

MAINVIEW[®] for OS/390

Getting Started

Version 2.7

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 - system hardware configuration
 - serial numbers
 - related software (database, application, and communication) including type, version, and service pack or maintenance level
- 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 that are designed to guide you through the BMC Software MAINVIEW[®] window interface, an easy-to-use extension of the standard ISPF interface that is also used by the BMC Software CMF[®] MONITOR and MAINVIEW VistaPoint[™] products. The book is intended for anyone who wants to learn about the MAINVIEW for OS/390 product 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 set for beginners and one set for advanced users. It is organized as follows. In addition, this book contains an index.

Chapter	Description
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 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, "Using 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.

Related Documentation

BMC Software products are supported by several types of documentation:

- online and printed books
- online Help
- release notes and other notices

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. As “Online and Printed Books” explains, these publications are available on request from BMC Software.

- *MAINVIEW Quick Reference*, which introduces the MAINVIEW family of products and lists the commands that are 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.

If you are using MAINVIEW Alternate Access, you might want to refer to the *MAINVIEW Alternate Access Implementation and User Guide*.

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Online Help

The MAINVIEW for OS/390 product includes online Help. In the MAINVIEW for OS/390 ISPF interface, 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

In addition, BMC Software sometimes provides updated product information between releases (in the form of a flash or a technical bulletin, for example). The latest versions of the release notes and other notices are available on the Web at www.bmc.com/support_home.

General 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	To invoke View Customization, type CUST on the COMMAND line.
specific (standard) keyboard key names	bolded and in Times 10 pt. font	Press Enter .
field names	bolded and in Times 10 pt. font	Sort on the %Use ThisJob field.
directories, file names, Web addresses, e-mail addresses, option names	bolded and in Times 10 pt. font	The BMC Software home page is at www.bmc.com . Use the X - Exclude option in the View Customization panel.
view names, commands, nonspecific key names, keywords	every letter capitalized	The DEVSTATZ view is useful for sites with multiple systems sharing a single device. The SUM command is in effect until you redisplay the summary view. Use the HELP function key.
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	<code>TIME [date time [duration NEXT PREV]] [dowMask todMask]</code> There is no data that satisfies your request.
emphasized words, new terms, variables	italics	The <i>window information line</i> helps you keep track of what is displayed in a particular window. The variable <i>yourJob</i> is a job name on JFLOW.

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 information that might improve product performance or that might make procedures easier to follow.

Chapter 1 Getting Started

This chapter provides an overview of the MAINVIEW for OS/390 product, 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.

The MAINVIEW for OS/390 product monitors job, workload, and system activity through a series of easy-to-use menus and views. You can monitor data from multiple systems 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:

- CMF MONITOR
- DATA ACCELERATOR Compression
- IMSplex System Manager
- MAINVIEW Alarm Manager
- MAINVIEW Alternate Access
- MAINVIEW AutoOPERATOR
- MAINVIEW Explorer
- MAINVIEW FOCAL POINT
- MAINVIEW for CICS
- MAINVIEW for DB2®
- MAINVIEW for DBCTL
- MAINVIEW for IMS
- MAINVIEW for IP
- MAINVIEW for Linux
- MAINVIEW for OS/390 (replaces MAINVIEW for MVS)
- MAINVIEW for UNIX System Services
- MAINVIEW for VTAM
- MAINVIEW for WebSphere Application Server
- MAINVIEW for WebSphere MQ (replaces MAINVIEW for MQSeries)
- MAINVIEW SRM
- MAINVIEW SYSPROG Services
- 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. The MAINVIEW for OS/390 product 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, DATA ACCELERATOR Compression, MAINVIEW VistaPoint, and the CMF Extractor. The OS/390 PAS runs as a started task.

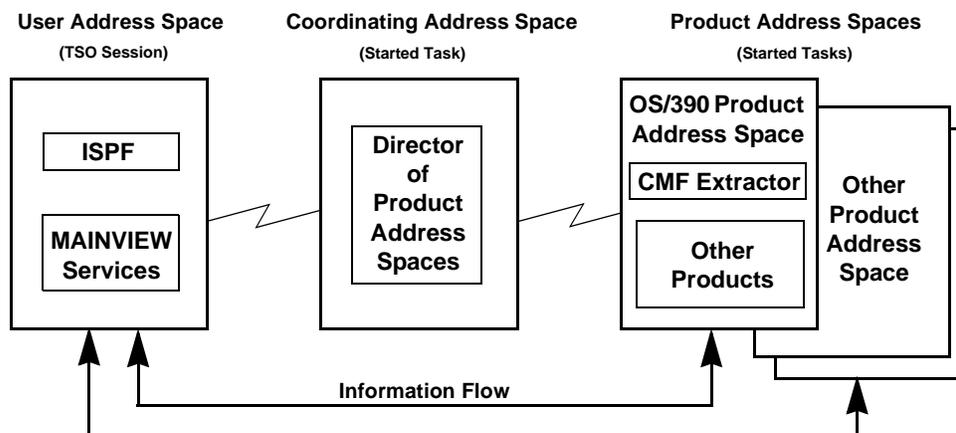
MAINVIEW for OS/390, MAINVIEW for UNIX System Services, MAINVIEW SYSPROG Services, and CMF MONITOR share the OS/390 PAS. Other MAINVIEW products might also share this product address space or might require their own PAS.

- **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

The MAINVIEW for OS/390 product 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 the MAINVIEW for OS/390 product. 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 the MAINVIEW for OS/390 product 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 the MAINVIEW for OS/390 product.
- 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 the MAINVIEW for OS/390 product. This chapter 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 the MAINVIEW for OS/390 product, 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
                                USERID  -- BAOSRR1
                                MODE     -- ISPF 4.8

  O Parameters and Options
  E Alerts and Alarms
  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. 2003

```

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  ==>
Performance
  1 MV390      MAINVIEW for OS/390
  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
DATE      -- MM/DD/YY
TIME      -- HH:MM
USERID    -- BAOSRR1
MODE      -- ISPF n.n

```

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  (CAS Subsystem ID, ? for list of active SSIDs)

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 or if you do not know the CAS identifier, type a question mark (?) in the **Subsystem ID** field. If only one SSID is listed, select it. If you still have questions or the value that you choose 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 the MAINVIEW for OS/390 product. Go to Chapter 3, “Using MAINVIEW for OS/390 Views.”

OS/390 Easy Menu

The OS/390 Easy Menu (EZM390) looks like Figure 2-4.

Figure 2-4 EZM390 Menu

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS  -----
COMMAND  ===>                                           SCROLL  ===>  PAGE
CURR WIN  ===>  1          ALT WIN  ===>
W1  =EZM390=====SYSE====*=====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
> Long Term Data

```

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** or else type **EZM390** on the **COMMAND** line to see the BMC version of the OS390 Easy Menu (as shown in Figure 2-4 on page 2-4).

Chapter 3 Using MAINVIEW for OS/390 Views

To use the MAINVIEW for OS/390 product 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	3-15
Examining System Activity Views	3-19
Troubleshooting	3-26

Understanding MAINVIEW for OS/390 Views

A *view* is a collection of data gathered by the MAINVIEW for OS/390 product 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.

The MAINVIEW for OS/390 product 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—WLM menus and views

xxxxx 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.

L (Long-term data)—Reflects the system over a period of weeks, depending on the interval established for that element.

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.

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.

You can also have combinations of data in a view. For example, the JCPULZ view includes both long-term and summarized data.

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 realtime. 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 the MAINVIEW for OS/390 product, 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 =JOVER=====SYSD=====*=====DDMMYYYY=====HH:MM:SS=====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.
JOVER	Is the name of the view.
<i>formName</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 (*).
DDMMYYYY	Is the date that data currently in the window was last updated.
HH:MM:SS	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>formLocation</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.

The MAINVIEW for OS/390 product 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 the MAINVIEW for OS/390 product 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 How to Use the EZM390 Menu

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS-----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =EZM390=====SYSE====*=====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   | > Data Compression
> Data Set Usage  | press ENTER    | > Alarm Management
> Storage         +-----+ > OS/390 Fast Menu
> XCF Monitoring  > RMF-like Menus
> Coupling Facility > Environment Settings
> WLM Workloads   . Return...
> Non-WLM Workloads
> Long Term Data
    
```

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(Vv.r.mm)MVMVS  -----
COMMAND  ===>
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                    +-----+
. Common Storage              | Place cursor on | . Overview
. CPU                          | menu item and  | . Data Sets
. Data Sets                    | press ENTER   | . Devices
. Devices                      +-----+ . Enqueues
. Enqueues                    . HSM
. HSM                          General
. I/O                          . Overview
. Paging                       . Abends
. SRM Service Units           . Status
. Storage                      > Steps
                                . Workflow
                                . Return...
    
```

The EZMJOB menu provides hyperlinks to views that display information about the performance and utilization of the jobs on your system. The hyperlinks are presented under the following categories:

- Resource Usage
- General
- Delays

Step 4 To display the general job overview, place the cursor on **Overview** under the **General** category, and then press **Enter**.

Your screen should look similar to the screen shown in Figure 3-3 on page 3-8.

Figure 3-3 JOVERZ View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =JOVERZ=====SYSDJEN1=*=====DDMMYYYY==HH:MM:SS==MVMVS==D==127
C Jobname JES Job T SrvClass Step MBO Total Total %Dly %Dly %CPU EXCP D
- - - - - Number - - - - - Data --- Dly% Use% Idle ECB/Oth Util /Sec /
BKSPRMP3 STC04547 S STCNRM NO No 100
BKSPRMP1 STC04546 S STCNRM NO No 100
BKSPRMP7 STC04428 S STCNRM NO No 100
BKSPRMP5 STC04425 S STCNRM NO No 100
BKSPRMP6 STC04427 S STCNRM NO No 100
BOLHNG2 TSU04596 T TSONRM NO No 2.30 4.60 93.10 0.0 1.7K
TCPIP STC04261 S SYSSTC NO No 1.56 1.56 96.87 0.1
MIMGR STC04171 S SYSSTC NO No 1.39 11.11 87.50 0.3 27.7
GRS S GRS NO No 0.78 0.78 98.44 0.0
ANTAS000 S STCNRM NO No 100.00
ANTMAIN S SYSTEM NO No 100
WLM S SYSTEM NO No 100 0.3
INIT STC04196 S SYSSTC NO No 100.00
OMVS S SYSTEM NO No 100 0.0
XCFAS S SYSTEM NO No 4.69 95.31 0.3 2.1
RASP S SYSTEM NO No 100.00
CONSOLE S SYSTEM NO No 100 0.0 0.0
    
```

Step 5 Press **Enter** and notice how the data on JOVERZ changes.

The data is refreshed every time you press **Enter** (unless you press **Enter** more frequently than the data-collection interval established for that view's data elements).

If you are interested in a particular job that is not currently visible on JOVERZ, rather than scrolling down, possibly several times, you can move this job to the top of the window by using the LOCATE command.

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 jobName** (where *jobName* is the name for the job in which you are interested), 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, like most of the other column headings, 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 a few 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 the **MAINVIEW** for OS/390 product 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(Vv.r.mm)MVMVS-NO MORE VIEWS IN STACK
COMMAND ==>> SCROLL ==>> PAGE
CURR WIN ==>> 2 ALT WIN ==>> &2
>W1 -JOVERZ-----SYSDJEN1-*-----DDMMYYYY--HH:MM:SS----MVMVS----D--127
C Jobname JES Job T SrvClass Step MBO Total Total %Dly %Dly %CPU EXCP D
- ----- Number - ----- Data --- Dly% Use% Idle ECB/Oth Util /Sec /
BKSPRMP3 STC04547 S STCNRM NO No 100
BKSPRMP1 STC04546 S STCNRM NO No 100
BKSPRMP7 STC04428 S STCNRM NO No 100
BKSPRMP5 STC04425 S STCNRM NO No 100
BKSPRMP6 STC04427 S STCNRM NO No 100
>W2 =EZMJOB=====SYSDJEN1=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Job Menu
Timeframe - Interval

Current Job -> BKSPRMP3

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...
    
```

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**.

Because window 2 is still current, the **CLOse** command is directed to window 2. Your screen should now contain just one view, **JOVERZ**.

Now use the MAINVIEW for OS/390 online help to find out more information about JOVERZ.

Step 12 To display online help, position the cursor on **JOVERZ** on the window information line and press **PF1**.

Tip: You can display help for any view by placing the cursor on the view name (as it appears on the window information line) and pressing **PF1**.

The online help for JOVERZ is displayed, as shown in Figure 3-5

Note: In some older versions of ISPF, the help panel occupies the entire screen.

Figure 3-5 Online Help for JOVERZ

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>>                                SCROLL ==>> CSR
CURR WIN ==>> 1          ALT WIN ==>>
>W1 =JOVERZ=====SYSDJEN1=*=====DDMMYYYY==HH:MM:SS====MVMVS====D==156
C Jobname  JES Job  T SrvClass Step MBO Total Total %Dly %Dly %CPU EXCP D
----- Number - ----- Data --- Dly% Use% Idle ECB/Oth Util /Sec /
BKSPRMP3 STC04
BKSPRMP1 STC04  Help      Summarized Interval Job Activity      Help
BKSPRMP7 STC04  Command ==>                                Scroll ==> PAGE
BKSPRMP5 STC04  -----
BKSPRMP6 STC04
BOLHNG2  TSU04  Use JOVERZ to monitor job activity during the                1.7K
TCPIP    STC04  interval or summarize the job(s) over multiple
MIMGR    STC04  intervals. JOVERZ helps you to analyze the                    27.7
GRS
ANTAS000
ANTMAIN
WLM
INIT     STC04  For more information on this view, place the
OMVS     cursor on one of the following topics and press
XCFAS    o Actions available from this view
RASP
CONSOLE  o Elements in this view
RACF     STC04
IXGLOGR  o Positional parameters
SMSVSAM  o Keyword parameters                2.1
SMF
LLA      o Forms that are valid for this view                0.0
JES2AUX  o Sort information                1.2
JES2
AAOJP    STC03
OL20     STC03
BBVBHMQ  JOB03  JOVERZ is a TABULAR SUMMARY view.

```

The Help displays a list of hyperlinked topics that you can use to find specific information about JOVERZ, such as what filters are in effect, which fields have hyperlinks and to where, and so on. This information is created dynamically, so regardless of the changes that you make to JOVERZ, the help is always accurate.

Scroll down to browse the remainder of the help text. Take a moment to hyperlink to one or two of the available topics.

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**.

The MAINVIEW for OS/390 product 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 on page 3-13 (partial view only).

Figure 3-6 JOVERZ View Actions

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =JOVERZ=====SYSDJEN1=*=====DDMMYYYY==HH:MM:SS====MVMVS====D==159
C Jobname  JES Job  T SrvClass Step MBO Total Total  %Dly  %Dly  %CPU  EXCP
- ----- Number - ----- Data ---  Dly%  Use%  Idle ECB/Oth Util  /Sec
BKSPRMP3 STC04
BKSPRMP1 STC04  Help          Available Actions          Help
BKSPRMP7 STC04  Command ==>          Scroll ==> PAGE
BKSPRMP5 STC04  -----
BKSPRMP6 STC04
BOLHNG2  TSU04  Two line command actions are available:          1.7K
TCPIP    STC04
MIMGR    STC04
GRS
ANTAS000
ANTMAIN
WLM
INIT     STC04
OMVS
XCFAS
RASP
CONSOLE
RACF     STC04
IXGLOGR
SMSVSAM
SMF
LLA
JES2AUX
JES2

```

Help Available Actions Help

Command ==> Scroll ==> PAGE

Two line command actions are available:

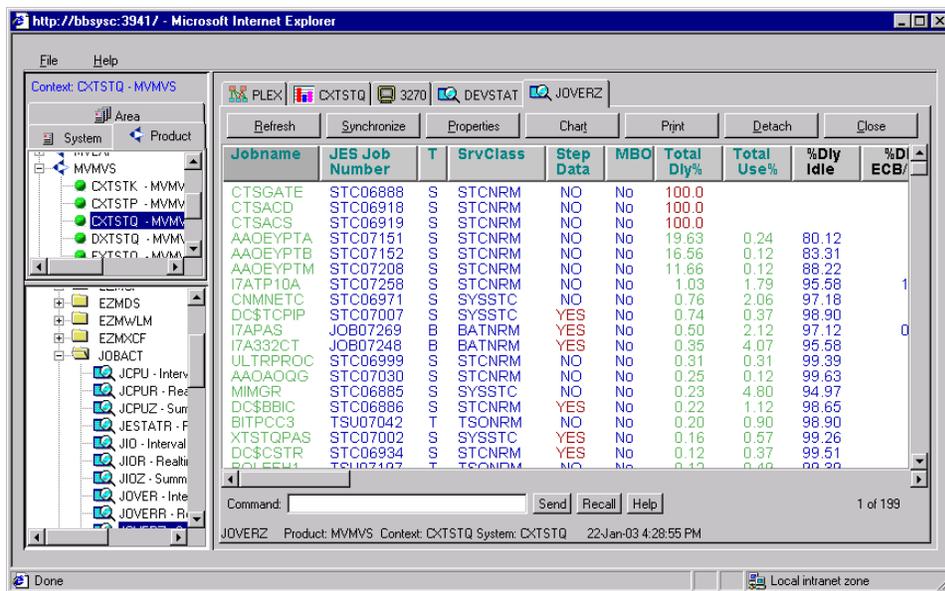
- o The "m" line command used to initiate MVScope monitoring for a job or device. 27.7
- o The "c" line command used to generate an internal OS/390 CANCEL console command for an address space, job, or device.

The MVScope facility identifies problem areas by tracing CPU usage down to to the CSECT level and I/O usage down to the channel program level. You can initiate the MVScope facility from most MAINVIEW for OS/390 views in one of three ways:

- o Type an "m" in the line command field next to the job or device you wish to monitor. 2.1
- o Type MVSCOPE on the COMMAND line. You will be 0.0
- o Type MVSCOPE on the COMMAND line. You will be 1.2

Note: If MAINVIEW Explorer is installed on your system, you can access MAINVIEW for OS/390 views through a web browser. For example, Figure 3-7 on page 3-14 illustrates the JOVERZ view accessed in this manner. Refer to *Using MAINVIEW* for information about using MAINVIEW Explorer to access MAINVIEW products.

Figure 3-7 JOVERZ View Accessed Using MAINVIEW Explorer



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, long-term, and interval (short-term) views
- how to read the window information line
- how to use hyperlinks
- how to open and close windows
- 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
- how to move a particular workload, job, or resource to the top of the view by using the LOCATE command

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 use the conventional view names.

Using EZMFAST

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 EZMFAST, you can hyperlink to many areas informing you about your system's performance. For example, from the **Workloads** category, select **Delay Reasons** to display the WDELAYZ view, which shows workload delay information.

Using 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 3-8, 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 3-8 WORKDEL View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1 =WORKDEL=====SYSE====*=====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
JHSM HSM related delays
JHSMZ Summary HSM related delays
JHSMSTAT HSM related delays, details
JINFO Detailed job delay information
JINFOZ Detailed realtime job info
JINFOZ Summary detailed job info
JJESD JES related delays

```

One of the listed views is WDELAYZ. You might need to scroll to it.

Step 3 Hyperlink on WDELAYZ.

The WDELAYZ view appears, as shown in Figure 3-9 on page 3-17.

Figure 3-9 WDELAYZ View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =WDELAYZ=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====64
C Workload T #AS Total Delay% %Dly %Dly %Dly %Dly %Dly %Dly %Dly
- - - - - 0...50...100 CPU Dev Stor ENQ SRM Subs Idle
ALLBAT B 8 8.21 ** 0.58 0.32 1.15 6.15 89.12
BATCH W 8 8.21 ** 0.58 0.32 1.15 6.15 89.12
BATNRM S 8 8.21 ** 0.58 0.32 1.15 6.15 89.12
STCNRM S 107 4.55 * 0.07 0.15 3.13 1.21 75.58
STC W 118 4.13 * 0.07 0.13 2.84 1.09 74.36
ALLSTC S 207 2.37 0.05 0.08 1.61 0.62 63.74
ALLWKLDS C 284 1.96 0.06 0.07 1.22 0.62 71.98
GRS S 1 0.32 0.32
TSNRM S 66 0.10 0.01 0.00 0.08 98.69
TSO W 66 0.10 0.01 0.00 0.08 98.69
ALLTSO T 66 0.10 0.01 0.00 0.08 98.69
STCPAS S 6 0.05 0.05 98.81
SYSSTC S 71 0.05 0.04 0.01 0.00 42.98
SYSTEM W 89 0.04 0.03 0.01 0.00 48.78
SYSTEM S 18 0.01 0.01 71.67
CICST1 S
SLOW W 1 100
OMVSNRM S 2

```

WDELAYZ 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.

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 WDELAYZ to make sure that the workload contains more than one address space (or job).

Note: A workload might have had address spaces running during the interval but not have any active address spaces; therefore, this value is blank.

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

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

Figure 3-10 JDELAYZ View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>> SCROLL ==>> PAGE
CURR WIN ==> 1 ALT WIN ==>>
>W1 =JDELAYZ=====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===50
C Jobname JES Job T SrvClass Step Total Delay % %Dly %Dly %Dly %D
- - - - - Number - - - - - Data 0...50...100 CPU DEV Stor E
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$BBI STC01197 S STCNRM NO 1.92 ***** 1.53 0.
AAODM5B STC01459 S STCNRM NO 1.90 ***** 1.66 0.
AAORMB5G S STCNRM NO 1.83 ***** 1.83
AAOHW4A STC01196 S STCNRM NO 1.43 ***** 1.43
WRWJCAS S STCNRM NO 1.40 ***** 1.40
AAOHW51 S SYSTEM NO 1.36 ***** 1.36
DC$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 STC01938 S STCNRM NO 0.82 ***** 0.82
DC$EXT STC01854 S STCNRM NO 0.54 ***** 0.54
CSBEMSTR STC01944 S STCNRM NO 0.54 ***** 0.54
TUNCIC4 S STCNRM NO 0.54 ***** 0.54

```

JDELAYZ 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	JCPUZ, which tells you about each job's use of the CPU
%Dly DEV	JDDEVZ, which displays information about jobs that are delayed because of contention for devices
%Dly Stor	JSTORDZ, which tells you about job delays related to storage
%Dly ENQ	JDENQZ, 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	JSRMDZ, which tells you about job delays related to SRM constants
%Dly Subs	JSUBDZ, 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

To See	Use This View
an overview of workload delays	WDELAY, WDELAYZ
an overview of job delays	JDELAY, JDELAYZ
how well jobs are being served by all resources	JFLOW, JFLOWZ
how well workloads are being served by all resources	WFLOW, WFLOWZ
which I/O devices are being used by jobs	DUJOB
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 3-11 on page 3-20.

Figure 3-11 SYSACT View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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
CPALL       Analyze all Channel Paths
CPSTAT      Analyze All Channel Paths
CPSTATR     Analyze All Channel Paths
CPSTATZ     Analyze All Channel Paths Summary
CPUINFO     Detailed info on a single CPU
CPUSTAT     Analyze CPU performance
DMNSTAT     Interval SRM domains
DMNSTATR    Realtime SRM domains
DSIO        Dataset 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
LPARTOT     Analyze LPARS/Domains
LPARTOTZ    Analyze LPARS/Domains summ
MPLSTAT     SRM MPL adjustment values
PGDINFO     Analyze single Page Dataset
PGDSTAT     Analyze Page Datasets
PGDSTATZ    Analyze Page Datasets Summary
PGINFO      System paging overview
SMSINFO     Analyze single Storage Group
SMSSTAT     Analyze SMS Storage Groups
SNQR        Realtime Enqueue
SNQRZ       Realtime Enqueue 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 3-12 on page 3-21.

Figure 3-12 CPUTAT View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1 =CPUTAT=====SYSE====*=====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 3-13.

Figure 3-13 CPUINFO View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1 =CPUTAT==CPUINFO====SYSE====*=====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 3-12.

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

- Step 1** To clear the screen, type **RESet** on the **COMMAND** line.
- Step 2** On the **COMMAND** line, type **EZM390** and press **Enter**.
- Step 3** Under the **Activity** category, select the **Devices** option and press **Enter**.

The EZMDEVS Activity Menu is displayed.

- Step 4** Under the **Devices** category, select the **Device Utilization** option and press **Enter**.

The DEVSTATZ view is displayed, as shown in Figure 3-14.

Figure 3-14 DEVSTATZ View

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE (Vv.r.mm)MVMVS -----
COMMAND ===>                               SCROLL ===> PAGE
CURR WIN ===> 1           ALT WIN ===>
W1 =DEVSTATZ=====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==169
C Volser Type Dev LCU MX Storage I/O      Resp. Time IOSQ Conn Disc Pend D
- - - - - - - - - - Num Num -- Group /Sec      0...50.100 Time Time Time Time O
PAGD27 3390 0227 00B          2.90 96.61 ***** 49.5 5.73 41.0 0.37
TSG322 3390 02AD 00C          0.90 78.05 ***** 5.9 52.8 0.12 19.1
BSD001 3390 0D36 01C          0.03 27.55 ***           0.41 0.10 27.0
ES510P 3390 0D32 01C          0.03 26.36 ***           0.47 0.06 25.8
SMS900 3390 0326 00D          0.11 22.86 **            3.71 2.03 17.1
TSG312 3390 02A1 00C          1.38 16.49 *             11.2 0.29 1.09
BAB321 3390 030C 00D          0.44 15.84 *             10.5 1.56 3.71
FAT901 3390 0322 00D          0.03 15.63 *             0.78 0.09 14.7
HSM301 3390 0D00 01C          1.02 14.61 *             1.06 0.16 13.3
SYM042 3390 024A 00B          0.03 13.94 *             1.06 0.09 12.7
SYM028 3390 023C 00B          0.26 12.06 *             0.82 0.88 10.3
BAB331 3390 02A5 00C          0.17 10.51                5.36 4.77 0.38
BAB322 3390 0317 00D          0.40 10.05                3.93 2.39 3.73
FAT902 3390 0323 00D          0.03 9.93                  0.81 0.13 9.00
TSG320 3390 0D38 01C          0.88 9.91                  7.98 0.17 1.76
SMS001 3390 0D2A 01C          0.03 9.22                  1.64 2.78 4.80
BAB311 3390 0302 00D          1.96 8.81                  2.70 1.06 5.05
O26G11 3390 0319 00D          0.03 8.70                  0.82 0.05 7.83
PUBBC1 3390 0D06 01C          0.03 8.63                  1.78 3.58 3.26
PAGA21 3390 0221 00B          0.03 8.15                  1.04 0.09 7.03
BAB402 3390 0252 00B          0.03 7.97                  0.99 0.08 6.91
```

- Step 5** Hyperlink from any line in the **Volser** column within the DEVSTATZ view.

The MAINVIEW for OS/390 product displays the EZMDEV menu, as shown in Figure 3-15 on page 3-23, 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 3-15 Device Activity Menu (EZMDEV)

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
>W1 =DEVSTATZ==EZMDEV====SYSE====*=====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
           . Jobs Using Volume
           . Data Set Usage and Delay
           . Overview

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

           . Return...

```

Step 6 Under the **This Device** category, select **Detailed Info**.

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

Figure 3-16 DEVINFO View, Showing Information about PAGD27

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
W1 =DEVSTATZ==DEVINFO====SYSE====*=====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 Con+Dis Tm. 46.78
SSCH/Sec..... 2.90 % Dev Queued... 9.04 Avg DPB Delay..
Total SSCH.... 1121 % Q+CPU Wait... 1.60 Avg CUB Delay..
% In Use..... 6.20 % Efficiency... 90.96 Avg DvB Delay.. 0.01
% Delaying.... 0.28 Avg Q Depth.... 0.14 % Reserved....
Curr DS open... Max Q Depth.... 5.00 % Resv Shr....
Avg DS open.... 4 % Error Rec....

```

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

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

SYSSUM, SYSOVER, and SYSPERF are excellent places to start analyzing the health of your system. In particular, SYSOVER helps you pinpoint dangerous trends that could 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, under the **Activity** category select the **System Trends** option, and then press **Enter**.

The SYSSUM view is displayed, as shown in Figure 3-17.

Figure 3-17 SYSSUM View

```
DDMMYY HH:MM:SS-MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS-"RCHANGE " is not active
COMMAND ==>> SCROLL ==>> PAGE
CURR WIN ==>> 1 ALT WIN ==>>
>W1 =SYSSUM=====SYSE=====DDMMYYYY==HH:MM:SS====MVMVS====D====5
In Date      Time      Wflow %      CPUbsy%      Pag/Sec      I/O Intr      W
Nm -----
5 09MAYYYY 14:29 48 ***      34.0 **      101. ***** 81.46 **      2
4 09MAYYYY 14:15 64 ****      27.4 **      10.2          67.04 *      43
3 09MAYYYY 14:00 59 ***      28.0 **      16.7 *        63.43         44
2 09MAYYYY 13:45 44 ***      29.8 **      20.1 *        65.76         11
1 09MAYYYY 13:30 63 ****      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 4—which ended at 14:15 this afternoon—to display the SYSSUM view and WFLOW view, as shown in Figure 3-18.

Figure 3-18 SYSSUM and WFLOW

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS  -----
COMMAND  ==>>
CURR WIN ==>> 2          ALT WIN ==>> &2
W1 -SYSSUM-----SYSE-----*-----DDMMYYYY==HH:MM:SS----MVMVS----D----5
In Date      Time      Wflow %      CPUbsy%      Pag/Sec      I/O Intr      W
Nm  -----      -----      0...100      0...100      0...100      0...500      0
5 09MAYYYYY  14:29  48 ***      34.0 **      101.  *****+  81.46 **      2
4 09MAYYYYY  14:15  64 ****      27.4 **      10.2          67.04 *      43
3 09MAYYYYY  14:00  59 ***      28.0 **      16.7 *        63.43      44
2 09MAYYYYY  13:45  44 ***      29.8 **      20.1 *        65.76      11
1 09MAYYYYY  13:30  63 ****      32.8 **      18.9 *        95.60      12

H2 =WFLOW=====SYSE====*=====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.

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 **2** in the **CURR WIN** field.
- 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 3-19.

Figure 3-19 WIO Sorted By the %Dly Dev Column

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE (Vv.r.mm)MVMVS  -----
COMMAND  ==>
CURR WIN ==> 1          ALT WIN ==>
W1 =WIO=====SYSE====*=====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 NR    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 3-19, 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 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 3-20 on page 3-28.

Figure 3-20 JIO View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =JIO=====SJSCTSM=*=====DDMMYYYY==HH:MM:SS====MVMVS====D==366
C Jobname JES Job T SrvClass Step EXCP per Sec %Use %Dly %Con I
- - - - - Number - - - - - Data 0.....50.....100 Dev Dev Time E
IMS71Y JOB07933 S SYSTEM NO 49.52 ***** 4.0 14.6 3.8
CATALOG S SYSTEM NO 0.02 1.9 0.2
BAODYM2 TSU04854 T TSONRM NO 4.55 * 0.9 0.1
DC$BBIRR STC04655 S STCNRM NO 0.87 0.1 0.1
DC$BBI STC04711 S STCNRM NO 1.98 1.1 0.1
DC$STG STC04745 S STCNRM NO 1.56 0.6 0.1 20.5
I7AARCH JOB07845 B BATNRM NO 161.6 *****+ 25.0 28.2
CSQ1MSTR STC04598 S STCNRM NO 81.61 ***** 11.9 7.7
BMVDID3 TSU04759 T TSONRM NO 52.43 ***** 6.0 17.9
IMFAH33 JOB07945 B BATNRM NO 49.20 ***** 3.8 6.4
BMVDWP4 TSU04499 T TSONRM NO 36.33 ***** 1.0 3.8
BMVDWP5 TSU04531 T TSONRM NO 32.00 ***** 2.6
BMCAHX1 TSU04492 T TSONRM NO 25.89 **** 6.0 6.4
AAODM6A STC04792 S STCNRM NO 24.36 **** 2.7 2.6
MIMGR STC04801 S SYSSTC NO 23.67 **** 8.4 1.3
RDHCLH TSU04642 T TSONRM NO 23.20 **** 1.3
BMVDWP6 TSU04661 T TSONRM NO 22.33 **** 2.6
BMVDID3 TSU04666 T TSONRM NO 15.33 *** 1.3
BAOMXM1 TSU04786 T TSONRM NO 13.75 ** 2.6
BOLKGB2 TSU04611 T TSONRM NO 12.56 ** 1.3
    
```

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

In Figure 3-20, IMS71Y is the most delayed job.

Step 10 To find what is causing the delay, position your cursor in the **JES Job Number** field under the job that is experiencing the highest delay and press **Enter**.

The JINFO view is displayed, as shown in Figure 3-21 on page 3-29.

Figure 3-21 JINFO View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =JIO=====JINFO=====SJCXTSM=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Timeframe... Interval      Owner.....  +MASTER+
Jobname.... IMS71Y          Avg Frames.. 1433      Workflow... 100.00
Step/Proc... IMS71Y          Avg Cframes. 1377      Total Use.. 7.50
Job Step Mon NoSteps       Avg Eframes. 57         Using Proc 0.00
JES Number.. JOB07933       Cframes held 1643      Using Dev. 7.50
Type..... JOB              Eframes held 56         Total Dly.. 21.92
JobClass.... Fixed frames 181        Processor. 6.98
JES Queue Tm 00:00:01       Fixed <16M.. 70         Device.... 14.63
%CPU Util... 0.0           Dmd Page/Sec 0          Storage... 0.00
Total CPU Tm 00:04:03       Swp Page/Sec 0          Enqueue... 0.31
Tot EXCP Cnt 8326          Avg UIC..... 1321.8     SRM..... 0.00
Terminal ID.              Avg Wkg Set. 0.0         Msg..... 0.00
ASID..... 53              SU/Sec..... 69486   XCF..... 0.00
SrvClass.... BATNRM        EXCP/Sec.... 49.5       JES..... 0.00
Workload....              JobStart Dt. 18DECYYYY   HSM..... 0.00
%Connected.. 0.3           JobStart Tm. 00:27:22  Idle..... 66.18
Disp. Prty.. 229          Job Elpd Tm. 00:04:03  ECB/Other.. 4.42
Job Status.. Active       JobEnd Dt... N/A
JobEnd Tm... N/A
    
```

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 3-29, you can see that the biggest percentage of the total delay experienced by IMS71Y, 14.63 percent, was due to I/O devices.

Step 11 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(Vv.r.mm)MVMVS -----
COMMAND  ===>                                     SCROLL ===> PAGE
CURR WIN ===> 1           ALT WIN ===>
W1 =DDJOB=====SJSCXTSM=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
C Volser  Dev Type  LCU  Resp  Act.  %Delay  %Delay  Jobname  JES Job  T  SrvClas
- -----  Num  ----  Num  Time  Rate  ThisJob  AllJobs  -----  Number  - -----
  BAB317  308 3390  030  9.59  2.99   14.63   14.63  IMS71Y   TSU04792 S  STCNRM
    
```

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

Step 13 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 the example shown in Figure 3-23 on page 3-31).

Figure 3-23 Device Activity Menu

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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
> Utilities

. Return...
    
```

Step 14 Under the **This Device** category, hyperlink on **Detailed Info**.

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(Vv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
W1 =EZMDEV===DEVINFO===SYSE=====*****=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 Con+Dis Tm. 11.30
SSCH/Sec..... 7.40 % Dev Queued... 1.28 Avg DPB Delay..
Total SSCH.... 2396 % Q+CPU Wait... Avg CUB Delay..
% In Use..... 32.72 % Efficiency... 98.72 Avg DvB Delay..
% Delaying.... 1.25 Avg Q Depth.... 0.01 % Reserved....
Curr DS open... 60 Max Q Depth.... 1.00 % Resv Shr....
Avg DS open.... 131 % Error Rec.... 0.64
    
```

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 15 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 3-31, 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 the MAINVIEW for OS/390 product has established the hyperlink that you need to answer this question.

Note: If the device is shared, consider using the CONtext command to include all of the systems that share this device. (See “Accessing Several Systems Simultaneously” on page 6-9 for information about how to use the CONtext command.)

Step 16 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(Vv.r.mm)MVMVS -----
COMMAND ==>> SCROLL ==>> PAGE
CURR WIN ==>> 1 ALT WIN ==>>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===60
C Jobname JES Job T SrvClass %Use %Use %Use %Use %Use %Delay %Dly Dev Volser
- - - - - Number - - - - - VolSer DASD Tape Dev AllRsn VolSer Dev Num
BMCJMBAR JOB04913 B BATNRM 50.00 75.6 75.6 99.4 83AE BAB317
IMS71Y JOB07933 S SYSTEM 7.12 7.2 7.2 9.4 83AE BAB317
XCFAS S SYSTEM 6.84 6.8 6.8 7.7 83AE BAB317
*MASTER* STC04606 S SYSTEM 2.05 3.4 3.4 3.4 83AE BAB317
DB1KMSTR STC04811 S STCNRM 1.71 1.7 1.7 1.7 83AE BAB317
XTST7PAS STC04856 S SYSSTC 1.33 5.3 5.3 6.0 83AE BAB317
DB2KMSTR STC04745 S STCNRM 0.85 0.9 0.9 0.9 83AE BAB317
*MASTER* STC04606 S SYSTEM 0.68 3.4 3.4 3.4 83AE BAB317
*MASTER* STC04606 S SYSTEM 0.68 3.4 3.4 3.4 83AE BAB317
XTST7PAS STC04856 S SYSSTC 0.66 5.3 5.3 6.0 83AE BAB317
XTST7PAS STC04856 S SYSSTC 0.66 5.3 5.3 6.0 83AE BAB317
XTST7PAS STC04856 S SYSSTC 0.66 5.3 5.3 6.0 83AE BAB317
XTST7PAS STC04856 S SYSSTC 0.66 5.3 5.3 6.0 83AE BAB317
XTST7PAS STC04856 S SYSSTC 0.66 5.3 5.3 6.0 83AE BAB317
XTST7PAS STC04856 S SYSSTC 0.66 5.3 5.3 6.0 83AE BAB317
BCVPAP4 TSU04759 T TSONRM 0.57 1.1 1.1 1.7 83AE BAB317
IMS71Y JOB07933 S SYSTEM 0.48 1.1 1.1 1.7 83AE BAB317
```

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

Note: Instead of hyperlinking on the % **In Use** field, you could have returned to the Device Activity Menu (by press the **End** key from DEVINFO) and chosen **Jobs Using Volume**. You would still have encountered the same view, JUDEV.

The MAINVIEW for OS/390 product 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(Vv.r.mm)MVMVS -----
COMMAND ==>>                               SCROLL ==>> PAGE
CURR WIN ==>> 1           ALT WIN ==>>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====60
C Jobname   JES Job   T SrvClass   %Use %Use %Use %Use %Use %Delay %Dly Dev  VolSer
- - - - - Number - - - - - VolSer  DASD  Tape  Dev AllRsn VolSer  Dev  Num  - - - - -
  BMCJMBAR  JOB04913  B BATNRM    50.00 75.6          75.6 99.4          83AE BAB317
  IMS71Y    JOB07933  S SYSTEM    7.12  7.2          7.2  9.4          83AE BAB317
  XCFAS     JOB07933  S SYSTEM    6.84  6.8          6.8  7.7          83AE BAB317
  *MASTER*  STC04606  S SYSTEM    2.05  3.4          3.4  3.4          83AE BAB317
  DB1KMSTR  STC04811  S STCNRM    1.71  1.7          1.7  1.7          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    1.33  5.3          5.3  6.0          83AE BAB317
  DB2KMSTR  STC04745  S STCNRM    0.85  0.9          0.9  0.9          83AE BAB317
  *MASTER*  STC04606  S SYSTEM    0.68  3.4          3.4  3.4          83AE BAB317
  *MASTER*  STC04606  S SYSTEM    0.68  3.4          3.4  3.4          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  XTST7PAS  STC04856  S SYSSTC    0.66  5.3          5.3  6.0          83AE BAB317
  BCPAP4    TSU04759  T TSONRM    0.57  1.1          1.1  1.7          83AE BAB317
  IMS71Y    JOB07933  S SYSTEM    0.48  1.1          1.1  1.7          83AE BAB317
```

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 3-26. 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 VolSer.
- 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, BMCJMBAR is the only job that is using VOLSER BAB317 to any significant degree. If you reassign the priority of BMCJMBAR, you afford BMCJMBAR less access to the CPU, and thus less access to BAB317.

Write down the names of any jobs to which you want to reassign priority. You will need these names later.

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

SYSPROG displays the full list of system programmer utilities available with MAINVIEW for OS/390; a partial panel is shown in Figure 4-2.

Figure 4-2 SYSPROG Services Menu

```

----- SYSPROG SERVICES MENU ----- ROW 1 TO 23 OF 95
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 4 Scan the **Description** column until you see CHANGE ADDRESS SPACE DISPATCHING PRIORITY.

This service is called the CHAP service.

Step 5 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

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===60
C Jobname JES Job T SrvClass %Use %Use %Use %Use %Use %Delay %Dly De
- - - - - Number - - - - - VolSer DASD Tape Dev AllRsn VolSer Dev Nu
----- 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.
BCVPAP4 TSU04759 T TSONRM 0.57 1.1 1.1 1.7 83A

```

Step 6 In the **ASNAME** field, type the name of the job.

Using BMCJMBAR as an example, the screen would look like Figure 4-4 on page 4-5.

Figure 4-4 CHAP Service Panel for BMCJMBAR

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====60
C Jobname JES Job T SrvClass %Use %Use %Use %Use %Use %Delay %Dly De
- ----- Number - ----- VolSer DASD Tape Dev AllRsn VolSer Dev Nu
----- SYSPROG - CHAP Service -----
COMMAND ==>
ASNAME ==> BMCJMBAR (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.
BCVPAP4 TSU04759 T TSONRM 0.57 1.1 1.1 1.7 83A

```

Step 7 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,BMCJMBAR          SCROLL ==> PAGE
ENTER CHANGE AS +NN -NN .NNN ANNN. PREFIX WITH X FOR HE TARGET - SYSE
REPLY ==>
-----
13:57:45 CMD=CHAP,BMCJMBAR
AMTX11I JOB04913 BMCJMBAR 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 8 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 BMCJMBAR: 54

```

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

-----
AMTX11I JOB04913 BMCJMBAR  IKJJOB1  PRTY DF (54) PGP 227/ 1
-----
***** Bottom of data *****
    
```

The priority for BMCJMBAR is now 54, or 200 less than its original value of 254.

Step 9 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 BMCJMBAR Priority

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS  -----
COMMAND  ==>                SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====60
C Jobname  JES Job  T SrvClass  %Use  %Use  %Use  %Use  %Use %Delay  %Dly  Dev  Volser
- - - - -  Number  - - - - -  VolSer  DASD  Tape  Dev  AllRsn  VolSer  Dev  Num  -----
IMS71Y    JOB07933  S SYSTEM    7.12  7.2   7.2   7.2   9.4   83AE  BAB317
XCFAS     S SYSTEM    6.84  6.8   6.8   7.7   83AE  BAB317
*MASTER* STC04606  S SYSTEM    2.05  3.4   3.4   3.4   83AE  BAB317
DB1KMSTR STC04811  S STCNRM    1.71  1.7   1.7   1.7   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    1.33  5.3   5.3   6.0   83AE  BAB317
DB2KMSTR STC04745  S STCNRM    0.85  0.9   0.9   0.9   83AE  BAB317
*MASTER* STC04606  S SYSTEM    0.68  3.4   3.4   3.4   83AE  BAB317
*MASTER* STC04606  S SYSTEM    0.68  3.4   3.4   3.4   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    0.66  5.3   5.3   6.0   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    0.66  5.3   5.3   6.0   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    0.66  5.3   5.3   6.0   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    0.66  5.3   5.3   6.0   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    0.66  5.3   5.3   6.0   83AE  BAB317
XTST7PAS STC04856  S SYSSTC    0.66  5.3   5.3   6.0   83AE  BAB317
BCVPAP4   TSU04759  T TSONRM    0.57  1.1   1.1   1.7   83AE  BAB317
IMS71Y    JOB07933  S SYSTEM    0.48  1.1   1.1   1.7   83AE  BAB317
BMCJMBAR  JOB04913  B BATNRM    0.42  1.1   1.1   1.7   83AE  BAB317
    
```

You can see that BMCJMBAR now accounts for only about .4 percent of BAB317's VOLSER use—a significant improvement.

Step 10 To find out if the original problem has been solved, display WIO, as shown in Figure 4-8.

Figure 4-8 WIO after Reducing the BMCJMBAR Priority

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND  ===>                                SCROLL  ===> PAGE
CURR WIN  ===> 1          ALT WIN  ===>
Wl =WIO=====SYSE====*=====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  6.07 *          0.6   8.3   3.8   520  224
 ALLWKLDS  CMP 172  5.92 *          0.9   0.0  26.9   432  251
 ALLSTC    STC 144  4.91 *          1.0   0.0  25.6   398  251
 STC       WKL  98  4.86 *          1.2   0.0  10.2   981  250
 STCNRM    SCL  86  4.58 *          1.1   0.0   7.7   617  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
 TSONRM    SCL  25  0.31          0.1                               34  249
 ALLTSO    TSO  25  0.31          0.1                               34  249
 APPCHOT   SCL
 CICSLOT   SCL
 CICSNRM   SCL

```

Although ACCTNG1 is still the most severely delayed workload, it is now within an acceptable range—8.3 percent.

By reducing the priority of BMCJMBAR, you provided improved access to BAB317 for other jobs, including one job that belonged to ACCTNG1. Therefore, when ACCTNG1 jobs are progressing smoothly through the system, the workload performs successfully as a whole.

For the most part, this problem is solved.

The *MAINVIEW for OS/390 User Guide and Reference* provides a complete description of each MAINVIEW for OS/390 system programmer utility.

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, as shown in Figure 4-9.

Figure 4-9 EZMSPROG, the SYSPROG Easy Menu

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =EZM390===EZMSPROG=EXTSTQ==*=====DDMMYYYY==HH:MM:SS===MVMVS===D===1
          SYSPROG Easy Menu

      Job                               System
> Actions                               +-----+ > Actions
> Performance                           | Place cursor on | > Dump Services
> Storage                               | menu item and  | > Information
                                         | press ENTER   | > Performance
                                         +-----+ > Storage
                                         > Utilities

      Device                             Advanced
> I/O Subsystem                         > SYSPROG Fast Menu
> Realtime Performance
> Utilities                             . Return...
    
```

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 three different time frames provided by MAINVIEW for OS/390 views: real-time, short-term (interval), and long-term. The MAINVIEW for OS/390 product offers another 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. (For purposes of displaying historical data, short-term and long-term time frames work the same way.)

Note: All long-term data is also historical. No current interval exists for long-term data.

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.

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 that 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 Easy 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**.

The DSLISTZ view is displayed, showing the interval recorder service tasks, as shown in Figure 5-1 on page 5-3.

Figure 5-1 DSLISTZ View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Vv.r.mm)-----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =DSLSTZ=====EVKCS====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====2
C Interval Recorder Service Task  Num DDName
- Description----- DS- Root
  Long Term Historical Data        3 HST1DS
  Short Term Historical Data       12 HISTDS

```

Under **Interval Recorder Service Task**, the **Short Term Historical Data** option is present if any HISTDS nn DD statements are in the PAS JCL. The **Long Term Historical Data** option is present if any HST1DS nn DD statements are in the PAS JCL.

Note: Long-term data collection is disabled by default. To enable long-term data collection, edit the BBDTLTDC PARMLIB member. See COMMENTS in BBDTLTDC for instructions on how to enable long-term data collection, as well as the *MAINVIEW for OS/390 Customization Guide*.

Step 5 Select the type of data in which you are interested, and press **Enter**.

If you select **Short Term Historical Data**, you will see the DSLIST view, which displays a list of the historical data sets that are currently available, as shown in Figure 5-2.

Figure 5-2 DSLIST View Showing Short Term Historical Data

```

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

```

In Figure 5-2, 12 data sets are available, spanning the dates between January 28, YYYY and the current date (February 16, YYYY). 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]] [dowMask todMask]
```

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 SYSOVER 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 5-3 on page 5-5.

Figure 5-3 SYSOVER with an Open Window

```

26FEBYYYY 13:52:16 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ===>                                     SCROLL ===> CSR
CURR WIN ===> 2           ALT WIN ===>
>W1 =SYSOVER=====EXTSTQ===*=====26FEBYYYY==13:52:16====MVMVS====D====1
Syst   CPU Cpu Avg Inp  Avg  System   I/O Chan I/OI DASD  DASD  CSA  ECSA
Name   Bsy% Utl Que Len  InRd  Pg Rte   Rate %Bsy  TPI  QDep Util% Used% Used% U
SJSE   18.8 51   0.05 1.3   54.69 138.5 43.6  0.7  0.1  5.75 63.1 45.3

T2 =====

```

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

Step 3 Display the SYSOVER view in window 2, as shown in Figure 5-4.

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

Figure 5-4 SYSOVER in Both Windows

```

26FEBYYYY 13:53:45 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ===>                                     SCROLL ===> CSR
CURR WIN ===> 2           ALT WIN ===>
>W1 -SYSOVER-----EXTSTQ---*-----26FEBYYYY--13:52:16----MVMVS----D----1
Syst   CPU Cpu Avg Inp  Avg  System   I/O Chan I/OI DASD  DASD  CSA  ECSA
Name   Bsy% Utl Que Len  InRd  Pg Rte   Rate %Bsy  TPI  QDep Util% Used% Used% U
SJSE   18.8 51   0.05 1.3   54.69 138.5 43.6  0.7  0.1  5.75 63.1 45.3

>W2 =SYSOVER=====EXTSTQ===*=====26FEBYYYY==13:54:01====MVMVS====D====1
Syst   CPU Cpu Avg Inp  Avg  System   I/O Chan I/OI DASD  DASD  CSA  ECSA
Name   Bsy% Utl Que Len  InRd  Pg Rte   Rate %Bsy  TPI  QDep Util% Used% Used% U
SJSE   18.4 57   0.03 1.4   49.57 134.7 43.6  0.7  0.1  4.44 63.1 45.3

```

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

The Set Time Frame dialog box is displayed. 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.

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

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

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

```

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

Requested Time Frame:
End Date ==> 25FEBYYYY      (*, =, 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 ==> 26FEBYYYY     (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
Type CAnCel to quit without setting

```

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

Step 5 Press **PF3** to exit the dialog box, which has set window 2 for yesterday at 13:52, as shown in Figure 5-6 on page 5-7.

Figure 5-6 SYSOVER in Two Time Periods

```

26FEBYYYY 13:53:45 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>>                                     SCROLL ==>> CSR
CURR WIN ==>> 2           ALT WIN ==>>
>W1 -SYSOVER-----EXTSTQ---*-----26FEBYYYY--13:52:16---MVMVS---D---1
Syst   CPU Cpu Avg Inp Avg System   I/O Chan I/OI DASD  DASD  CSA  ECSA
Name   Bsy% Utl Que Len InRd  Pg Rte   Rate %Bsy  TPI  QDep Util% Used% Used% U
SJSE   20.7 17   0.86 1.5 277.93 488.4 51.9 2.1 0.2 10.73 60.6 56.3

>H2 =SYSOVER=====EXTSTQ===*=====25FEBYYYY==14:00:00====MVMVS====D====1
Syst   CPU Cpu Avg Inp Avg System   I/O Chan I/OI DASD  DASD  CSA  ECSA
Name   Bsy% Utl Que Len InRd  Pg Rte   Rate %Bsy  TPI  QDep Util% Used% Used% U
SJSE   19.9 60   0.38 1.7 294.46 478.6 49.3 1.4 0.1 19.71 57.9 52.7

```

You are now looking at two versions of SYSOVER 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 6 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 data that was collected the prior day.

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

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]] [dowMask todMask]
```

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 11:00 A.M. and 12:00 P.M. today, which is not a peak activity period for your site. Compare today's CPU utilization from 11:00 A.M. to 12:00 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 on page 5-9.

Figure 5-7 CPUSTAT with a Duration of One Hour

```

26FEBYYYY 16:32:52 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mmm)MVMVS -----
COMMAND ==>
CURR WIN ==> 2          ALT WIN ==>
>H1=CPUSTAT=====SYSE=====*=26FEBYYYY==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 Bus
00 11:15   99.6 ***** 18.0 12.3 12.3 99.9 ***** 8.3   24
01 11:15   99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8   12
00 11:30   99.6 ***** 18.0 12.3 12.3 99.9 ***** 8.3   24
01 11:30   99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8   12
00 11:45   99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3   24
01 11:45  100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8   12
00 12:00  100.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3   24
01 12:00  100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8   12
    
```

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 CPUSTAT 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 Windows Mode**.
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 11:00 A.M. to 12:00 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 CPUTAT 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 CPUTAT and an Empty Window

```

26FEB2001 15:39:44 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>> SCROLL ==> PAGE
CURR WIN ==> 2 ALT WIN ==>
>H1=CPUTAT=====SYSE=====*=====26FEBYYYY==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 Bus
00 11:15 99.6 ***** 18.0 12.3 12.3 99.9 ***** 8.3 24
01 11:15 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
00 11:30 99.6 ***** 18.0 12.3 12.3 99.9 ***** 8.3 24
01 11:30 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
00 11:45 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24
01 11:45 100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
T2=====

```

You would type

TIME 25FEBYYYY 12:00 =

Your screen would now look like Figure 5-9 on page 5-12.

Figure 5-9 CPUTAT in Two Time Periods

```

26FEBYYYY 15:48:06 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> TIME 25FEBYYYY 12:00                                SCROLL== > PAGE
CURR WIN ==> 2          ALT WIN ==>
>H1=CPUTAT=====SYSE=====*=====26FEBYYYY====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 Bus
  00 11:15    99.6 ***** 18.0 12.3 12.3 99.9 ***** 8.3 24
  01 11:15    99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
  00 11:30    99.6 ***** 18.0 12.3 12.3 99.9 ***** 8.3 24
  01 11:30    99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
  00 11:45    99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24
  01 11:45   100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
>H2=CPUTAT=====SYSE=====*=====25FEBYYYY====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 Bus
  00 11:15    99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24
  01 11:15    99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
  00 11:30   100.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24
  01 11:30   100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12
  00 11:45   100.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24
  01 11:45   100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12

```

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

```

26FEBYYYY 14:32:29 ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>>                                     SCROLL ==>> PAGE
CURR WIN ==>> 2          ALT WIN ==>>
>H1=CPUSTAT=====SYSD=====*=====26FEBYYYY=====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 Bus
  00 11:15  99.6 *****          18.0 12.3 12.3 98.9 *****          8.3  24
  01 11:15  99.7 *****          19.2 15.3 15.2 99.0 *****          4.8  12
  00 11:30  99.6 *****          18.0 12.3 12.3 98.9 *****          8.3  24
  01 11:30  99.7 *****          19.2 15.3 15.2 99.0 *****          4.8  12
  00 11:45  99.6 *****          18.0 12.3 12.3 98.9 *****          8.3  24
  01 11:45 100.7 *****          19.2 15.3 15.2 99.0 *****          4.8  12
>H2=CPUSTAT=====SYSD=====*=====26FEBYYYY=====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 Bus
  00 12:15  52.6 *****          18.0 12.3 12.3 11.9 **          8.3  24
  01 12:15  45.7 *****          19.2 15.3 15.2 12.0 **          4.8  12
  00 12:30  33.6 *****          18.0 12.3 12.3 13.9 **          8.3  24
  01 12:30  44.7 *****          19.2 15.3 15.2 11.0 **          4.8  12
  00 12:45  44.6 *****          18.0 12.3 12.3 21.9 ***          8.3  24
  01 12:45  45.7 *****          19.2 15.3 15.2 19.0 ***          4.8  12

```

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 `SYSOVER` to review system activity between 5:00 A.M. and 8:00 A.M. this morning, display `SYSOVER`, and then type this command:

TIME * 8:00 3h

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

```
H1=SYSOVER=====SYSE====*====01MARYYYY====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=SYSOVER=====SYSE====*====01MARYYYY====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 SYSOVER view.
- Step 2** On the **COMMAND** line, type **INCLUDE TIME**, and press **Enter**.
- Step 3** On the **COMMAND** line, type **INCLUDE DATE**, and press **Enter**.

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

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS-----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =SYSOVER=====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Syst Interval Intvl CPU Cpu Avg Inp Avg System I/O Chan I/OI DASD D
Name Date----- Time- Bsy% Utl Que Len InRd Pg Rte Rate %Bsy TPI QDep Ut
SJSE DDMMYYYY 11:19 15.1 29 0.00 2.5 71.59 242.4 31.7 1.9 0.2 9
```

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. CPUSTAT 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 either views that are already summarized or 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.

Figure 5-12 Summarizing by CPU Number

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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 (Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>H1 =CPUSTAT=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====2
C Intvl No      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
13:15 0*  42.6  *****      18.0 12.3 12.3 28.9  ****      8.3   24.
13:30 0*  42.6  *****      18.0 12.3 12.3 28.9  ****      8.3   24.
13:45 0*  49.7  *****      19.2 15.3 15.2 29.0  ****      4.8   12.
12:00 0*  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. This chapter 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	6-14

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(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =PLEX=====SYSE=====*=====DDMMYYYY==HH:MM:SS====PLEXMGR==D==10
C Product  Context  System  Description
-----
MVMVS  SYSE  SYSE  MAINVIEW for OS/390 (2.7.00)  Active
MVMVS  SYSC  SYSC  MAINVIEW for OS/390 (2.6.00)  Active
MVSPS  SYSD  SYSD  MAINVIEW SYSPROG Svcs (3.2.01)  Active
MVSPS  SYSC  SYSC  MAINVIEW SYSPROG Svcs (3.2.01)  Active
MVUSS  SYSE  SYSE  MAINVIEW for USS (1.2.00)  Active
MVUSS  SYSD  SYSD  MAINVIEW for USS (1.2.00)  Active
MVVP   SYSD  SYSD  MAINVIEW VistaPoint (1.1.04)  Active
MVVP   SYSC  SYSC  MAINVIEW VistaPoint (1.1.04)  Active
CMF    SYSC  SYSC  CMF MONITROR Online (5.4.00)  Inactive
PLEXMGR SYSC  SYSC  Target Manager (4.1.04)  Active
PLEXMGR SYSD  SYSD  Target Manager (4.1.04)  Active
PLEXMGR SYSE  SYSE  Target Manager (4.0.06)  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(Vv.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
-----
MVMVS SYSE SYSE MAINVIEW for OS/390 (2.7.00) Active
MVMVS SYSC SYSC MAINVIEW for OS/390 (2.6.00) Active
MVSPS SYSD SYSD MAINVIEW SYSPROG Svcs (3.2.01) Active
MVSPS SYSC SYSC MAINVIEW SYSPROG Svcs (3.2.01) Active
MVUSS SYSE SYSE MAINVIEW for USS (1.2.00) Active
MVUSS SYSD SYSD MAINVIEW for USS (1.2.00) Active
MVVP SYSD SYSD MAINVIEW VistaPoint (1.1.04) Active
MVVP SYSC SYSC MAINVIEW VistaPoint (1.1.04) Inactive
CMF SYSC SYSC CMF MONITROR Online (5.4.00) Inactive
PLEXMGR SYSC SYSC Target Manager (4.1.04) 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 EZMVS 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(Vv.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
-----
MVMVS  SYSE  SYSE  MAINVIEW for OS/390 (2.7.00)              Active
MVMVS  SYSC  SYSC  MAINVIEW for OS/390 (2.6.00)              Active
MVSPS  SYSD  SYSD  MAINVIEW SYSPROG Svcs (3.2.01)            Active
MVSPS  SYSC  SYSC  MAINVIEW SYSPROG Svcs (3.2.01)            Active
MVUSS  SYSE  SYSE  MAINVIEW for USS (1.2.00)                 Active
MVUSS  SYSD  SYSD  MAINVIEW for USS (1.2.00)                 Active
MVVP   SYSD  SYSD  MAINVIEW VistaPoint (1.1.04)              Active
MVVP   SYSC  SYSC  MAINVIEW VistaPoint (1.1.04)              Active
CMF    SYSC  SYSC  CMF MONITROR Online (5.4.00)              Inactive
PLEXMGR SYSC  SYSC  Target Manager (4.1.04)                   Active
W2 =EZMVS=====SYSE=====*=====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           | > Data Compression
> Data Set Usage                | press ENTER             | > Alarm Management
> Storage                       +-----+ > OS/390 Fast Menu
> XCF Monitoring                > RMF-like Menus
> Coupling Facility             > Environment Settings
> WLM Workloads                 . Return...
> Non-WLM Workloads
> Long Term Data
    
```

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 to "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(Vv.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
-----
MVMVS SYSE SYSE MAINVIEW for OS/390 (2.7.00) Active
MVMVS SYSC SYSC MAINVIEW for OS/390 (2.6.00) Active
MVSPS SYSD SYSD MAINVIEW SYSPROG Svcs (3.2.01) Active
MVSPS SYSC SYSC MAINVIEW SYSPROG Svcs (3.2.01) Active
MVUSS SYSE SYSE MAINVIEW for USS (1.2.00) Active
MVUSS SYSD SYSD MAINVIEW for USS (1.2.00) Active
MVVP SYSD SYSD MAINVIEW VistaPoint (1.1.04) Active
MVVP SYSC SYSC MAINVIEW VistaPoint (1.1.04) Active
CMF SYSC SYSC CMF MONITROR Online (5.4.00) Inactive
PLEXMGR SYSD SYSD Target Manager (4.1.04) Active
>W2 =DEVSTAT=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==163
C Volser Type Dev LCU MX Storage I/O Resp. Time IOSQ Conn Disc Pend D
- - - - - Num Num -- Group /Sec 0...50.100 Time Time Time Time O
SMFE36 3380 830B 0E7 0.13 762 *****+ 221 30 82 429
TSG322 3390 83AE 0E7 0.50 406 *****+ 119 76 207 3.56
SPOOL1 3380 832F 0E7 0.10 74.18 ***** 0.18 0.03 74
SANWK1 3390 8572 0EC 0.10 52.61 ***** 0.14 0.05 52
SYSP15 3380 8308 0E7 0.10 52.54 ***** 0.19 0.02 52
SAEPG2 3380 833B 0E7 0.59 50.50 ***** 0.93 41 8.22
SAEPG1 3390 858C 0EC 0.51 33.53 *** 0.60 28 5.29
SMFF37 3380 830C 0E7 0.10 31.34 *** 0.14 0.05 31
    
```

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** and press **Enter**.

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
MAINVIEW for UNIX System Services	MVUSS
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(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =DEVSTAT===== (SYSC=====*)DDMMYYYY==HH:MM:SS====MVMVS====D==165
C Volser Type Dev LCU MX Storage I/O Resp. Time IOSQ Conn Disc Pend D
- ----- Num Num -- Group /Sec 0...50.100 Time Time Time Time O
TSG307 3390 839F 0E5 0.03 329 *****+ 48 3.27 278
BAB341 3390 83F2 0E7 0.16 135 *****+ 124 0.96 8.46 2.26
TSG322 3390 83AE 0E5 0.59 118 *****+ 42.1 36 39 1.33
CKPI01 3380 8300 0E7 0.02 111 *****+ 0.19 111
SPOOL1 3380 832F 0E7 0.02 100 *****+ 0.19 0.06 100
TSG322 3390 83AE 0E7 0.47 94.50 ***** 56 38 0.32
BAB321 3390 836A 0E7 0.11 43.41 **** 21 2.69 19
FTP113 3390 A324 0F9 2 FTPPOOL 0.96 42.05 **** 34 1.33 6.28
>W2 -DEVSTAT-----SYSE-----*-----DDMMYYYY==HH:MM:SS----MVMVS----D--163
C Volser Type Dev LCU MX Storage I/O Resp. Time IOSQ Conn Disc Pend D
- ----- Num Num -- Group /Sec 0...50.100 Time Time Time Time O
SMFE36 3380 830B 0E7 0.13 762 *****+ 221 30 82 429
TSG322 3390 83AE 0E7 0.50 406 *****+ 119 76 207 3.56
SPOOL1 3380 832F 0E7 0.10 74.18 ***** 0.18 0.03 74
SANWK1 3390 8572 0EC 0.10 52.61 ***** 0.14 0.05 52
SYSP15 3380 8308 0E7 0.10 52.54 ***** 0.19 0.02 52
SAEPG2 3380 833B 0E7 0.59 50.50 ***** 0.93 41 8.22
SAEPG1 3390 858C 0EC 0.51 33.53 *** 0.60 28 5.29
SMFF37 3380 830C 0E7 0.10 31.34 *** 0.14 0.05 31
    
```

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(Vv.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 (5.4.00)
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 (2.7.00)
ALL      MVMVS    SYSC     ACTIVE      MAINVIEW for OS/390 (2.6.00)
ALL      MVMVS    SYSE     ACTIVE      MAINVIEW for OS/390 (2.5.01)
ALL      PLEXMGR  EXTSTJ  ACTIVE      Target Manager (4.1.04)
ALL      PLEXMGR  SYSC     ACTIVE      Target Manager (4.1.04)
ALL      PLEXMGR  SYSE     ACTIVE      Target Manager (4.0.06)

```

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

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, first type **PLEXOVER** on the **COMMAND** line, and then press **Enter**.

The PLEXOVER view is displayed.

Step 4 Hyperlink to the MVMVS view on system SYSE.

The EZM390 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(Vv.r.mm)MVMVS -----
COMMAND ===>                                SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
>W1 =JFLOW===== (ALL=====*)=====) DDMMYYYY==HH:MM:SS==MVMVS==D==469
C Jobname  JES Job  T SrvClass      Workflow %      Delay %      Main R
- - - - - Number - - - - -      0...50...100    0...50...100  -----
DC$SWTHC  STC04675  S SYSSTC                100.0 ***** Wait f
IMSGEN05  STC08703  S STCNRM      39.1 *****      60.9 ***** Wait f
WLM                S SYSTEM        9.1 *              30.3 ****  Wait f
BCVSS531  STC08321  S STCNRM      12.5 *              29.2 ****  Wait f
CNMPROCC  STC07903  S STCNRM                28.6 ****  Wait f
BCVCJ330  STC08110  S STCNRM                28.6 ****  Wait f
CICS4101  STC97936  S STCNRM      25.0 ****          25.0 ****  Wait f
DC$BBI    STC04598  S STCNRM      14.3 **            24.5 ****  Wait f
BCVSS53D  STC07999  S STCNRM      14.3 **            24.5 ****  Wait f
*MASTER*  STC04606  S SYSTEM        0.2              19.2 ***   Wait f
BITMXPC   TSU08184  S TSONRM      20.0 ***           19.0 ***   Wait f
AAODM4A   STC04635  S STCNRM                19.0 ***   Wait f
DC$SGP    STC04624  S STCNRM      68.2 *****      18.2 ***   Wait f
CMRSSTA   STC07936  S STCNRM      37.5 *****      17.9 ***   Wait f
WRWJCAS   STC08276  S STCNRM      20.0 ***           15.4 **    Wait f
DC$TCPIP  STC08033  S SYSSTC                14.3 **    Wait f
BOLJAC4   TSU08422  T TSONRM                14.3 **    Wait f

```

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.

Figure 6-10 EZMJOB View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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 on page 6-12.

Figure 6-11 JINFO View for DC\$SWTHC

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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 Owner..... TSGSTC 0...
Jobname.... DC$SWTHC Avg Frames.. 61 Workflow... 0.00
Step/Proc... DC$SWTHC Avg Cframes. 48 Total Use.. 0.00
Job Step Mon NoSteps Avg Eframes. 13 Using Proc 0.00
JES Number.. STC03171 Cframes held 48 Using Dev. 0.00
Type..... STC Eframes held 13 Total Dly.. 100.00
JobClass.... Fixed frames 36 Processor. 0.00
JES Queue Tm Fixed <16M.. 0 Device.... 0.00
%CPU Util... 0.0 Dmd Page/Sec 0 Storage... 0.00
Total CPU Tm Swp Page/Sec 0 Enqueue... 0.00
Tot EXCP Cnt 0 Avg UIC.... 0 SRM..... 0.00
Terminal ID. SU/Sec..... 0 Msg..... 100.00
ASID..... 107 EXCP/Sec.... 0.0 XCF..... 0.00
SrvClass . STCNRM JobStart Dt. DDMMYYYY JES..... 0.00
Workload... JobStart Tm. HH:MM:SS HSM..... 0.00
%Connected.. 0.0 Job Elpd Tm. 15:20:02 Idle..... 0.00
Disp. Prty.. 0 JobEnd Dt... N/A ECB/Other.. 0.00
Job Status.. Active JobEnd Tm... N/A
    
```

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.

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 of EZMENU 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 EZMENU. 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 Using 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 7-4 Save Screen Definition Panel

```
----- SAVE SCREEN DEFINITION-----  
COMMAND ==>  
  
Screen Definition Parameters:  
  
Name          ==> MVMVS  
Description   ==> MV390 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 `MAINVIEW` for `OS/390` views by opening multiple windows.
2. Typed `SAVEScr` 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 and that you have the authority to update it. 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(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 2          ALT WIN ==>
>W2 =DDJOB=====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====6
C Volser Dev Type  LCU  Resp  Act.  %Delay  %Delay Jobname  JES Job  T  SrvClas
- ----- Num ----  Num  Time  Rate  ThisJob AllJobs  ----- Number  - -----
PAGD27 227 3380 00B 104.5 3.31 30.82 40.41 XTSTIPAS STC04890 S STCPAS
TSG322 2AD 3390 00C 133.1 0.66 22.68 38.27 AAOMH41 STC04599 S STCNRM
TSG322 2AD 3390 00C 133.1 0.66 25.68 31.14 OLTG STC94666 S STCNRM
TSG322 2AD 3390 00C 133.1 0.66 21.68 28.14 AAOMH51 STC04392 S STCNRM
BAB310 301 3390 00D 6.46 0.94 28.14 33.14 XTSTIPAS STC04555 S STCPAS
TSG322 2AD 3390 00C 133.1 0.66 20.68 34.14 XCFAS S SYSTEM
```

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(Vv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> CSR
CURR WIN ==> 1           ALT WIN ==>
W1 =SCREENS=====SYSE====*=====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, the site-wide screen definition library, and the distributed BBSDEF library that was created when the product was installed.

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(Vv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> CSR
CURR WIN ==> 1           ALT WIN ==>
W1 =SCREENS=====SYSE====*=====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(Vv.r.mm)MVMVS -----
COMMAND ==>>
CURR WIN ==>> 3          ALT WIN ==>>
>W1 -DEVSTAT-----SYSE-----*----- >W3 =DUJOB=====SYSE=====*=====
C Volser Type Dev LCU MX Storage I/O | C Volser Dev Type LCU Resp Act.
- ----- Num Num -- Group /Sec | - ----- Num ---- Num Time Rate
TSG322 3390 02AD 00C 0.75 | PAGD27 227 3390 00B 94.86 3.26
BAB201 3390 0243 00B 1.13 | BAB332 25B 3390 00B 1.99 0.13
PAGC31 3390 0231 00B 0.93 | TSG320 D38 3390 01C 9.59 1.02
PAGD27 3390 0227 00B 4.14 | MVS256 256 3390 00B 4.53 0.16
SYM044 3390 024C 00B 0.03 | OS120P D37 3390 01C 7.13 4.01
ES430D 3390 0D24 01C 0.03 | BAB400 250 3390 00B 3.29 4.32
PUBBC1 3390 0D06 01C 0.03 | BAB317 308 3390 00D 10.83 1.11
SYM046 3390 024E 00B 0.03 | SYSP14 240 3380 00B 3.59 1.54
SYM043 3390 024B 00B 0.18 | BAB329 D3F 3390 01C 3.54 4.21
BAB321 3390 030C 00D 0.40 | PAGD27 227 3390 00B 94.86 3.26
TSG312 3390 02A1 00C 1.09 | TSG322 2AD 3390 00C 134.0 0.63
>W2 -DDJOB-----SYSE-----*-----DDMMYYYY--HH:MM:SS----MVMVS---D---6
C Volser Dev Type LCU Resp. Act. %Delay %Delay Jobname JES Job T SrvClass
- ----- Num ---- Num Time Rate ThisJob AllJobs ----- Number - -----
OS120P D37 3390 01C 7.13 3.06 0.31 0.82 BITRKK2 STC04440 T TSONRM
TSG322 2AD 3390 00C 133.1 0.66 0.68 0.27 AAOMH41 STC04599 S STCNRM
BAB310 301 3390 00D 6.46 0.94 0.14 0.14 XTSTIPAS STC04555 S STCPAS
TSG320 D38 3390 01C 9.59 1.04 0.28 0.34 DC$BBIRR STC04662 S STCNRM

```

The views reflect the *current* time, not the time that you created the screen definition. (If you have the **Intvl Time** field displayed on the screen, you can see that the time has changed.) 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	8-26

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(Vv.r.mm)MVMVS -----
COMMAND  ===>                                     SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
>W1 =JCPUR=====SYSE=====DDMMYYYY==HH:MM:SS====MVMVS====D==118
C Jobname  JES Job  T SrvClass      Realtime CPU Seconds  %CPU  %Use  %Dly C
- -----  Number  - -----  0.....2.5.....5  Util  CPU  CPU P
  XCFAS          S SYSTEM      5.46 *****+  8.21  14.3      2
  XTSTIPAS STC07168 S SYSSTC      1.08 *****  1.15      2
  CNMNETE STC07145 S SYSSTC      0.78 **      0.62      2
  XTSTHPAS STC07465 S SYSSTC      0.67 **      0.31      2
  WRWJPAS STC07244 S STCNRM      0.64 **      0.29      2
  WLM          S SYSTEM      0.41 **      0.12      2
  *MASTER* STC07102 S SYSTEM      0.22 *      0.11      2
  WRWJCAS STC08095 S SYSSTC      0.17 *      0.10      2
  XTSTHCAS STC07308 S STCNRM      0.16 *      0.08      2
  XTSTICAS STC07170 S SYSSTC      0.12 *      0.07      2
  JES2      STC07145 S SYSSTC      0.11 *      0.06      4.1      2
  AAOTSHE STC07385 S STCNRM      0.10 *      0.05      2
  AAOHW41 STC07181 S STCNRM      0.08 *      0.04      2
  DC$BBI STC07092 S STCNRM      0.08 *      0.04      2
  BAODYM4 TSU07455 T TSONRM      0.08 *      0.04      2
  AAODM4B STC07130 S STCNRM      0.06 *      0.02      2
  AAODM5B STC07096 S STCNRM      0.05 *      0.01      2
  GRS          S GRS          0.05 *      0.01      2

```

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 ==>                                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      B      C D      G      H      I      L      M      N
C Jobname JES Job  T SrvClass      Realtime CPU Seconds %CPU %Use %Dly C
----- Number - ----- 0.....2.5.....5 Util CPU CPU P
XCFAS          S SYSTEM      5.46 *****+ 8.21 14.3 2
XTSTIPAS STC07168 S SYSSTC      1.08 ***** 1.15 2
CNMNETE STC07145 S SYSSTC      0.78 ** 0.62 2
XTSTHPAS STC07465 S SYSSTC      0.67 ** 0.31 2
WRWJPAS STC07244 S STCNRM      0.64 ** 0.29 2
WLM          S SYSTEM      0.41 ** 0.12 2
*MASTER* STC07102 S SYSTEM      0.22 * 0.11 2

```

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 C. 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 **LC** 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 8-3 Filter Work Area

```

----- VIEW CUSTOMIZATION - JCPUR -----
OPTION ==> L                                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

-----< Filter - column: C element: ASREYFLC >-----
Filter condition =>
Parameter position => (optional: 1 to 8; blank means not used positionally)
A condition consists of the column id, an operator, and a value. This value
can be overridden by requesting this view with a keyword parameter (using the
element name as keyword) or a positional parameter (if you assign a position).
-----

```

A	B	C D	G	H	I	L	M	N
C Jobname	JES Job	T SrvClass	Realtime CPU Seconds		%CPU	%Use	%Dly	C
-----	Number	-----	0.....2.5.....5		Util	CPU	CPU	P
XCFAS		S SYSTEM	5.46	*****+	8.21	14.3		2
XTSTIPAS	STC07168	S SYSSTC	1.08	****	1.15			2
CNMNETE	STC07145	S SYSSTC	0.78	**	0.62			2
XTSTHPAS	STC07465	S SYSSTC	0.67	**	0.31			2
WRWJPAS	STC07244	S STCNRM	0.64	**	0.29			2
WLM		S SYSTEM	0.41	**	0.12			2
MASTER	STC07102	S SYSTEM	0.22	*	0.11			2

Filters are created by supplying an operator (=, >, <, >=, <=, <>) and a constant in the **Filter condition** field. Together, the operator and the constant are called a *condition*. Thus, > 20, < 10, and = J* are all examples of conditions. (The asterisk is a wildcard character.)

Using JCPUR as a model, add a filter to the **Type** column so that only TSO jobs are included.

Step 5 Move the cursor to the **Filter condition** field and type = TSO.

You specify **TSO** instead of **T** because the **Type** field is actually three bytes long in this view. However, the field length for **Type** is truncated to one byte, so all you see is the T.

Step 6 Press **Enter**.

Your screen looks like Figure 8-4 on page 8-6.

Figure 8-4 Filtering the Type Column

```

----- VIEW CUSTOMIZATION - JCPUR -----
OPTION ==> L                                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

-----< Filter - column: C element: ASREYFLC >-----
Filter condition => C = TSO
Parameter position => (optional: 1 to 8; blank means not used positionally)
A condition consists of the column id, an operator, and a value. This value
can be overridden by requesting this view with a keyword parameter (using the
element name as keyword) or a positional parameter (if you assign a position).
-----

```

A	B	C	D	G	H	I	L	M	N
C Jobname	JES Job Number	T SrvClass		Realtime	CPU Seconds	%CPU Util	%Use CPU	%Dly CPU	P
BAODYM4	TSU07455	T	TSONRM	0.08	***		0.04		2
BMVBAR4	TSU07903	T	TSONRM						
BTSSEC5	TSU07770	T	TSONRM						
BMVDLL3	TSU07771	T	TSONRM						
BMVJES1	TSU07833	T	TSONRM						
PPE2	TSU07901	T	TSONRM						
BMVJSL3	TSU07846	T	TSONRM						

The view at the bottom of the screen is updated so that you can see how your view now looks. The **Type** field now contains nothing but Ts—all other types of tasks have been filtered out from the view.

Step 7 To exit View Customization, press **PF3**.

The Exit View Customization panel in the middle of the screen prompts you to save changes, as shown in Figure 8-5 on page 8-7.

Figure 8-5 Exit View Customization Panel

```

----- VIEW CUSTOMIZATION - JCPUR ----- FILTERS WERE CHANGED
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

-----< Exit View Customization >-----
View: JCPUR   has been modified. Do you wish to save your changes?

Save changes ==> YES  If you reply YES , you will be prompted for a view name.
                    If you reply NO  , the view will appear in its original
                    state the next time you request the view by name.

-----
  A      B      C D      G      H      I      L      M      N
C Jobname JES Job T SrvClass      Realtime CPU Seconds %CPU %Use %Dly C
- - - - - Number - - - - -      0.....2.5.....5 Util CPU CPU P
BAODYM4 TSU07455 T TSONRM   0.08 ***      0.04      2
BMVBAR4 TSU07903 T TSONRM
BTSSEC5 TSU07770 T TSONRM
BMVDLL3 TSU07771 T TSONRM
BMVJES1 TSU07833 T TSONRM
PPE2    TSU07901 T TSONRM
BMVJSL3 TSU07846 T TSONRM
    
```

You will need this view in a later step.

Step 8 Press **Enter** to select **YES** in the **Save changes** field.

The Save View definition panel is displayed in the middle of the View Customization - JCPUR screen, as shown in Figure 8-6 on page 8-8.

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 D      G      H      I      L      M      N
C Jobname JES Job  T SrvClass      Realtime CPU Seconds %CPU %Use %Dly C
- - - - - Number - - - - -      0.....2.5.....5 Util CPU CPU P
BAODYM4  TSU07455 T TSONRM      0.08 ***      0.04      2
BMVBAR4  TSU07903 T TSONRM
BTSSEC5  TSU07770 T TSONRM
BMVDLL3  TSU07771 T TSONRM
BMVJES1  TSU07833 T TSONRM
PPE2     TSU07901 T TSONRM
BMVJSL3  TSU07846 T TSONRM
    
```

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(Vv.r.mm)MVMVS -----
COMMAND  ==>
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
TDEVL    MVMVS    LONGTERM  Analyze Tape Devices Long Term
TDEVR    MVMVS    DMON      Realtime Analyze Tape Devices
TRX      MVMVS    RMON      Transaction Activity
TSTAT    MVMVS    SYSACT    Tape Drive Allocation
```

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

TCPUR
TDEV
TDEVL
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**, **TDEVL**, **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.

Figure 8-8 The New View: TCPUR

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =TCPUR=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===26
C Jobname  JES Job  T SrvClass      Realtime CPU Seconds  %CPU  %Use  %Dly C
- - - - -  Number  - - - - -      0.....2.5.....5  Util   CPU   CPU P
  BMVCXG4  TSU07923  T TSONRM      3.42  *****          13.3
  BOLVAT3  TSU07943  T TSONRM      2.08  *****          11.1
  BITKCY4  TSU07915  T TSONRM      1.40  *****          13.3
  BAODYM4  TSU07455  T TSONRM      0.20  *                0.04
  BMVJES1  TSU07833  T TSONRM
  PPE2     TSU07901  T TSONRM
  BMVBAR4  TSU07903  T TSONRM
  BTSSEC5  TSU07770  T TSONRM
  BMVDLL3  TSU07771  T TSONRM
  BMVWRW1  TSU07611  T TSONRM
  BMVJSL3  TSU07846  T TSONRM
  BAOHXW3  TSU07555  T TSONRM
  BAOHXW4  TSU07568  T TSONRM
  BOLCAR1  TSU07432  T TSONRM
  BOLCAR5  TSU07693  T TSONRM
  BOLCJN2  TSU07528  T TSONRM
    
```

TCPUR appears in the view name field on the window information line, and the T column contains only Ts.

To Summarize

In summary, you have performed the following steps:

1. Displayed a MAINVIEW for OS/390 view, JCPUR.
2. Typed the CUSTom command to enter the View Customization facility.
3. Typed LE to place a filter on JCPUR, specifying a condition of = TSO.
4. Saved the new view under a unique name, TCPUR.

TCPUR is stored in the private view library that you allocated for your user ID before you began.

If you had not created your own library, TCPUR would have been stored in your site-wide library, assuming that it was allocated to your user address space. If it was not, you would have received an error message.

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(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
W1=SYSINFO=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
SMFID.....  SJSE    - Interval -          0....50...100
IO Interrupt 491.6 %CPU utilization 49.2 *****
% TPI.....  1.2 %TSO..... 6.9
% Enabled... 18.0 %Batch..... 5.9
% Disabled.. 82.0 %STC..... 36.4 *****
%CPUwt+ChBsy 23.6 %TCB mode..... 32.5 *****
Avg CPU Q... 0.8 %Prob. state... 0.0
                %Sup. state.... 49.2 *****

                - Realtime -
IO Interrupt 434.4 %CPU utilization 54.4 *****
% TPI.....  1.1 %TSO..... 9.1 *
% Enabled... 25.0 %Batch..... 13.6 **
% Disabled.. 75.0 %STC..... 31.7 *****
Cur CPU Q... 0 %TCB mode..... 40.8 *****
                %Prob. state... 0.0
                %Sup. state.... 54.4 *****

```

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**. For now, this action displays the JCPUR 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 can save the
modified view definition with any name you choose and specify where thresholds
-----

```

A	B	C
1 SMFID.....	SJSE - Interval -	0....50...100
2 IO Interrupt	491.6 %CPU utilization	49.2 *****
3 % TPI.....	1.2 %TSO.....	6.9
4 % Enabled...	18.0 %Batch.....	5.9
5 % Disabled..	82.0 %STC.....	36.4 *****
6 %CPUwt+ChBsy	23.6 %TCB mode.....	32.5 *****
7 Avg CPU Q...	0.8 %Prob. state...	0.0
8	%Sup. state....	49.2 *****
9		
10		
11	- Realtime -	
12 IO Interrupt	434.4 %CPU utilization	54.4 *****
13 % TPI.....	1.1 %TSO.....	9.1 *

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.

version of SYSINFO is displayed first. If you want to display the original version of SYSINFO, you simply need to delete SYSINFO from your private library.

Step 8 Leave **Save Changes** set to **YES**, and then press **Enter**.

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 (Vv.r.mm) MVMVS  -----
COMMAND  ===>
CURR WIN ===> 1      ALT WIN ===>
W1 =TCPUR=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===26
C Jobname  JES Job  T SrvClass      Realtime CPU Seconds  %CPU  %Use  %Dly C
- - - - -  Number  - - - - -  0.....2.5.....5  Util  CPU  CPU P
BMVCXG4   TSU07923 T TSONRM      3.42  *****          13.3
BOLVAT3   TSU07943 T TSONRM      2.08  *****          11.1
BITKCY4   TSU07915 T TSONRM      1.40  *****          13.3
BAODYM4   TSU07455 T TSONRM      0.20  *                0.04
BMVJES1   TSU07833 T TSONRM
PPE2      TSU07901 T TSONRM
BMVBAR4   TSU07903 T TSONRM
BTSSEC5   TSU07770 T TSONRM
BMVDLL3   TSU07771 T TSONRM
BMVWRW1   TSU07611 T TSONRM
BMVJSL3   TSU07846 T TSONRM
BAOHXW3   TSU07555 T TSONRM
BAOHXW4   TSU07568 T TSONRM
BOLCAR1   TSU07432 T TSONRM
BOLCAR5   TSU07693 T TSONRM
BOLCJN2   TSU07528 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 JCPU view, as shown in Figure 8-14.

Figure 8-14 JCPU View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =JCPU=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==162
C Jobname  JES Job  T SrvClass Step      Interval CPU Seconds  %CPU  %Use  %
- - - - - Number  - - - - - Data      0.....30.....60  Util  CPU
XTSTQMVA  STC05475 S SYSSTC  NO      42.58 *****
XTSTQPAS  STC05476 S SYSSTC  YES     27.28 *****
XNXRMPAS  STC06166 S STCNRM  YES     14.15 *****
CNMNETE   STC05449 S SYSSTC  NO     11.63 ***
XTSTKPAS  STC05456 S SYSSTC  YES     8.70 **
DC$PAS    STC05453 S STCNRM  YES     7.39 **
WLM              S SYSTEM NO     6.26 *
XCFAS      S SYSTEM NO     5.92 *
AAOJP      STC05776 S STCNRM  NO     5.60 *
MQMGT41E  STC06159 S STCNRM  NO     4.95 *
MQMGT42E  STC05976 S STCNRM  NO     4.68 *
MIMGR     STC05401 S SYSSTC  NO     4.05 *
XTSTQCAS  STC05473 S SYSSTC  NO     3.91
CSQ8MSTR  STC05890 S STCNRM  YES     3.81
DOMDC40   STC05973 S SYSSTC  NO     3.14
DC$BBIE   STC05398 S STCNRM  YES     2.66
DMRPA72Q  STC05975 S STCNRM  NO     2.51
*MASTER*  STC05407 S SYSTEM  NO     2.49
  
```

Step 2 To invoke the View Customization facility, type **CUSTom** on the **COMMAND** line, and then press **Enter**.

The View Customization - JCPU screen is displayed.

Step 3 To show the fields that have been excluded for JCPU, 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 JCPU (Scrolled Right)

```

----- VIEW CUSTOMIZATION - JCPU -----
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      HH      II
C Jobname MVS Syst St
- ----- Name Fg
  XTSTQMVA SJSE      80
  XTSTQPAS SJSE      80
  XNXRPAS  SJSE      80
  CNMNETE  SJSE      80
  XTSTKPAS SJSE      80
  DC$PAS   SJSE      80
  WLM      SJSE      80

```

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 JCPU (Scrolled Left)

```

----- VIEW CUSTOMIZATION - JCPU -----
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      J      K      L      M      N      O      P
C Jobname Step      Interval CPU Seconds %CPU % CPU Utilization Unadj %Us
- ----- Data      0.....30.....60 Util 0.....10.....20 CPU U  CP
  XTSTQMVA NO      42.58 *****          2.69 ***          5.37 10.
  XTSTQPAS YES     27.28 *****          1.72 **           3.44  0.
  XNXRPAS  YES     14.15 *****          0.89 *            1.79  3.
  CNMNETE  NO      11.63 ***              0.73 *            1.47  3.
  XTSTKPAS YES     8.70 **                0.55 *            1.10  1.
  DC$PAS   YES     7.39 **                0.47              0.93  1.
  WLM      NO      6.26 *                 0.39              0.79  0.

```

Next, you will add two excluded fields to JCPU: **Unadj CPU U** and **En Unad %CPU Ut**. You might want to include these fields because unadjusted values are not adjusted by the number of processors. The value in the **Unadj CPU U** field clearly indicates when a job is approaching 100% capacity of a CPU.

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

First, you will add the **Unadj CPU U** field.

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

Now include the **En Unad %CPU Ut** field.

- Step 7** In the **OPTION** field, type **I n** and press **Enter**, where *n* is the alphabetic column identifier for the **En Unad %CPU Ut** field for your system.

Notice that the headings on the **Unadj CPU U** and **En Unad %CPU Ut** 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 JCPU in the next section, “Renaming Fields” on page 8-18

Renaming Fields

In this section, you will change the name of the **En Unad %CPU Ut** field that you just added to JCPU. 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 **En Unad %CPU Ut** 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 - JCPU -----
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: V element: ASIECPUU >-----
Data type: Numeric      Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 7              Graph range (for 2): Low => 0      High => 0
Decimals => 2 (for numeric data)  Display zero values => N (Yes/No)
Heading1 => En Unad      Summarization type => L (A/S/M/X/C/L/P)
Heading2 => %CPU Ut     Condition (for C) =>

-----
  A      R      S      T      U      V      X      Y      Z      BB
C Jobname Avg %TCB %SRB Enc%CPU En Unad Job Tot Elapsed Short Job
- ----- Pty Time Time Util %CPU Ut CPU Time Job Time Waits Status
XTSTQMVA 254 99.8 0.2                01:32:51 60:59:28 6482 Active
XTSTQPAS 254 98.7 1.3                01:07:11 60:59:27 11952 Active
XNXRMPAS 255 97.9 2.1                00:00:20 00:15:37 12894 Active
CNMNETE  254 57.4 42.6               01:30:03 60:59:58 36229 Active
XTSTKPAS 254 85.1 14.9               00:34:39 60:59:35 10375 Active
DC$PAS   246 96.1 3.9                 00:25:57 60:59:37 12794 Active
WLM      255 88.2 11.8               00:21:39 61:02:20 6092 Active

```

The first part of the field's current name, *En Unad*, appears in **Heading1**, and the second part, *%CPU Ut*, appears in **Heading2**.

Step 2 In the Format area, type **Enclave** directly over the current title in the **Heading1** field, and type **Unadjst** in the **Heading2** field, as shown Figure 8-18:

Figure 8-18 Using Dashes in a Column Name

```

-----< Format - column: V element: ASIECPUU >-----
Data type: Numeric      Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 7              Graph range (for 2): Low => 0      High => 0
Decimals => 2 (for numeric data)  Display zero values => N (Yes/No)
Heading1 => Enclave     Summarization type => L (A/S/M/X/C/L/P)
Heading2 => Unadjst     Condition (for C) =>

```

Step 3 Press **Enter**.

The **En Unad %CPU Ut** column changes immediately to look like column **V** in Figure 8-19 on page 8-20.

Figure 8-19 New Column Name

```

----- VIEW CUSTOMIZATION - JCPU -----
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: V element: ASIECPU >-----
Data type: Numeric      Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 7              Graph range (for 2): Low => 0 High => 0
Decimals => 2 (for numeric data) Display zero values => N (Yes/No)
Heading1 => Enclave     Summarization type => L (A/S/M/X/C/L/P)
Heading2 => Unadjst     Condition (for C) =>

-----
  A      P      Q      R      S      T      U      V      W      X      Y
C Jobname %Use %Dly Avg %TCB %SRB Enc%CPU Enclave Enclave Job Tot Ela
- - - - - CPU CPU Pty Time Time Util Unadjst CPU time CPU Time Job
XTSTQMVA 12.5      254 99.8 0.2      00:00:00.00 01:33:36 61:
XTSTQPAS 2.7 0.6 254 98.8 1.2      00:00:00.00 01:07:40 61:
XNXRMPAS 5.6      255 97.9 2.1      00:00:00.00 00:00:35 00:
CNMNETE 4.9 0.7 254 58.4 41.6     00:00:00.00 01:30:16 61:
XTSTKPAS 2.0 0.4 254 86.8 13.2     00:00:00.00 00:34:49 61:
BMVGWB2 8.8      243 99.8 0.2      00:00:00.00 00:00:08 00:
DC$PAS 1.8 1.5 238 95.9 4.1      00:00:00.00 00:26:05 61:
CATALOG 1.1      255 98.9 1.1      00:00:00.00 00:04:17 61:
MQMGT42E 3.2 2.0 238 95.5 4.5      00:00:00.00 00:02:10 03:
WLM 0.6      255 88.3 11.7     00:00:00.00 00:21:46 61:

```

Do *not* press **PF3** yet—you have one more modification to make. Continue with the “Moving Fields” on page 8-20 section.

Moving Fields

In this section, you will move the new JCPU **Unadj CPU U** field so that it follows the **Jobname** 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 **Unadj CPU U** field for your system and *n2* is the alphabetic column identifier for the **Jobname** field.

The **Unadj CPU U** field is column O in Figure 8-19, and the **Jobname** field is column A. Therefore, to move the **Unadj CPU U** field so that it follows the **Jobname** field, you would type: **M O A**.

Step 2 Scroll left until you see your **Unadj CPU U** column, as shown in Figure 8-20.

Figure 8-20 Moving Fields on JCPU

```

----- VIEW CUSTOMIZATION - JCPU -----
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 - Hide excluded
L - Filter     T - Threshold H - Hyperlink    Z - Summarize  K - Show template

-----< Move      - column: B element: ASICPPCU      >-----
The column has been moved. Note that the affected columns have been
assigned new column identifiers.

-----
  A      B      C      D      E F      G H      I J      K      L
C Jobname Unadj Interval  Intvl Hr JES Job T SrvClass Dmn SC# Step
- - - - - CPU U Date----- Time- -- Number - - - - - /Pg Data
XTSTQMVA  5.40 03MAR2003 13:57 13 STC05475 S SYSSTC  N/A  36 NO  39.10
XTSTQPAS  3.55 03MAR2003 13:57 13 STC05476 S SYSSTC  N/A  36 YES  25.75
XNXRMPAS  1.84 03MAR2003 13:57 13 STC06166 S STCNRM  N/A  25 YES  13.31
CNMNETE   1.50 03MAR2003 13:57 13 STC05449 S SYSSTC  N/A  36 NO  10.88
XTSTKPAS  1.23 03MAR2003 13:57 13 STC05456 S SYSSTC  N/A  36 YES  8.93
BMVGWB2   3.83 03MAR2003 13:57 13 TSU06170 T TSONRM  N/A  32 YES  8.82
DC$PAS    0.99 03MAR2003 13:57 13 STC05453 S STCNRM  N/A  25 YES  7.16
CATALOG   0.91 03MAR2003 13:57 13          S SYSTEM  N/A  35 NO  6.58
MQMGT42E  0.86 03MAR2003 13:57 13 STC05976 S STCNRM  N/A  25 NO  6.20
WLM       0.79 03MAR2003 13:57 13          S SYSTEM  N/A  35 NO  5.71

```

The **Unadj CPU U** column now follows the **Jobname** column and has been assigned a new column letter.

Step 3 To exit View Customization, press **PF3**.

Step 4 To save your changes, change the view name as prompted in the Exit View Customization panel in the middle of the screen.

To Delete a View That You Have Customized

Step 1 Access the **VIEWS** view.

Step 2 In the line command field to the left of your view name, type **D** and press **Enter**.

A confirmation panel appears.

Step 3 On the **COMMAND** line of the confirmation panel, type **END**.

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 job is being served by system resources. A high workflow value means that the job is receiving excellent service; a low value means that the job 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	E	F	G	J	K	L	M	N
C	Jobname	JES	Job	T	SrvClass	Workflow %	Delay %	Main R
-	-----	Number	-	-----	0.....50...100		0.....50...100	-----
	AAOHO41	STC01675	S	STCNRM		100.0	*****	Wait f
	AASTGKCP	STC01588	S	STCNRM	51.5	*****	17.0 **	Wait f
	OLCVTS13	STC01772	S	STCNRM	21.4	***	9.9 *	Wait f
	MASTER	STC07102	S	SYSTEM	0.8		8.9 *	Enqueu
	AAOHW4A	STC01734	S	STCNRM	22.2	***	5.6	Wait f
	AAOHW51	STC01749	S	STCNRM	25.0	****	5.4	Wait f
	CNMNETE	STC01646	S	SYSSTC	75.0	*****	5.2	Wait f

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: K   element: ASIWKFL   >-----
Condition:                               Attr: Sub:   Inherit from => J   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      E      F G      J      K      L      M      N
C Jobname  JES Job  T SrvClass  Workflow %  Delay %  Main R
- - - - -  Number  - - - - -      0.....50...100  0.....50...100  -----
AAOHO41  STC01675 S STCNRM                100.0 ***** Wait f
AASTGKCP STC01588 S STCNRM      51.5 *****      17.0 **      Wait f
OLCVTS13 STC01772 S STCNRM      21.4 ***                9.9 *      Wait f

```

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: K		ELEMENT: ASIWKFL		>-----	
CONDITION:	ATTR:	SUB:	INHERIT FROM => J	0: GREEN	5: GREEN
1ST => I >= 80	=>	0 =>		1: BLUE	6: BLUE
2ND => I >= 50	=>	2 =>		2: YELLOW	7: YELLOW
3RD => I >= 0	=>	4 =>		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 (K in Figure 8-22 on page 8-23)—as well as in the column to the left of **Workflow %** (J in Figure 8-22 on page 8-23)—immediately assume the thresholds that you set, because column K *inherits* the values set for column J so that all thresholds set for column J also affect column K.

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**.

Do not save the changes you made.

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.” This chapter includes the following topics:

Summarizing Data	9-2
Expanding a Summary View	9-13
Choosing Another Column by Which to Summarize	9-15
Using a Summarizing Shortcut: DEVSTATZ	9-17

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 summarized view, created using the procedure described in this section, contains a maximum of five rows, one row for each of the following types of information:

- summarized workflow for TSO users
- open MVS
- batch jobs
- started tasks
- APPC address spaces

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 on page 9-3, 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	E	F	G	J	K	L	M	N
C Jobname	JES Job	T SrvClass			Workflow %		Delay %	Main R
- - - - -	Number	- - - - -			0.....50...100		0.....50...100	-----
BKSPRMP6	STC02092	S STCNRM				100.0	*****	Wait f
BKSPRMP5	STC02112	S STCPAS				100.0	*****	Wait f
BKSPRMP7	STC02111	S STCNRM				100.0	*****	Wait f
DC\$TCP	STC01674	S SYSSTC				1.9	*	Wait f
AAOAOQU	STC01724	S STCNRM				1.0		Wait f
BAOEUK4	TSU02021	T TSONRM				1.0		Wait f
DC\$ESTR	STC01643	S SYSNRM				1.0		Wait f
BMVBHM4	TSU02212	T TSONRM		66.7	*****	1.0		Enqueue

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

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

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, 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 activity of the service class 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 information is displayed in the middle of JFLOW, as shown in Figure 9-2.

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	E	F	G	J	K	L	M	N
C Jobname	JES Job	T SrvClass			Workflow %		Delay %	Main R
-	-----	Number	-	-----	0.....50...100		0.....50...100	-----
BKSPRMP6	STC02092	S	STCNRM			100.0	*****	Wait f
BKSPRMP5	STC02112	S	STCPAS			100.0	*****	Wait f
BKSPRMP7	STC02111	S	STCNRM			100.0	*****	Wait f
DC\$TCPIE	STC01674	S	SYSSTC			1.9	*	Wait f
AAOAOQU	STC01724	S	STCNRM			1.0		Wait f
BAOEUK4	TSU02021	T	TSOENRM			1.0		Wait f
DC\$ESTR	STC01643	S	SYSNRM			1.0		Wait f
BMVBHM4	TSU02212	T	TSOENRM	66.7	*****	1.0		Enqueue

Step 4 To summarize—or group—the data by the **T (Type)** 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 **F**.

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=> F 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.

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      F      G      J      K      L      M      N
C T Jobname JES Job SrvClass Workflow % Delay % Main R
- - - - - Number - - - - - 0....50...100 0....50...100 - - - - -
B ***** JOB0232* BATNRM 68.9 ***** 5.8 * *****
O ***** STC016** OMVSNRM
S ***** ***** ***** 46.4 ***** 2.1 *****
T ***** TSUO**** TSONRM 91.7 ***** 0.0 *****

```

In this example, there are only four lines: one line each for batch, OMVS, started tasks, and TSO, respectively. (The other type, APPC, is 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 first field by which a summary view was grouped; it is always the first field.

You need to examine each field to 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**, **JES Job Number**, 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 **JES Job Number** field.
- Step 9** To exclude the **JES Job Number** field, press **Enter**.
- Step 10** In the **OPTION** field, type **X n**, where *n* is the alphabetic column identifier for the **Main Reason** field.
- Step 11** To exclude the **Main Reason** field, press **Enter**.

Your screen looks like Figure 9-5.

Figure 9-5 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: N 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 G      J      K      L      M      O      R
C T SrvClass      Workflow %      Delay %      Elapsed Job
- - -----      0.....50...100      0.....50...100      Job Time Status
B BATNRM      68.9 *****      5.8 *      01:09:44 *****
O OMVSNRM      10:11:42 Active
S *****      46.4 *****      2.1      10:14:35 *****
T TSONRM      91.7 *****      0.0      07:37:00 Active

```

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 12 In the **OPTION** field, type **F n**, where *n* is the alphabetic column identifier for the **SrvClass** field.

Step 13 To invoke the **Format** option for **SrvClass**, press **Enter**.

Your screen looks like Figure 9-6.

Figure 9-6 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: G 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 G      J      K      L      M      O      R
C T SrvClass      Workflow %      Delay %      Elapsed Job
- - - - -      0.....50...100      0.....50...100 Job Time Status
B BATNRM      68.9 *****      5.8 *      01:09:44 *****
O OMVSNRM
S *****      46.4 *****      2.1      10:11:42 Active
T TSONRM      91.7 *****      0.0      10:14:35 *****
      07:37:00 Active

```

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 14 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 9-7 on page 9-8.

Figure 9-7 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: G 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 G      J      K      L      M      O      R
C T SrvClass      Workflow %      Delay %      Elapsed Job
- - -----      0.....50...100      0.....50...100 Job Time Status
B      5 68.9 *****      5.8 *      01:09:44 *****
O      4      10:11:42 Active
S      155 46.4 *****      2.1      10:14:35 *****
T      42 91.7 *****      0.0      07:37:00 Active

```

You can see how the meaningless information in the **SrvClass** field has turned into meaningful data. You now know that the rows in Figure 9-7 represent 5 batch jobs, 4 OMVS jobs, 155 started tasks, and 42 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 G in the example).

Step 15 Type over **SrvClass** in the **Heading1** field, changing its name to **Count**, then press **Enter**.

Notice in Figure 9-8 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 16 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 graph columns. The new column that you created is the one to the left of the **Workflow %** column, as shown in Figure 9-8 on page 9-9.

Figure 9-8 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 G      J      K      L      M      N      P
C T Count      0.....50...100 0.....50...100      0.....50...100 Job Time
- - -----
B      5 68.9 *****      *****      5.8 *      01:09:44
O      4      10:11:42
S      155 46.4 *****      *****      2.1      10:14:35
T      42 91.7 *****      *****      0.0      07:37:00

```

Note: When you repeat a column, 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 17 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 18 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 9-9.

Figure 9-9 Typing Information in the Format Panel Fields (Workflow %)

```

-----< Format - column: K 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 19 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 9-10 on page 9-10.

Figure 9-10 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: K 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) => K > 80
-----
  A G      J      K      L      M      N      P
C T Count      Cnt > 80%      Workflow %      Delay %      Elapsed
- - - - -      0.....50...100      0.....50...100      Job Time
B      1
O      2
S      154 17.1      17.0 **      2.0      10:31:56
T      44 75.0      3.0 *****      0.0      07:54:21
    
```

Every time that you press **Enter**, the **Workload %** 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 20 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 9-11.

Figure 9-11 Duplicate Cnt > 80 Columns

```

-----
  A G      J      K      L      M      N      O
C T Count      Cnt > 80%      Cnt > 80%      Workflow %      Delay %
- - - - -      0.....50...100      0.....50...100      0..50.100
B      1
O      2
S      154 17.1      17.0 **      **      2.0
T      44 75.0      3.0      *****      0.0
    
```

Format the count field that you just repeated to display workflow counts *less* than or equal to 80 percent.

Step 21 In the **OPTION** field, type **F n**, where *n* is the alphabetic column identifier for the **Cnt > 80%** field that you repeated (in this case column K, which is the **Cnt > 80%** field on the left), and then press **Enter**.

Step 22 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 9-12.

Figure 9-12 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 23 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 K in the example):

Figure 9-13 Adding the Cnt <= 80% Column

```

-----
A G          J      K          L          M          N      O
C T Count    Cnt <= 80% Cnt > 80%  Workflow %  Delay %
- - - - -    0.....50...100 0.....50...100 0.....50...100
B           1
O           2
S          154 17.1      69.5 ***** **          2.0
T           44 75.0      23.0 **          ***** 0.0

```

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 24 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—in this case **M J L**; then press **Enter**.

Notice that the position of the numeric workflow data (column **L** in Figure 9-14 on page 9-12), is now to the left of its matching graphic display, **Workflow %**.

Figure 9-14 Result of Moving the Numeric Workflow Column

```

-----
  A G          J          K          L          M          N          O
C T Count      Cnt <= 80% Cnt > 80%          Workflow %          Delay %
- - - - -      0.....50...100          0.....50...100          0.....50...100
B              1
O              2
S             154          69.5 *****          17.1 **          2.0
T              44          23.0 **          75.0 *****          0.0

```

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 25 In the **OPTION** field, type **S** and press **Enter** to bring up the Save View definition panel.

Step 26 Fill out the Save View definition panel as shown in Figure 9-15.

Figure 9-15 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 27 Press **Enter**.

When you see a message in the upper right corner indicating that your view was created, you have completed this step successfully.

Step 28 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 9-16 on page 9-14.

Figure 9-16 Expanding SJFLOW to JFLOW

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1=SJFLOW==JFLOW=====SYSE=====DDMMYYYY==HH:MM:SS=====MVMVS====D===304
C Jobname JES Job T SrvClass Workflow % Delay % Main R
- - - - - Number - - - - - 0.....50...100 0.....50...100 -----
DLN1 JOB09887 B BATNRM 81.2 ***** 1.9 Wait f
DC$NPM JOB08392 B BATHOT 60.7 ***** 1.7 Wait f
XTSTNPAS JOB09344 B BATNRM 78.8 ***** 1.7 Wait f
CIR4 JOB08443 B BATNRM 79.6 ***** 1.7 DASD I
ICSR JOB07282 B BATNRM 78.3 ***** 1.6 DASD I
RPR1 JOB09933 B BATNRM 70.0 ***** 1.4 Stagin
MJC1 JOB09123 B BATNRM 83.3 ***** 1.3 DASD I
CMFPMASR JOB08352 B BATNRM 12.5 ** 1.1 Wait f
CPS10 JOB09292 B BATHOT 82.1 ***** 1.1 DASD I
GRS JOB08585 B BATNRM 66.7 ***** 0.9 Wait f
DLA1 JOB05356 B BATHOT 64.7 ***** 0.9 DASD I
CPS19 JOB06828 B BATNRM 75.0 ***** 0.9 Wait f
KMZ1 JOB08373 B BATNRM 85.4 ***** 0.9 Wait f
CMRHX JOB07383 B BATNRM 87.8 ***** 0.8 DASD I
BBWHS JOB04757 B BATNRM 58.3 ***** 0.8 Wait f
RBS3 JOB07383 B BATNRM 84.8 ***** 0.8 Wait f
JES2 JOB06389 B BATNRM 94.2 ***** 0.8 Wait f

```

As you can see, this is JFLOW, the view from which you created SJFLOW. (Actually, it is the *form* JFLOW.) The form JFLOW adds all of the columns that you excluded from SJFLOW and adds a filter so that only batch jobs (or whatever you selected) are displayed.

Now that you have a complete list of all of the batch jobs running in your system, you can pinpoint the job or jobs experiencing significant delays and proceed by hyperlinking.

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 9-17.

Figure 9-17 Another Summary View: DSPCZ

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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 9-18 on page 9-16.

Figure 9-18 Summarizing DSPCZ by the Ref Column

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.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 9-19.

Figure 9-19 Form DEVSTATZ Applied to DEVSTAT View

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ===>                                     SCROLL ===> PAGE
CURR WIN ===> 1           ALT WIN ===>
>W1 =DEVSTAT==DEVSTATZ=EVKCS====*=====07FEB2003==11:14:51====MVMVS====D==855
C Volser Type Dev LCU MX Storage I/O Resp. Time IOSQ Conn Disc Pend D
- ----- ---- Num Num -- Group /Sec 0...50.100 Time Time Time Time O
BAB342 3390 83F6 0E7 0.05 697 *****+ 139 93 77 388
TSG337 3390 8710 0EE 4.12 125 *****+ 7.83 0.97 116
SMSA02 3390 85BF 0EC SGENG 0.35 124 *****+ 48 56 20
TSG322 3390 83AE 0E7 0.24 80.66 ***** 44 33 4.37
CKPC01 3390 85E7 0EC 0.03 40.85 **** 0.30 0.03 41
SHRA05 3390 850E 0EC SHRASG 2.03 33.75 *** 22 4.58 7.49
A00379 3590 6C1 084 0.34 29.32 *** 1.34 28 0.41
BAB404 3390 837A 0E7 0.03 27.64 *** 0.58 23 4.13
TSG320 3390 83AC 0E7 0.88 24.99 ** 15.9 1.14 3.05 4.93 1
SHR005 3390 8504 0EC 1.02 21.31 ** 1.02 17 3.20
SYSP14 3380 8306 0E7 2.62 20.83 ** 5.29 0.72 15
SAEPG1 3390 858C 0EC 4.23 20.24 ** 8.3 1.26 7.94 2.78
BAB364 3390 8564 0EC 2.87 19.61 ** 2.4 5.06 1.66 10
SAEPG2 3380 833B 0E7 3.91 17.46 ** 5.4 1.49 7.25 3.34
TSG311 3390 83A3 0E7 0.04 12.19 * 10 0.06 2.08 1
WORK03 3380 8334 0E7 0.03 11.92 * 0.22 0.02 12
SMFE36 3380 830B 0E7 5.05 10.67 * 1.4 1.09 5.20 2.99
PROF00 3390 8585 0EC TSOPOOL 0.13 10.51 * 0.54 5.34 4.63
```

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

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(Vv.r.mm)MVMVS -----
COMMAND  ==>>                               SCROLL ==>> PAGE
CURR WIN ==>> 1          ALT WIN ==>>
>W1 =JFLOW=====SYSE=====DDMMYYYY==HH:MM:SS====MVMVS====D==133
C Jobname  JES Job  T SrvClass      Workflow %      Delay %      Main R
- - - - -  Number  - - - - -      0....50...100  0....50...100 - - - - -
  OLTE     STC08812 S STCNRM      29.6  ****          20.7  ***          Wait f
  OLTG     STC07963 S STCNRM      32.5  ****          20.6  ***          Wait f
  MQMPASHN STC06588 S STCNRM      67.0  *****          20.3  ***          Wait f
  DC$BBI   STC08112 S STCNRM      19.7  ***           13.3  **           Wait f
  CICS2121 STC07452 S STCNRM      13.8  **            12.6  **           Wait f
  AAOJC41  STC08883 S STCNRM      29.4  ****          11.3  **           Wait f
  AAODJ41D STC07134 S STCNRM      21.4  ***           11.3  **           Wait f
  AAOH41   STC07955 S STCNRM      29.7  ****          11.1  **           Wait f
  OLTGMVA  STC06583 S STCNRM      25.2  ****          9.3   **           Wait f
  JES2     STC07882 S STCNRM      22.9  ***           8.4   *           Wait f
  TUNCIC3  STC07152 S STCNRM       5.6          8.0   *           Wait f
  BOLJEH1  TSU09723 T TSONRM      11.3  **            7.5   *           Wait f
  CNMNETD  STC09222 S STCNRM      26.4  ****          7.5   *           Wait f
  AAOTSHD  STC08112 S STCNRM      33.3  *****          6.8          Wait f
  CSBDCHIN STC08457 S STCNRM       2.0          5.9          Wait f
  GRS      S GRS        61.2  *****          5.8          Wait f
  OLTGCAS  STC07773 S STCNRM      36.7  *****          5.8          Wait f

```

Suppose you spot a problem with the OLTE job that you want to investigate immediately by using the JINFO view. You could type **JINFO OLTE** on the **COMMAND** line; however, 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 *yourJob*

where *yourJob* 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(Vv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =JFLOW====JINFO====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Timeframe... Interval  Owner..... ++++++ 0...
Jobname.... OLTE Avg Frames.. 1959 Workflow... 29.56
Step/Proc... OLTE Avg Cframes. 1682 Total Use.. 8.67
Job Step Mon NoSteps Avg Eframes. 277 Using Proc 7.60
JES Number.. STC03215 Cframes held 1084 Using Dev. 1.07
Type .. STC Eframes held 964 Total Dly.. 20.67
JobClass ... N/A Fixed frames 0 Processor. 20.24
JES Queue Tm 00:00:00 Fixed <16M.. 4 Device ... 0.21
%CPU Util... 0.0 Dmd Page/Sec 0 Storage... 0.21
Total CPU Tm 00:00:00 Swp Page/Sec 0 Enqueue... 0.00
Tot EXCP Cnt. 3 Avg UIC..... 236 SRM..... 0.00
Terminal ID. Avg Wkg Set. 240 Msg..... 0.00
ASID..... 125 SU/Sec .... 4222 XCF..... 0.00
SrvClass.... STCNRM EXCP/Sec.... 1.5 JES..... 0.00
Workload.... JobStart Dt. DDMMYYYY HSM..... 0.00
%Connected.. 0.0 JobStart Tm. 14:02:05 Idle..... 0.00
Disp. Prty.. 245 Job Elpd Tm. 02:11:14 ECB/Other.. 70.66
Job Status... Active JobEnd Dt... N/A
JobEnd Tm... N/A

```

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(Vv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =JFLOW====JOVER====SYSE====*====DDMMYYYY==HH:MM:SS====MVMVS====D==133
C Jobname  JES Job  T SrvClass Step MBO Total Total  %Dly  %Dly  %CPU  EXCP D
- - - - -  Number  - - - - -  Data ---  Dly%  Use%  Idle ECB/Oth  Util  /Sec /
  OLTE     STC08812 S STCNRM  NO  NO  20.67  8.67          70.66  1.1  1.5
  OLTG     STC07963 S STCNRM  NO  NO  20.61  9.93          69.46  1.3  1.6
  MQMPASHN STC06588 S STCNRM  NO  NO  20.32  41.34  12.50  25.83  1.0  6.2
  DC$BBI   STC08112 S STCNRM  NO  NO  13.27  3.26          83.47  0.3  1.0
  CICS2121 STC07452 S STCNRM  NO  NO  12.59  2.02          85.39  0.2  0.0
  AAOJC41  STC08883 S STCNRM  NO  NO  11.33  4.71          83.95  0.5  1.2
  AAODJ41D STC07134 S STCNRM  NO  NO  11.30  3.07          85.63  0.3  1.6
  AAOH41   STC07955 S STCNRM  NO  NO  11.12  4.69          84.19  0.5  2.2
  OLTGMVA  STC06583 S STCNRM  NO  NO  9.31   3.14          87.54  0.5
  JES2     STC07882 S STCNRM  NO  NO  8.40   2.50          89.10  0.2  2.2
  TUNCIC3  STC07152 S STCNRM  NO  NO  8.02   0.48          91.50  0.1
  BOLJEH1  TSU09723 T TSONRM  NO  NO  7.54   0.96          91.50  0.1
  CNMNETD  STC09222 S STCNRM  NO  NO  7.49   2.69          89.82  0.5  0.0
  AAOTSHD  STC08112 S STCNRM  NO  NO  6.79   3.39          89.82  0.2  1.0
  CSBDCHIN STC08457 S STCNRM  NO  NO  5.87   0.12          94.01  0.1  0.1
  GRS      S GRS      NO  NO  5.85   9.24          84.91  0.6
  OLTGCAS  STC07773 S STCNRM  NO  NO  5.83   3.39          90.78  1.0

```

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 (partial screen only).

Figure 10-4 Help Topic for the FORM Command

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
>W1 =JFLOW====JOVER====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==133
C Jobname  JES Job  T SrvClass Step MBO Total Total  %Dly  %Dly  %CPU  EXCP D
- - - - - Number  - - - - - Data ---  Dly%  Use%  Idle ECB/Oth  Util  /Sec /
OLTE      STC08
OLTG      STC07
MQMPASHN  STC06
DC$BBI    STC08
CICS2121  STC07
AAOJC41   STC08
AAODJ41D  STC07
AAOMH41   STC07
OLTGMVA   STC06
JES2      STC07
TUNCIC3   STC07
BOLJEH1   STC09
CNMNETD   STC09
AAOTSHD   STC08
CSBDCHIN  STC08
GRS
OLTGCAS   STC07

```

```

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 JPAGOVZ
o JPAGDMZ
o JPAGSWZ
o JSTORZ

```

This help topic displays all of the views that you can use on the FORM command from JFLOW.

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.

Note: Many of the hyperlinks are already defined as form hyperlinks. For example, hyperlinking on the **JES Job Number** field from JFLOW in Figure 10-1 on page 10-2 would have the same result as issuing the **FORM JINFO yourJob** command.

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 *commandName*** on the **COMMAND** line.

For This Action	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 refresh 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 might 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 Wx.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, for example, 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 with a service class named STCNRM (or whatever service class you use), 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 service class STCNRM 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 service class STCNRM 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:

Type END to update the form filter
CANCEL to quit without updating

```

Step 3 Choose a service class name and a **%Dly CPU** value from your JCPU screen. Type these conditions in the format shown here:

(ASGCNMC=STCNRM) 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 STCNRM Delayed More Than 60%

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ===>                                     SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
W1 =JCPU=====SYSE=====*=====DDMMYY==HH:MM:SS====MVMVS====D==149
C Jobname  JES Job  T SrvClass Step          Interval CPU Seconds  %CPU  %Use  %Dly
- - - - -  Number  - - - - -  Data          0.....30.....60  Util  CPU  CPU
  CVMDKB11 STC08202 B STCNRM   NO           0.81 *                0.17  14.0  78.4

```

All of the jobs in service class STCNRM that have a CPU delay of higher than 60 percent are displayed.

Specifying Complex Filter Conditions

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 service classes STC* through STD*—but you do not want to include service class STCNRM—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 STC* and STD*) AND (ASGCNMC <> STCNRM)

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 STC* - STD*

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Vv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =JCPU=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==149
C Jobname  JES Job  T SrvClass Step          Interval CPU Seconds  %CPU  %Use  %Dly
- - - - -  Number  - - - - -  Data           0.....30.....60 Util  CPU  CPU
CNMPPR14  STC08568 S STCLOW   NO          0.83 *           0.09  2.1
TSO       STC08257 S STCPROD  NO
LOGROUTE STC08242 S STCLOW   NO
RESOLVER          S STCLOW   NO

```

JCPU now contains all of the jobs having service class names STC* through STD*, with the exception of STCNRM.

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

You can use the statements in conjunction with these operands:

- =
- <> (NOT EQUAL TO)
- >
- >=
- <
- <=

The WHERE equation can include an element and a constant (ASGCNMC=STCNRM), or it can include *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.

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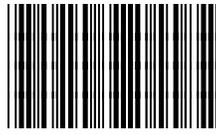
THE DISPUTE AS NECESSARY TO PROTECT EITHER PARTY'S CONFIDENTIAL INFORMATION, OWNERSHIP, OR ANY OTHER PROPRIETARY RIGHTS. ALL ARBITRATION PROCEEDINGS SHALL BE CONDUCTED IN CONFIDENCE, AND THE PARTY PREVAILING IN ARBITRATION SHALL BE ENTITLED TO RECOVER ITS REASONABLE ATTORNEYS' FEES AND NECESSARY COSTS INCURRED RELATED THERETO FROM THE OTHER PARTY.

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MISCELLANEOUS TERMS. You agree to pay BMC all amounts owed no later than 30 days from the date of the applicable invoice, unless otherwise provided on the order for the License to the Products. You will pay, or reimburse BMC, for taxes of any kind, including sales, use, duty, tariffs, customs, withholding, property, value-added (VAT), and other similar federal, state or local taxes (other than taxes based on BMC's net income) imposed in connection with the Product and/or the Support. This Agreement constitutes the entire agreement between You and BMC and supersedes any prior or contemporaneous negotiations or agreements, whether oral, written or displayed electronically, concerning the Product and related subject matter. No modification or waiver of any provision hereof will be effective unless made in a writing signed by both BMC and You. You may not assign or transfer this Agreement or a License to a third party without BMC's prior written consent. Should any provision of this Agreement be invalid or unenforceable, the remainder of the provisions will remain in effect. The parties have agreed that this Agreement and the documents related thereto be drawn up in the English language. Les parties exigent que la présente convention ainsi que les documents qui s'y rattachent soient rédigés en anglais.

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