Paragon™ System
Performance Visualization Tool
User's Guide

Intel® Corporation

WARNING

Some of the circuitry inside this system operates at hazardous energy and electric shock voltage levels. To avoid the risk of personal injury due to contact with an energy hazard, or risk of electric shock, do not enter any portion of this system unless it is intended to be accessible without the use of a tool. The areas that are considered accessible are the outer enclosure and the area just inside the front door when all of the front panels are installed, and the front of the diagnostic station. There are no user serviceable areas inside the system. Refer any need for such access only to technical personnel that have been qualified by Intel Corporation.

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Preface

This manual describes the System Performance Visualization tool (SPV). The manual is intended for Paragon™ system users who wish to monitor the performance of their Paragon system. The sections of this manual that describe the X resources used to configure SPV assume familiarity with X resources.

For window displays, menus, commands, buttons, keyboard accelerators, and dialog boxes, SPV follows the Motif style guide. This manual assumes the Motif window manager functionality. SPV can, however, be run under window managers other than the Motif window manager.

Organization

Chapter 1	Provides an overview of SPV, describes how to start SPV, and describes SPV error conditions.
Chapter 2	Describes SPV's windows, menus, and commands.
Chapter 3	Describes the X resources used to configure SPV.
Appendix A	Describes the default configuration for SPV.

Notational Conventions

This manual uses the following notational conventions:

Bold	Identifies command names and switches, system call names, reserved words, and other items that must be used exactly as shown.

Italic   Identifies variables, filenames, directories, processes, user names, and writer annotations in examples. Italic type style is also occasionally used to emphasize a word or phrase.

```
Plain-Monospace
```
                 Identifies computer output (prompts and messages), examples, and values of variables. Some examples contain annotations that describe specific parts of the example. These annotations (which are not part of the example code or session) appear in *italic* type style and flush with the right margin.

Bold-Italic-Monospace
                 Identifies user input (what you enter in response to some prompt).

Bold-Monospace
                 Identifies the names of keyboard keys (which are also enclosed in angle brackets). A dash indicates that the key preceding the dash is to be held down *while* the key following the dash is pressed. For example:

              <Break>   <s>   <Ctrl-Alt-Del>

[   ]   (Brackets) Surround optional items.

. . .   (Ellipsis dots) Indicate that the preceding item may be repeated.

| (Bar) Separates two or more items of which you may select only one.

{   }   (Braces) Surround two or more items of which you must select one.

Applicable Documents

For more information about Paragon system documents, refer to the *Paragon™ System Technical Documentation Guide*.

Comments and Assistance

Intel Scalable Systems Division is eager to hear of your experiences with our products. Please call us if you need assistance, have questions, or otherwise want to comment on your Paragon system.

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Table of Contents

Chapter 1
SPV Overview

Chapter 2
Windows, Menus, and Commands

Chapter 3
Configuring SPV

Appendix A
Default SPV Configuration

List of Illustrations

List of Tables

SPV Overview   1

The System Performance Visualization tool (SPV) allows you to monitor the performance of your Paragon™ system. SPV allows you to do the following:

- Display the Paragon system front panel lights on your workstation

- Display CPU, Mesh, and memory bus utilization values

- Display the current, an average, or the maximum value of performance information

- Zoom from all of the CPUs to a few CPUs

- Record and playback the performance displays

The performance data used for the SPV display is CPU, Mesh, and memory bus utilization. The Reprogrammable Performance Monitoring (RPM) chip on each node board collects Mesh and memory bus information while the Mach Kernel collects CPU idle-time information. Each second the node collects performance data and sends the data to a process running on a service node. This process forwards the performance data to SPV running on the Paragon system.

Graphical Displays

SPV uses the OSF Motif toolkit for its graphical interface. The pull-down menus, commands, buttons and dialog boxes are described in Chapter 2. SPV provides four basic displays. These displays are

- CPU display

- Mesh Display

- Values Display

- Node Display

All four of the basic displays use color or gray scale along with stipples to denote utilization. You can configure the mapping between color, gray scale, or stipples to a particular utilization value or partition with X resources. Chapter 3 describes the X resources used to configure SPV. A custom dialog box is available to show the current mapping of utilization value to color, gray scale, and stipples. This dialog is described in Chapter 2 in the section titled *Show Utilization Color Mappings*.

The default SPV display is sized to show all nodes of the system. If you want a larger display, you must use X geometry resources to provide a larger SPV window and default display.

The following sections describe the four basic SPV displays. There are a number of display options for the basic SPV displays. These options are described in Chapter 2 in the section titled *Change Data Display Options*. You can move between the different displays by using the *Zoom* menu at the top of the SPV display window.

CPU Display

The CPU display shows CPU utilization. The color (or grey scale) and stipple of each CPU shown in the display denotes the utilization for that CPU. The Mesh utilization is not displayed. Because of the number of nodes in a large Paragon system, the CPU utilization display may be the only display that shows all of the system. The display is also useful in a small window to monitor the performance of the Paragon system on an ongoing basis. There are two versions of the CPU utilization display: one where only the CPUs are shown and one where the Mesh is drawn. Figure 1-1 shows the CPU-only display, and Figure 1-2 shows the mesh display.
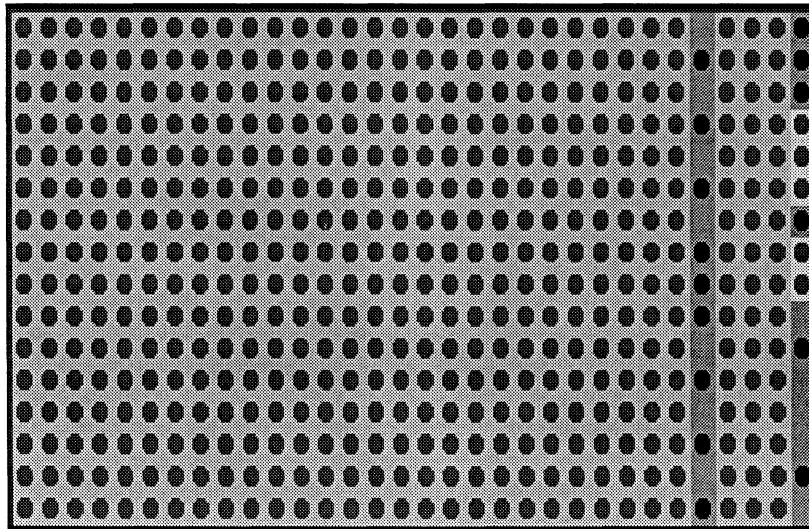
Figure 1-1. CPU Utilization Display (CPU's only)
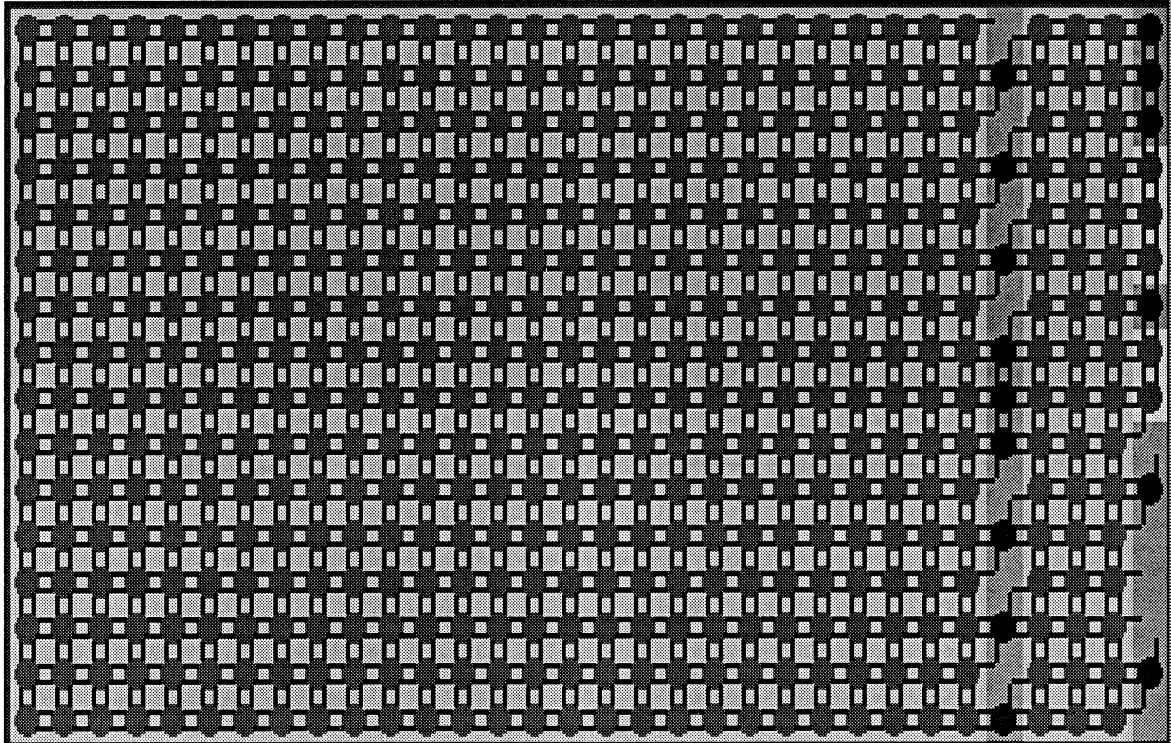
Figure 1-2. CPU Utilization Display (Mesh)

The background color, gray scale and stipple patterns denote partitions. In Figure 1-1 and Figure 1-2, the light gray background denotes I/O nodes while the darker cross-hatched background denotes the service partition.

Mesh Display

The Mesh display is a visualization of the Paragon system front panel. As shown in Figure 1-3, both CPU and Mesh utilization are displayed. The color (or grey scale) and stipple of each mesh link shown in the display denotes the utilization for that link.
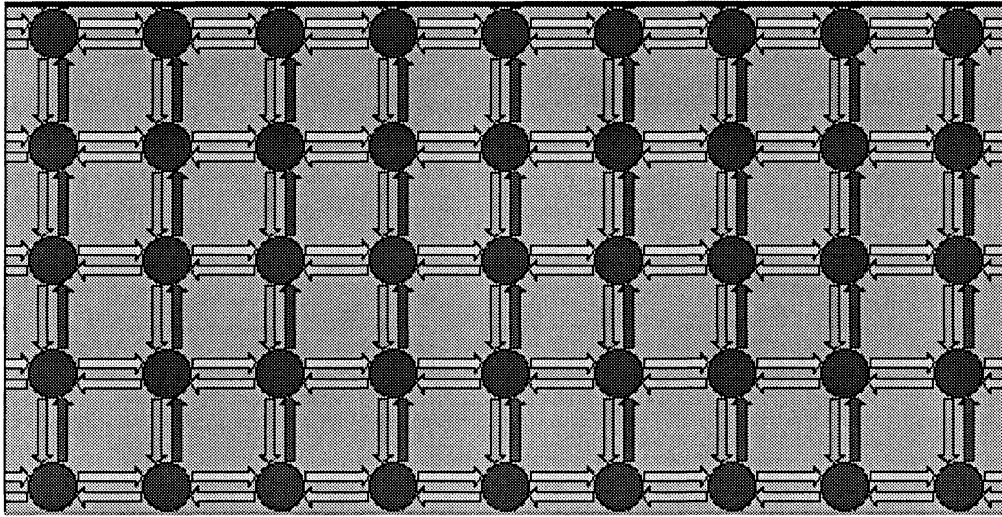
Figure 1-3. Mesh Display

Values Display

The values display shows the actual utilization values. As shown in Figure 1-4, both the CPU and Mesh utilization values appear. The node's compute CPU utilization is in the center in a larger font while the message passing CPU utilization is at the bottom in a smaller font. The mesh utilization values are shown on the mesh links.
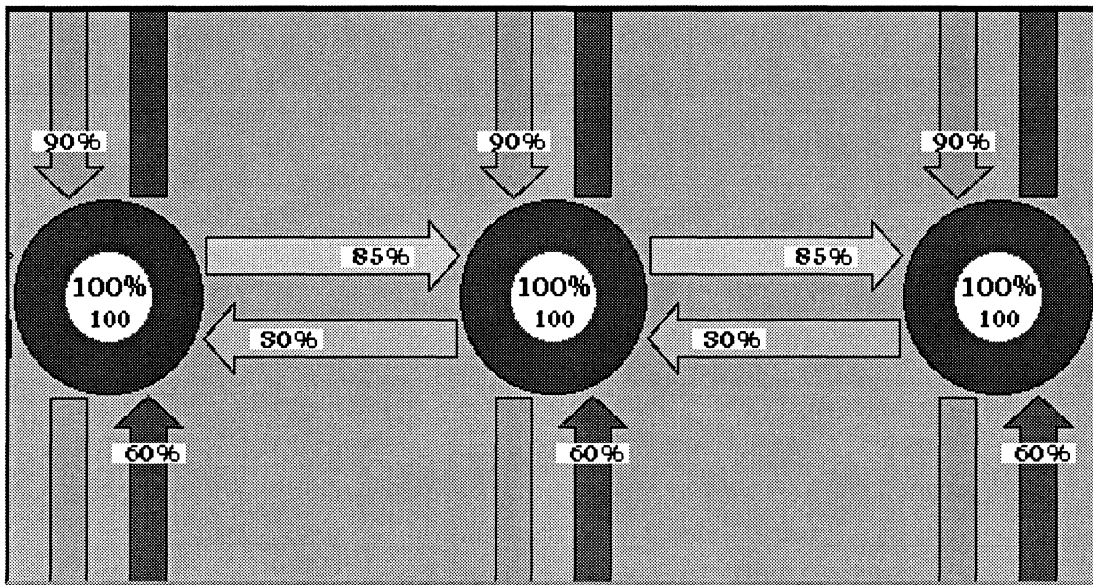
Figure 1-4. Values Display

Node Displays

The node display presents CPU, Mesh, and memory bus utilization. The node display is a logical depiction of a node showing the CPUs, the message passing LTU, the memory bus, and main memory. Figure 1-5 shows a GP node and Figure 1-6 shows an MP node. Figure 1-7 shows an I/O node, where the I/O daughter card is depicted above the main memory module. Inside the I/O daughter card is the type of the I/O card, in this case, BOOT. The background color, gray scale and stipple in each module denotes the utilization value shown in the foreground.
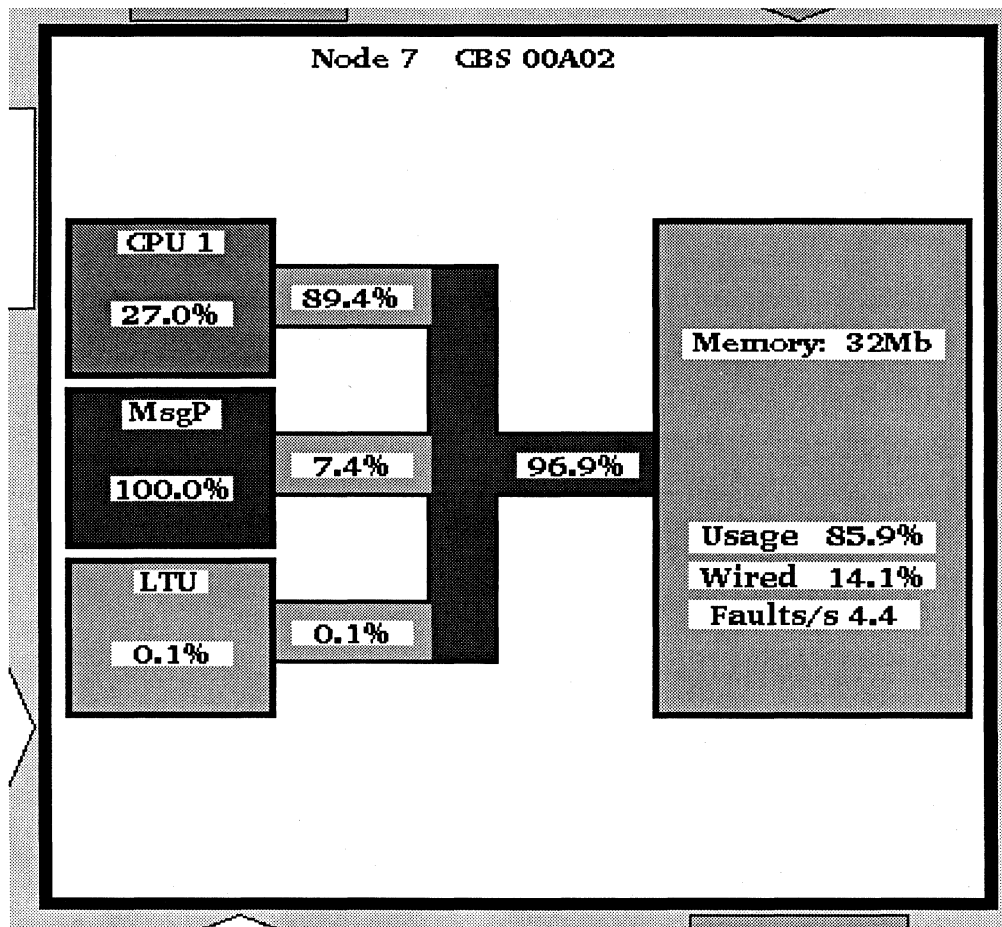
Figure 1-5. GP Node Display

At the top of the node display are the root partition node number and the cabinet backplane slot (CBS) number for the node. In Figure 1-7 these values are Node 3 and 00A03.

At the left of the node display are the compute CPU(s), the message passing CPU (MsgP), and the LTU. The utilization value shown for the CPU is the percentage of time that the CPU has been busy.
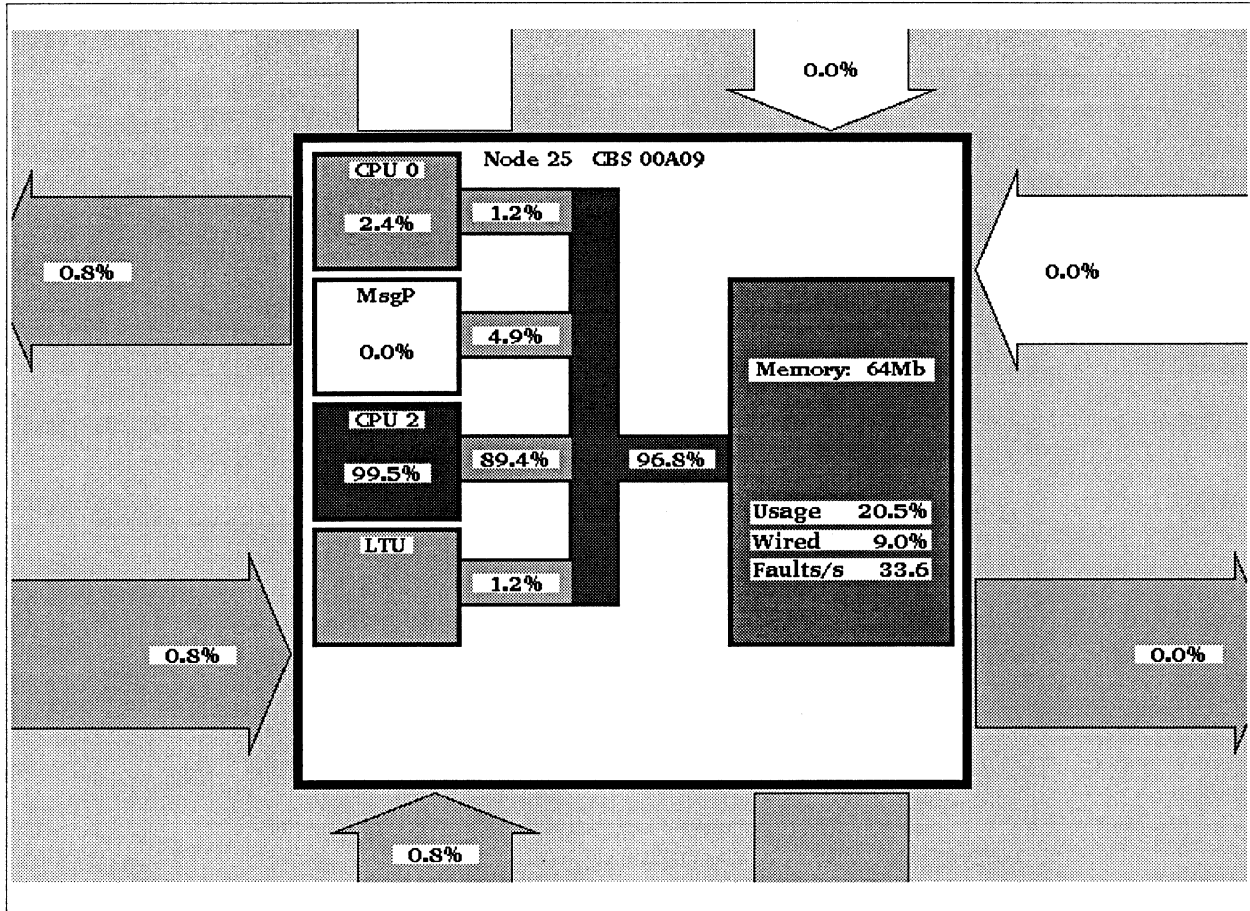
Figure 1-6. MP Node Display

To the right of each CPU (inside the memory bus) is the amount of time the CPU has been master of the memory bus. Since it is expensive in terms of time to become the master of the memory bus, the compute CPU(s) is/are always given the bus by default. The other bus utilization values denote when the message-passing CPU, LTU, or I/O daughter card become the bus master and indicates their actual memory bus usage. The LTU and I/O daughter utilization values represent their memory bus usage (the same value that is presented in the memory bus).

The total memory bus usage is shown in the memory bus at the left of the memory module. The total is always roughly 98%, since CPU 1 always is a bus master even when it is not using the bus and approximately 2% of the bus cycles are used for memory refresh. The values inside the memory module are the percentage of memory allocated, the percentage of wired memory, and the number of faults per second. It is important to note that this is the total number of faults, not just page faults. Wired memory represents memory that can not be swapped.
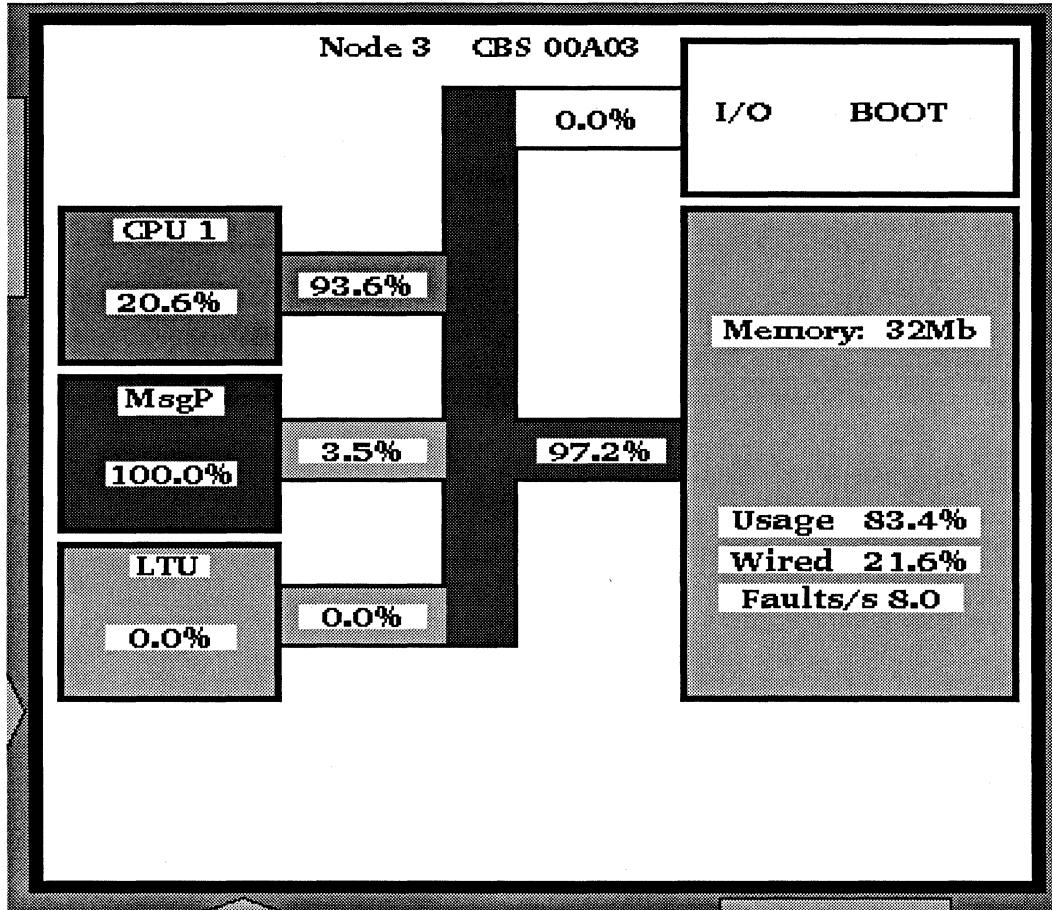
Figure 1-7. I/O Node Display

Zooming Between Displays

The mouse buttons allow you to zoom back and forth between displays. The default settings for the buttons are as follows:

Left button	select
Middle button	return to previous display
Right button	display the Utilization Color Mappings dialog

When you click on a node in the display area with the select button, SPV zooms to the node display for that individual node. You can examine the node, and then use the return mouse button to zoom back to the previous display. This allows you to easily examine individual nodes from the CPU or mesh display.

You can also use *rubberbanding* to zoom in on nodes in the display. To zoom in on selected nodes, hold down the *select* mouse button and drag the mouse to form a rectangle around the nodes you want to zoom in on. When you release the mouse button, SPV zooms in on the nodes in the rectangle.

Starting SPV

To run SPV on the Paragon system do the following:

1. Enter the following command on your workstation:

    %**xhost** + *paragon_system*

    where *paragon_system* is the name of the Paragon system on which you are going to run SPV.

2. Log onto the Paragon system.

3. Set the *DISPLAY* environment variable to your workstation as in the following example:

    %**setenv DISPLAY** *machine_name***:0**

    where *machine_name* is the name of your workstation.

4. Check to be sure you have */usr/bin/X11* in your search path.

5. Start SPV.

To start SPV, use the **spv** command as follows:
spv [{**-f** | **-file** | **-fileName**} *file_name*] [{**-h** | **-host** | **-hostName**} *host_name*] [*X Toolkit parameters*]

The **spv** command parameters are as defined follows:

{**-f** | **-file** | **-fileName**} *file_name*

The *file_name* parameter is the name of a file that contains previously-saved SPV data. The **-fileName** flag is the same name as the X resource used to specify a file name. By specifying a file, you can playback previously saved SPV data. Along with the main SPV display window, SPV also displays the Playback dialog box (see the **File Menu Open Playback** command).

{**-h** I **-host** I **-hostName**} *host_name*

The *host_name* parameter is the Internet machine or system name of the Paragon system. The **-hostName** flag is the same name as the X resource used to specify a host name. This parameter is used to specify the Paragon system displayed when you start SPV. If you run SPV on a Paragon system, the host name need not be specified.

X Toolkit standard parameters

These are the standard parameters supported by the X Toolkit.

You can also use SPV from ParAide, the graphical front end to the Paragon system application toolset. For a description of ParAide, refer to the *Paragon™ System Application Tools User's Guide*.

When you run SPV on the Paragon system, SPV runs on a service node with the output displayed on your workstation.

When you start SPV, it does one of the following:

- If you use {**-f** I **-file** I **-fileName**} to define a file containing previously recorded SPV data, SPV plays back the data.

- If you use {**-h** I **-host** I **-hostName**} to define a Paragon system host name, you connect to the Paragon system and SPV begins displaying performance data.

- If the X resource *hostName* is defined, you connect to the Paragon system defined by the X resource and SPV begins displaying performance data.

- If you are executing SPV on a Paragon system, you connect to the SPV collection process running on the Paragon system and SPV displays performance data for that system.

As SPV attempts to connect to the SPV data collection process, a working dialog displays with the following message:

```
Attempting to connect to host name
```

host name is the name of the Paragon system. If SPV fails to connect to the Paragon system, an error dialog displays and the Host Name dialog appears so you can change the host name.

SPV Error Conditions

There are several errors that can occur when you use SPV. If the Paragon system is unable to connect to your system, you get the following message:

```
Client refusing connection
```

If you get this message, run **xhost** as described in the section *Starting SPV*.

If SPV is unable to open a display on your workstation, you get the following message:

```
Unable to open display
```

If you get this message, set your DISPLAY environment variable as described in the section *Starting SPV*.

If your resources are not set correctly, SPV displays an error message. If you get a resource error message, check your resource file to be sure your resources are set correctly. For information on resources, refer to Chapter 3, *Configuring SPV*.

If an error occurs while SPV is running, an error dialog appears and the error message displayed in the dialog is also displayed on the SPV status line (refer to Figure 2-1). If you dismiss the error dialog, the status line contains the error message until the state of SPV changes.

Socket Errors

If the Paragon system responds with bad data over the socket connection, or if the socket connection is terminated for any reason, an error message dialog is displayed with the following message:

```
Socket error, connection lost at (date at which connection lost)
```

This error condition can be caused by the system administrator terminating the SPV data collection daemon, the network failing, or the system failing. If SPV is executing on a workstation, any one of the failure conditions could be the cause. However, if SPV is executing on the displayed system, then for network or system failures SPV itself is likely to fail. If SPV is still working, the system administrator has probably terminated the SPV data collection daemon. You can determine if this is the case by entering a *ps -e* command and looking for */usr/lib/toolenv/bin/spvdaemon*.

To dismiss the error dialog, select the OK button. SPV stops displaying the performance data but leaves the last display to show the state of the system when the socket connection was lost. You can use the **Host Name** command to reconnect to the system, or the **Exit** command to exit SPV.

Response Errors

If the Paragon system fails to respond with performance data within 10 seconds, an error dialog appears with the following message:

```
Possible system failure, no response from system for 10 seconds
at (time system stopped responding)
```

Because a "Socket error, connection lost" error was not reported, the network still functions and the SPV data collection daemon continues to run. However, the SPV data collection daemon does not respond to requests for performance data by SPV. The most common cause of the error condition is that the SPV data collection daemon has been paged out and excessive paging by the system is preventing the daemon from running. If this is the case, at some point the SPV data collection daemon will respond, and SPV will continue to display system performance data. In very rare cases, the error condition can be caused by the partial failure of the SPV data collection daemon or the partial failure of the system. In this case, the SPV data collection daemon should be terminated and restarted.

To dismiss the error dialog, select the OK button. The SPV utilization display does not change and shows the state of the system at the time the system stopped responding. If the system starts responding, the status line shows what is being displayed and the error dialog remains until you dismiss the dialog.

Blocking Errors

If the SPV data collection process is blocked due to excessive paging or because a node stopped responding, the same data is reported by the collection process. If the same data is reported for more than 10 seconds, an error dialog appears with the following message

```
Possible node failure, same data reported for 10 seconds at (time
system started reporting the same data).
```

The data is collected via a spanning tree and the failure of one node to respond causes the spanning tree to fail. Thus, the same data is reported by the SPV data collection daemon. The error condition can be caused by excessive paging on the node or by the failure of the node. If the error is due to excessive paging, at some point the data will be collected and SPV will continue to display the system performance data. The error dialog can be dismissed. However if the error condition continues, it is likely that one of the nodes in the system has failed.

To dismiss the error dialog, select the OK button. The SPV utilization display does not change and continues to show the state of the system at the time the system started reporting the same data. If normal data collection resumes and new data is reported, the status line shows what is being displayed and the error dialog remains until you dismiss the dialog.

Displaying Failing Nodes

SPV identifies and displays nodes that are configured in a partition but not in the system and bad nodes. Figure 1-8 shows the two types of failing nodes. At the right, near the top of the SPV display, is a node (circle) with an horizontal line through the circle indicating an empty slot that is configured in the partition. This follows the **showpart** command convention of showing a minus sign when an empty slot is configured in a partition. SPV does not show the mesh arrows, which further indicates that the node is not in the mesh.

At the right near the bottom is a node with a large X superimposed over the node. This denotes a bad node and follows the **showpart** command convention of displaying an **x** for a bad node. Bad nodes are nodes that do not boot properly when the system is initialized. The list of bad nodes is found in the file */etc/nx/.badnodes*.

If you click on the bad node with the select button, SPV zooms to the node display for the node. This allows you to identify and examine bad nodes.
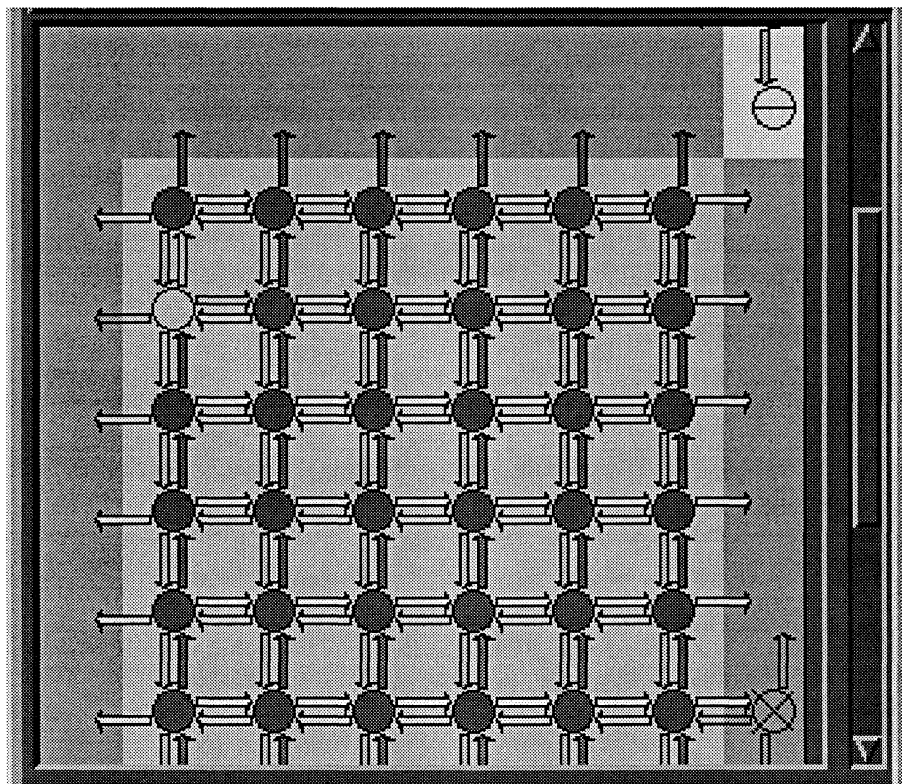
Figure 1-8. Failing Node Display

Figure 1-9 and Figure 1-10 show failing nodes for the close-up node display. Figure 1-9 shows an empty slot configured into the partition and Figure 1-10 shows a bad node.

90.0%

Node 39   CBS 00C03

Empty slot in partition
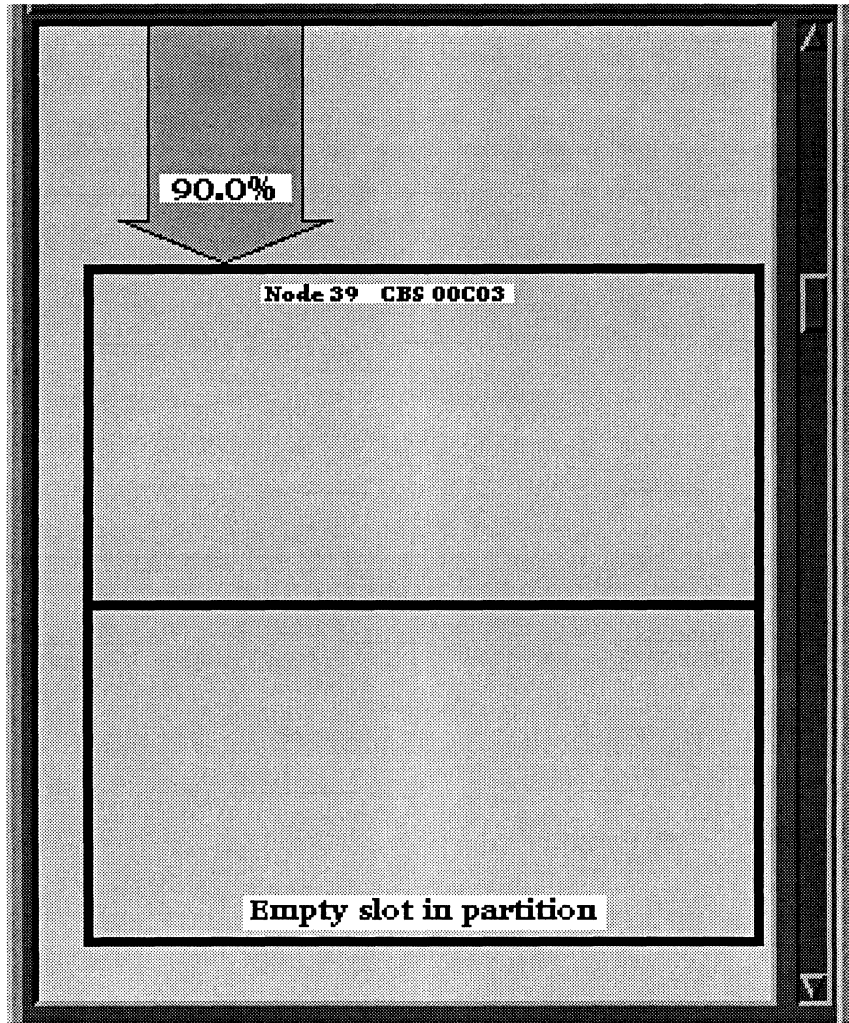
Figure 1-9. Close-up Failing Node Display (Empty Slot)
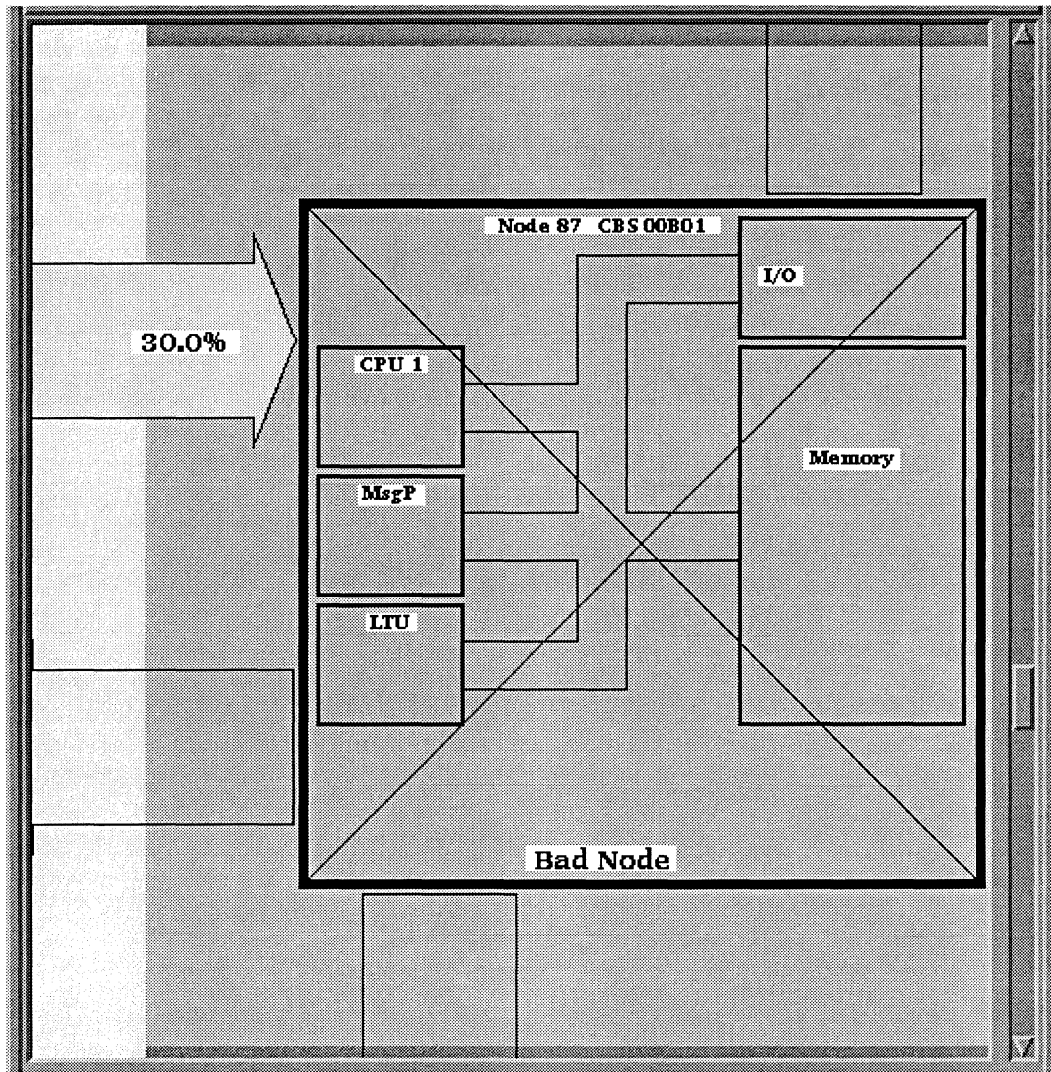
Figure 1-10. Close-up Failing Node Display (Bad Node)

Windows, Menus, and Commands   2

This chapter describes the windows, menus, and commands offered by SPV. The main window is the SPV display window. The following section describes the SPV display window.

SPV Display Window

The main SPV display window shows the Paragon™ system front panel. Figure 2-1 shows the various components of the SPV display window.

Pull-down menus   Title bar   Window border
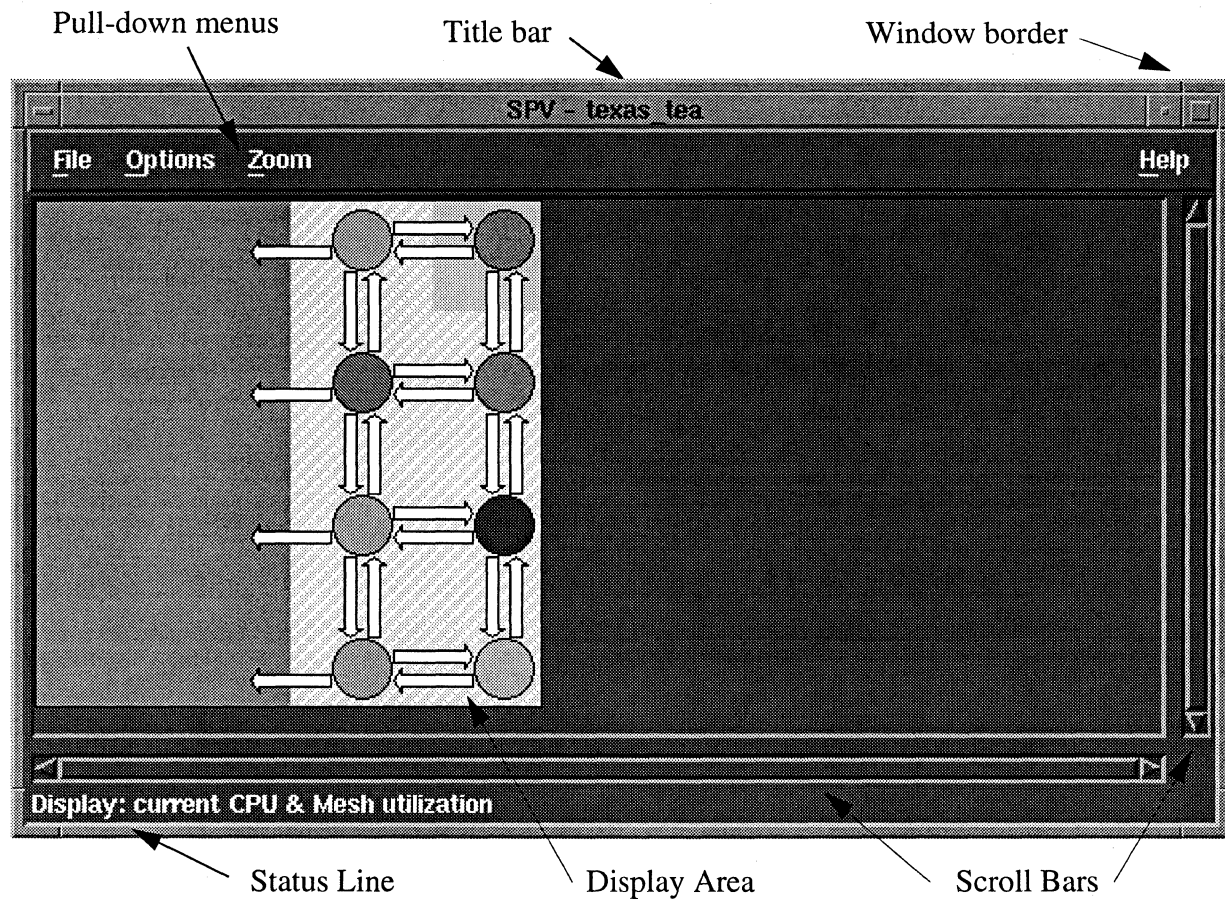
Figure 2-1. SPV Display Window

Status Line   Display Area   Scroll Bars

Pull-Down Menus

The pull-down menu bar is at the top of the window. The **File** pull-down menu is at the far left of the menu bar, followed by the **Options** pull-down menu and the **Zoom** menu. The **Help** pull-down menu is at the far right of the menu bar.

Title bar

The title bar contains the name of the tool (SPV) and the name of the Paragon system SPV is displaying or the name of the file being replayed.

Window border

The window border defines the SPV window area. The window border is provided by the window manager.

Status Line

The status line contains the current SPV status. During normal operation the status line describes what is being displayed. At the left of the status line is the header, **Display:**. To the right of the header is either **current**, **average**, or **maximum**, depending upon whether the current, average or maximum value of the data is being displayed (see *Display Options*). To the right of the current, average or maximum is a description of what is being displayed. The description is one of the following:

For the CPU display:

CPU utilization
Memory utilization
Wired memory utilization
Page faults/sec

For the Mesh display:

CPU & Mesh utilization
Memory & Mesh utilization
Wired memory & Mesh utilization
Page faults/sec & Mesh utilization

For the Values display:

CPU & Mesh values
Memory & Mesh values
Wired memory & Mesh values
Page faults/sec & Mesh values

For the Node display:

CPU, Mesh, Bus & Memory values

When an error occurs (see *SPV Error Conditions* in Chapter 1) an error message appears in an error dialog and in the status line. If you dismiss the error dialog, the error remains present in the status line until the state of SPV changes.

Display Area

The Display Area is where the front panel displays appear (see *Graphical Displays* in Chapter 1).

Scroll Bars

The scroll bars are at the right and bottom of the window. The scroll bars allow you to scroll the SPV display up, down, left, or right. The scroll bars are needed if the display area is smaller than what is required for a full-system display.

When you resize the window using window manager functions, more or less of the display image appears in the display area. SPV also provides zoom-in and zoom-out to enlarge or shrink the image (see *Zoom menu*). By varying the window size, the image zoom, and the scroll bars you can specify what part of the front panel to display and the exact size of the displayed image.

File Menu

The **File** menu is at the far left of the menu bar and, for a non-root user, contains the following commands:

- **Open Playback**

- **Record Data**

- **Save Options**

- **Host Name**

- **Exit**

Figure 2-2 shows the **File** menu.
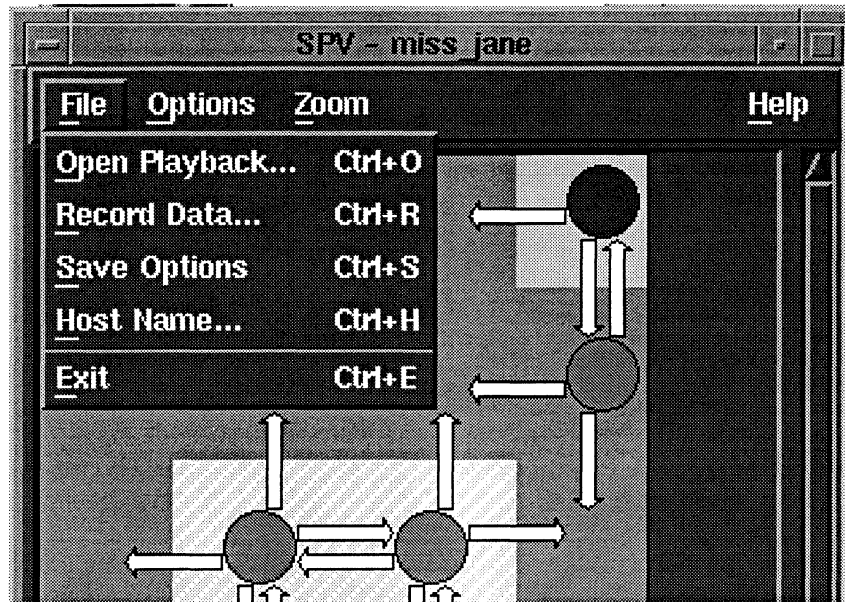
Figure 2-2. File Menu

For a root-privileged user running on the Paragon system, the **Data Collection** command appears just before the **Exit** command. The **File** menu with the Data Collection command is shown in Figure 2-3.
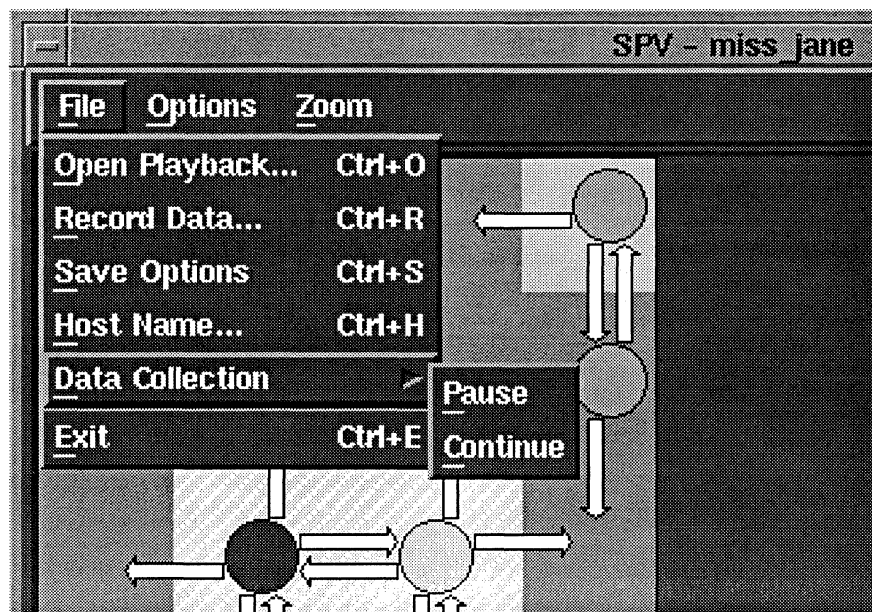
Figure 2-3. File Menu with Data Collection Command

Open Playback

The **Open Playback** command allows you to replay previously-saved SPV data. You first choose a file, then SPV displays a Playback dialog box to allow you to control the playback. When the Playback dialog is visible, the File Menu Open Playback menu is desensitized. At the end of the Playback, you dismiss the Playback Dialog, and SPV stops the playback and closes the playback file.

Open Playback File Selection Dialog

The **Open Playback** command allows you to specify a file containing the SPV data. Figure 2-4 shows the dialog used by the **Open Playback** command.

Figure 2-4. Open Playback File Selection Dialog

To select a file for playback, select a file name and then select the OK button.

If you specify a file (directory or special file) other than an ordinary file, SPV displays an error dialog containing the following message:

    Not a file: *file name.*

If you specify a file that does not exist, SPV displays an error dialog containing the following message:

    File not found: *file name.*

If you specify the same file name that is currently being used to record data (see *Record Data*), SPV displays an error dialog containing the following message:

    The file that you want to open is the same as the recording file: *file name.*

If the file does not contain recognizable SPV data, SPV displays an error dialog containing the following message:

    Not an SPV data file: *file name.*

To dismiss any of these error dialogs, select the OK error dialog button.

The file selection dialog's features are as follows:

Filter

This text field contains the filter for displaying files. SPV displays all file names, but you have the option of filtering out files by using file name wild cards.

Directories

All directories in the current directory that pass through the filter are listed. Selecting a directory makes it the current directory.

Files

All files in the current directory that pass through the filter are listed. It is possible for the list to be empty if no files match the filter or if the current directory is empty. If a file is selected, it becomes the selection for the file dialog.

Selection

This text field contains the name of the currently-selected playback file.

OK

When you select the OK button, SPV checks the file in the selection text field. If the file is valid, the file selection dialog is dismissed and the Playback dialog appears. If the file is not valid, error and question dialogs appear.

Filter

When selected, the entry in the Filter field is used to obtain a new file list and a new directory list.

Cancel

When selected, the file selection dialog is dismissed.

Help

The help button displays help information on the Playback topic.

Open Playback Dialog

Once you choose the playback file, the name of the file appears in the SPV title bar and the playback dialog appears to allow you to control the replay of the performance data. Figure 2-5 shows the playback dialog.
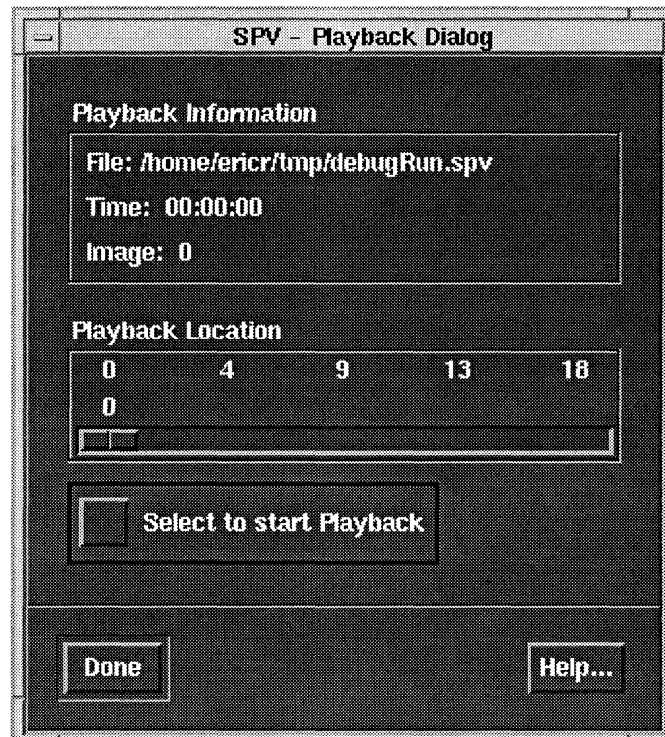
Figure 2-5. Playback Dialog

The Playback dialog contains playback information, a scale that shows the playback location, a toggle button that signifies to start the playback, the Done button and the Help button. The initial playback state is to start the playback, (the toggle button in). In order to stop the playback you must select the toggle button. The Playback dialog contains the following features:

File

The name of the file containing the performance data being read.

Time

The time at which the SPV data was recorded. This field changes as SPV displays each new image.

Image

The current SPV display or image. The images or displays are numbered sequentially from the beginning of the recording. This field changes as SPV displays each new image.

Playback Location

A scale is provided that indicates where in the file the replay is occurring. The scale also allows you to move around in the file. The values above the scale denote an image number. If the number of images to playback is less than or equal to 12, then all 12 image numbers will be displayed above the scale. However, if the number of images is greater than 12, only the image numbers corresponding to 0%, 25%, 50%, 75% & 100% of the file are displayed. If you change the playback location by manipulating the scale, the playback stops and must be activated by selecting the toggle button.

Select to Start/Stop Playback

This toggle button activates the playback mode.

Done

The Done button exits the playback mode. SPV closes the playback file and dismisses the Playback dialog.

Help

The help button displays help information on the SPV Playback dialog features.

Record Data

The **Record Data** command allows you to save SPV data. You first choose a file, then SPV displays a record dialog box to allow you to control the recording of the performance data. When the record dialog is visible, the **File** Menu **Record Data** command is desensitized. At the end of the recording, you dismiss the record dialog, and SPV stops recording data and closes the record file.

Record Data File Selection Dialog

The **Record Data** command allows you to specify file names that are used to record data. Figure 2-6 shows the dialog used by the **Record Data** command.
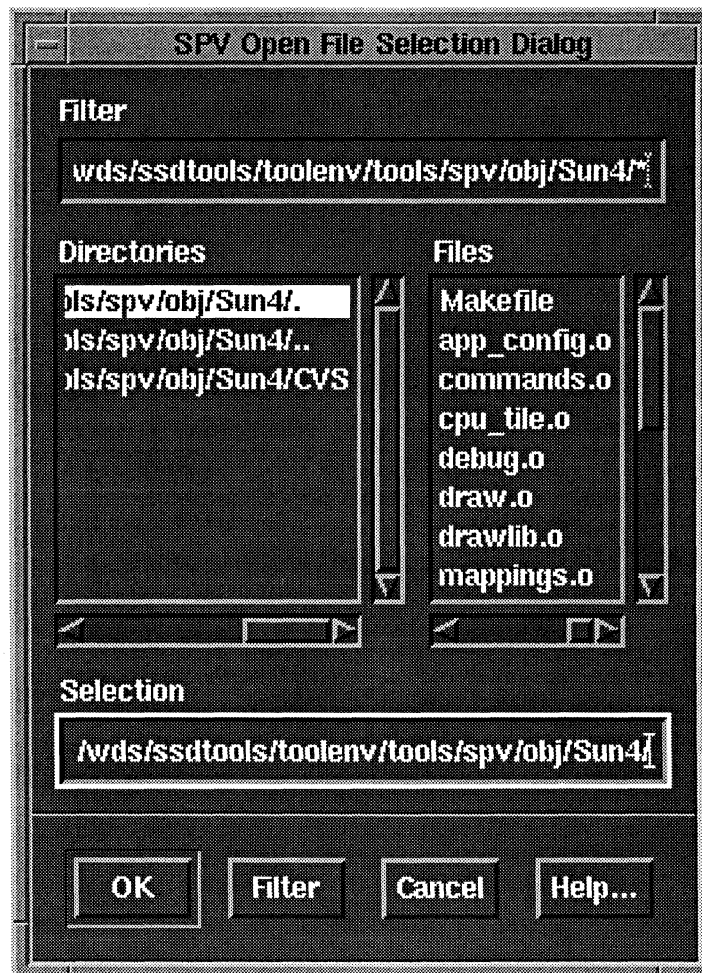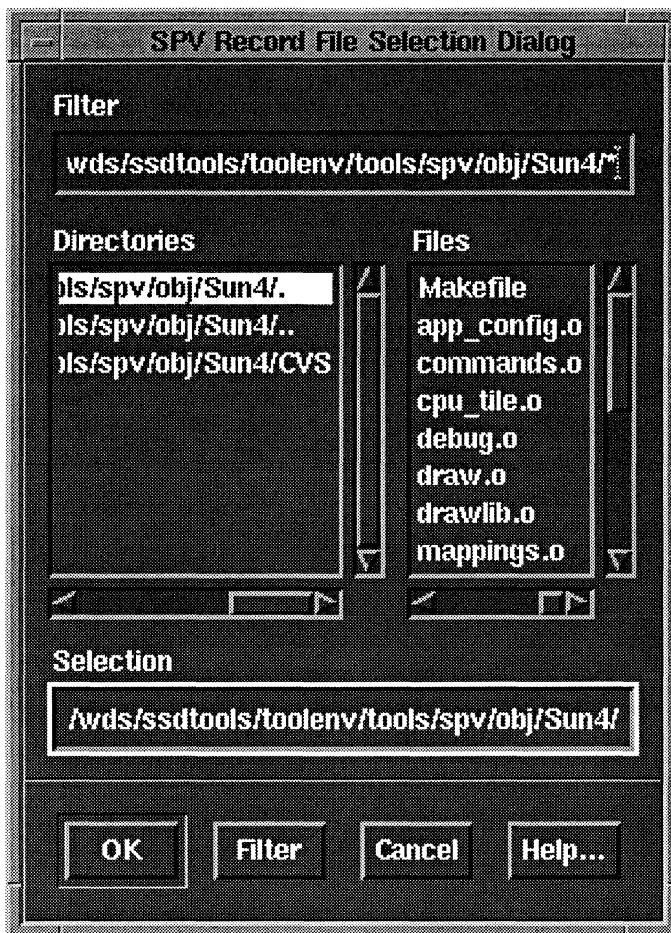
Figure 2-6. Record File Selection Dialog

To select a file for recording, select a file name and then select the OK button.

If you specify a file (directory or special file) other than an ordinary file, SPV displays an error dialog that contains the following message:

    Not a file: *file name*.

Select the OK error dialog button to dismiss the error dialog.

If you specify a file that already exists, and the file is write protected, SPV displays an error dialog that contains the following message:

    This file name is currently write protected: *file name*.

You must select OK to confirm the dialog, and then change the file permissions, delete the file, or use another file name.

If you specify a file that already exists, and the file is not write protected, SPV displays a question dialog that contains the following message:

```
File already exists, delete?
```

If you select the question dialog Yes button, the question dialog and file selection dialog are dismissed, and the existing file is deleted and used as the recording file. If you select the No button, the question dialog is dismissed and the file selection dialog remains.

If you specify the same file name that is currently being used to Playback performance data (see *Open Playback*), SPV displays an error dialog containing the following message:

```
The file that you want to create is the same as the playback file:
file name.
```

Select the OK error dialog button to dismiss the error dialog.

The file selection dialog's features are as follows:

Filter

This text field contains the filter for displaying files. All file names are displayed, but you have the option of filtering out files by using file name wild cards.

Directories

All directories in the current directory that pass through the filter are listed. Selecting a directory makes it the current directory.

Files

All files in the current directory that pass through the filter are listed. It is possible for the list to be empty if no files match the filter or if the current directory is empty. If a file is selected, it becomes the selection for the file dialog.

Selection

This text field contains the name of the currently-selected record file.

OK

When you select the OK button, SPV checks the file in the selection text field. If the file is valid, the file selection dialog is dismissed and the Record dialog appears. If the file is not valid, error and question dialogs appear.

Filter

When selected, the entry in the Filter field is used to obtain a new file list and directory list.

Cancel

When selected, SPV dismisses the file selection dialog.

Help

The help button displays help information on the Record Data topic.

Record Data Dialog

Once you have chosen a file name, the file selection dialog is dismissed, and the Record dialog appears to allow you to control the recording of the performance data. Figure 2-7 shows the Record dialog.

Figure 2-7. Record Dialog

The Record dialog contains record information, a toggle button that signifies to start the record mode, a Done button, and a Help button. The initial record state is to not record (the toggle button out). In order to start the recording, you must select the toggle button. The record dialog box contains the following features:

File

The name of the file where the performance data is to be recorded.

Bytes

The total number of bytes in the file, including any header information. This field changes as SPV records each new image.

Image

The current SPV display or image. The images or displays are numbered sequentially from the beginning of the recording. This field changes as SPV records each new image.

Select to Start/Stop Recording

This toggle button activates the record mode.

Done

The Done button exits the record mode. SPV closes the record file and dismisses the Record dialog.

Help

The help button displays help information on the SPV Record features.

Host Name

The **Host Name** command allows you to specify the name of the Paragon system to be displayed. Figure 2-8 shows the Host Name dialog.

Figure 2-8. Host Name Dialog

The Host Name dialog's features are as follows:

Enter Host Name

The text field below this label is where you type the Paragon system host name or IP address.

OK

When you select the OK button, SPV checks the host name in the text field. If SPV is able to connect to the Paragon system, the Paragon system name appears in the SPV title bar, and SPV starts displaying system performance data. If SPV is unable to connect to the Paragon system, the status line and an error dialog are displayed containing the following message:

```
Can not connect to host name.
```

Select the error dialog OK button to dismiss the error dialog.

Cancel

When selected, SPV dismisses the Host Name dialog.

Help

The help button displays help information on the Host Name topic.

Save Options

The **Save Options** command saves the options, colors, and patterns that you can dynamically configure with the Options menu dialogs. The options, colors, and patterns are written out as SPV X resources to the file *Spv* in your home directory. The next time you run SPV, the standard X resource search path reads the file *Spv* in your home directory and uses these resources to override any application default X resources.

When you save the options, colors, and patterns with the **Save Options** command, SPV displays an information dialog with the following message:

```
The changes have been made to your Spv resource file. The changes
will take effect next time you execute spv.
```

Select the information dialog OK button to dismiss the information dialog.

If access permissions are not set correctly on your resource file, SPV displays an error dialog with the following message:

```
Can't open filename: permission denied.
```

pathname is the name (with full path) of your resource file. Select the error dialog OK button to dismiss the error dialog.

Data Collection

The **Data Collection** menu is a pull right menu with the following two submenu commands: **Pause** and **Continue**. These commands allow a root-privileged user to temporarily stop (pause) SPV data collection, and once the data collection is stopped, to continue data collection once again.

The **Pause** command stops data collection, but SPV data collection processes are still allocated on every node. For the **Pause** command, a question dialog appears with the following message:

```
Are you sure you want to stop the SPV data collection?
```

Selecting the question dialog Yes button stops SPV data collection. Selecting either dialog button dismisses the dialog.

When data collection is stopped, at the next time interval update of the SPV display an error dialog appears with the following message:

```
SPV data collection stopped by root user at time stopped.
```

Selecting the OK button dismisses the error dialog, but the status line still contains the error message. The SPV utilization display does not change and shows the state of the system at the time the data collection was stopped.

When the root user selects the **Continue** command to start SPV data collection, at the next timer interval update of the SPV display, an information dialog appears with the following message:

```
Data collection resumed.
```

Selecting the OK button dismisses the information dialog. The SPV status line is replaced with the normal operating message that describes what is being displayed.

SPV ignores selecting the **Continue** command when the data collection is already started.

Exit

The **Exit** command allows you to exit SPV. SPV displays a question dialog with the following message:

```
Are you sure that you want to exit SPV?
```

If you select the Yes button, SPV exits. If you select the No button, SPV continues to display performance data. Selecting either the Yes or No button dismisses the question dialog.

Options Menu

The **Options** menu is to the right of the **File menu** and contains the following commands:

* **Change Data Display Options**

* **Show Utilization Color Mappings**

* **Show Partition Color Mappings**

* **Change Color Options**

Figure 2-9 shows the options menu.
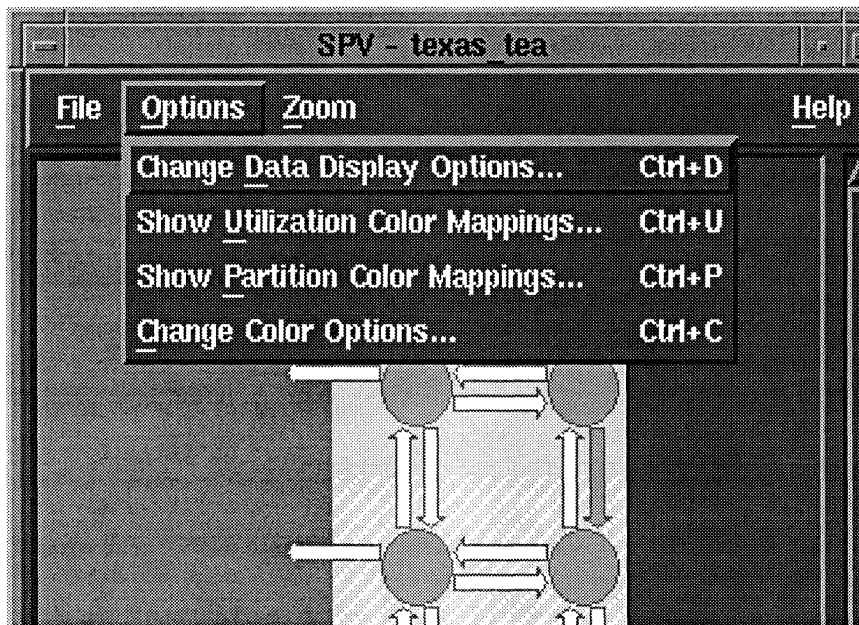
Figure 2-9. Options Menu

Change Data Display Options

The **Change Data Display Options** command allows you to modify various SPV display options. Figure 2-10 shows the Display Options dialog you can use to modify the SPV display options.
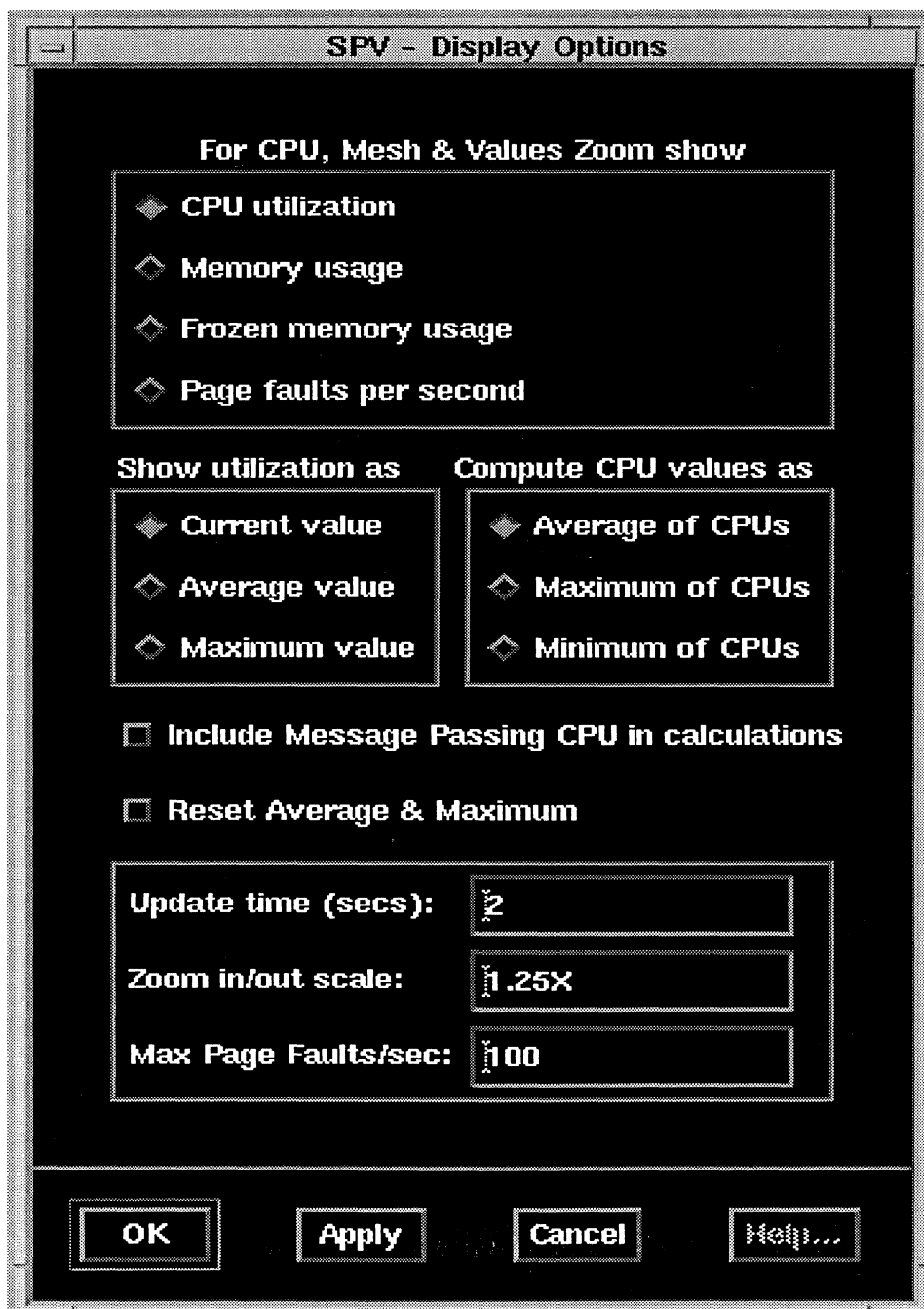
Figure 2-10. Display Options Dialog

The Display Options dialog allows you to change the following:

- what utilization values are displayed

- how the CPU values are computed

- whether the message passing process is included in the CPU calculations

- the update time

- the zoom scale factor

- the maximum page fault rate

The Display Options dialog features are as follows:

For CPU, Mesh & Values Zoom show

This region contains the following buttons:

- CPU Utilization

- Memory usage

- Wired memory usage

- Page faults per second

The currently-selected button determines which information is displayed in the CPU, Mesh, and Value displays. The SPV status line also reflects what is being displayed.

Show utilization as

This region contains three radio buttons that allow you to choose what utilization values are displayed. The buttons are:

Current value   displays the current utilization value

Average value   displays a running average of the utilization values

Maximum value   displays the maximum utilization value obtained to this point

The average and maximum values can be reset to zero at any time with the **Reset Average & Maximum** toggle button.

Compute CPU values as

If the Message Passing processor is included in the CPU calculations, this region is used to specify how CPU utilization is computed for the CPU display, the Mesh Display, and the background CPU color for the values display. The region contains three radio buttons. By selecting the buttons you can specify that SPV show the average of the CPUs, the maximum of the CPUs or the minimum of the CPUs.

Include Message Passing CPU in calculations

This toggle button is used to specify whether the message passing CPU is included in the CPU calculations. If the toggle button is out, the message passing CPU is not included. If the toggle button is in, the message passing CPU is included in the CPU calculations.

Reset Average & Maximum

This toggle button allows you to reset the computed average and maximum values. SPV can display either the current utilization values, a running average, or the maximum value. This toggle button resets the average and maximum values to zero. From the point at which the values are reset, SPV computes new values. After you select the OK or Apply button, the toggle button resets to the off, or out position.

Update Time (secs)

You can modify this text field to specify the SPV update time interval. This is the time interval at which the SPV display is updated. The time is specified in seconds and can range from 0 to the largest positive integer. A value of zero indicates to update as fast as possible. If you enter an illegal value, SPV displays an error dialog with the following message:

```
Illegal negative update time.
```

Zoom in/out scale

You can modify this text field to specify the scale factor that is multiplied by the current display to zoom either in or out. The scale factor is specified as a floating point number (an x or X is permitted as a suffix and is ignored). If you enter an illegal value, SPV displays an error dialog with the following message:

```
Illegal Zoom in/out scale. Valid values: 1.0 <= scale <= 100.0".
```

Max Page Faults/sec

Because page fault information is given in terms of page faults per second, a maximum page fault value is needed to convert to a 0% to 100% range. You can specify that maximum in this field. The value must be greater than zero.

Show Utilization Color Mappings

The **Show Utilization Color Mappings** command displays a custom dialog that contains the mapping of utilization values to color, gray scale, and stipples. The dialog contains a table with the range of utilization values on the left and the corresponding color, gray scale, and stipple on the right. When a utilization value falls within a range, SPV uses the corresponding color, gray scale, and stipple to represent that utilization value in utilization displays.

The smallest range change is 0.1%. A value of less than 0.1% indicates any value greater than zero but less than 0.1%. For the default color mappings display the header "Any%" appears in the second to last color-value pair and the last color-value pair is 0% - 0%. You can change the utilization color mappings with the Change Color Options dialog or the SPV utilizationColors X resources.

Figure 2-11 shows the Utilization Color Mappings dialog. The dialog contains OK and Help buttons. When you select the OK button, SPV dismisses the dialog. When you select the Help button, SPV displays a help dialog on the Utilization Color Mappings topic.
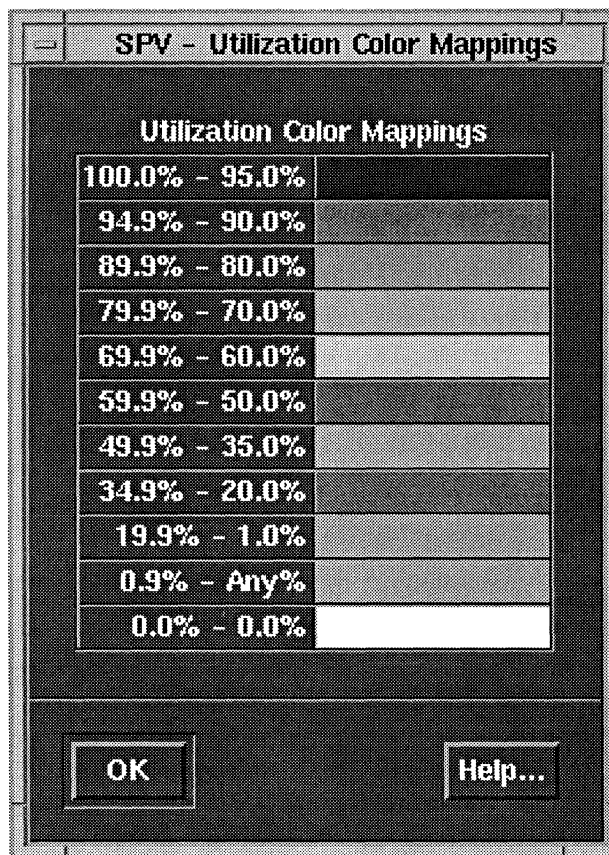
Figure 2-11. Utilization Color Mappings Dialog

Show Partition Color Mappings

The **Show Partition Color Mappings** command displays a custom dialog box that contains the mapping of partitions to color, gray-scale, and stipples. The dialog contains a table with the full partition name on the left and the corresponding color, gray scale, and stipple on the right. When a node falls within the partition, SPV displays the corresponding color as the node's background color. You can change the partition color mappings with the SPV Change Color Options dialog or the partitionColors X resource.

Figure 2-12 shows the Partition Color Mappings dialog. The dialog contains OK and Help buttons. When you select the OK button, SPV dismisses the dialog. When you select the Help button, SPV displays a help dialog on the Partition Color Mappings topic.
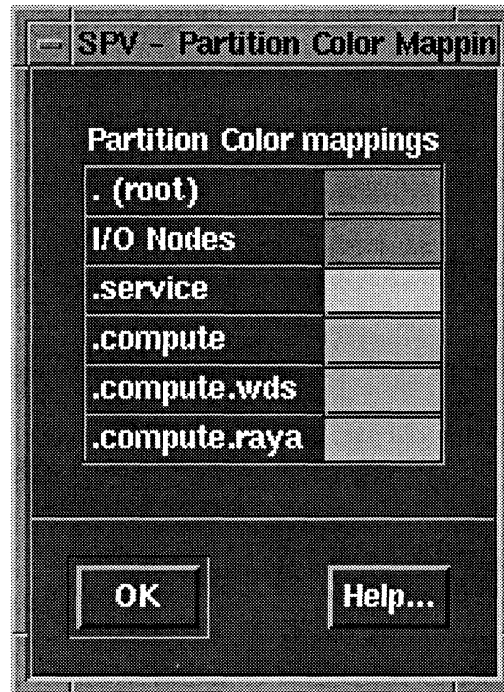
Figure 2-12. Partition Color Mappings

The order in which the partitions are listed in the dialog is also the same order in which the partitions are applied to the nodes, except the service partition is always applied last. Because the Paragon system supports sub-partitions and partitions that overlap, the color shown for the background of the node corresponds to the last partition in the list or the leaf components of the partition tree. The one exception is the service partition which is always the last partition applied to the nodes.

Change Color Options

The **Change Color Options** command allows you to change the color and stipple of the text foreground and background in the display area, as well as the utilization and partition colors. When you select the **Change Color Options** command, SPV displays the Choose Patterns and Colors dialog, shown in Figure 2-13. At the top of the dialog is a pop-up menu used to select which color is to be changed. The pop-up menu is divided into three sections: the top section for selecting the display area text foreground and background colors, a middle section for selecting the utilization colors & stipples and the bottom section for selecting the partition colors & stipples.

As you choose a color and stipple pattern, the area under the pop-up menu at the top of the dialog changes and the corresponding SPV display item also changes to show the color and pattern.

You can also use the dialog to find a particular partition. If you use the pop-up menu to select a partition name, SPV immediately applies the partition's color and stipple to the nodes. By changing the partition color and stipple, you can immediately see which nodes are in the partition.
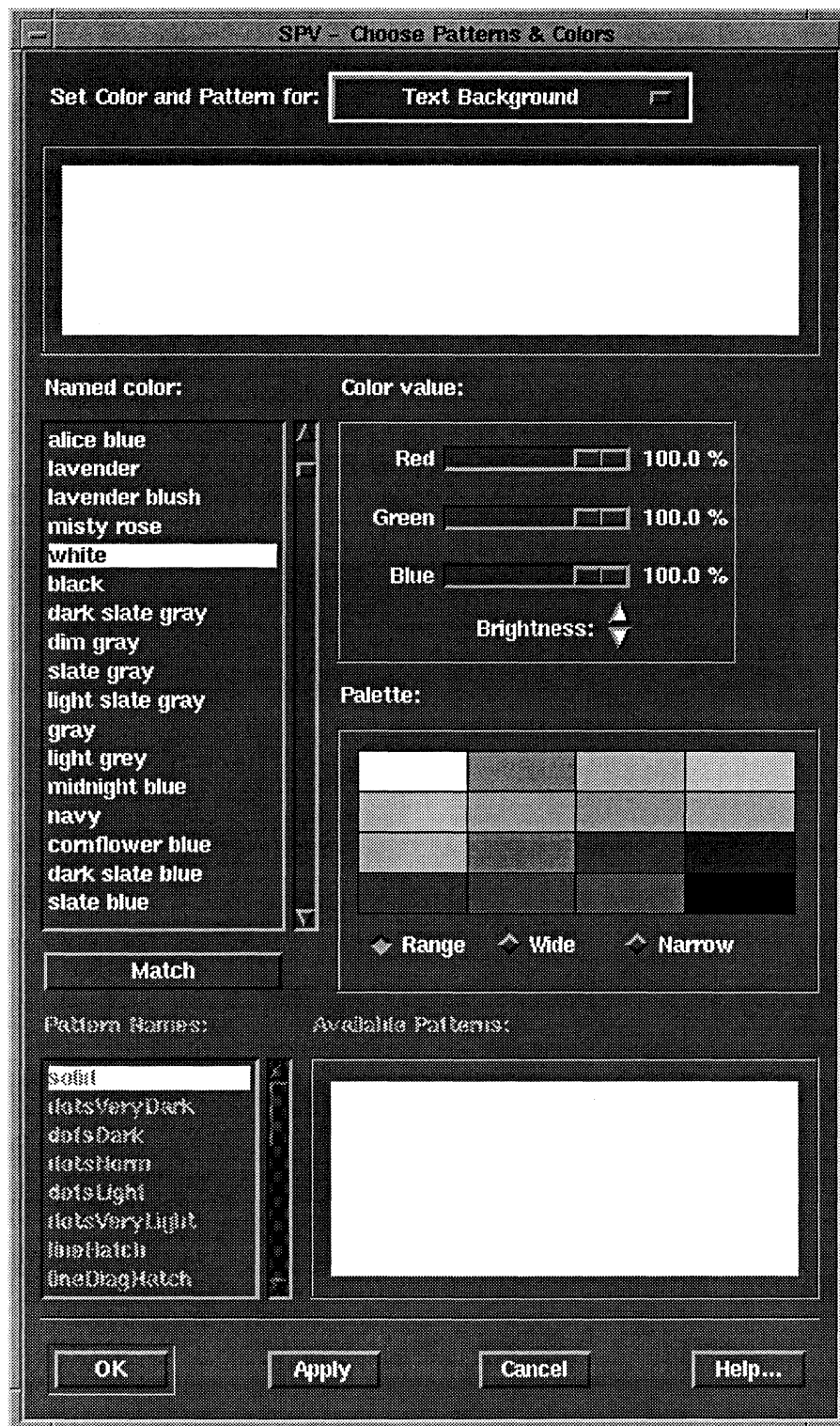
Figure 2-13. Choose Patterns and Colors Dialog

The features of the Choose Patterns and Colors dialog are as follows:

Set Color and Pattern for

This pop-up menu allows you to specify which display feature you want to set colors and patterns for. The current color to be changed is shown within the large area immediately below the pop-up menu.

Named Color

This area contains a listing of the colors you may choose.

Color value

This area contains three scale widgets and two arrow buttons that allow you to adjust the red/green/blue components and the brightness of the currently selected color. By moving the scales, you can change the red/green/blue components of the selected color. The Brightness up arrow makes the selected color brighter while the down arrow makes the selected color darker.

Palette

This area contains a palette of related colors and three radio buttons. The radio buttons control the colors depicted in the palette. The radio buttons are:

Range	displays a range of colors in the palette
Wide	displays a wide range of colors similar to the selected color
Narrow	displays a narrow range of dark to light of the selected color

Match

If you set a color with the *Color value* scales or by the *Palette*, you can use the Match button to find the closest corresponding color name. The color list under the header *Named color* highlights the name of the color.

Pattern Names

This area contains the names of the stipples SPV supports. If you select one of the names, the stipple pattern is applied to the selected color.

Available Patterns

Choosing one of the patterns shown in this area applies the pattern to the selected color.

OK

Saves the changes made to the dialog.

Apply

Saves the changes made to the dialog.

Cancel

Discards the changes made and dismisses the dialog.

Zoom Menu

The **Zoom** menu provides commands to enlarge or shrink a display (zoom in or out) and to zoom directly to different graphical displays. The SPV displays are scalable to any size. You can configure the zoom scale with the Display Options dialog from the Options menu.

Figure 2-14 shows the **Zoom** menu.
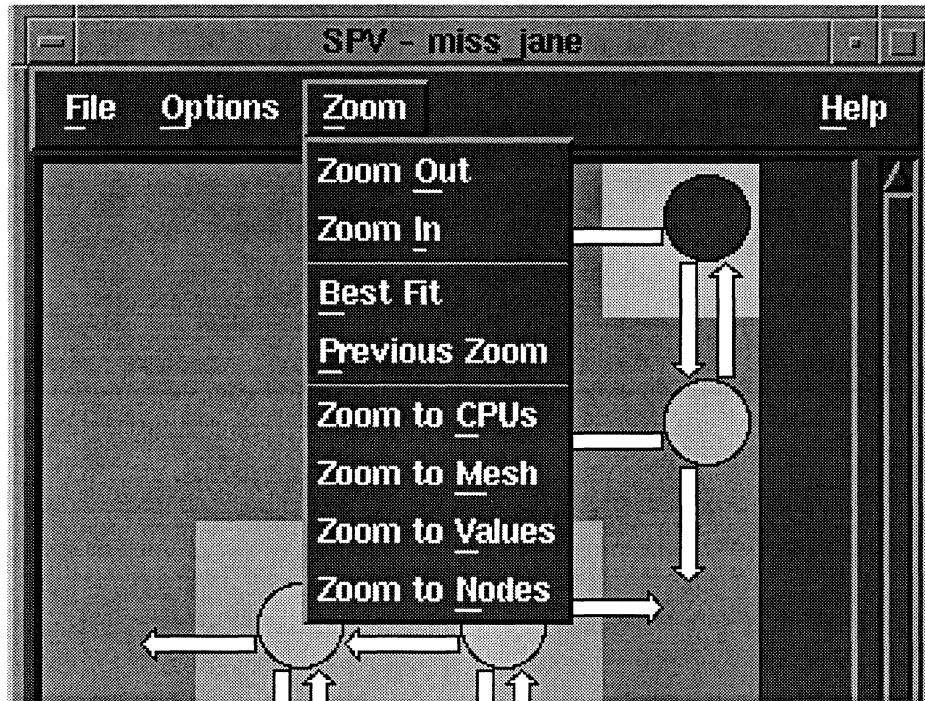
Figure 2-14. Zoom Menu

Zoom out

The **Zoom out** command allows you to zoom out. The display area becomes smaller by the zoom in/out scale factor (see *Display Options*). The same image appears, but smaller.

Zoom in

The **Zoom in** command allows you to zoom closer.The display area becomes larger by the zoom in/out scale factor (see *Display Options*). The same image appears, but larger.

Best Fit

The **Best Fit** command allows SPV to compute the largest picture that can be displayed in the display area. You can use this command to quickly find the largest zoom that shows the entire system. This is the default zoom that SPV uses when it is started in order to fit the entire system display inside the geometry of the SPV window.

Previous Zoom

The **Previous Zoom** command allows you to switch back to a previous zoom display. SPV maintains a stack of the last four zooms.

Zoom to CPUs

The **Zoom to CPUs** command allows you to change the display to the CPU display.

Zoom to Mesh

The **Zoom to Mesh** command allows you to change the display to the Mesh display.

Zoom to Values

The **Zoom to Values** command allows you to change the display to the Values display.

Zoom to Nodes

The **Zoom to Nodes** command allows you to change the display to the Nodes display.

Help Menu

The **Help** menu provides commands to display help information. Figure 2-15 shows the **Help** menu.
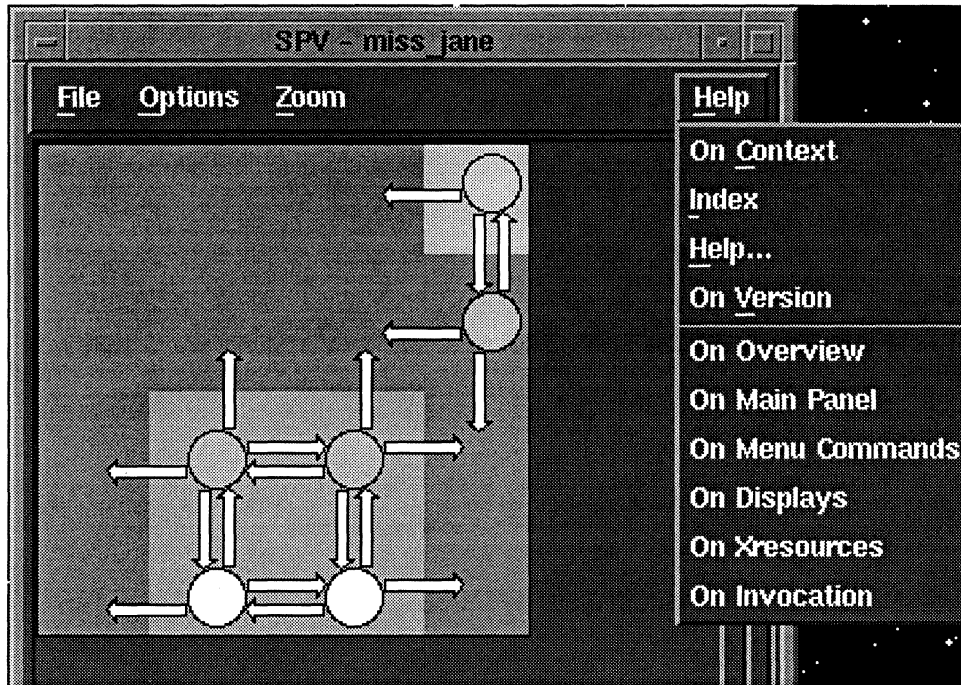
Figure 2-15. Help Menu

On Context

The **On Context** command provides context-sensitive help about the situation that exists when help is requested. When you select this command, the pointer shape changes to a question mark. Selecting any part of the SPV window displays a help dialog specific to the part of SPV selected.

Index

The **Index** command displays a scrolled list that contains an index of the SPV help topics. You can select a topic, and a help dialog appears for that topic. When you select the Done button, SPV dismisses the index dialog. Figure 2-16 shows a help index dialog.

Figure 2-16. Help Index Dialog

On Help

The **Help** command provides information about SPV's help facilities. A help dialog appears that describes how to use the help facilities.

On Version

The **On Version** command displays a dialog showing the name, version, and date of SPV. Selecting the OK button dismisses the version dialog.

On Overview

The **On Overview** command displays a help dialog that provides an overview of SPV.

On Main Panel

The **On Main Panel** command displays a help dialog that provides help on SPV's main panel.

On Menu Commands

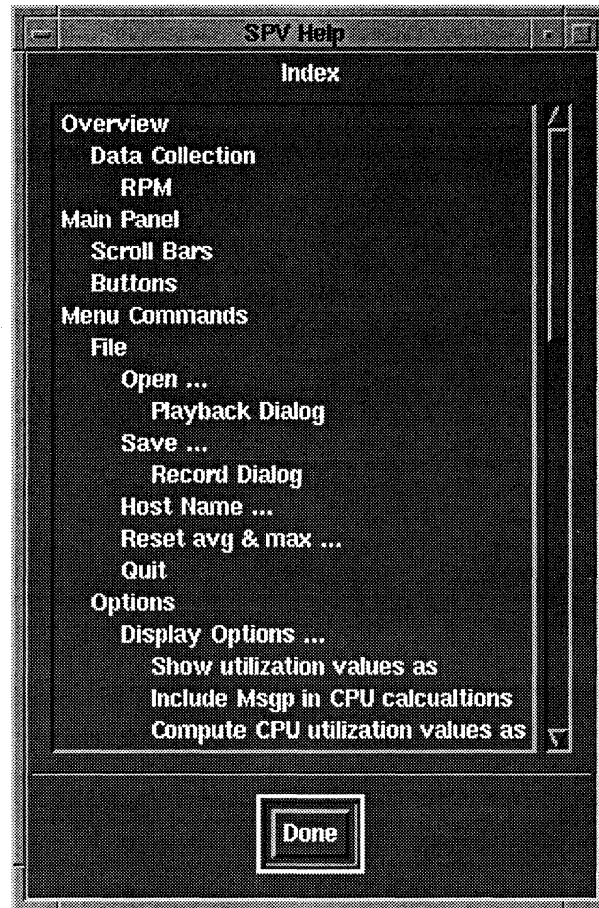The **On Menu Commands** command displays a help dialog that provides help on SPV's menu commands.

On Display

The **On Display** command displays a help dialog that provides help on SPV's graphical displays.

On Xresources

The **On Xresources** command displays a help dialog that provides help on SPV's X resource specifications.

On Invocation

The **On Invocation** command displays a help dialog that provides help on SPV's command line syntax.

Help Dialog

A help dialog appears whenever you choose a specific help topic. As shown in Figure 2-17, the dialog contains text giving help on the requested topic, a subtopics menu, and a Done button. Selecting the Done button dismisses the help dialog.
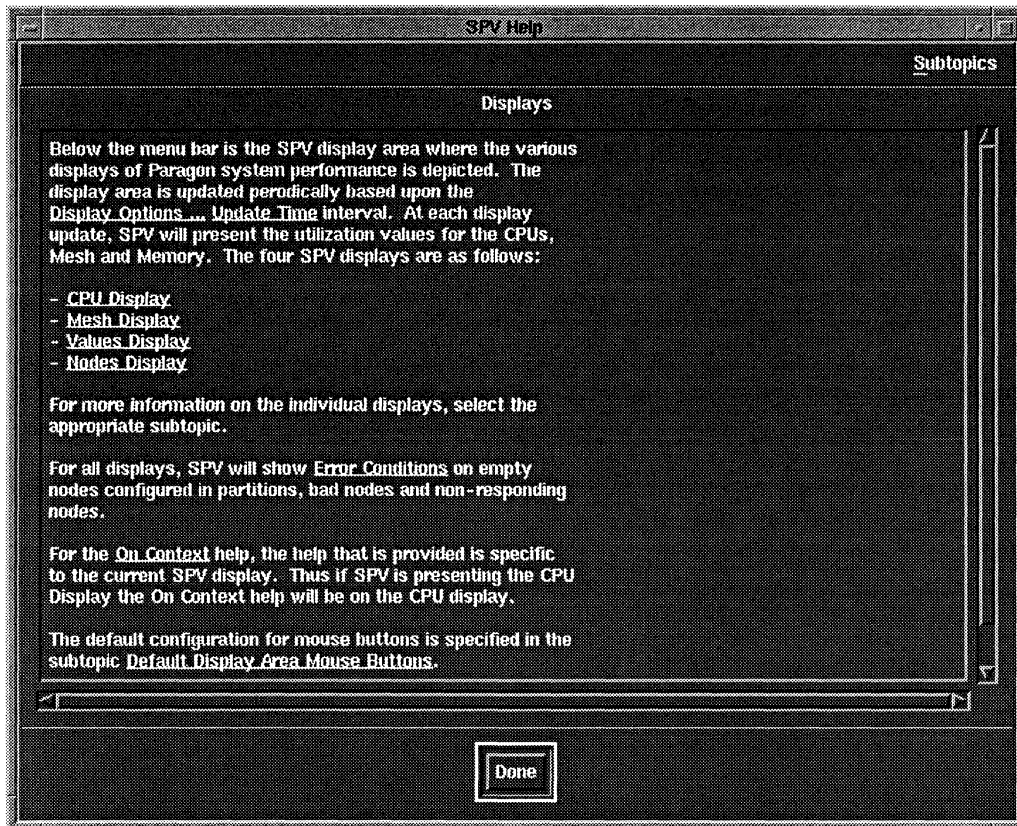
Figure 2-17. Help Dialog

In the help text, keywords or phrases that are underlined denote subtopics for which further help information exists. If you select an underlined item by clicking on it, a new help dialog appears giving help on the selected keyword or phrase. The same keywords and phrases are also presented in the subtopics menu at the upper right of the dialog. Figure 2-18 shows the help dialog subtopics menu.
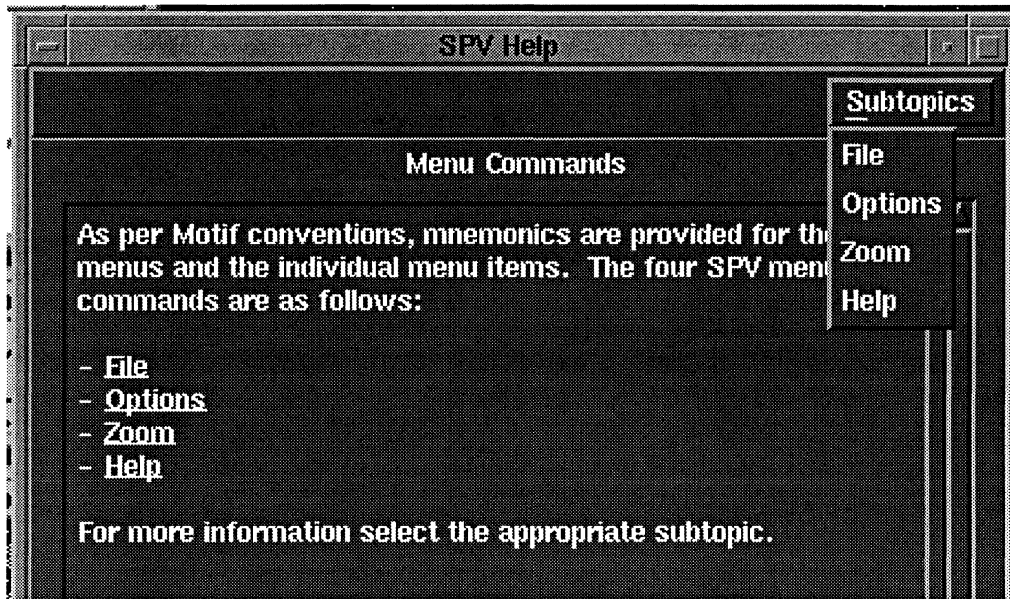
Figure 2-18. Help Dialog Subtopics Menu

Configuring SPV   3

You can configure SPV by using X resources. Refer to the X documentation for definitions of the X resources. The SPV resources fall into the following configuration categories:

- File name X resources

- Display option X resources

- Utilization colors X resources

- Partition colors X resources

- Font X resources

- Mouse button 2 and mouse button 3 X resources

- Keyboard accelerator X resources

File Name X Resources

The X resources that configure SPV file or path names are as follows:

Spv*fileName:

The file name resource specifies the file opened by SPV to playback previously saved system data. Refer to the descriptions of the File Menu **Open Playback** and the File Menu **Record Data** commands.

Spv*hostName:

The host name resource specifies the Paragon™ system to which SPV connects and for which SPV displays system performance information. Refer to the description of the File Menu **Host Name** command.

Display Option X Resources

The X resources used to configure the SPV Options Menu Display Options are shown in Table 3-1.

Table 3-1. Display Option X Resources

X Resource	Value
Spv*showUtilizationOf:	{cpu I memory I wired I faults}
Spv*maxPageFaults:	*positive number greater than 0*
Spv*showUtilizationAs:	{current I average I maximum}
Spv*includeMsgPinCPUs:	{True I False}
Spv*computeCPUutilizationAs:	{average I minimum I maximum}
Spv*updateTime:	*positive integer value*
Spv*zoomScale:	1.0 <= *float value* <= 100.0

Refer to the description of the Options Menu **Display Options** command for a detailed description of what is changed by these X resources.

Utilization Colors X Resources

The X resources to change the utilization color mappings are shown in Table 3-2.

Table 3-2. Utilization Colors X Resources

X Resource	Value
Spv*utilizationColors:	*float color_name float color_name...*
Spv*utilizationStipples:	*float stipple_name...*

Both of these resources are a set of values, where the first value is a floating-point value specifying a utilization value from 0.0 to 100.0 percent. The second value is either an RGB color value, an RGB color name as defined in */usr/lib/X11/rgb.txt* or an SPV stipple name. RGB names must be one name, rather than two names separated by a blank. An example utilizationColors resource is as follows:

Spv*utilizationColors: 90.0 red \
                                                          80.0 yellow \
                                                          60.0 blue \
                                                          20.0 green \
                                                          0.0 white

This example utilizationColors resource specification defines colors for 5 ranges:

100.0% - 90.0	red
89.9% - 80%	yellow
79.9% - 60.0%	blue
59.9% - 20.0%	green
19.9% - 0.0%.	white

If, for example, the utilization value falls within the 79.9% - 60.0% range, the color blue is displayed. If the values are given out of order in the specification, such as "20.0 green" being specified before "60.0 blue", the same ranges are displayed, since SPV reorders the values in ascending order. Any value less than 0.1 indicates a range of any value greater than zero. In the Utilization Color Mappings dialog and the Color Preferences dialog any value less than 0.1% is indicated by "Any%". The maximum number of ranges and colors that can be defined is 20.

For the Spv*utilizationStipple resource a stipple pattern is specified instead of a color. The stipple names are as follows:

solid	lineHatch	largeLineHatch
dotsVeryDark	lineDiagHatch	largeLineDiagHatch
dotsDark	lineDiagRight	largeLineDiagRight
dotsNorm	lineDiagLeft	largeLineDiagLeft
dotsLight	lineVert	largeLineVert
dotsVeryLight	lineHoriz	largeLineHoriz
stipple	boxes	cross_weave
dimple1	dimple3	none

Partition Colors X Resources

The X resources to change the partition color mappings are shown in Table 3-3.

Table 3-3. Partition Colors X Resources

X Resource	Value
Spv*partitionColors:	*partition_name color_name...*
Spv*partitionStipples:	*partition_name stipple_name...*

Both of the resources are a set of values, where the first value is the full name of the partition and the second value is either an RGB color value, an RGB color name as defined in */usr/lib/X11/rgb.txt* or an SPV stipple name (listed previously in *Utilization Colors Xresources*). RGB names must be one name, rather than two names separated by a blank. A maximum of 16 partitions can be defined.

Font X Resources

The X resources to configure fonts are shown in Figure 3-4.

Table 3-4. Font X Resources

X Resource	Value
Spv*font1:	*font_name*
Spv*font2:	*font_name*
Spv*font3:	*font_name*
Spv*font4:	*font_name*
Spv*font5:	*font_name*
Spv*font6:	*font_name*

These resources control the fonts used to display SPV text in the display window. The fonts represent a range of point sizes from small (font1) to large (font6). These correspond to the range of zooms from far-away zooms (zoom out) to close-in zooms (zoom in). The fonts do not have to be from the same font family or have particular point sizes.

The default values for these fonts differ, depending on whether you are running SPV on an X11R5 server or not. Refer to Appendix A for a list of the default fonts.

Button 2 and Button 3 X Resources

The middle mouse button (button 2) and the right mouse button (button 3) can be reconfigured using the SPV button2 and button3 X resources. In Table 3-5, the left column defines the menu, the middle column defines the command, and the right column defines the X resource string used to specify what the button does.

Table 3-5. Button 2 and Button 3 X Resources

Menu	Command	X Resource
File	Open Playback...	open
File	Record Data...	record
File	Save Options	save
File	Host Name...	host
Options	Change Data Display Options...	options
Options	Show Utilization Color Mappings...	utilization
Options	Show Partition Color Mappings...	partitions
Options	Change Color Options...	colors
Zoom	Zoom Out	out
Zoom	Zoom In	in
Zoom	Best Fit	best
Zoom	Previous Zoom	previous
Zoom	Zoom to CPUs	cpus
Zoom	Zoom to Mesh	mesh
Zoom	Zoom to Values	values
Zoom	Zoom to Nodes	nodes

The buttons are only active when the corresponding menu command is active (sensitized). If the command is desensitized then the button is also desensitized.

You can not configure the left mouse button. By Motif convention, the left mouse button is used to select items. When you select a node in the Display Area, SPV zooms to the nodes display and centers the selected node inside the Display Area.

Keyboard Accelerator X Resources

SPV supports the standard Motif keyboard accelerator X resource conventions. The accelerators are specified first by the menu (file, options, zoom or help) name, followed by the menu item (command) name, followed by "accelerator" to define the accelerator key and "acceleratorText" to define the text placed in the pull-down menu. In Table 3-6, the left column defines the menu, the middle column defines the command, and the right column defines the X resource prefix used to specify the keyboard accelerator.

Table 3-6. Keyboard Accelerator X Resources

Menu	Command	X Resource
File	Open Playback...	file.open
File	Record Data...	file.record
File	Save Options	file.save
File	Host Name...	file.host
File	Exit	file.exit
Options	Change Data Display Options...	options.display
Options	Show Utilization Color Mappings...	options.utilization
Options	Show Partition Color Mappings...	options.partitions
Options	Change Color Options...	options.colors
Zoom	Zoom Out	zoom.out
Zoom	Zoom In	zoom.in
Zoom	Best Fit	zoom.best
Zoom	Previous Zoom	zoom.previous
Zoom	Zoom to CPUs	zoom.cpus
Zoom	Zoom to Mesh	zoom.mesh
Zoom	Zoom to Values	zoom.values
Zoom	Zoom to Nodes	zoom.nodes

Default SPV Configuration   A

The SPV default configuration is defined in the application defaults file:
/usr/lib/X11/app-defaults/Spv. The application defaults file documents the default SPV resources, including the following:

* General resources

* Keyboard accelerators

* File name resources

* Display option resources

* Button resources

* Font resources

* Color terminal resources

* Gray scale resources

* Monochrome resources

The following tables list the SPV defaults for these resources. Note that there are two tables for font resource defaults. Table A-6 shows the font defaults for an X11R5 server, and Table A-7 shows the font defaults for a non-X11R5 server (for example, X11R4, OpenWindows).

Table A-1. General Resource Defaults

Resource	Default Value
Spv*fontList:	variable
Spv.Geometry:	600x350
Spv*textForeground:	black
Spv*textBackground:	white

Table A-2. Keyboard Accelerator Defaults

Resource	Default Value
Spv*file*open.accelerator:	Ctrl<Key>O
Spv*file*open.acceleratorText:	Ctrl+O
Spv*file*record.accelerator:	Ctrl<Key>R
Spv*file*record.acceleratorText:	Ctrl+R
Spv*file*save.accelerator:	Ctrl<Key>S
Spv*file*save.acceleratorText:	Ctrl+S
Spv*file*host.accelerator:	Ctrl<Key>H
Spv*file*host.acceleratorText:	Ctrl+H
Spv*file*exit.accelerator:	Ctrl<Key>E
Spv*file*exit.acceleratorText:	Ctrl+E
Spv*options*display.accelerator:	Ctrl<Key>D
Spv*options*display.acceleratorText:	Ctrl+D
Spv*options*utilization.accelerator:	Ctrl<Key>U
Spv*options*utilization.acceleratorText:	Ctrl+U
Spv*options*partitions.accelerator:	Ctrl<Key>P
Spv*options*partitions.acceleratorText:	Ctrl+P
Spv*options*colors.accelerator:	Ctrl<Key>C
Spv*options*colors.acceleratorText:	Ctrl+C

Table A-3. File Name Resource Defaults

Resource	Default Value
Spv.fileName:	N/A
Spv.hostName:	N/A
Spv.helpFile:	spv.hlp

Table A-4. Display Option Resource Defaults

Resource	Default Value
Spv.showUtilizationOf:	cpu
Spv.maxPageFaults:	100
Spv.showUtilizationAs:	current
Spv.includeMsgPinCPUs:	false
Spv.computeCPUutilizationAs:	average
Spv.updateTime:	2
Spv.zoomScale:	1.25

Table A-5. Button Resource Defaults

Resource	Default Value
Spv.button2:	previous
Spv.button3:	utilization

Table A-6. Font Resource Defaults (X11R5 Servers)

Resource	Default Value
Spv*font1:	-bitstream-charter-bold-r-normal--9-*-*-*-*-*-iso8859-1
Spv*font2:	-bitstream-charter-bold-r-normal--10-*-*-*-*-*-iso8859-1
Spv*font3:	-bitstream-charter-bold-r-normal--11-*-*-*-*-*-iso8859-1
Spv*font4:	-bitstream-charter-bold-r-normal--12-*-*-*-*-*-iso8859-1
Spv*font5:	-bitstream-charter-bold-r-normal--13-*-*-*-*-*-iso8859-1
Spv*font6:	-bitstream-charter-bold-r-normal--14-*-*-*-*-*-iso8859-1

Table A-7. Font Resource Defaults (Non-X11R5 Servers)

Resource	Default Value
Spv*font1:	-adobe-new century schoolbook-medium-r-normal-*-8-*-*-*-*-*-
Spv*font2:	-adobe-new century schoolbook-medium-r-normal-*-10-*-*-*-*-*-
Spv*font3:	-adobe-new century schoolbook-medium-r-normal-*-12-*-*-*-*-*-
Spv*font4:	-adobe-new century schoolbook-medium-r-normal-*-14-*-*-*-*-*-
Spv*font5:	-adobe-new century schoolbook-medium-r-normal-*-18-*-*-*-*-*-
Spv*font6:	-adobe-new century schoolbook-medium-r-normal-*-24-*-*-*-*-*-

Table A-8. Color Terminal Resource Defaults

Resource	Default Value
Spv*foreground:	white
Spv*background:	#165284
Spv*alert_dialog.foreground:	#165284
Spv*alert_dialog.background:	white
Spv*selectColor:	limegreen
Spv.utilizationColors:	95.00 #BF0000 90.00 #F95D42 80.00 #ED9D00 70.00 #FFD100 60.00 #FFFF00 50.00 #00CD66 35.00 #7FFF00 20.00 #00B2EE 1.00 #00FFFF 0.01 #B0B0C8 0.00 #FFFFFF
Spv.utilizationStipples:	N/A
Spv.partitionColors:	. #8C8C8C IO #0000FF .service #F0E68C .compute #BBFFFF
Spv.partitionStipples:	IO largeLineHatch .compute largeLineDiagRight

Table A-9. Gray Scale Resource Defaults

Resource	Default Value
Spv*foreground:	black
Spv*background:	white
Spv*alert_dialog.foreground:	white
Spv*alert_dialog.background:	black
Spv*selectColor:	N/A
Spv.utilizationColors:	95.00 #000000 90.00 #000000 80.00 #606060 70.00 #808080 60.00 #A0A0A0 50.00 #404040 35.00 #707070 20.00 #7C7C7C 1.00 #000000 0.01 #000000 0.00 #FFFFFF
Spv.utilizationStipples:	95.00 solid 90.00 dotsVeryDark 80.00 solid 70.00 solid 60.00 solid 50.00 lineDiagHatch 35.00 lineHatch 20.00 cross_weave 1.00 dimple3 0.01 boxes 0.00 solid
Spv.partitionColors:	. #FFFFFF IO #8A8A8A .service #ABABAB .compute #D4D4D4
Spv.partitionStipples:	. solid IO boxes .service largeLineHatch .compute largeLineDiagRight

Table A-10. Monochrome Resource Defaults

Resource	Default Value
Spv*foreground:	black
Spv*background:	white
Spv*alert_dialog.foreground:	white
Spv*alert_dialog.background:	black
Spv*selectColor:	N/A
Spv.utilizationColors:	0.01 #000000 0.00 #FFFFFF
Spv.utilizationStipples:	95.00 solid 90.00 dotsVeryDark 80.00 dotsDark 70.00 largeLineDiagHatch 60.00 lineHatch 50.00 lineDiagHatch 35.00 cross_weave 20.00 dimple1 1.00 dimple3 0.01 boxes 0.00 solid
Spv.partitionColors:	. #FFFFFF IO #000000 .service #000000 .compute #000000
Spv.partitionStipples:	. solid IO boxes .service largeLineHatch .compute dotsNorm

Index

CPU display 1-2

CPU utilization 1-2, 1-6

customer service vii

D

data collection 2-17

data collection menu 2-17

default resource settings A-1

display
    CPU 1-2
    mesh 1-4
    node 1-6, 1-13
    values 1-5

display area 2-4

display option resources 3-2

DISPLAY variable 1-9

display window 2-1
    display area 2-4
    menus 2-2
    scroll bars 2-4
    size 1-2
    status line 2-3
    title bar 2-2

displaying failing nodes 1-13

displays 1-1
    zooming between 1-8

E

entering a host name 2-15

error conditions 1-11

errors
    blocking 1-12
    response 1-11
    socket 1-11

exit command 2-17

F

file menu 2-4
    data collection 2-17
    exit 2-17
    host name 2-15
    open playback 2-6
    record data 2-10
    save options 2-16

file name resources 3-1

files
    playback 2-6
    record file 2-10
    Spv resource file 2-16

font resources 3-4

front panel 2-1

G

getting assistance vii

H

help command 2-31

help menu 2-29
    help 2-31
    index 2-30
    on context 2-30
    on display 2-32
    on invocation 2-32
    on main panel 2-32
    on menu commands 2-32
    on overview 2-32
    on version 2-31
    on Xresources 2-32

host name
    entering 2-15

host name command 2-15