FUJITSU COMPUTERS SIEMENS

SINIX/windows ONLINE Documentation

Reliant UNIX 5.44
System Administration and Hardware Configuration Using the SYSADM User Interface

Edition October 1997

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1 Preface

SYSADM is a menu-driven user interface for the administration of Reliant UNIX systems. It is an extended version of the standard administration package OA&M (Operation, Administration, and Maintenance) of UNIX System V. This user interface is implemented using the FMLI (Form and Menu Language Interpreter), a tool for generating window-oriented menu systems. FMLI programs run on character-oriented screens and in alphanumeric windows.

1.1 Target group

This manual is intended for system administrators who manage Reliant UNIX systems and have a good knowledge of Reliant UNIX and a basic knowledge of hardware.

1.2 Summary of contents

The chapter " Operating SYSADM" contains general information on operating *SYSADM*. The functions of *SYSADM* are explained in this manual. You are provided with detailed information on filling out the different input forms. These chapters can be used as a reference for routine work with *SYSADM*, in conjunction with some of the publications listed in the section "Related publications", in particular the "System Administrator's Guide" and the "Network Administration" manual.
Finally, the appendix contains information on keyboard shortcuts and environment variables, as well as a list of abbreviations and related publications, and an index.

1.3 Changes compared with the previous version

The structure of the manual has been changed. In the previous version, a separate chapter was dedicated to each main menu item and its submenus, whereas now the functional description of SYSADM is based on the tasks that you, as system administrator, want to perform. Most of the screen dumps have been removed to make the manual easier to follow. We have also extended the index so that you can find what you are looking for more quickly.

1.4 Notational conventions

Certain words are highlighted using different fonts to make it easier for you to locate specific information in this manual. The following notational conventions are used in the body text:

italics
: Menu title and menu items in the *SYSADM* interface appear in italics, e.g. *Add Users or Groups* or *Applications*, etc. Italics are also used for variables, input fields in forms, file names and path names, and for general highlighting in the body text.

bold Bold is used throughout the body text for emphasis.

`typewriter text`
: Messages that are displayed by *SYSADM* in the message line appear in typewriter text, e.g. `Fill in the form and then press SAVE`.

`bold typewriter text`
: Commands entered in the *SYSADM* command line, or input entered in forms appear in this font.

<*variable*>
: In a small number of cases, angle brackets are used to indicate variable information in highlighted text, e.g.*errfile.*<*date*>*.Z*.

`[KEY SYMBOL]`
: Key symbols identify function keys in uppercase, as well as the keys on the keyboard itself, e.g. **`[RETURN]`** or **`[CHOICES]`**.

Tip:

This symbol indicates additional information which is important for understanding the surrounding text.

Warning:

This symbol is used to warn users of the risk of data loss.

-> This symbol identifies submenus of the SYSADM main menu, which you can select to perform the task you want to carry out with SYSADM.
Example: To create a new login name, select *users* -> *add*. A form is then displayed, from which you ultimately reach the form you need.

2 Operating SYSADM

This chapter describes how to work with the *SYSADM* environment. It explains how to log on and log off, identifies the menus, forms, and text windows, and describes how to use them. It also explains how to work quickly and effectively with *SYSADM* by using function keys, special keyboard shortcuts, and the command menu. Finally, it describes how the integrated *SYSADM* help system operates.

2.1 Starting SYSADM

From the UNIX shell, you can start *SYSADM* with the following command:

```
$ sysadm
```

If you are not the user *root*, you are then asked to key in the *SYSADM* password.
If a login name is created as a *SYSADM* login name, *SYSADM* is automatically started on the system when the user *sysadm* logs in.
In *SYSADM*, express mode allows you to execute a specific function quickly without having to work through all of the overlying menus. For this purpose, you must call *SYSADM* and the name of the desired function. If you have been assigned a password for using *SYSADM*, you must then enter this password.
With express mode, it is not always possible to jump directly from shell level to any submenu or any *SYSADM* action. Depending on the hardware configuration, for example, you may only get as far as the start menu in express mode and can therefore only enter *sysadm configuration*.
If the menu item that you wish to specify does not have a unique name (i.e. it occurs several times within *SYSADM*), but you know its position in the menu system, you can call it by specifying its menu path name. For example, if you wish to access the *add* action of the *file_systems* menu item, enter the following:

```
$ sysadm file_systems/defaults/add
```

However, if you specify a menu or form in an ambiguous manner, *SYSADM* will output a list containing all possible menu items, from which you can select the required item. This occurs with the following entry, for example:

```
$ sysadm add
```

If the names of the menu items or actions comprise more than one word, whereby the words are separated by blanks, the name must be enclosed in single quotes (**'**), e.g.

```
$ sysadm 'machine/reboot'.
```

Please note that when using express mode it is not possible to access menus or actions that are higher in the menu tree than those which you have already called. If, for example, you have entered the command *sysadm users/password* at shell level, it is not possible to return to the *users* menu by pressing **[CANCEL]**. Of course, this would have been possible if you had not used express mode to access the menu.

2.2 Terminating SYSADM

There are two ways of terminating *SYSADM*:

- Press the **[EXIT]** function key to return to the command line. If this function key cannot be activated in one of the menus, use the **[CANCEL]** function key to move back through the menu hierarchy until the **[EXIT]** function key can be activated again.
- Exit *SYSADM* using the *exit* command in the command menu (**[CMD-MENU]** function key). Activate the command by pressing **[RETURN]**.

When you exit *SYSADM* you automatically log out of the system, if you were working with the login name *sysadm*. If you called *SYSADM* in the UNIX shell, you return to the UNIX shell when you exit *SYSADM*.

2.3 Configuring SYSADM

Before you can use SYSADM you must define certain system parameters, which are described below.

2.3.1 Configuring the working environment

For correct screen presentation, you must set the *TERM* environment variable to the appropriate value for your terminal. The following table provides an overview of the most important terminals and the associated environment variables.

Terminal type	TERM variable	Comment
BA47	ba47, ba80, ba80-06, dap4x	ct06 keyboard
BA48	ba48 ba48-8	7-bit representation 8-bit representation
BA80, BA97	ba80, ba80-06, dap4x ba80-08 ba80-vt220	ct06 keyboard ct08 keyboard Terminal in unloaded state
97801 -VT	vt02 vt02-mf2 vt02-f	Function keys F1-F5 not freely available MF2 keyboard Function keys F1-F5 freely available
97801 -xxx, 97808 -xxx	97801, 97808	
TC20	pct, ansi-pct, ansi-tc20 97801 vt02	TC20 with ANSI emulation TC20 with 97801 emulation TC20 with VT emulation
TX100 TX100 -20	xterm	

Table 1: Possible TERM variables

If you are using a 97801-5xx terminal in 132-character mode, you should increase the number of columns to 132 using the environment variable *COLUMNS*:

```
$ COLUMNS=132; export COLUMNS
```

The texts in *SYSADM* have been internationalized, although only the two languages German and English are currently supported. The default is English. The environment variable

LC_MESSAGES or *LANG* is used to set the language. In this case, the value of the variable *LANG* is overridden by *LC_MESSAGES* if *LC_MESSAGES* is set, e.g. by SINIX/windows.
If you set the language with the variable LC_MESSAGES, the variable LC_TYPE must be set to the same value. For example, if you want to change the default language to "German", set the variable as follows:

```
$ LC_MESSAGES=DeDE.88591; export LC_MESSAGES
$ LC_CTYPE=De_DE.88591; export LC_CTYPE
```

If LC_MESSAGES is not set, use the variable LANG if you want to change the default language from English to German. For an 8-bit terminal, set the language variable such that the texts are displayed with German umlauts, e.g.:

```
$ LANG=De_DE.88591; export LANG
```

If your screen is only capable of running in 7-bit mode, e.g. the 97801 terminal, set the language variable in such a way that the texts are output without German umlauts, i.e:

```
$ LANG=De_DE.646; export LANG
```

If you want to change from German to English, set the language variable as follows:

```
$ LANG=En_US.ASCII; export LANG
```

2.3.2 Configuring terminal consoles for SYSADM

In order to work with *SYSADM* on your console, you must set certain system parameters and terminal parameters as appropriate. For information on how to set the terminal parameters, please refer to the operating instructions for your terminal.
If you have started *SYSADM* using the wrong terminal parameters, you can exit *SYSADM* in two ways in order to correct the terminal parameters.

- Press **[CTRL] [F7]**. Then enter the letter *e* and confirm your entry using the Return key.
- Press **[CTRL] [J]**. Then enter the letters *ex* and confirm your entry using the Return key. If the *LANG* variable has been set to *De_DE.88591* or *De_DE.646*, enter *exit* instead.

The terminals *97801-vt02*, *97801-524* and *TC20-V100* are currently used as consoles on RM systems. With the RM600, anRM200 can also be used as the console. If you are using a graphics monitor, you should use the SINIX/windows client *xpct*.

Tip:

If *SYSADM* is operated at the console, the screen mask may be destroyed under certain error conditions. If this happens, press **[F7]** to enter the command menu. Then select the menu item *refresh* to restore the screen mask.

Setting the 97801-vt02 terminal
The TERM variable must be set to *TERM=vt02*. The terminal parameters must be set as follows:

General setup menu		Host interface menu	
Terminal ID	VT220	Baud rate	1920 0
Terminal mode	7-bit control	Parity	off
User defined	locked	Character	8-bit

keys		length	
Cursor key mode	ANSI-control	Stopbit length	1-bit
New-line mode	off	XOFF	at 64
User-preferred set	DEC	Local echo mode	off
Communication	online	Transmit rate	limited

Table 2: Terminal parameters for the97801-vt02 terminal console

It is also recommended that you set the *x key function* to *BACKSPACE* in the *Keyboard setup menu*, and *Autowrap mode* to *on* in the *Display setup menu*.
Please note that for this terminal type the function keys *F6* to *F13* are used to control *SYSADM*.

Setting the 97801-524 terminal
The TERM variable must be set to *TERM=97801*. The terminal parameters must be set as follows:

Terminal mode menu		**Host interface menu**	
Emulation mode	SINIX-8-Bit	Baud rate	19200
Screen width	80-column	Parity	off
Local loop back	normal	Character length	8-bit
		Stopbit length	1-bit
		Modem line	dedicated

Table 3: Terminal parameters for the 97801-524 terminal console

Setting the TC20-V100 terminal
This terminal emulates the two terminals mentioned above. Recognition is automatic depending on the attached keyboard. Please refer to the operating instructions for the TC20 terminal to establish which keyboard is connected. The respective terminal settings correspond to those of the terminals described above.

2.4 The SYSADM screen

This section contains information on the layout of the *SYSADM* screen, and on how to work with windows, forms, and menus.

2.4.1 Functional areas of the SYSADM screen

The *SYSADM* screen can be divided into four functional areas. The layout of the screen is shown in figure "Layout of the SYSADM screen".

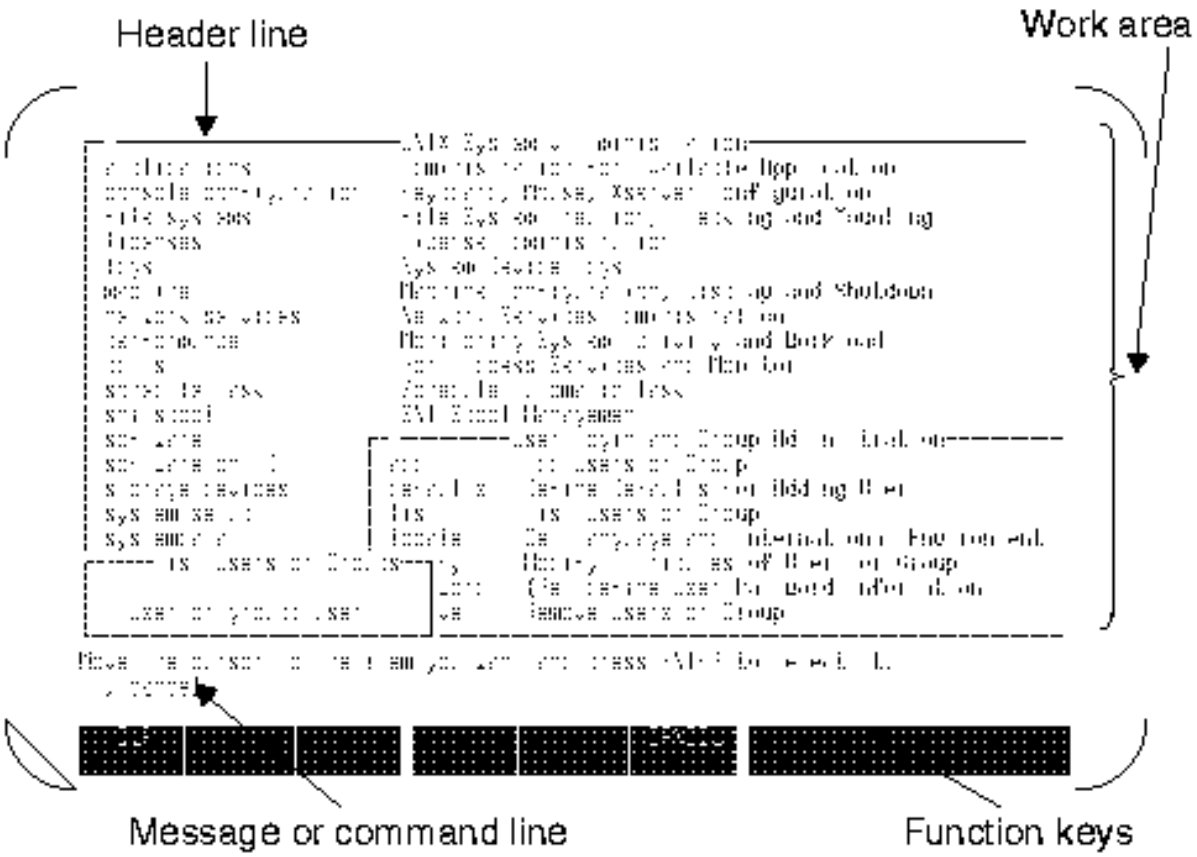

Figure 1: Layout of the SYSADM screen

Header line
: If *SYSADM* is currently processing a function, a message is displayed at the extreme right of this line. *SYSADM* cannot process any entries as long as this message is displayed.

Work area
: All menus, forms, and text windows where you can make entries are displayed in the work area.

Message line
: The first line below the work area is the message line. Operating instructions and error messages are displayed here.

Command line

The second line below the work area is the command line. In order to enter a command in the command line, you can use the keyboard shortcut **[CTRL] [J]** or [**CTRL] [F] [C]**. An input request then appears "-->". At this point you can also enter a shell command if it is preceded by an exclamation mark, for example:

```
!ls -l
```

Using the command line you can switch to another window by entering the number of the target window, which is specified in the title line before the window name.

Function keys

The current key allocation for the function keys is displayed in the bottom line of your *SYSADM* screen.

If there are no function keys or allocated keys available on the keyboard of your terminal, you can access the required function using alternative keyboard shortcuts. Please refer to section "Function keys" and section "Alternative keyboard shortcuts" for further information.

2.4.2 Windows

In the work area of the *SYSADM* screen, related information is combined in windows.

Tip:

Windows are numbered in the order in which they are opened. If a window is closed in the meantime, the original numbering is retained.

The representation of the cursor under *SYSADM* can vary depending on the terminal type set. The cursor marks the current menu entry, whereby a symbol is displayed to the left of the menu entry. On some terminals, the cursor symbol is the ">" character, on others it is the underscore "_" or an arrow pointing right "->". However, there are also terminals on which other symbols are used.

A question mark (?) after the device name identifies the devices that are not yet fully configured. The configuration of such devices must be confirmed and activated by a hardware analysis after adding, renaming, or copying their data records.

If a window contains more than two lines of content, the window normally has a black scroll bar on the right-hand side. If only part of the information can be displayed in a window, the symbols for upwards "^" and downwards "v" in the scroll bar indicate that there is more information further up or further down respectively.

The command line also contains the "-->" character, which appears as an input request if commands can be entered for *SYSADM* administration.

You can only access the content of **one** window at a time. You switch to another window via the command line.

There are three types of window: menus, forms, and text windows. The three types of window are illustrated in figure "Window types".

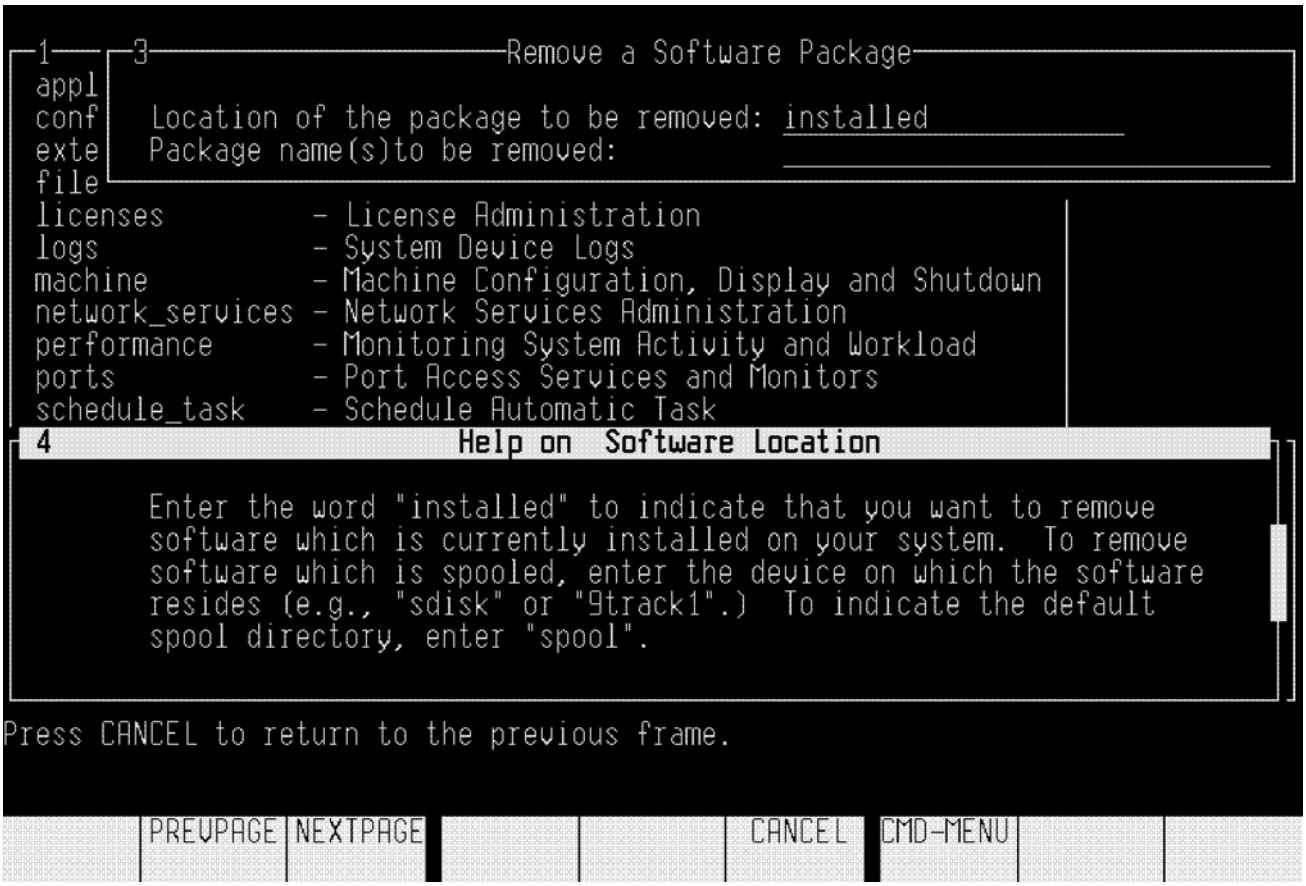

Figure 2: Window types

Three possible window types are displayed in the work area of the screen:
- a text window (no. 4) containing a help text
- a form (no. 3)
- the middle section contains some of the items of the *SYSADM* main menu, which is partly covered by the other two windows

Menus
A menu is a window containing a list of options. The options are referred to throughout this manual as menu items. One of the menu items in the current menu is always highlighted. You can move this highlighter bar using the cursor. The cursor can be moved from one menu item to the next using the arrow keys **[UP]** or **[DOWN]**. The highlighted menu item on which the cursor is positioned can be activated with the **[RETURN]** key.

Forms
Forms contain one or more fields for inputting data. These fields can be filled in using the keyboard. Default values have been provided for some fields. You can display a list of possible input values for other fields by pressing the **[CHOICES]** function key while an appropriate message is displayed in the message line. If only one value can be selected, position the cursor on the required entry, and confirm with the **[ENTER]** function key. If several entries can be selected, mark all desired entries using the **[MARK]** function key, and then confirm with the **[SAVE]** function key.

Text windows

Information and longer messages are output in the text windows. It is not possible to select or enter information in text windows.
SYSADM also provides help texts. Help texts provide context-sensitive information on the current menu item or input field. Help texts are called up by pressing the **[HELP]** function key. If you press **[HELP]** in a menu, help texts on the current menu item (which is highlighted) are displayed. If you press **[HELP]** in a form, help texts on the current input field are displayed.

2.4.3 Special navigation keys

Tip:

The special keys described in this section are not available on all keyboards. In this case, you can use alternative keyboard shortcuts to move through the text (see section "Alternative keyboard shortcuts"). Please note that the key symbols displayed here may not be identical to the keys on your keyboard.

Arrow keys or **[TAB RIGHT]** and **[BACKSPACE]** key
: The **[UP]** and **[DOWN]** keys (arrow up or down) or **[TAB RIGHT]** (TAB) and **[BACKSPACE]** (BACKSPACE) are used to move the cursor line-by-line in menus and forms. If a form contains mandatory input fields, you can only skip these fields with the arrow keys if you have entered a valid value.

HOME/HOME-DOWN
: These keys are used to reach the first or last line of a menu.

Letter(s)
: If you enter the first letter of a menu item (or the first letter and one or more of the subsequent letters), the cursor jumps to the relevant menu item. This is not case-sensitive.

2.4.4 Function keys

Function keys are numbered, programmable keys which have been assigned names and functions by *SYSADM*.

Tip:

If you are running non-SNI software packages under *SYSADM*, the function keys may be allocated different functions to those described in this section. In this case, please refer to the documentation provided with this software for information on the allocation of these function keys.

The function keys are usually arranged horizontally at the top of the keyboard. If your keyboard does not have function keys, you can also execute the same functions using alternative keyboard shortcuts (see section "Alternative keyboard shortcuts"). *SYSADM* uses the eight function keys *F1* to *F8*. Depending on the type of terminal, the *SYSADM* function keys may be assigned different key labels on your keyboard. The precise allocation for your keyboard is indicated in the table below.

Terminal type	F1	F2	F3	F4	F5	F6	F7	F8
BA47, BA80, BA97	[PF1]	[PF2]	[PF3]	[PF4]	[PF5]	[PF6]	[PF7]	[PF8]
BA48	[PF1]	[PF2]	[PF3]	[PF4]	[CTRL] [f] [5]	[PF6]	[F7]	[F8]
97801-VT02	[F6]	[F7]	[F8]	[F9]	[F10]	[F11]	[F12]	[F13]
97801-5xx, TX100, PC-T	[F1]	[F2]	[F3]	[F4]	[F5]	[F6]	[F7]	[F8]

Table 4: Allocation of function keys on the keyboard for different terminals

The lower area of the *SYSADM* screen has eight or nine small boxes (depending on the terminal type) which are allocated the function of the corresponding function key, e.g. **[CANCEL]** or **[SAVE]**. If there are nine boxes, no function is assigned to the box on the extreme right.
Depending on the program context, the same keys on the keyboard may be assigned different functions. The following functions can be activated by the function keys:

[CANCEL] or **[QUIT]** (**[F6]**)
: Closes the current window.You are returned to the previous window (this has no effect in the main window).

[ACTIONS]
: The **[ACTIONS]** function key is displayed if "actions" can be performed on devices. A window is opened, indicating the executable actions as menu items. The actions *copy*, *multicopy*, *remove* and *operation* relate to device names marked with ">".
The action *add* allows you to add a new object to the database.
The action *multiadd* allows you to add a number of new objects to the database at the same time. When you "multiadd" PCs and terminals of the same type, you must first set the terminal type.

Tip:

As was the case for adding individual objects, it is not possible to automatically display the attribute settings for each object. For example, if you are adding 100 terminals, 100 forms would be displayed one after the other in this case.
The action *copy* allows you to copy an existing object under a new name in the database.
The action *multicopy* allows you to copy an existing object a number of times under new names in the database.

Tip:

As was the case for copying individual objects, it is not possible to display the attribute

settings for each object when "multicopying" objects. For example, if you are copying 100 terminals, 100 forms would be displayed one after the other in this case.

Tip:

Connection-specific information, such as the connector name, is automatically entered if a free connector is still available on the peripheral device. An object for which there is no connector available is added incorrectly and must be corrected accordingly.

Tip:

The actions *copy* and *multicopy* are specifically intended for creating virtual configurations in cabinets, boards, and storage devices.

The action *remove* allows you to remove objects from the database. The action *remove* is only available when you select at least one object. You must confirm the remove operation.
The action *rename* allows you to enter a new name for an existing object in the database.
The action *print* allows you to output the current object hierarchy to an ASCII file.
The action *analyze* allows you to analyze the hardware that is installed on your system. When you select this action, you must decide in an additional window which components of your system are to be analyzed.
Once you have decided on a component, you must confirm the start of the analysis. During the analysis, the program displays information on how the hardware analysis is progressing. This information is also written to the log file */var/spool/SIconf/analyze.log*. When the hardware analysis is complete, the program displays information on the errors that occurred during the analysis.
The action *operation* allows you to carry out special tasks:

- Activate and deactivate boards or hard disks
  This action allows you to (de)activate boards and hard disks manually on RM600 computers.
- Replace hard disks when the system is running
  This action allows you to exchange hard disks with the OLR function when the system is running.
- Install hard disks when the system is running
  This action allows you to install hard disks in special peripheral cabinets when the system is running.
- Set the default partition structure
  This action allows you to assign the original partitioning to a selected hard disk. You may have to do this, for example, if the hard disk was previously used differently. This action is only available on activated hard disks if you have selected a hard disk in the *storage devices* submenu.

  Warning:

  This action deletes all the data on the hard disk.

- Check the file system
  This action allows you to check the file system on the selected partition, while at the same time eliminating inconsistencies.

- Create a file system
  This action allows you to create a new file system on the selected partition. The file system to be created corresponds to the type which you defined in the *Type* input field in the form for this partition.

  Warning:

  This action deletes all the data in any existing file system.

[CHOICES] ([F2])
Displays possible input values for a field in a form. If there are three values or less, the next possible value is entered directly in the form field each time you press a key. If there are more than three possible values, a menu is opened containing these values. The **[RETURN]** key is used to insert a value from the menu into the form field. (See the "[MARK] ([F2])" function key.)

[ENTER] ([F3])
Selects the current menu item, or moves to the next field of a form (can also be activated using the **[RETURN]** key).

[EXIT] ([F8])
Terminates *SYSADM* and returns to the call level.

[PRINT] ([F8])
The information on software products in the *software_prod* menu can be printed to a printer or a file by pressing the **[PRINT]** key. The necessary print command is defined by pressing the **[CMD-MENU]** key to call up the command menu and select the *def-print* function, in order to enter the desired print command in the print form.

[HELP] ([F1])
Displays help information on a window or on a field within a window, depending on your position in the window when this call is made.

[CMD-MENU] ([F7])
Displays a menu with commands. See the section "The command menu".

[MARK] ([F2])
Used to select several menu items from a menu that was opened with the **[CHOICES]** function key. When **[MARK]** is first activated, an asterisk '*' is placed in front of the menu item to which the cursor is pointing. This process can be repeated several times. The list thus marked with asterisks is incorporated into the form field provided when the **[SAVE]** function key is pressed. If you wish to delete markings, you must position the cursor on the relevant item, and press the **[MARK]** function key again.

[RESET] ([F8])
Resets the value contained in the field(s) of a form the last time the form was opened.

[NEXTPAGE] ([F3])
Scrolls forwards to the next page if the information cannot be displayed on one page.

[PREVPAGE] ([F2])

Scrolls backwards to the previous page if the information cannot be displayed on one page.

[SAVE] (**[F3]**)
Closes the current window. The values input are incorporated, and the requested function is executed.

Warning:

If you press the **[SAVE]** function key, the changes you requested are carried out on the basis of the values input. Please note that it may not be possible to reverse these changes.

[KEY-W] (**[F8]**)
Switches between the two alternative function key allocations.

[CONTINUE] (**[F3]**)
Continues an action that was interrupted by a confirmation request from *SYSADM*. This is either a copyright message or a security query from the system asking you to confirm whether you would like to continue the action. This query is intended to prevent undesirable results when carrying out important actions.

2.4.5 Alternative keyboard shortcuts

If there are no function keys on your keyboard or if these cannot be used, the relevant functions (e.g. "Backing up a form" or "Cancelling a menu option") can also be executed using special keyboard shortcuts, which are referred to in this manual as *alternative keyboard shortcuts*.

Tip:

The alternative keyboard shortcuts only use the alphanumeric part of your keyboard and certain control keys that are available on all conventional keyboards.

Each alternative keyboard shortcut for a function key consists of three individual keys, which must be pressed in accordance with the sequence given below:
- **[CTRL] [F]** (press and hold down the key with the label **[CTRL]**, **[CONTROL]** or **[STRG]**, and then press the **[F]** key)
- press the number of the function key whose function you wish to execute

Let us assume that you wish to call up a help text. You know that the **[F1]** key is used for this purpose, but there are no function keys on your keyboard. Press and hold down the **[CTRL]** key, and then press the **[F]** key. Release the two keys, and then immediately press the **[1]** key. The help text is then displayed on your screen.
There are also alternative keyboard shortcuts for navigating in menus and forms, and for editing input fields.

2.4.6 The command menu

When the **[CMD-MENU]** function key is pressed, the entries of the command menu are displayed on your screen:

cancel
: Closes the current window without changing the contents and without executing another function.

cleanup
: Closes all windows that are not currently required.

exit
: Terminates *SYSADM* and returns to the call level.

def-print
: This form allows you to define a print command which is used whenever you press the **[PRINT]** function key (see "[PRINT] ([F8])"). The information to be printed is transferred to the print command through a pipe.

help
: Displays help information on a window or on a field within a window, depending on your position in the window when this call is made.

refresh
: Refreshes the screen. This may be necessary if the screen layout is corrupted by messages from active programs or by errors.

sinix-system
: Interrupts *SYSADM* and opens a UNIX shell. If you enter *exit* in this shell or activate the keyboard shortcut **[CTRL] [D]**, you are returned to the current *SYSADM* menu.

update
: Restores all default values for a form.

2.4.7 The command line

In the command line, you can enter the commands that are contained in the command menu.
In order to enter a command in the command line using the keyboard, first press the keyboard shortcut **[CTRL] [J]** or **[CTRL] [F] [C].**

2.4.8 Working with forms

Certain *SYSADM* functions require that you enter additional information on the action to be executed. This type of information is entered in forms. Forms contain input fields where you must enter the necessary information. Input fields are often prefilled with a default value. If only a limited set of input values is permitted for the input field, you can usually display a list of permitted values using the **[CHOICES]** function key, and simply select the desired value.
If you wish to retain the default values, simply press the **[RETURN]** key here. If desired, you may also overwrite the default values.

Tip:

The character ">" at the end of an input field means that the text to be entered may

extend beyond the visible part of the input field. In this case, the text is shifted when the cursor is moved, i.e. the character "<" now appears at the end of the line, the text already entered disappears, and only the "excess" text can be seen. You can then jump to the start or the end of the text then using [CTRL] [F] [B] or [CTRL] [F] [E].

Filling in a form

When filling in forms, you can display a list of the possible entries by pressing the [CHOICES] function key. If your terminal has arrow keys, you can move the cursor to the desired field using the keys [UP] and [DOWN]. You can browse through the information with the keys [NEXTPAGE] and [PREVPAGE]. You can select one or more possible entries from the list by hitting the [RETURN] key.
If there are only two possible values for the current field, *SYSADM* outputs one of the two values in the form. You can either use this value, or press the [CHOICES] function key again, in which case the second possible value is entered.
By pressing [SAVE], you execute the action associated with the form. The form is then closed.
If you need additional information, press the [HELP] function key.

Changing the values in a form

Even if you have already filled in all input fields in a form, you can still change an entry before pressing the [SAVE] function key. If your terminal has arrow keys (up, down, left, right), you can use these keys to position the cursor on the value to be changed. When the cursor is in the correct position, you can overwrite the old value with the new one.
If your terminal does not have any arrow keys, you can use the [NEXTPAGE] and [PREVPAGE] keys to scroll cyclically through the queries. When you have arrived at the correct field, you can modify the entry accordingly.

Checking your entries

Your entries are checked for accuracy when you exit an input field using [RETURN], or when you exit a form. If an entry is not correct, an error message appears in the message line. Additional information on valid values can be obtained using [HELP] or [CHOICES].

Tip:

If a form contains a comment line, you cannot enter any German umlauts in this comment line.

Saving form entries

When you have filled in your form, press the [SAVE]. function key. This informs *SYSADM* that you are ready to start the next step. If there are more forms to be filled in, the next form appears on the screen. Otherwise, the action associated with the form is executed and a report on the results is displayed.

2.4.9 Full window actions

A full window action is an activity which comprises an interactive function outside *SYSADM*. This type of function can contain a request for information.
This type of action is characterized by clearance of the entire screen. A typical full window

action is switching to the shell level using '!' and the associated shell command.
In the case of a full window action, a command is executed which produces output on the screen and may also request input. After the command has been executed, the message `Press Enter to continue` is output at the bottom of the screen.
You are returned to *SYSADM* by pressing **[ENTER]** or **[RETURN]**. You then regain access to the function keys, the command menu, and the other *SYSADM* options.

3 Configuring the system

Once you are familiar with the operation of SYSADM, you can learn about the file systems and files that are important for UNIX system administration. File names also give you access to the hardware equipment: the computer hardware and the peripherals which you can connect and configure for data input and output.

3.1 File systems

Select the item *file_systems* from the main menu. From this menu item, you can perform the following tasks.

Function	Menu item	Shell command
Check a File System	*check*	*fsck(1M)*
Manage Defaults	*defaults*	*cat /etc/vfstab* or editor on */etc/vfstab*
Display Disk Usage	*diskuse*	*df*
Display Installed Types	*display*	*/usr/sadm/sysadm/bin/sysfs*
List Files by Age	*fileage*	*find . -mtime*
List Files by Size	*filesize*	*du(1M)*
Identify File System Type	*identify*	*fstyp(1M)*
List Mounted File Systems	*list*	*mount(1M)*
Create a File System	*make*	*mkfs(1M)*
Mount a File System	*mount*	*mount(1M)*
Unmount a File System	*unmount*	*umount(1M)*

Table 5: Functions and shell commands for managing file systems

If you want to know more about the individual menu items, simply press the **[HELP]** function key.
The commands are described in detail in the Reliant UNIX system documentation. The individual menu items of the *Manage File Systems* start menu are described below.

3.1.1 Creating file systems

If you want to create a file system, choose the item *make* from *Manage File Systems* start menu. A form containing five fields is displayed:

Device that will contain the file system
: In this field, enter the device on which you wish to create the file system. Normally, file systems are located on partitions of the hard disk. You can display a list of all devices in the device table */etc/device.tab* with the attribute *type=dpart* or *type=diskette* by activating the **[CHOICES]** function key. You can then select a device from this list.

File system type
: In this field, enter the file system type. There are several file system types that provide different functions for different applications. You can display a list of all file system types available for this function by activating the **[CHOICES]** function key.

Label for the file system
: In this field, specify a name for the file system that is being created. This field is not mandatory.

Once created, should the file system be mounted*?*
: If you respond with *yes* here, the newly created file system is automatically mounted. If you respond with *no*, the new file system is only created. You must then mount the file system before working with it. If you respond with *no*, the next form field disappears, and you can exit this form with **[SAVE]**.

File system name when mounted
: If you entered *yes* in the fourth field, specify the name here under which the file system is to be mounted in the file tree.

Tip:

A file system that is mounted during creation is not automatically mounted again when the system is restarted. If the file system created here is to be mounted each time the system is started, you must select the option *yes* in the field *Should file system be automatically mounted at boot* under the *defaults* menu item.

When you have filled in the form, you can confirm your entries with **[SAVE]**. A check is first run to verify whether a file system is already present on the device specified, and you are then asked to confirm whether you wish to save your entries.

Warning:

When a new file system is created, all data located on the logical data medium is destroyed. You must therefore ensure that the data medium does not contain any important data. As alternative partitions exist which may overlap, you can only create a file system on partitions that do not overlap other partitions. Otherwise, you run the risk of destroying an existing file system.

Another form window is then displayed, in which you must define further specifications for the file system to be created, depending on the file system type selected.

Tip:

The input fields are already prefilled with values. If you would like to change these default values, please consult the "System Administrator's Guide".

The fields have the following meanings:

Number of Blocks in the File System
: In this field, enter the number of physical blocks that are to be used when creating the new file system. The specified number must be less than or equal to the number of physical blocks (sectors), which are available on a hard disk partition or on a diskette. The size of a physical block is 512 bytes.

Block Size in Bytes
: In this field, specify the size of the logical blocks of the file system in bytes. Block sizes are generally powers to the base 2; they are never less than the physical block size of 512 bytes.

Fragment Size in bytes
: In this field, enter the fragment size. For further information, please refer to the descriptions of the relevant file systems in the "Guidelines for System Administrators".

Number of cylinders in group
: This value must be between 1 and 32 and must be a power of 2.

*Min*imum Percentage of Free Space
: The value to be specified here represents the lowest permissible percentage of free space on the hard disk. As soon as the file system falls below this limit, only privileged users can allocate disk blocks. The default value for this field is 10%.

Tip:

The default value of 10% is only practical for smaller file systems. For example, if you have allocated only one file system to an entire 1.5 Gbyte hard disk, 150 Mbytes would not be available to non-privileged users. In such a case, reduce the percentage to 2% (=30 Mbytes) or 1% (=15 Mbytes), for example. This example does not apply to the system disk.

Number of Bytes per Inode
: In this field, specify the number of bytes for which an inode block is created. The default value is 2048. For each inode block, precisely one file can be created in the file system. The default value should only be modified if the expected average file size clearly falls below the value entered here.

When you have completed the second form, press the **[SAVE]** function key to create the file system. You will then receive a message confirming that the file system has been created.

3.1.2 Mounting a file system

To mount a file system, select the *mount* menu item from the *Manage File Systems* menu. A form containing two fields is displayed:

Device that contains the file system
: In this field, enter the name of the device containing the file system. You can display a

list of devices belonging to the system by activating the [CHOICES] function key. The device names are defined in the */etc/device.tab* file.

File system name when mounted
: In this field, enter the name under which the file system is to be mounted in the *root* file system. This name is also known as the mount point of the file system.

When you have filled in both fields, press [SAVE]. Another form containing three input fields is then displayed.
The input fields of this form have the following meaning:

File System Type (IMPORTANT: DO NOT GUESS)
: In this field, enter the file system type. You can display a list of the file system types available in your system by activating the [CHOICES] function key.

Warning:

> You must enter the correct file system type; otherwise, the file system may be destroyed. If you are not sure of the file system type, select *unknown*. The file system type is then determined automatically.

Read and Write Privileges
: In this field, select whether access to the file system is to be read-only (*read-only*), or read and write (*read/write*).

Should setuid programs be allowed
: In this field, specify whether *setuid* programs are permitted. Enter *yes*, *no*, or *na*, to define whether *setuid* rights are permitted, excluded, or not available for this file system. The default value is *yes*.

Before mounting, the relevant file systems are checked for errors. The check fails if the file system to be tested is already mounted, is the wrong file system type, or if the storage device cannot be opened.

3.1.3 Checking and repairing a file system

You can use the *check* menu item to search for errors in a file system on a logical data medium. A logical drive can be either a hard disk partition or a removable data medium. If errors or inconsistencies are identified, they are automatically rectified, if possible. To check a file system, select the *check* menu item from the *Manage File Systems* start menu. The *File System Check* window then appears.

Warning:

> The file system must be unmounted before it can be checked. For further information in this regard, please refer to the section on unmounting a file system. When checking the *root* file system, let the machine run in single user mode.

The *File System Check* window contains two input fields, in which you must specify the file system to be checked:

Device that contains the file system

In this field, enter the device you wish to check. The possible device names for the logical drives are defined in the */etc/device.tab* file. You can display a list of all devices that can be checked using this menu item by activating the **[CHOICES]** function key. Each device name corresponds to a single special file.

File System Type

If the file system type is not automatically entered following selection in the above input field, you must enter the file system type here. Once again, you can display a list of possible file system types by activating the **[CHOICES]** function key.

Warning:

It is extremely important that you specify the correct file system type in the *File System Type* input field. If you are not sure of the file system type, select the *unknown* item from the list that is displayed when you press the **[CHOICES]** function key. If you then press the **[SAVE]** function key, the correct file system type is automatically determined.

Errors in identifying the file system may be due to the following causes:

- the device you selected is not entered in the */etc/device.tab* device table
- there is no file system on the device you have selected
- the data medium has not been inserted correctly
- the data medium is not formatted

When you have entered the appropriate values in the input fields, you can commence checking the file system by pressing the **[SAVE]** function key. If the file system to be checked is successfully identified and the file system is unmounted, a form appears on your screen, in which you can enter the type of check to be carried out. Select one of three specified types:

check only

Searches for errors in the file system without rectifying them.

interactive fix

Specify the corrective procedure for each error identified. If you select this option and then activate the **[SAVE]** function key, the *SYSADM* user interface is overlaid by a process which controls interactive rectification of the detected error.
As soon as the function has ended, the system returns to the *SYSADM* user interface.

automatic fix

Select this option to apply standard procedures for the elimination of the detected errors. If errors occur that cannot be rectified automatically, you will find more detailed information in the "System Administrator's Guide" and in the "System Administrator's Reference Manual", *fsck* command.

Checking and changing defaults

The defaults for processing file systems that are entered in the */etc/vfstab* file. Information on the file systems available in your system is managed in this file. A typical entry in the */etc/vfstab* file may look as follows, for example:

```
/dev/ios0/sdisk000s2 /opt ufs 2 yes rw
```

This entry means, among other things, that partition 2 on hard disk 0 (defined by the special file) is automatically mounted in the */opt* directory as a file system of type *ufs*.
The defaults are then used for checking and mounting file systems at system startup, as well as for other file system management tasks.
To manage the defaults, select the *defaults* menu item from the *file_systems* menu. The *Manage Defaults* menu then appears, in which you can choose from four functions.
Using these four functions, you can add, display, modify, or remove the defaults of a file system. If you select one of the four menu items from the *Manage Defaults* window, a form containing two input fields is displayed:

Device that contains the file system
: In this field, enter the name of the device. Alternatively, you can display a list of available devices by activating the `[CHOICES]` function key, and select the required device from this list. Each of the device names corresponds to a special file under */dev*; they are defined in the */etc/device.tab* file.

File system name when mounted
: In this field, enter the name of the file system. Once again, you can display a list of available file systems by activating the `[CHOICES]` function key, and select the required file system from this list. The name to be entered here is the mount point for the file system in the file hierarchy.

When you have entered the names in both fields, you will receive different output depending on the function selected. If you have selected *Display defaults*, the contents of the */etc/vfstab* file are displayed in a window.
If you have selected *Add defaults* or *Modify defaults*, you must enter additional data in another form. The input fields described below are used for this purpose:

Should file system be automatically mounted at boot
: If you respond with *yes*, your system is configured such that this file system is automatically checked and mounted each time the system is started up. If you respond with *no*, you must check and mount the file system manually (if required) after the system has been started up.

Read and write privileges
: In this field, specify the read and write privileges that are to apply to this file system. If the file system contains important data that cannot be modified by other users, you should set this field to *read-only*. Otherwise, set the value *read/write* for the file system.

Should setuid programs be allowed
: By entering or selecting *yes*, *no*, or *na*, you can define whether or not setuid privileges are to be permitted or available for this file system. The default is *yes*.

Tip:

setuid privileges allow programs to operate temporarily in this file system with the rights of other users. This is necessary, for example, if users are to modify data in protected system files, e.g. */etc/shadow*, in which personal passwords are managed.

3.1.4 Information on file systems

Under the *file_systems* start menu, *SYSADM* gives you various options for determining which file systems are available with which attributes on your system.

Monitoring disk usage of file systems
To obtain information on the current storage space requirements of the file systems on the existing logical drives, select the *diskuse* menu item from the *file_systems* menu. If you then press the [CONTINUE] function key, a list indicating the disk usage of the system is displayed on your screen.
The following values are specified for each file system:
- name or mount point of the file system
- number of free blocks on the file system
- total number of blocks available in the file system
- file system usage as a percentage

Tip:

UNIX systems compatible with System V, such as Reliant UNIX, use a block size of 512 bytes.

Tip:

The following rule of thumb applies to disk usage: if the file system is to work efficiently, the disk space in a file system must never be more than 90% full. A full file system can cause the system to hang.

Displaying installed types
To generate a list of all file system types installed in your system, select the *display* menu item from the *file_systems* menu. When you press the [CONTINUE] function key, all of the file system types installed in your system are displayed.

Listing mounted file systems
You can use this menu item to list all currently mounted file systems. To do this, select the *list* menu item from the *file_systems* menu. A list of the mounted file systems is then displayed.

Identifying the file system type
If you wish to mount or check a file system, it is important that you specify the correct file system type.

Warning:

Specification of an incorrect file system type can cause loss of data. If you are not sure of the file system type, you should perform the *identify* function beforehand.

To identify a file system, select the *identify* menu item from the *Manage File Systems* menu. A form is then displayed in which you must enter the device name for the file system to be identified. However, you can also display a list of the device names of the existing file

systems by activating the **[CHOICES]** function key, and then select the required device name from this list. When you press the **[SAVE]** function key, the file system type is determined and output to a new window.

Listing files by age

You can use the *fileage* menu item to display the names of all files, the age of which exceeds a specified minimum number of days. To identify the files of a certain age, select the *fileage* menu item from the *Manage File Systems* menu. A form containing two input fields then appears:

Directory to be searched

In this field, enter the name of the directory that is to be searched. There is no default value for this field. The absolute path (preceded by a slash /) of an existing directory must be specified. The specified directory and all subdirectories are then searched. For this reason, the search process will naturally take longer if you start "close to the root" of the file tree (e.g. */* or */usr*). The number of files in the directories to be searched determines the duration of the query.

Age of files to be reported, in days

In this field, enter a positive integer indicating the minimum age (in days) of the files that are to appear in this list. You can specify an integer between 0 and 999. The default value is 90. If you do not specify a different number, all files that are older than 90 days are listed.

When you have entered the necessary information in both fields, you can start the search by pressing the **[SAVE]** function key. The results of this command are output by means of the UNIX command *find* and a downstream filter program. The search results are displayed in a new window, in which all files that were not edited for the specified number of days are output. The file names appear in the list together with the following information:

- the owner of the file
- the file size in characters
- the date of the last modification

The file names themselves are located in the last column of the displayed list. If the list contains more file names than can be displayed on one page in the window, you can use **[NEXTPAGE]** or **[PREVPAGE]** to scroll through the list.

Listing files by size

You can use the *filesize* menu item to display information on the largest files under a selected directory, whereby you can also determine the number of files reported.
To list these files, select the *filesize* menu item from the *Manage File Systems* menu. A form containing two input fields is displayed, in which you must enter the following information:

Directory to be searched

In this field, specify the name of the directory that is to be searched. The absolute path (preceded by a slash /) of an existing directory must be specified. The specified directory and all subdirectories are then searched. For this reason, the search process will naturally take longer if you start "close to the root" of the file tree (e.g. */* or */usr*). The number of files in the directories to be searched determines duration of the query.

Number of large files to be reported

In this field, enter a positive integer indicating the number of files to be listed. The default value is 10. If you do not specify a different value, information on the ten largest files is displayed.

When you have entered the necessary information in both fields, you can display a list of the largest files (specified in descending order) by pressing the **[SAVE]** function key.
The files are listed in descending order according to their size, i.e. the largest file is first in the list. In addition to the relative path names of the file, the list contains the following information on the largest files:

- the owner of the file
- the file size in characters
- the date on which the file was last accessed

3.2 Managing devices

With the exception of X terminals configured under SINIX/windows (menu item *System->Administration->X-Terminal-Administration*), you can use *SYSADM* menus to manage devices and set line parameters. The menus for managing the hardware can be found under the main menu items *configuration* and *storage_devices*.
If you choose *configuration->load*, the following functions and menu items are displayed:

Function	Menu item
Configure cabinets	*cabinets*
Configure boards	*boards*
Configure TAKs	*taks*
Configure SNMP-capable Taclan terminal servers	*terminal servers*
Configure PCs and alpha terminals	*PCs & terminals*
Configure printers	*printers*
Manage SCSI devices	*storage devices*
Configure serial devices (except terminals and printers)	*serial devices*
Adjust line parameters and attributes for Taclan terminal servers	*settings*

Table 6: Device management menus under "Configuration"

The menu items listed here contain submenus for individual objects. For example, if you choose a hard disk in the *storage devices* menu, a menu appears containing the name of the selected hard disk and the entry *partitions*. If you want to know more about the individual menu items, press the **[HELP]** function key.
You can press the **[ACTIONS]** function key to perform certain actions, e.g. add, copy, rename or delete objects. Pressing this function key opens a window in which the actions that can be performed in the current window are listed as menu items.
Press the **[SAVE]** function key to save the configuration changes for a device and activate these modifications in the system.
If configurations are inconsistent, the corresponding menu items, device names, and attribute settings are identified by an exclamation mark (!).
Devices that were added, copied or renamed in the current configuration session are identified by a question mark (?). Such devices are also called "virtual devices".
If cabinets, boards, and storage devices are installed correctly, the identification mark is removed following a hardware analysis, which can be performed automatically when powering up the system or by pressing the **[ACTIONS]** function key and choosing *analyze*.
After a hardware analysis, however, a question mark may still appear beside cabinets, boards or storage devices in order to indicate that these devices are no longer connected. When you connect the device, the question mark disappears following another hardware analysis.
Much of the information in this chapter applies to all RM systems. However, in some cases

it is necessary to describe the different models separately. The following terminology is then used:

- For RM200, RM300, and RM400 models whose names take the form **Cxx** (e.g. model C90), the corresponding abbreviation is used (e.g. RM400-Cxx).
- For RM600 models whose names take the form **xxx** (e.g. model 340), the abbreviation RM600-xxx is used.
- For RM600 models whose names take the form **Exx** (e.g. model E60), the abbreviation RM600 E is used.
- If the description applies to all RM600 models, the abbreviation RM600 is used.

3.2.1 Defective and deactivated devices (RM600 only)

Defective power supply units or fans, or defective boards and storage devices on RM600 systems are automatically detected by the operating system and are immediately deactivated using the LAR function (LAR = Logout Auto Recovery), if this is technically possible, in order to prevent data loss or an uncontrolled system shutdown.
In *SYSADM*, you can deactivate installed boards and hard disks manually, independently of the automatic deactivation procedure, using the action *operation -> deactivate* if you suspect, for example, that there may be a defect on these devices. The operating system does not differentiate between automatic and manual deactivation. You are offered the above action if you select an installed board or an installed hard disk in the *boards* or *storage devices* window.
If an error occurs while the system is running, a message window appears in *SYSADM* informing you about it. If you want to know more about this error, you must run the analysis function suggested in this window.
Once you have deactivated the board or hard disk, it is flagged as *Deactivated* in the *Status Info* output field in the form for the relevant device. As soon as you carry out a hardware analysis, the menu item for the corresponding device is also flagged.
If a hard disk is not in use (no *open()*), you can no longer access this hard disk immediately after you have deactivated it. In the case of hard disks and boards that are being used, the deactivation only comes into effect when you shut down the system. When you deactivate hard disks and boards, the program ensures that the minimum configuration required to operate the hardware is maintained.
If the deactivated hard disk is the system disk, it is also possible to restart the system in the deactivated state. Certain boards, such as the CSI board, cannot be deactivated.
If power supply units and fans were replaced while the system is running, they are started up again immediately after being replaced. Otherwise, they are started up again when the system is restarted.
Deactivated boards are started up again when the system is restarted if you previously activated them manually, or if they were replaced by different boards before the system was restarted (the boards are identified by their serial number).
Deactivated hard disks must be reactivated manually. You can access these hard disks again immediately after you have activated them.
Like the procedure involved in deactivating devices, boards and hard disks are activated manually in *SYSADM* using the action *operation -> activate*.

3.2.2 Replacing devices while the system is running

Power supply units and fans in cabinets, as well as hard disks, can be replaced while the

system in running using the OLR function (OLR = Online Replacement).

Warning:

Please note that power supply units and fans can only be replaced by the Siemens Nixdorf Service department.

Power supply units

Power supply units can be replaced while the system is in operation, with a redundant configuration. This means that other power supply units take over the tasks of the defective unit.

Fan units

Each fan unit operates independently, i.e. regardless of whether other fan units exist and are in operation. Each fan unit contains three fans. If one fan fails, the speed of the other two fans is increased. If two or all three fans fail, the operating system is shut down immediately (*shutdown*). If you want to replace a fan unit, you have about 30 seconds to complete the process. If the relevant fan unit is not back in operation after this time, the system is likewise shut down, even if other fan units are still in operation.

Hard disks

With a redundant configuration, hard disks can be replaced while the system is in operation. This means that other hard disks take over the tasks of a defective hard disk. The replacement of hard disks is supported on the software side by the action *operation -> replace disk online* (check the mirror operation, if necessary settle the SCSI channel, start up the new hard disk).
The OLR function is only offered to you if you selected an installed hard disk in the *storage devices* submenu. In addition, certain hardware and software requirements must be fulfilled. For information on these requirements, refer to your system's operating manual and to the "Virtual Disks" manual.
When the replacement operation is complete, you must perform a hardware analysis on the new hard disk using the function key **[ENTER]**. The program keeps you informed as to how the analysis is progressing.
If the action cannot be carried out without errors because, for example, the SCSI channel could not be settled, it is canceled and you are asked to confirm the cancelation for security purposes using the function key **[ENTER]**.
Please note that after the hard disk and the SCSI channel have been restarted, a mirror comparison is carried out in the background. Depending on the amount of data and the number of disks, it may take some time for the complete mirror disk operation to be achieved again.

DAT, MTC, SMC drives

These devices can be replaced while the system is running (online replacement function). This is possible as of Reliant UNIX 5.44. It may be necessary, for example, if the drive is defective. The replacement of DAT, MTC, SMC drives is supported on the software side by the *Operation -> Replace <device>* function (if necessary settling of the SCSI channel, starting of the new device).

The OLR function is only available if
- you have selected an installed device in the *storage devices* submenu,
- certain hardware and software requirements are fulfilled(see your system's operating manual).

When you select this function, a brief dialog takes place. If the function can be carried out successfully, the program displays some messafes which record the actions that have been carried out, and you must then enter a response to the question: *Exchanging device done?*
- Enter *yes* if you have replaced the drive.
- Enter *no* if you want to cancel the operation at this point.
  The operation is canceled without affecting the current configuration. The actions that have already been carried out by the OLR function are undone.

If you answered *yes* the new drive is configured and an appropriate message is displayed. Acknowledge this message with ENTER. A hardware analysis of the new drive is then carried out automatically.
If the function could not be carried out successfully, e.g. because the SCSI channel could not be settled, a message is displayed. Acknowledge this message with ENTER too.

3.2.3 Installing hard disks while the system is running

You can install hard disks while the system is running (online installation). This applies to:
- the peripheral cabinets BG31 (RM600) and BG32 (RM400)
- the peripheral cabinets BG70 and BG71
- all cabinet types of the RM600 models E20 and E60

The online installation of hard disks is supported on the software side with the action *Operation -> Online device insertion*. You are only offered this action if:
- the controller for the SCSI channel is installed (see the Controller output field in the form for the attribute settings of SCSI channels in section " Setting attributes for SCSI channels").
- you selected a peripheral cabinet in the *cabinets* submenu
- certain hardware and software requirements are fulfilled (refer to your system's operating manual)

Proceed as follows:
» Go to the submenu of the desired cabinet.
» Mark the relevant SCSI channel.
» Press the **[ACTIONS]** function key.
» Select the menu item *operation*.
» Select the menu item *Adddisks in scsi <number>*.
  You will then be prompted to install the hard disk.
  The question *Installation complete?* is output.
» If you wish to terminate the procedure at this point without installing a new hard disk, respond to this query with *no*.
  In this case, exit the window by pressing the **[RETURN]** key.
» If you have installed the new hard disk, answer the query with *yes*.
  In this case you must press the **[ENTER]** function key to perform a hardware analysis, in which the new hard disk - if you have installed one - is configured. The progress of the hardware analysis is indicated in a log window.

3.2.4 DHCP

The assignment and management of IP addresses can be relatively resource intensive in larger computer networks. This is particularly true if machines are only temporarily in the network (e.g. hours or days), such as test machines or mobile computers (notebooks). DHCP was developed with the aim of reducing this administration effort (DHCP = Dynamic Host Configuration Protocol). This protocol allows the systems in a network to get their network parameters (e.g. IP address, name server, domain name) from one or more DHCP servers. Until contact is made, the DHCP servers do not need to have any information about the DHCP clients (in contrast to the BOOTP servers).
When configuring the server, the system administrator makes a greater number (pool) of IP addresses available, from which IP addresses can then be assigned to clients. The length of time that an IP address is assigned to a client can also be established here. When the specified time period has expired, the client has to have its IP address extended by the server.
Otherwise, the IP address is released again and can be used elsewhere. The same happens if the client operating system powers down.
The DHCP is installed using the package *SIdhcp* installiert (available as of Reliant UNIX 5.43 C). The LAN board masks are extended by the following parameters when DHCP is installed on a system: *DHCP*, *DHCP client*, *DHCP user class*, *DHCP class*.

DHCPIn this input field you can enable/disable DHCP:

no This board is not configured as a DHCP client.
(default)
Enter the LAN attributes as usual.

yes This board is configured as a DHCP client.
It receives the LAN attributes from the DHCP server. The attributes are entered automatically in the system files and should not subsequently be modified in *SYSADM*.
If the DHCP server modifies the LAN parameters, *SYSADM* is informed of this and prompts the user to carry out a hardware analysis to adjust the data in *SYSADM*.

DHCP client
DHCP user class
DHCP class

These attributes are used to select client-specific configuration data on the DHCP server. You should check with your system administrator for the DHCP server, as to which character strings have to be entered or whether the input field can remain blank.
If you are to specify the MAC address of the client under *DHCP client*: This address is shown at the top of the dialog box (see also *etherstat*(1M)).

3.2.5 RAID Systems

RM200, RM300, RM400

DTP-RAID is supported. RAID drives are displayed as RAID drives in the Storage devices submenu, as well as the drives comprising the RAID array.
The RAID drives are displayed as normal drives in the RACKS submenu. It is not possible to make any chnages to the configuration.

RM600-xxx, RM600 E
PXRE is supported. The LUNs (Logical Unit Number) are displayed with their configuration data in the *Storage devices* submenu, but cannot be modified. The partition table can be modified and file systems can be created as with normal drives.
Changes in the status of the drives and LUNs are reported and displayed after hardware analysis.
RAID racks are listed in the *Racks* submenu together with the installed drives. Information on the boards, fans, power supplies and temperature is displayed. However, changes in the status of these rack components are not reported. A hardware analysis has to be initiated by the user.
HSZterm can be invoked from the *Racks* submenu, making it possible to configure PXRE from within SYSADM.

3.2.6 Configuring cabinets

You can administer the cabinets that are installed on your system by selecting the menu item *cabinets* in the *Configuration* window.
When you select this menu item, the program displays the *cabinets* window, which contains a selection list of all the cabinets that are known to *SYSADM*. In this window you can select available cabinets for processing.
Depending on the cabinet type, additional menus and/or forms for setting attributes are available for each of the cabinets.
Information on installing and configuring cabinets:

1. Cabinets are installed and wired by the Siemens Nixdorf Service department. For further information, refer to the Operating Manual for your system.
2. Start *SYSADM* as soon as the system has been powered on again.
3. When you have installed a system cabinet or an MBII cabinet in an RM600, or a peripheral cabinet (all RM models), you still have to set attributes for the SCSI channels. To do this, open the forms for each of the SCSI channels for this cabinet and set the attributes. The attributes that have to be set are marked with an exclamation mark.
4. RM600 only:
   When you have installed a BBU cabinet, you still have to specify the cabinets that are to be monitored by the relevant DC/DC converters of this BBU. To do this, open the form for the BBU cabinet and assign the corresponding cabinet to the relevant DC/DC converter.
5. RM600 only:
   Since UPS cabinets are not automatically recognized after installation, you must configure them in the *cabinets* window (e.g. using the action *add*). You then have to specify the type of UPS (and possibly also the interface type of the UPS type), and decide which cabinets are to be monitored by this UPS. You can also indicate whether this UPS cabinet is to be monitored by the CSI controller. To do this, open the form for the UPS cabinet and set the attributes.

Warning:

If you configure a UPS cabinet that is not connected to the system (virtual configuration), this can bring about spontaneous errors, including the automatic shutdown of the system with the risk of data loss.

3.2.6.1 Configuring the system cabinet and MBII cabinets (RM600)

You can use the entry for the system cabinet (*sys_cab*) or an MBII cabinet (*ext_cab*) to display information on the cabinet and to set attributes for the SCSI channels.
When you select a cabinet, the program displays a window containing the following entries, depending on the system model you are using:

Cabinet information
: This entry provides information on the cabinet such as name, type, hardware and firmware version, serial number, status of the power supply units and fan-out units, and BBU and UPS monitoring.

MB slots/slots (the term used depends on the system model)
: This entry provides information on the boards that are installed in this card cage, such as the allocation of each of the slots, the MBP route and status of each board.

SP slots (for system cabinets in models RM600-5xx to 7xx, E20 and E60)
: This entry provides information on the boards that are installed in this card cage, such as the allocation of each of the slots and the status of each board.

scsi-*n*
: You can set the attributes of a SCSI channel in a form under this entry for the channel (see " Setting attributes for SCSI channels"). The number of SCSI channels depends on the computer model.

Tip:

In the case of models RM600-1xx, -2xx, and -3xx, the slot with the highest number in each SCSI channel (excluding the SCSI channel 0 in the system cabinet) is reserved for the terminator and cannot therefore be assigned a device.

Setting attributes for SCSI channels

Tip:

Not all of the following input fields are available in every system configuration. To find out which input fields are available in what circumstances, refer to the descriptions of the input fields.

SCSI bridge
: This input field only exists for the SCSI channel 0 in the system cabinet of the RM600-1xx, 2xx, and 3xx models.
In this input field you define whether a SCSI bridge is installed between the SCSI channels 0 and 2:

yes The bridge is installed. The devices in the *scsi-2* channel are controlled by the CSI controller. The entry *scsi-2* is deleted.

no The SCSI bridge is not installed. The devices in the *scsi-2* channel are not controlled by the CSI controller. The entry *scsi-2* is maintained or recreated.

Controller

This input field does not exist for the SCSI channel 0 of the system cabinet, as this SCSI channel is closely linked to a controller.
Specify the controller that is linked with this SCSI channel in this input field.

Default slot for devices

This input field does not exist for the SCSI channel 0 of the system cabinet, nor for newer cabinets designed for 3.5 inch disks with Flexprint (e.g. BG70, BG71).
In this input field you define the rules to be used in the case of the SCSI devices belonging to this channel, in order to set their slot numbers:

Slot=SCSI-ID

Sets the slot to the relevant SCSI ID for all devices on this channel (default configuration when shipped).

undef Sets the slot to *undef* for all devices on this channel, meaning the exact position of this device is unknown.

Tip:

If the rule is set correctly, this significantly shortens the procedure required when setting the location of the SCSI devices. In the case of the storage devices, the storage space can be changed independently of the default setting.

SCU In the case of the RM600 1xx, 2xx, and 3xx models, as well as RM200, RM300 and RM400 systems, this input field only exists in peripheral cabinets.
If an SCU is installed, specify in this input field which SCU channel is linked with this SCSI channel and with the controller you specified above. If no SCU is used, simply enter *not installed* here.

Connection type

This input field only exists in MBII cabinets and peripheral cabinets.
Specify the connection type for the SCSI channel in this input field. The following options are available:

private

The SCSI channel is only used by this system.

switchable

The SCSI channel can be switched to different systems by SCU.

shared

The SCSI channel can be used at the same time by a number of systems (multihosted SCSI).

Warning:

If the SCSI channel is used simultaneously by a number of systems and you have not defined it as *shared*, the system may crash, resulting in the loss of data.

The number and type of output field in this form is dependent in part on the system configuration. The output fields in this form contain information on the SCSI channel and the devices that are installed in each of the slots.

3.2.6.2 Outputting information on the system cabinet (RM200, RM300, RM400)

You can use the entry for the system cabinet (*sys_cab*) to display information on the cabinet.
When you select the system cabinet, the program displays a window containing the following entries, depending on the system model you are using:

Cabinet information
: This entry provides information on the cabinet such as name, type, hardware and firmware version and the serial number.

EISA slots
: This entry contains information on the assignment of the individual slots and the boards installed at the EISA bus.

Tip:

The physical position cannot be determined automatically for ISA boards. The *Slot* attribute should therefore be set to an appropriate value to ensure a correct optical representation of your system. It may be that an EISA slot which is still free cannot be occupied due to lack of space caused by an adjacent PCI slot.

PCI slots (only models RM200-Cxx, RM300-Cxx and RM400-Cxx)
: This entry provides information on the assignment of the individual slots and the boards installed at the PCI bus.

Tip:

It may be that a PCI slot which is still free cannot be occupied due to lack of space caused by an adjacent EISA slot.

Memory slots/memory banks (depending on computer model)
: This entry provides information on the assignment of the individual slots/banks and the size of the individual memory areas.

Tip:

Since the assignment of the slots cannot be determined by *SYSADM* within a bank, all slots are displayed as occupied.

CPU/CPU slots (depending on computer model)
: This entry provides information on the assignment of the CPU, or the assignment of the individual slots and the boards installed in the CPU slots.

scsi-*n*
: This entry provides information for a SCSI channel. You are shown the position, the controller, the assignment of the SCSI-IDs and the status of the connected devices.

3.2.6.3 Outputting information on external SCSI channels (only RM200, RM300, RM400)

The entry for an external SCSI channel (e.g. *cs31p0_ch_0*) provides information about the channel; e.g. the position, the controller, the assignment of the SCSI-IDs and the states of the connected devices. The term *external SCSI channels* refers to controller which are not (yet) assigned to a peripheral cabinet in the interface.

3.2.6.4 Configuring peripheral cabinets

You can use the entry for the peripheral cabinet (*per_cab*) to display information on the cabinet and to set attributes for the SCSI channels.
When you select the peripheral cabinet, the program displays a window containing the following entries, depending on the system model you are using:

Cabinet information
: This entry corresponds to the entry with the same name for the system cabinet of an RM600 computer (see section "Configuring the system cabinet and MBII cabinets (RM600)").

SCU slots (only for models RM600-5xx, -6xx and -7xx)
: This entry provides you with information on the boards installed in this card cage, for example the individual slots and the states of the individual boards. This entry is present only if an SCU is installed.

scsi-*n*
: This entry corresponds to the entry with the same name for the system cabinet of an RM600 computer.

Warning:

With computers of types RM200, RM300 and RM400 this entry only has the input fields *Controller*, *SCU* and *Port type*.

3.2.6.5 Configuring BBU cabinets (RM600 only)

The entry for a BBU cabinet (*bbu_cab*) allows you to set the following attributes in a form:

DC/DC converter #*n* supervises:

In each of these input fields you must specify which cabinet is to be supervised by the relevant DC/DC converter. A DC/DC converter can only supervise a cabinet that is not being supervised by another DC/DC converter.

The output fields in this form contain information on the cabinet and the status of the DC/DC converters.

3.2.6.6 Configuring UPS cabinets (RM600 only)

The entry for a UPS cabinet (*usv_cab*) allows you to set the following attributes in a form:

UPS type
: Specify the UPS type in this input field.

UPS interface type
: Define the interface type of the UPS in this input field.

CSI supervision
: Specify in this input field whether this UPS cabinet is to be supervised by the CSI controller. Since only one UPS cabinet can be supervised by the CSI controller, *SYSADM* automatically sets this field to *no* for all other UPS cabinets.

Supervised cabinets
: This input field allows you to specify which cabinets are to be supervised by this UPS cabinet. (You can select all the cabinets that are to be supervised in the *Supervised cabinets* multiple selection list.) Only system cabinets, external cabinets and peripheral cabinets that are installed can be supervised.

3.2.7 Configuring boards

You can maintain the boards that are installed in your system by selecting the menu item *boards* in the *Configuration* window.
When you select this menu item, the program displays the *Boards* window, which contains a selection list of all the boards that are known to *SYSADM*. In this window you can select available boards for processing:
When you select a board, a form containing the attribute settings of the board is displayed.

Tip:

If the name of a board has a question mark instead of a consecutive number as a suffix, the board in question is one which was determined during a hardware analysis, but for which there is no driver or the MBII is deactivated. Be careful not to confuse these boards (e.g. *ccs?*) with virtual boards (e.g. *ccs1 ?*).

Information on installing and configuring boards:

1. You need driver software to operate certain boards (e.g. SIM boards). If this software is not installed, install it from the SYSADM menu *software* (see the section "Managing software").
2. Shut down the computer. Install the board in a free slot provided for it. Power on the computer and start *SYSADM*.
3. Once you have installed certain boards, you must set attributes, the number and type of

which may be different, depending on the board. You know that attributes have to be set by the fact that an exclamation mark appears next to the corresponding entry. In this case, you must open the form for the corresponding board and set the attributes.

4. In order to operate CC, CL, CL14P LAN submodule, CS, CSI, HIOS/XSPLAN submodule, LCE, LCF and LCT boards in the network, you must at least specify the Internet address and the host name. To do this, open the form for the corresponding board and enter the values. Consult your network administrator to find out the relevant values.

Board type	RM600 E	RM600	RM200 RM300 RM400
ASP	-	X	-
CC91P	-	-	X
CCA, CCA II	X	X	-
CCS0, CCS2, CCS7	X	X	-
CG11V	-	-	X
CG16P, CG90P	-	-	X
CL13P, CL15P	-	-	X
CL14P	-	-	X
CL14P-LAN submodule	-	-	X
CL32P, CL43P, CL51/54P	-	-	X
CP4	X	-	-
CPU	-	X	X
CS2, CS7	-	X	-
CS17P, CS31P	-	-	X
CS34/35P	-	-	X
CSI	-	X	-
CT50E	-	-	X
DCS	-	X	-
E-SIH	-	-	X
E-SIM	-	-	X
EIP	-	-	X
HIOS	X	-	-
HIOS/XSP-LAN submodule	X	X	-
HIOS/XSP-SCSI submodule	X	X	
ITC	-	-	X

LCE, LCE2	-	X	X
LCF	X	X	X
LCT	X	X	X
MBP	X	X	-
MBPR	X	X	-
MMM	-	X	-
Motherboard	-	-	X
SCSI	-	-	X
SIH	-	X	-
SIM	X	X	-
TC	-	-	X
TCA	X	X	-
TC4	-	-	X
XSP	-	X	-

Tip:

Due to the large number of board types, we have summarized board types with essentially the same attribute options in the following sections. Illustrations are only provided as examples for individual boards.

3.2.7.1 Configuring SIM and E-SIM boards

The entry for a SIM or E-SIM allows you to set the following attributes in a form:

Cabinet (SIM board only)
This output field indicates the cabinet in which the SIM board is installed.

Slot This output field indicates the slot number of the board in the cabinet.

Tip:

The term slot is used in various ways in this section, e.g. MBII slot, EISA slot or PCI slot, depending on the computer model and/or board type used in the forms.

TAKs per AFP line
In this input field you can specify the maximum number of TAKs that are to be connected to an AFP line on this board.

Tip:

This entry is useful, for example, when you want to add a large number of TAKs using the action *multiadd,* and you do not always want to connect eight TAKs to an AFP line.

The output fields in this form contain information on the board and the connected devices.

3.2.7.2 Configuring DCS boards and HIOS/XSP-SCSI submodules

The entry for a DCS board or HIOS/XSP-SCSI submodule allows you to set the following attributes in a form:

Cabinet (DCS board only)
: This output field corresponds to the *Cabinet* output field for a SIM board (see section "Configuring SIM and E-SIM boards").

MBII slot (DCS board only)
: This output field corresponds to the output field *Slot* for a SIM board (see section "Configuring SIM and E-SIM boards").

SCSI-ID (for channel 1 and channel 2 for DCS board)
: In these input fields, specify the SCSI number (0 ...7 or with Wide SCSI 0 ... 15) for the SCSI controller (HIOS/XSP-SCSI submodule) or for each of the two controllers of the DCS dual controller. Only the free SCSI numbers are displayed in the selection list (`[CHOICES]` function key).

Tip:

In general, the SCSI ID assigned by the operating system is correct and must not be changed. It only makes sense to change this parameter in the case of a multihosted SCSI configuration.
These input fields are only available for installed boards if the boards are fitted with the corresponding controllers.

Mode (HIOS/XSP SCSI submodule)

Mode channel 1 / Mode channel 2 (DCS board)
: Specify in these input fields whether the corresponding channel on the board is to be operated in *fast* or *slow* mode.
After you have changed the mode type and incorporated the change in the database (by selecting the menu item *quit* in the *Hardware Configuration* window), you must restart the system.

Tip:

You can only set the mode type for *fast* boards. *Slow* boards cannot be operated in *fast* mode. You must set the mode type *slow* for *BG55* peripheral cabinets.
These input fields are only displayed for installed boards if the boards are fitted with the relevant controllers.

The output fields in this form contain information on the board and the connected devices.

3.2.7.3 Configuring ASP, CCA, CCS, CG11V, CG16P, CL14P, CP4, CPU, CS2, CS7, CS17P, CS31P, CS34/35P, EIP, HIOS, MBP, MBPR, MMM, SCSI and XSP boards

The entry for one of these boards allows you to set the following attributes in a form:

Cabinet (CCA, CCS, CS2, CS7 and MBPR boards only)
This output field corresponds to the *Cabinet* output field for a SIM board (see section "Configuring SIM and E-SIM boards").

Slot This output field indicates the slot number of the board in the cabinet.

SCSI-Id #1/SCSI-Id #2/SCSI-Id #3 (CS17P board only)
In these input fields, you can specify the SCSI number for the corresponding channel (SCSI controller).

Comment (CP4 and CS34/35P board only)
You can enter any comment in this input field.

RAID Manager (CS34/35P board only)
This input field is only available if the RAID Manager is installed. The function starts the RAID Manager, which is used to configure all the installed RAID controllers.

The output fields in this form contain information on the board.

CL14P

There are separate forms for configuring the (max.) four LAN interfaces on the PCI board CL14P (RM200/300/400). These forms are supplementary to the CL14P form. When CL14P is selected in the boards menu, the forms for the interfaces are displayed with four separate entries in the automatically created intermediate menu - in addition to the CL14P board itself. The interfaces are referred to as the CL14P-LAN submodule in this manual. The configuration of these interfaces is described in the chapter which deals with the LAN boards.

HIOS and XSP

There are separate forms for configuring the daughter boards of the SPbus boards HIOS (RM600E) and XSP (RM600-xxx). These forms are supplementary to the HIOS or XSP form. When HIOS or XSP is selected in the boards menu, the forms for the daughter boards are displayed as channel entries in the automatically created intermediate menu - in addition to the HIOS or XSP board itself. The daughter boards are referred to as the HIOS/XSP-LAN submodule and HIOS/XSP-SCSI submodule in this manual. The configuration of these boards is described in the sections which deal with LAN and SCSI boards.

CP4

The following two sections only apply to the CP4 board (CPU board RM600 E). There are two supplementary forms here, one for the CPU configuration and one for the memory bank configuration. When CP4 is selected in the boards menu, these options are displayed with the entries "CP4-CPUs" and "CP4-Bank" in the automatically created intermediate menu - in addition to the CP4 board itself.

Configuring CP4-CPU

There are no input fields. The status is displayed for all four CPU slots. An installed CPU can be selected and its status changed.

Configuring the CP4 memory bank

There are no input fields. The size and status are displayed for all 32 memory bank slots. A stuffed memory bank can be selected and its status changed.

3.2.7.4 Configuring SIH and E-SIH boards

The entry for one of these boards allows you to set the following attributes in a form:

Cabinet (SIH boards only)
: This output field corresponds to the *Cabinet* output field for a SIM board (see section "Configuring SIM and E-SIM boards").

Slot This output field indicates the slot number of the board in the cabinet..

Type of SW
: Specify the type of connector box that is used to connect devices to the board in this input field.

The output fields in this form contain information on the board and the connected devices.

3.2.7.5 Configuring CC91P, CG90P, CL13P, CL14P-LAN submodule, CL15P, CL32P, CL43P, CL51/54P, CSI, HIOS/XSP-LAN submodule, LCE/LCE2, LCF, LCT boards and motherboard

The entry for one of these boards allows you to set the following attributes in a form:

Cabinet (LCE/LCE2, LCF and LCT boards in an RM600 only)
: This output field corresponds to the *Cabinet* output field for a SIM board (see section "Configuring SIM and E-SIM boards").

Slot (not CSI, LAN interfaces, motherboard and all CxxxP boards on PCI bus)
: This output field corresponds to the *Slot* output field for a SIM board (see section "Configuring SIM and E-SIM boards").

Internet address
: Define the Internet address for the LAN interface on the board in this input field. The address must be specified in decimal notation (e.g.: 132.132.16.244). Consult your network administrator to find out the valid address. If the board is an LCE2 board, this input field appears twice.

Host name
: Define the host name for the LAN interface on the board in this input field. This name is used by other systems in the network if your system is to be reached using this board. A valid host name can contain up to 64 characters. Consult your network administrator to find out the valid host name. When you activate the configuration, the host name is entered in the file */etc/inet/hosts*. If the board is an LCE2 board, this input field appears twice.

Tip:

If you are using a network management tool, such as NIS (Network Information Service) or Name Server, you must make the host name known on your network administration system.

Alias names

In this input field you can specify one or more alias names that can be used instead of the host name. Each entry must be separated by spaces. Valid alias names can contain up to 64 characters. When you activate the configuration, the alias names are entered in the */etc/inet/hosts* file, or if alias names have already been entered, the new alias names are added to these. If the board is an LCE2 board, this input field appears twice.

Tip:

If you are using a network management tool, such as NIS or Name Server, you must make the alias name known on your network administration system.

Comment

You can enter any comment in this input field. If the board is an LCE2 board, this input field appears twice.

Internet mask

Define the Internet mask that corresponds to the network class of your LAN in this input field. The address must be entered in hexadecimal form (e.g.: ffffff00). Consult your network administrator to find out the valid address. If the board is an LCE2 board, this input field appears twice.

Broadcast address

Define the broadcast address for the LAN interface on the board in this input field. The address must be entered in decimal notation (e.g.: 132.132.16.244). Consult your network administrator to find out the valid address. If the board is an LCE2 board, this input field appears twice.

Tip:

If you leave the input field blank and exit with **[RETURN]**, a valid address is automatically calculated at a later stage.

Multicasting

In this input field you define whether IP multicasting is to be activated or deactivated for this board. IP multicasting enables a group of users to be addressed using a multicasting address assigned to this group. Compared with normal addressing, the multicasting address has a special format. The default setting is "off", i.e. multicasting addresses can neither be formed nor recognized. Ask your network administrator whether or not this function should be activated.

The output fields in this form contain information on the board.

CL14P-LAN submodule

There are separate forms for configuring the (max.) four LAN interfaces on the PCI board CL14P (RM200/300/400). These forms are supplementary to the CL14P form, which only provides information on the number of the PCI slot containing the CL14P board. When CL14P is selected in the boards menu, the forms for the interfaces are displayed with four

separate entries in the automatically created intermediate menu - in addition to the CL14P board itself. The interfaces are referred to as the CL14P-LAN submodule in this manual.

3.2.7.6 Configuring CT50E, ITC, TC, TCA and TC4 boards

You can define the following attributes in a form under this entry for a CT50E board:

Slot This output field indicates the slot number of the board in the cabinet.

Connection boxes
: You can use this field to specify the number of connection boxes (max. 2). If two connection boxes are specified, the board must have a piggy-back board.

You can set the following attributes in a form under this entry for an ITC board:

Slot This output field indicates the slot number of the board in the cabinet.

Connection box
: You can use this field to specify the type of connection box used to connect devices to the board.

You can set the following attributes in a form under this entry for an TC board:

Slot This output field indicates the slot number of the board in the cabinet.

Connection box 0 / connection box 1 / connection box 2 / connection box 3
: You can use these fields to specify the type of connection box used to connect devices to the board.

Tip:

You must configure the second or third box before you configure a third or fourth one.

The entry for a TCA board allows you to set the following attributes in a form:

Cabinet
: This output field indicates the cabinet in which the TCA board is installed.

Slot This output field indicates the slot number of the board in the cabinet.

Type This input specifies the type of TCA board (*TCA* or *TCA1*).
: While it is possible to connect both devices with V.24 and SS97 interfaces to the "TCA" board, the "TCA1" board only supports devices with an SS97 interface.

Channel 0 / Channel 1 / Channel 2
: In these input fields you can define the type of connector box that is used to connect devices to the corresponding channel.

The entry for a TC4 board allows you to set the following attributes in a form:

Port 1 / Port 2 / Port 3 / Port 4
: Define the interface for the port that is used to connect a device to the board in these input fields. If there is no interface card installed for one or more ports, enter *not installed* here.

The output fields in these forms contain information on the board and the connected devices.

3.2.8 Configuring TAKs

You can configure terminal attachment concentrators by selecting the menu item *taks* in the *Configuration* window.
When you select this menu item, the program displays the *taks* window, which contains a selection list of all the configured TAKs. In this window you can add new TAKs and select existing TAKs for processing, or you can copy, rename, or remove them.
The entry for a TAK allows you to set the following attributes in a form:

SIM name
: Define the name of the SIM board to which the TAK is to be connected in this input field. The SIM board must be configured in the system using this name.

AFP line
: In this input field you define the number of the AFP line on the SIM board to which the TAK is to be connected.

AFP address
: Define the address of the TAK in this input field. All TAKs that are connected to an AFP line must have a unique address in the range from 1 through 9. Only the free addresses for the relevant AFP line are displayed in the selection list (`[CHOICES]` function key).

Tip:

The AFP address must also be set on the TAK itself.

Devices per TAK
: Define the maximum number of devices that are to be connected to this TAK in this input field.

The names of the devices that are already configured on this TAK are displayed in the output fields.

3.2.9 Configuring terminal servers

Under the *terminal servers* menu item in the *Configuration* window you can:
- Configure terminal servers, if these are installed and managed via SNMP (Simple Network Management Protocol) - see the section "Configuring terminal servers managed via SNMP").
- Make known terminal servers, if these are configured with TACLAN-ADM863 and not managed via SNMP (see the section "").

You can also create virtual configurations.
After you select this menu item, the terminal server window is opened which offers all terminal servers known in *SYSADM* for selection. In this window you can add new terminal servers and select, copy, rename or remove existing ones.

3.2.9.1 Configuring terminal servers managed via SNMP

The following requirements must be fulfilled to configure a terminal server managed via SNMP in *SYSADM*, and activate this configuration in the system:

- The software packages SIsnmpdm V1.0 and later, SIterms V2.0 and later, SIrtty, and SIadm863 must be installed. The SIsnmpdm package must be installed before the SIterms package.
- The terminal server must be SNMP-capable, that is it must be software release V8.0 or later.

Perform the following actions outside of *SYSADM*:

- Install the terminal server (i.e. the hardware) and make the initial settings. These two actions are described in the Operating Guide for the TACLAN terminal server.
- With network loading terminal servers
  Install the TACLAN ADM863 software on the boot host, and make sure that the version is at least Version 2.1. The software installation is described in the "TACLAN-ADM863 Software Installation" manual.
- Add the line `snmp community public`:

  with network loading terminal servers:
  in the */opt/adm863/gateways* file

  with self-loading terminal servers:
  in the configuration file of the terminal server itself
- Set the *allow_snmp_sets* parameter to *Y* (with the administration command *na* or the CLI command *admin*).
- Boot the terminal server.
- Ensure either that the terminal server can be accessed via the name server, or enter its Internet address and its name in the */etc/inet/hosts* file.

When you have performed the actions described above, you can configure the terminal server in *SYSADM*. To do this, carry out the following steps:

1. Create a terminal server in the *terminal servers* window. If it is an installed terminal server, enter the name by which it is known in the network. For virtual configurations you can also specify any name you wish and change this name later if required.
   After you create the terminal server, the form for this terminal server is opened automatically.
2. Enter the TACLAN type in this form and activate SNMP administration.
3. Close the form using the **[SAVE]** function key.
4. If you open the form again you will find additional input fields where you need make no further entries for installed terminal servers, since this data will be established during a later hardware analysis. In the case of virtual configurations, you should check the number of ports, and where necessary, change this before configuring any devices on this terminal server. Inconsistent configurations can result if the established value deviates from the set value, and if devices are configured on non-existent ports, since the number of ports will be established during a later hardware analysis.
5. Analyze the installed terminal server using the menu item *Edit->analyze->terminal servers*. Virtually configured terminal servers cannot be analyzed.
6. After you have configured the terminal server in this way, you can configure devices on it. Whether the terminal server is installed or virtual is immaterial.

After you select a terminal server another window is opened which contains the following menu items:

Terminal server name
Under this menu item you can set attribute settings for a terminal server.

Taclan ports
When you select this menu item, the *Taclan ports* window is opened offering all ports of the selected terminal server as menu items for selection. Under each of these menu items you can obtain information about the devices connected to each port. In addition you have the option of overriding port settings by specifying user-defined attribute sets.

The form for attribute settings and the additional settings of a terminal server managed by SNMP contains the following input fields:

TACLAN type
In this input field you specify that the terminal server is to be managed via SNMP.

SNMP administration
In this input field you specify that the terminal server is to be managed via SNMP.

Tip:

If a selection is not offered in this field, the terminal server is not SNMP-capable.

Ports In this input field you define the number of ports.

Tip:

This input field is only important in the case of virtual configurations (see point 4). In the case of installed terminal servers the number of ports is established automatically during the hardware analysis. Any input or change to this input field will be overwritten during the next hardware analysis.

Add. settings
In this input field you can select a number of user-defined attribute sets in order to use the additional functions of the terminal server.
The attribute sets are defined under the main menu item "Settings" in section " Taclan settings". Here you have the option of creating new attribute sets yourself and changing existing attribute sets. You must ensure that all attribute sets to be specified in this input field begin with the prefix *B*.
Two attribute sets have been predefined by the manufacturer:

B-passive_routing
If you specify this attribute set the terminal server will also be used as a router.

B-image
If you specify this attribute set, the software package to be loaded in the terminal

server will be selected.

Internet addr
: In this input field you can change the Internet address of the installed terminal server.

  Tip:

  In the case of installed terminal servers, the Internet address is established automatically during hardware analysis. If you change this address, it is loaded in the terminal server the next time the configuration changes are activated, and also changed in the file */etc/inet/hosts*, and/or the name server.

Internet mask
: In this input field you can change the Internet mask of the installed terminal server.

  Tip:

  In the case of installed terminal servers, the Internet mask is established automatically during hardware analysis. If you change this mask, it will be loaded in the terminal server the next time the configuration changes are activated.

Broadcast addr
: In this input field you can change the broadcast address of the installed terminal server.

  Tip:

  In the case of installed terminal servers, the broadcast address is established automatically during hardware analysis. When you change this address, it is loaded in the terminal server the next time the configuration changes are activated.

Load gateway addr
: In this input field you can change the load gateway address of the installed terminal server.
  This is the address of a gateway computer which functions as a bridge to the boot host if the boot host is not in the same subnetwork.

  Tip:

  In the case of installed terminal servers, the load gateway address is established automatically during hardware analysis. If you change this address it will be loaded in the terminal server the next time the configuration changes are activated.

Boot host addr
: In this input field you can change the address of the host of the installed terminal server if this is to be loaded over the network. This is the address of the system from which the terminal server is to be booted.

Tip:

In the case of installed terminal servers loaded over the network, the host address is established automatically. If you change this address it will be loaded in the terminal server the next time the configuration changes are activated.
If the terminal server is a self-loading device which is not to be loaded over the network, the input field is preset to a default value of *0.0.0.0*. In this case any changes made have no effect.

Comment
In this input field you can enter any comment you wish.

The form for a Taclan port contains the following input fields for alternative settings:

Alt. settings
In this input field you can enter a number of user-defined attribute sets to override the terminal server port settings which result from the configuration of a device.
The attribute sets are defined under the main menu item "Settings" in section " Taclan settings". Here you have the option of creating new attribute sets yourself and changing existing attribute sets. You must ensure in this case that all attribute sets to be specified in this input field begin with the prefix *P-*.

Example:
You configured a terminal on a port. The default operating mode for this terminal is *SLAVE*. You can override this setting with an attribute set that defines another operating mode, for example *P-dedicated*.

The following attribute sets are predefined by the manufacturer:

P-slave
With this attribute set the operating mode of the terminal server port is set to *SLAVE*.

P-cli With this attribute set the operating mode of the terminal server port is set to *CLI*.

P-dedicated
With this attribute set the operating mode of the terminal server port is set to *DEDICATED*.

P-need_dsr_en
With this attribute set the TC signal is switched on.

P-need_dsr_dis
With this attribute set the TC signal is switched off.

P-fctl_XonXoff
With this attribute set the software flow control is switched on.

P-appendix
This attribute set contains a range of attributes which serve as examples to help you create your own attribute sets.

The output field *Res. settings* shows the settings to be loaded in the terminal server.

3.2.9.2 Terminal servers not managed via SNMP

The configuration of terminal servers (TACLAN) which are not to be managed via SNMP is performed with TACLAN-ADM863. Configured terminal servers can only be made known in *SYSADM*.
Perform the following actions outside of *SYSADM*:

- Install the terminal server (i.e. the hardware) and define the initial basic settings. Both of these procedures are described in the operating instructions for the TACLAN terminal server.
- Install the TACLAN ADM863 software on the system from which the TACLAN peripherals are to be operated. The software installation process is described in the manual "TACLAN-ADM863 - Software Installation".
- Boot the terminal server (see operating instructions for the TACLAN terminal server).
- Configure the terminal server with the administration command *na* (see chapter "Appendix B: Connecting devices to the TACLAN terminal server" and the Administrator's Guide "TACLAN-ADM863"). The individual device ports can then be configured.
- Boot the terminal server again with the command *na* (see the Administrator's Guide "TACLAN-ADM863").
- Either ensure that the terminal server can be reached via the name server, or enter its Internet address and name in the */etc/inet/hosts* file.

When you have performed the actions described above, you can configure the terminal server in *SYSADM*. To do this, carry out the following steps:

1. Create a terminal server in the *terminal servers* window.
   If it is a configured terminal server, enter the name by which it is known in the network. For virtual configurations you can also specify any name you wish and change this name later if required.
   After you create the terminal server, the form for this terminal server is opened automatically.
2. In this form, set all attributes such that they correspond with the configured terminal server or the desired virtual configuration, and deactivate SNMP administration.
3. Configure at least one terminal on the new terminal server.
4. Activate this configuration using the menu item *File->activate*. The terminal server is known in *SYSADM* following activation.

After you select a terminal server, another window is opened which contains the following menu items:

Terminal server name
: Under this menu item you can set the attribute settings for a terminal server.

Taclan ports
: If you select this menu item, the *Taclan ports* window is opened which offers for selection all ports of the selected terminal server. Under each of these menu items you can obtain information about the devices connected to each port.

The following diagram shows the form for the attribute settings of a terminal server which is not managed via SNMP:

TACLAN type
In this input field you define the terminal server type.

SNMP administration
In this input field you specify that the terminal server is not to be managed via SNMP.

Ports In this input field you set the number of ports.

Tip:

The effect of all attribute settings that you set in this form is limited to the database. It is not possible to change the configuration in the system here. The purpose of the attribute settings is merely to make known an existing terminal server, or to create a virtual configuration.

3.2.10 Configuring PCs and terminals

You can configure PCs with alpha terminal emulations and alpha terminals under the menu item *PCs & terminals* in the *Configuration* window.

Tip:

X terminals are not configured with *SYSADM*, rather under SINIX/windows with the menu item

System ->Administration ->X-terminal administration.
When you select the menu item *PCs & terminals*, a window is opened containing the following menu items:

PC & terminal entries
Under this menu item you can configure PCs and terminals.

default terminal type
Under this menu item you can define a terminal type which will be taken as the default when you add new PCs and terminals.

default settings
Under this menu item you can define default attribute settings for all terminal types which will be used automatically when you add new PCs and terminals.

Tip:

You can set the line parameters for operating PCs and terminals in section "Settings".

3.2.10.1 Terminal types

All PCs and terminals are assigned terminal types under *SYSADM*. A terminal type summarizes the different device variants. For example, the terminal type *97808* covers the variants *97808-301*, *97808-302* and *97808-310*. Select the menu item *default terminal type* to

display a list of the terminal types that are available on your system.
Each of the terminal types in turn forms a family, i.e. once you have defined a type for a PC or a terminal, you can only change this type within the specific family. When you press the **[CHOICES]** function key in the *terminal type* input field in the form for setting the attributes for a PC or terminal, the program displays a list of the terminal types that belong to the family.
In order to avoid redundancies in the description of the attribute settings, terminal types that need (basically) the same attributes for configuration purposes are grouped together under one configuration type.
The following table contains a list of the terminal types that are currently available under *SYSADM* and clarifies the connection to families (the same number represents the same family), device variants and configuration types (column "Attribute settings of...").

Terminal type	Fam.	Device variants[1]	Attribute settings of ...
9766[1]	1	BA97 (follow-on product to the BA80)	PCs and terminals
9766-hdlc	2	BA97 with HDLC protocol	PCs and terminals with HDLC protocol
9766-hdlc-pc	8	PC with BA97 emulation and HDLC protocol	PCs and terminals with HDLC protocol
9766-lanpc	9	PC with BA97 emulation on LAN	PCs on LAN
9766-pc[2]	7	PC with BA97 emulation	PCs and terminals
9766-vt220	3	BA97 in unloaded state	PCs and terminals
97801-3	4	97801-302, 97801-304, 97801-305, 97801-306	PCs and terminals
97801-4	4	97801-402, 97801-404, 97801-405	PCs and terminals
97801-480	4	97801-480, 97801-C480	PCs and terminals
97801-5	4	97801-502, 97801-512, 97801-514, 97801-524	PCs and terminals
97801-51xP[1]	4	97801-512P, 97801-514P	PCs and terminals

97801-530[1]	5	97801-530	Terminals with integrated TAK
97801-vt	6	97801-VT01, 97801-VT02	PCs and terminals
97808	4	97808-301, 97808-302, 97808-310	PCs and terminals
97808-32	4	97808-32*x*	PCs and terminals
99011	4	99011	PCs and terminals
ba47[2]	1	BA47	PCs and terminals
ba47-hdlc	2	BA47 with HDLC protocol	PCs and terminals with HDLC protocol
ba48	3	BA48	PCs and terminals
ba80[2]	1	BA80	PCs and terminals
ba80-hdlc	2	BA80 with HDLC protocol	PCs and terminals with HDLC protocol
ba80-hdlc-pc	8	PC with BA80 emulation and HDLC protocol	PCs and terminals with HDLC protocol
ba80-lanpc[2]	9	PC with BA80 emulation on LAN	PCs on LAN
ba80-pc[2]	7	PC with BA80 emulation	PCs and terminals
ba80-vt220	3	BA80 in unloaded state	PCs and terminals
ba80vt100[2]	1	BA80 with old PROM version	PCs and terminals
ba80vt100-hdlc	2	BA80 with old PROM version and HDLC protocol	PCs and terminals with HDLC protocol
sinix-te	7	Software package for different terminal emulations on PC1	PCs and terminals
sinix-te-lan	9	Software package for different terminal emulations on PC on LAN[5]	PCs on LAN
tc10-ansi	4	TC10 with SCO-ANSI emulation	PCs and terminals
tc10-vt	4	TC10 with VT emulation	PCs and terminals

tc20-97801	4	TC20-V100 with 97801 emulation TC20-V105 with 97801 emulation	PCs and terminals
tc20-ansi	4	TC20-V100 with SCO-ANSI emulation TC20-V105 with SCO-ANSI emulation	PCs and terminals
tc20-vt	4	TC20-V100 with VT emulation TC20-V105 with VT emulation	PCs and terminals
tc20-v801	4	TC20-V801 with 97801 emulation	PCs and terminals
generic	3	VT220-compatible terminals that are not SNI products and do not have to be loaded	PCs and terminals

[1]) Please refer to the relevant Operating Manual to find out which device variants can be connected to your system.
[2]) These terminal types can also be used as distribution devices for connecting printers with a V.24 interface and other serial devices.
[3]) This terminal type can also be used as a distribution device for connecting devices with an SS97 interface.
[4]) This terminal type can also be used as a distribution device for connecting terminals with an SS97 interface (97801-*xx*2, 97801-VT*xx*, TC20-V801) and printers with an SS97 interface.
[5]) The possible emulations are given in the selection list for the "Emulation" input field which you can find in the form for setting the attributes for a device of this type.

3.2.10.2 PC & terminal entries

When you select this menu item, the program displays the *PC & terminal entries* window, which contains a selection list of all the configured PCs and terminals. You can press the **[ACTIONS]** function key in this window to add new devices and select existing devices for processing, or copy, rename or remove them.
When you select a PC or terminal in the *PC & terminal entries* window:

- A form is displayed on devices that do not have multiwindow capabilities in which you can edit the attribute settings for this device.
- The program displays another window on devices that have multiwindow capabilities, which can contain further entries for the channels 1-*n*, in addition to the entry for the device itself (channel 0); these entries can be used for virtual terminals, external devices (e.g. printers) or for CTRAS file transfer (how the channels 1-*n* are used depends on the type of multiwindow device).

When you select a channel in this window, the program displays a form in which you can edit the attribute settings for this channel. You can also press the **[ACTIONS]** function key in this window to add new channels and copy, rename, or remove existing channels.

Attribute settings for PCs and terminals
The same attributes generally have to be set for the types of terminals that are grouped together in this section. The attributes described here are taken from an example of a terminal of type *97801-3*:

Notes on configuration of a TC20-MuSe terminal:
TC20-MuSe terminals (MuSe = MultiSession) are configured under the terminal type *sinix-te*. The following restrictions must be observed:
- TC20-MuSe terminals, in contrast to "real" terminal emulations on PC, only have 10 channels.
- When configuring the terminal (channel 0), the emulations *ba80* and *97801-C480* must not be selected.
- When configuring further channels, the assignment is fixed: channels 1-7 for virtual monitors, channels 8-9 for printers.
- For channels 1-9, operating modes *ba80*, *97801-C480* or *CTRAS_File_Transfer* must not be selected.
- With new SINIX-TE entries, channel 7 is preassigned the operating mode *CTRAS_File_Transfer*. The preassignment must be changed to an operating mode for virtual monitors (e.g. VT220).
- For channel 8, only the interface type *Centronics* may be selected because this channel is assigned to the local Centronics interface of the terminal.
- For channel 9, *SYSADM* is currently offered only for interface type *V.24*. This channel is permanently assigned to the local SS97 interface, however. If you wish to connect a printer to this channel, you must configure a printer with a V.24 interface that is functionally compatible with the printer with SS97 interface actually connected (e.g. 4822-P10).

The terminal form contains the following input fields:

PC/terminal type
: You can change the PC or terminal type to a different type in the same family in this input field. The default value in this input field is the value that was specified when the device was added or the value that was set under the menu item *default terminal type*.

Interface
: Define the system interface for the PC/terminal in this input field. Please note that interface converters and modems are not taken into consideration here.

Attachment type
: In this input field you can define the type of device to which the PC or terminal is to be connected. This may be a board or a distribution device (e.g. TAK), depending on the system interface. The desired device type must be configured in the system.

Attachment device
: Define the name of the device to which the PC or terminal is to be connected in this input field. The desired attachment device must be configured in the system using this

name.

Connector name
: Define the name of the connector on the attachment device to which the PC or terminal is to be connected in this input field. The selection list only displays the free connectors on the selected attachment device.

Modem control
: In this input field you can define whether the PC or terminal is to operate with a modem signal (*yes*) or without a modem signal (*no*).
The modem signal is used to send messages to the system in order to report when the PC/terminal is switched on/off. Certain terminals (e.g. 9766) always need the modem signal.

Tip:

All TTY labels, one of which you must specify in the next input field, consist of a *Modem control* input field (see section " Line settings for PCs, terminals, printers, and serial devices"). If the modem control for the corresponding TTY label is set to *yes*, it must then be set to *yes* here also. If the modem control for the TTY label is set to *no*, the entry *yes* that you entered in the input field in this form will be overridden.

TTY label
: You define a TTY label for the PC or terminal in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for PCs and terminals are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Keyboard type
: You can define the keyboard type for the terminal in this input field. If you enter *default* or *undef* here, the keyboard type that was set in the Setup menu for the terminal, or the keyboard type that is preset by the terminal hardware is used.

Keyboard nationality
: Define the country code for the keyboard type in this input field. If you enter *DEFAULT* or *UNDEF* here, the nationality that was set in the Setup menu for the terminal, or the nationality that is preset by the terminal hardware is used.

Prompt
: In this input field you can enter the character string which is to be displayed when you log on to the system. In addition to any user-defined text, you can also use the *#TERM* variable here. When you enter this variable, the PC/terminal name is displayed as the prompt.

Login service
: In this input field you can define whether a login service is to be started (*yes*) or not (*no*) when you switch on the PC/terminal.

Emulation (only for terminals of type *9766-pc*, *ba80-pc* and *sinix-te*)

In this input field you define which terminal type is to be emulated.

Firmware number (only in the case of terminals of type *tc20-ansi*, *tc20-97801* and *tc20-vt)*
In this input field you can set a loadable firmware variant. By specifying a firmware variant you configure the loadable device variant *TC20-V105* of the relevant terminal type. If you do not specify a firmware variant, you configure the non-loadable device variant *TC20-V100* of the relevant terminal type.

Configuring channels for PCs and terminals with multiwindow capabilities
If you are using devices with multiwindow capabilities, you can configure other channels, in addition to the device itself (channel 0) as described above, that can be used for virtual terminals, external devices (e.g. printers), or for CTRAS file transfer.
When you select such a channel in this window, the program displays a form for printers, for example, into which you can enter the attribute settings of this channel:

Channel number
You can define the number for the channel of a virtual terminal, an external device (e.g. printer), or CTRAS file transfer in this input field:

1-7 Virtual screens for terminals and terminal emulations on PC

8-9 Printers for terminals

8-15 External devices without login service for terminal emulations on PC

1-15 CTRAS file transfer on PCs of the type *sinix-te* and *sinix-te-lan*

Interface
In this input field you can define the peripheral interface for the PC or terminal for connecting an external device (e.g. printer). You can only specify a channel type if you have entered a value greater than or equal to 8 in the *Channel number* field.

Login service (not for *sinix-te* and *sinix-te-lan* PCs)
You can define in this input field whether a login service is to be started (*yes*) or not (*no*) when you switch on the virtual terminal. A login service can be started for each virtual terminal. No login service can be started for *sinix-te* and *sinix-te-lan* PCs.

Prompt
In this input field you can enter a character string which is to be displayed when you log on to the system. In addition to any user-defined text, you can also use the *#TERM* environment variable here. When you enter this variable, the terminal name is displayed as the prompt.

Mode (only for *sinix-te* and *sinix-te-lan* PCs)
In this input field you define the mode for the channel that was specified in the *Channel number* field. You can use the channels 1 through 7 for virtual terminals (emulations) or for CTRAS file transfer, while channels 8 through 15 can be used for external devices (e.g. printers), or for CTRAS file transfer.

Tip:

When configuring channels for TC20-MuSe terminals (terminal type *sinix-te*), the operating modes *ba80*, *97801-C480* and *CTRAS_File_Transfer* must not be selected. If the operating mode for channel 7 is set to *CTRAS_File_Transfer* is preset, it must be changed on to a virtual monitor.

The output fields in this form contain information on the type of multiwindow PC/terminal and the device that is connected to the channel.

Attribute settings for PCs and terminals using the HDLC protocol

The entry for a PC or terminal that is operated using the HDLC protocol allows you to set the following attributes in a form:

PC/terminal type

You can change the PC/terminal type to a different type in the same family in this input field. The default value in this input field is the value that was specified when the device was added or the value that was set under the menu item *default terminal type*.

Attachment type

In this input field you can define the type of device to which the PC or terminal is to be connected. This may be a board or a distribution device (e.g. TAK), depending on the system interface. The desired device type must be configured in the system.

Attachment device

Define the device name to which the PC/terminal is to be connected in this input field. The attachment device must be configured in the system using this name.

Connector name

Define the name of the connector on the attachment device to which the PC or terminal is to be connected in this input field. The selection list only displays the free connectors on the selected attachment device.

Attachment type

Specify the link address of the HDLS line in hexadecimal form in this input field. The value you set for the link address in *SYSADM* must be the same as the value you set in the terminal, or the value which you set when you installed/configured the terminal emulation on the PC.

TTY label

You define a TTY label for the PC or terminal in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for PCs and terminals are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Keyboard type

You define the keyboard type for the terminal in this input field. If you enter *default* or *undef* here, the keyboard type that was set in the Setup menu for the terminal, or the keyboard type that is preset by the terminal hardware is used.

Keyboard nationality

Define the country code for the keyboard type in this input field. If you enter *DEFAULT* or *UNDEF* here, the nationality that was set in the Setup menu for the terminal, or the

nationality that is preset by the terminal hardware is used.

Line label
: You define the line label for the HDLC connection in this input field. The line label is an entry which begins with *line* in the */etc/hdlcdefs* file and defines the HDLC parameters for all the devices on a channel.

Link label
: You define the link label for the HDLC connection in this input field. The link label is an entry which begins with *link* in the */etc/hdlcdefs* file and defines the HDLC parameters for a device address.

Tip:

When you operate HDLC PCs/terminals over a modem, you must set a link label whose *m5timer* parameter contains the value 0.

Prompt
: In this input field you can enter the character string which is to be displayed when you log on to the system. In addition to any user-defined text, you can also use the *#TERM* variable here. When you enter this variable, the PC/terminal name is displayed as the prompt.

Login service
: In this input field you can define whether a login service is to be started (*yes*) or not (*no*) when you switch on the PC/terminal.

Attribute settings for terminals with an integrated TAK

The entry for a *97801-530* terminal allows you to set the following attributes in a form:

PC/terminal type
: You can change the terminal type to a different type in the same family in this input field. The default value in this input field is the value that was specified when the device was added or the value that was set under the menu item *default terminal type*.

Name of SIM
: In this input field you define the name of the SIM board (Serial Interface Multiplexer) to which the AFP terminal is to be connected. The SIM board must be configured in the system using this name.

AFP line
: In this input field you define the number of the AFP line on the SIM board to which the AFP terminal is to be connected.

AFP address
: You must specify the address of the AFP terminal in this input field. All terminals that are connected to an AFP line must have a unique address in the range from 1 through 9.

Tip:

You can select the required AFP line from the list of free addresses. The AFP address must also be set on the terminal itself.

Modem control

In this input field you define whether the terminal is to operate with a modem signal (*yes*) or without a modem signal (*no*). The modem signal is used to send messages to the system in order to report when the terminal is switched on/off.

Tip:

All TTY labels, one of which you must specify in the next input field, consist of a *Modem control* input field (see "Modem control").If the modem control for the corresponding TTY label is set to *yes*, it must then be set to *yes* here also. If the modem control for the TTY label is set to *no*, the entry *yes* that you entered in the input field in this form will be overridden.

TTY label

You define a TTY label for the terminal in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for terminals are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Keyboard type

You define the keyboard type for the terminal in this input field. If you enter *default* or *undef* here, the keyboard type that was set in the Setup menu for the terminal, or the keyboard type that is preset by the terminal hardware is used.

Keyboard nationality

Define the country code for the keyboard type in this input field. If you enter *DEFAULT* or *UNDEF* here, the nationality that was set in the Setup menu for the terminal, or the nationality that is preset by the terminal hardware is used.

Prompt

In this input field you can enter the character string which is to be displayed when you log on to the system. In addition to any user-defined text, you can also use the *#TERM* variable here. When you enter this variable, the terminal name is displayed as the prompt.

Login service

In this input field you can define whether a login service is to be started (*yes*) or not (*no*) when you switch on the terminal.

The names of the devices that are connected to the terminal are displayed in the output fields *A(SS97)* and *B(SS97)*.

Attribute settings for PCs on LAN

The entry for a PC which is to operate on a LAN allows you set the following attributes in a form:

PC/terminal type

You can change the PC type to a different type in the same family in this input field. The default value in this input field is the value that was specified when the PC was added or the value that was set under the menu item *default terminal type*.

Internet address

Enter the Internet address of your PC in decimal form (e.g.: 144.144.16.233) in this input field. Consult your network administrator to find out the valid address.

Host name

When you are adding a new PC, the default entry in this input field is generally the name of the terminal and can be changed at this point. A valid host name can contain up to 64 characters. When you activate the configuration, the host name is entered in the file */etc/inet/hosts*.
When you change the attribute settings for a PC whose configuration has already been activated, the default entry in this input field is the corresponding host name from the file */etc/inet/hosts*. You should not change the host name in this case, since this would cause inconsistencies in the network and the host name in the file */etc/inet/hosts* would be replaced by the new host name when you activate the configuration.

Tip:

If you are using a network management tool, such as NIS or Name Server, you must make known the host name on your network administration system.

Alias names

When you are adding a new PC, you can specify more alias names in this input field which can be used instead of the host name. The individual entries must be separated by blanks. Valid alias names can contain up to 64 characters. When you activate the configuration, the alias names are entered in the file */etc/inet/hosts*.
When you change the attribute settings for a PC whose configuration has already been activated, the default entry in this input field is the corresponding alias names from the file */etc/inet/hosts*. If you enter new alias names in this input field, they are added to the corresponding entry in the file */etc/inet/hosts* when you activate the configuration.

Tip:

If you are using a network management tool, such as NIS or Name Server, you must make known the alias names on your network administration system.

Comment

You can enter any comment in this input field.

Port number

In this input field you must specify the TCP port number that was set for this system when you configured the terminal emulation on the PC.

Emulation

In this field, you specify the terminal type to be emulated.

TTY label
: You can define a TTY label for the PC in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for PCs are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Prompt
: In this input field you can enter the character string which is to be displayed when you log on to the system. In addition to any user-defined text, you can also use the *#TERM* variable here. When you enter this variable, the PC name is displayed as the prompt.

Login service
: In this input field you can define whether a login service is to be started (*yes*) or not (*no*) when you switch on the PC.

Tip:

To operate a PC as a 9766-lanpc or ba80-lanpc, the appropriate emulation software must be installed and started on the PC (see manuals entitled "DPTG-WIN, DPTG Emulation under Windows" or "SINIX TE, SINIX Terminal Emulation under Windows").

Tip:

In the case of terminal emulations with multiwindow capabilities, you can also add virtual terminals and printer channels, in addition to configuring the device (channel 0), as described in the subsection on "PC & terminal entries".

RTY Connection Mode
: You can define the mode to be used to set up the connection to the LAN-PC in this selection field (see *rtymon*(1M)):

  OUT The connection setup is started from the host.

  DATA The connection setup is started from the host.
  : In contrast to *OUT* mode, the connection setup is only started when any character has been received from the PC.

  IN The connection setup is started from the LAN-PC.

RTY label
: You have to define an RTY label for the LAN-PC in this selection field. RTY labels define LAN line settings that can be used for operating PCs, terminals, printers and serial devices. The RTY labels are defined in the submenu *settings -> rty settings*.

3.2.10.3 Default terminal type

When you select the menu item *default terminal type*, the program displays another window containing the default terminal type. When you press the **[CHOICES]** function key, the

program displays a list of all the available terminal types, from which you can select the desired type.
When you are adding or multiadding terminals, the terminal types that were set here appear as default entries in the *Terminal type* input field. This saves time whenever you want to add a number of terminals of the same type since you do not have to select and confirm the relevant type for each terminal.
Select *edit* as the default terminal type, if you want to expressly specify the terminal type when you are adding PCs and terminals.

3.2.10.4 Default settings

When you select the menu item *default settings*, you can set default attributes for all the available terminal types. If you are adding PCs or terminals, the values that are set here are used so that you do not have to enter the relevant attributes again.

Tip:

Setting default attributes does not affect devices that are already configured.

The program first displays a list of all the available terminal types for which you can set default attributes. When you select a terminal type, you can enter values in the following form, e.g. for the terminal type *97801-3* here:

Base of name
: In this input field you can define the character string which is to appear at the beginning of names for this terminal type. The name base can contain up to ten alphabetic characters. When you are adding PCs or terminals, the name base generally appears as a prefix to the name of the terminal. Dummy entries (#) for the terminal number can be used in the name base in addition to the characters, e.g. *t##pc*. The dummy entries are then replaced by a consecutive number when you add PCs or terminals. The first consecutive number for the terminal type is displayed in the *Starting number* output field.

Interface
: You define the default setting for the system interface type of all PCs and terminals of this type in this input field. Please note that interface converters and modems are not taken into consideration here.

Attachment type
: In this input field you define the default setting for the type of this attachment device to which the PCs or terminals of this type are to be connected. A PC or terminal can be connected directly to a board or over a distribution device, depending on the system interface.

Modem control
: In this input field you define the default setting for the modem signal (*yes* or *no*). The modem signal is used to send messages to the system in order to report when the terminal is switched on/off.

  Tip:

All TTY labels, one of which you must specify in the next input field, consist of a *Modem control* input field (see "Modem control"). If the modem control for the corresponding TTY label is set to *yes*, it must then be set to *yes* here also. If the modem control for the TTY label is set to *no*, the entry *yes* that you entered in the input field in this form will be overridden.

TTY label
: You define a TTY label as a default setting for the PC or terminal in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for PCs and terminals are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Keyboard type
: You define the default setting for the keyboard type for all terminals in this input field. If you enter *default* or *undef* here, the keyboard type that was set in the Setup menu for the terminal, or the keyboard type that is preset by the terminal hardware is used.

Keyboard nationality
: Define the default setting for the country code for a keyboard type in this input field. If you enter *DEFAULT* or *UNDEF* here, the nationality that was set in the Setup menu for the terminal, or the nationality that is preset by the terminal hardware is used.

Prompt
: In this input field you can enter the character string which is to be displayed when you log on to the system. In addition to any user-defined text, you can also use the *#TERM* variable here. When you enter this variable, the PC name is displayed as the prompt.

Login service
: In this input field you can preset whether a login service should generally be started (*yes*) or not (*no*) when you switch on a PC or terminal of this type.

3.2.11 Configuring printers

You can configure printers under the menu item *printers* in the *Configuration* window.
After selecting this menu item the *printers* window is opened which offers for selection all configured printers. In this window you can add new printers, and copy, rename, or remove existing printers using the `[ACTIONS]` function key.
SYSADM differentiates between standard printers and LAN printers. Standard printers are connected either directly to the system or to a terminal (workstation printers). LAN printers are connected to the system over a local network. When you add a printer, you must decide which of the two categories the printer belongs to - standard printer or LAN printer.

Tip:

When you add a printer, the IOCS (Input Output Control System) and the SINIX spooler SPOOL 4.x are configured so that the printer can be used over the spooler. If you need special spooler settings, use the SYSADM menu *sni_spool*. If the new printer is to be selected using the SINIX spooler SPOOL V1.6, the printer must be announced to the spooler using the SYSADM menu *extensions -> spool_inst*. For further information on this,

refer to the manuals entitled "IOCS V3.0, Administering, Configuring and Programming Printers" and "SPOOL V4.0, OA&M User Interface".

3.2.11.1 Attribute settings for standard printers

The following figure shows the form that is used to configure standard printers:

Type Define the type of printer you are using in this input field. You can select it from the list of all the printer types that are available on your system. If your printer is of a type that is not displayed in the list, use the *generic* type.

Interface
Define the interface type of the printer in this input field. Please note that interface converters and modems are not taken into consideration here.

Attach. type
In this input field you can define the type of attachment device to which the printer is to be connected. The printer can be connected either directly to a board or over a distribution device, depending on the system interface.

Attach. device
In this input field you can specify the name of the attachment device to which the printer is to be connected.

Tip:

The attachment device must already be configured in the system using this name.

Connector name
Enter the name of the connector on the attachment device to which the printer is to be connected in this input field. The selection list only displays the free connectors on the selected attachment device.

Emulation
In this input field you define which emulation is to be used to operate the printer. The selection list contains all the emulations (Printer Control Languages) that are approved for this printer. If you want to use a different emulation, you must change the printer type to *generic*. You can then select an emulation from all the emulations that are known to SINIX-SPOOL.

Supervisor
In this input field you specify the SINIX-SPOOL supervisor responsible for monitoring this printer. Up to 5-10 printers can be monitored by one supervisor.

Tip:

If you want to name a new supervisor, whose name does not appear in the selection list, you must first add this supervisor using the SYSADM menu *sni_spool* and carry out a hardware analysis for *miscellaneous* in *SYSADM*.

TTY label
: You define a TTY label as a default setting for the PC or terminal in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for printers are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Comment
: You can enter any comment, e.g. the location of the printer, in this input field.

3.2.11.2 Attribute settings for LAN printers

The following figure shows the form that is used to configure LAN printers:

Type Define the type of printer you are using in this input field. You can select it from the list of all the printer types that are available on your system. If your printer is of a type that is not displayed in the list, use the *generic* type.

Internet address
: Enter the Internet address of your printer in decimal form (e.g.: 132.132.16.244) in this input field. Consult your network administrator to find out the valid address.

Host name
: Like every other device on the LAN that can be identified using an Internet address, you can also specify a symbolic name for a LAN printer. When you are adding a new printer, the printer name generally appears as the default entry in this input field, and this entry can be changed at this point. A valid host name can contain up to 64 characters. When you activate the configuration, the host name is entered in the file */etc/inet/hosts*.
When you change the attribute settings for a LAN printer whose configuration has already been activated, the relevant host name from the file */etc/inet/hosts* appears as the default entry in this input field. The host name should not be changed in this case since this would create inconsistencies in the network and the host name that appears in the file */etc/inet/hosts* would be replaced by the new host name when you activate the configuration.

Tip:

If you are using a network management tool, such as NIS or Name Server, you must make known the host name on your network management system.

Alias names
: When you are adding a new LAN printer, you can specify one or more alias names in this input field which can be used instead of the host name. The individual entries must be separated by blanks. Valid alias names can contain up to 64 characters. When you activate the configuration, the alias names are entered in the file */etc/inet/hosts*.
When you change the attribute settings for a LAN printer whose configuration has already been activated, the relevant alias name from the file */etc/inet/hosts* appears as the default entry in this input field. When you enter new alias names in this input field,

they are added to the corresponding entry in the file */etc/inet/hosts* when you activate the configuration.

Tip:

If you are using a network management tool, such as NIS or Name Server, you must make known the alias names on your network management system.

Port number
: Enter the port number in this input field, depending on which LAN interface card is installed in the printer.

Emulation
: This input field corresponds to the input field of the same name for standard printers.

Supervisor
: This input field corresponds to the input field of the same name for standard printers.

Comment
: This input field corresponds to the input field of the same name for standard printers.

Connection Mode
: You define in this selection field how the printer is to be connected to the LAN:

  TEMPORARY
  : Temporarily via Xprint (default)
    Prerequisite: The Xprint spool system is installed
    (see also *xpadd_dev*(1M)).

  PERMANENT
  : Permanently via Xprint
    Prerequisite: The Xprint spool system is installed
    (see also *xpadd_dev*(1M)).

  RTY Via the *rtymon* port monitor
  : In this case you have to select a label in the *RTY label* field.

RTY label
: If you selected the connection type *RTY* in the *Connection Mode* selection field, you have to define an RTY label for the printer here. RTY labels define LAN line settings that can be used for operating PCs, terminals, printers and serial devices. The RTY labels are defined in the submenu *settings -> rty settings*.

3.2.12 Configuring storage devices

Under the menu item *storage devices* in the *Configuration* window you can configure SCSI devices.
After you select this menu item the *storage devices* window is opened which offers for selection all configured SCSI devices. In this window you can add new SCSI devices using the **[ACTIONS]** function key, and copy or remove existing SCSI devices. If SCSI printers are

installed in your system, you can display the attributes for these printers.
You can maintain the following devices:

Device types	Descriptions
Hard disks	5.25" and 3.5" disk drives
Optical storage devices	CD-ROM drives WORM drives ROD drives
Diskette drives	3.5" diskette drives
Magnetic tape drives	1/2" tape drives (also known as "9-track tape device") SMC drives (also known as "quarter-inch cartridge") 8mm videoband drives (Exabyte) DAT drives
Jukeboxes	SCSI jukeboxes (also known as "MCD = Medium Changer Device")
RAID systems	
	SCSI printers

3.2.12.1 Information on installing SCSI devices

Please complete the following steps if you want to install new SCSI devices:

1. Depending on the type of hardware you use, you can either install SCSI devices yourself, or have them installed by service personnel from Siemens Nixdorf Informationssysteme AG. For information about the SCSI devices you can install yourself, and how to do so, refer to your system's operating manual.
2. After you install new SCSI devices, start *SYSADM* to configure these devices.
3. (RM600 only)
   If the new device is a device which is installed in a slot, open the form for editing the attributes for the device in question, and check the *Slot number* input field to ensure that the automatically set slot number corresponds to the slot in which you have installed the device. If the displayed slot number is incorrect, you must correct it at this point. For further information on this, refer to the section "Information on setting slot numbers".

   Tip:

   If the new device is a hard disk, you must also set other attributes here. These attributes depend among other things on whether you have added a new (empty) hard disk, or have integrated a hard disk that already contains data (see points 4 and 5 below).

4. If you have added a new hard disk, you must specify how many and which partitions are to be used in the form for the hard disk (see section "Configuring hard disks"). If you have integrated a hard disk that already contains data, you must check how many and

which partitions are being used. If the values established by *SYSADM* do not correspond to the required values, you must correct them here. The specified values are retained when the hardware is activated after subsequent hardware analyses.

5. As soon as you have defined the partitions, you must define the usage for each of these partitions. To do this, open the forms for configuring the relevant partitions one after the other and set the partition type, the usage, and if necessary, the partition size for new hard disks (see section "Attribute settings for partitions"). In the case of integrated hard disks that already contain data, you must set the partition type and the usage. If a partition is used for a file system, you can add a new file system on this partition when you close the dialog box.

Tip:

If a disk partition is used as part of a virtual disk, it cannot be configured under *SYSADM*. The manual entitled "Virtual Disks" describes how to configure virtual disks.

3.2.12.2 Information on setting slot numbers

The slot number cannot be established by carrying out a hardware analysis on installed SCSI devices.

Devices in a 3.5" frame
: In the case of these devices, the program automatically sets a slot number which corresponds to the SCSI number that was set on the device.

Devices in a 5.25" frame
: The value *undef* is automatically set for these devices. Set the slot number according to the slot on the SCSI device in the SCSI channel.
If only the value *undef* is displayed in the *Slot number* input field when you press the `[CHOICES]` function key in the form for setting attributes for a SCSI device, this means that there are no more free slots in the SCSI channel.
In the case of SCSI devices that use two slots (double modular width), you must always specify the smaller slot number when you are configuring the device.
Slot numbers within a SCSI channel always start with 0 and the numbering convention used depends on your system:

Models 1xx to 3xx
: Slots are counted from right to left at the front of the cabinet, and from left to right at the back of the cabinet. Provided the SCSI channel is not in one level, the slots in the top row are counted first and then the slots in the lower row. If the SCSI channel is distributed between the front and back of the cabinet, the slots on the front are counted first, followed by the slots on the back.

Models 5xx to 7xx
: The slots are always counted from right to left on the front and back of the cabinet. The SCSI channels cannot be distributed over a number of levels and cannot be located on both the front and back of the cabinet.

Models E20 and E60

For information on how the slots are numbered, please refer to the diagram in the cabinet.

3.2.12.3 Configuring hard disks

When you select a hard disk from the *storage devices* window, the program displays another window containing a list with two entries, namely the name of the selected hard disk and the entry *partitions*. You can decide at this point whether you want to edit the attributes for the hard disk (see section "Configuring diskette and magnetic tape drives") or the attributes for the partitions on this hard disk (see section "Configuring jukeboxes").

Tip:

Please read the information on installing and configuring SCSI devices in the section "Information on installing SCSI devices".

Attribute settings for hard disks

When you select the name of the hard disk, the form for setting attributes for this hard disk appears.

Type The disk type is indicated in this output field.

Controller
: This output field indicates the controller to which the hard disk is connected.

SCSI number
: This output field indicates the SCSI number of the controller to which the hard disk is connected.

Slot (RM600 only)
: You define the slot for the hard disk in the SCSI channel in this input field. The selection list only displays the free slots in the relevant SCSI channel. For further details, refer to the information on setting the slot number in section "Information on setting slot numbers".

Number of partitions
: Define the number of partitions that are used in this input field. If the specified value does not appear in the *No. of Part's* partition table, which is displayed in the lower part of the form, a new entry is created in the partition table.

Tip:

If you have added a new hard disk, you must specify the number of partitions that are to be used in this input field. If you have integrated a hard disk which already contains data, you must check how many partitions are used. If the value established by *SYSADM* does not correspond to the required value, you must correct it here. The specified value remains valid during a subsequent hardware analysis when you activate the hardware.

Partitions

You can define which partitions are to be used in this input field. Depending on the value that was specified in the *Number of partitions* input field, the program displays all the relevant entries from the *No. of Part's* partition table, from which you can select one.

Tip:

If you have added a new hard disk, you must define which partitions are to be used in this input field. If you have integrated a hard disk which already contains data, you must check which partitions are used. If the value established by *SYSADM* does not correspond to the required value, you must correct it here. The specified value remains valid during a subsequent hardware analysis when you activate the hardware.

Write cache

You can specify in this input field whether you want to use the write cache on this hard disk. For security reasons, you should only activate the write cache for hard disks that are mirrored and are connected to different SCSI controllers.

Warning:

The write cache can only be toggled on and off on completely unused hard disks (no *open()* system call).

In addition to the input fields described above, the form also contains some output fields which display additional information on the hard disk, such as the character path of the related special file, and a list of the possible combinations of partitions.

Attribute settings for partitions

When you select the entry *partitions*, the program displays a window containing a selection list of all the partitions on the selected hard disk.
When you select one of the partitions in this window, you can edit the attributes for this partition in a form.

Tip:

You can only edit the attributes for partitions that are being used. You can define the partitions that are used in the *Partitions* input field of the form for setting attributes for the hard disk (see "Partitions").

Type In this input field you can define the purpose for which the partition is used. You can use a partition for a file system (*ufs* or *vxfs*) or as a data partition (*dp*). Swap partitions, raw partitions that are used by an application (e.g. database), and unused partitions are referred to as data partitions.

UsageDefine the usage of the partitions in this input field. The possible entries depend on the selected partition type. If you are using this partition for a file system (*ufs* or *vxfs*), enter the mounting point (absolute pathname) here. If you are using this partition as a

data partition (*dp*), enter the following values:

free for an unused partition

raw for a partition that is used by an application (e.g. database)

swap for a swap partition

Warning:

Before changing the usage of a partition, you should backup the entire disk to prevent data loss.

Size (MB)

Define the capacity of the partition in Mbytes in this input field. The sum of the entire capacity of all the partitions must be equal to the disk size.

Warning:

Before changing the partition size, you should backup the entire disk to prevent data loss.

Comment

You can enter any comment, e.g. about how the partition is used, in this input field.

The *Char path* output field displays the complete pathname of the special file for this partition.

3.2.12.4 Configuring optical storage devices

Optical storage devices are CD-ROM drives, Write Once Read Many optical disks (WORM) and Rewriteable Optical Disks (ROD). The structure of the form for configuring optical storage devices is to a large extent the same for each of the types previously mentioned, and consequently is described here only once.

Tip:

Please read the information on installing and configuring SCSI devices in the section "Information on installing SCSI devices".

If you select an optical storage device, in this case *cdrom0*, in the *storage devices* window, the form for setting the attributes of this device is displayed.

Type Define the type of optical drive in this input field.

Tip:

You can only set the type for virtual configurations and when you open the form for the first time after adding an optical drive.

Controller
: In this input field you define the controller to which the optical drive is to be connected.

Tip:

You can only set the controller for virtual configurations. Any changes you make in this selection list for optical drives that have already been installed will be rejected during a subsequent hardware analysis.

Tip:

In the case of optical drives that are part of a jukebox (see the section "Configuring jukeboxes"), both the optical drives and the relevant jukebox must be configured on the same controller.

SCSI number
: Define the SCSI number of the optical drive in this input field. The selection list only displays the free SCSI numbers for the previously selected controller.

Tip:

You can only set the SCSI number for virtual configurations. With installed optical drives you must change the SCSI number on the optical drive itself. Any changes you make in this input field will be rejected during a subsequent hardware analysis.

Slot number (CD-ROM drives and ROD drives on RM600 only)
: You define the slot number for the optical drive in the SCSI channel in this input field. The selection list only displays the available slot numbers in the relevant SCSI channel. For further details, refer to the information on setting the slot number in the section "Information on setting slot numbers".

The output fields in this form display additional information on the optical drive, such as the character path of the related special file.

3.2.12.5 Configuring diskette and magnetic tape drives

To a large extent, the same attributes are edited during configuration of diskette and magnetic drives (tape, SMC, MBK, and DAT drives). As a result, the relevant form is explained using the configuration of a diskette drive as an example.
When you select a diskette or magnetic tape drive to be configured from the *storage devices* window, the program displays another window containing the name of the selected diskette or magnetic tape drive and the entry *modes*.
When you select the name of the diskette or magnetic tape drive, a form for setting the attributes for the selected drive is displayed (see section "Attribute settings for diskette and magnetic tape drives").
When you select the entry *modes*, the parameter values for the selected drive are displayed. In this case, the values for diskette or magnetic tape drives are displayed in different types of forms. Sample parameter values for diskette drives are given in "Displaying parameter values (diskette drives)", and the parameters for magnetic tape drives are described in

"Displaying parameter values (magnetic tape drives)".

Tip:

Please read the information on installing and configuring SCSI devices in the section "Information on installing SCSI devices".

3.2.12.6 Attribute settings for diskette and magnetic tape drives

When you select the name of the diskette/magnetic tape drive, the form for setting the drive attributes appears:

Type Define the type of diskette or magnetic tape drive in this input field.

Tip:

You can only set the type for virtual configurations and when you open the dialog box for the first time after adding a virtual diskette or magnetic tape drive.

Controller (not disk drives on RM200, RM300 and RM400)
In this input field you define the controller to which the diskette or magnetic tape drive is to be connected.

Tip:

You can only set the controller for virtual configurations. Any changes you make in this input field for diskette or magnetic tape drives that have already been installed will be rejected during a subsequent hardware analysis.

SCSI number (not disk drives on RM200, RM300 and RM400)
Define the SCSI number of the diskette or magnetic tape drive in this input field. The selection list only displays the free SCSI numbers for the previously selected controller.

Tip:

You can only set the SCSI number for virtual configurations. With installed diskette or magnetic tape drives you must change the SCSI number on the drive itself. Any changes you make in this input field will be rejected during a subsequent hardware analysis.

Slot number (diskette drives, SMC drives, and DAT drives on RM600 only)
You define the slot number for the diskette drive in the SCSI channel in this input field. The selection list only displays the free slot numbers in the relevant SCSI channel. For further details, refer to the information on setting the slot number in the section "Information on setting slot numbers".

The output fields in this form display additional information on the diskette or magnetic tape drive, such as the character path of the related special file.

Displaying parameter values (diskette drives)
When you select the entry *modes*, a window appears. In this window you can choose one of a number of different alias names for the diskette drive.
Different modes, in which the diskette drive can be operated, are hidden behind these alias names. These modes are characterized, for example, by different print densities and print formats. In our example, each mode is assigned a different special file in the *Char path* column.

Displaying parameter values (magnetic tape drives)
When you select the entry *modes*, a window appears. In this window you can choose one of a number of different alias names for the magnetic tape drive.
Different modes, in which the magnetic tape drive can be operated, are hidden behind these alias names. These modes are characterized, for example, by different print densities. Within a mode, you can define whether or not the magnetic tape is rewound when the end of the tape is reached. In our example, each mode is also assigned a different special file in the *Char path* column.

3.2.12.7 Configuring jukeboxes

Jukeboxes are devices that can contain one or more DAT, 8mm MTC, ROD or WORM drives. Drives which are part of a jukebox, are maintained under *SYSADM* as autonomous storage devices, i.e. in addition to the entry for the jukebox, there are also entries for each of the drives that are installed in the jukebox.

Tip:

Please read the information on installing and configuring SCSI devices in the section "Information on installing SCSI devices".

When you select a jukebox from the *storage devices* window, the program displays a form in which you can set the attributes for the jukebox.

Type Define the type of jukebox in this input field.

Tip:

You can only set the type for virtual configurations and when you open the dialog box for the first time after adding a virtual jukebox.

Controller
In this input field you can define the controller to which the jukebox is to be connected.

Tip:

You can only set the controller for virtual configurations. Any changes you make in this selection list for jukeboxes that have already been installed will be rejected during a subsequent hardware analysis.

Tip:

Jukeboxes and the related 8mm MTC, ROD, or WORM drives must be configured on the same controller.

Slot number (RM600 only)

You define the slot number for the jukebox in the SCSI channel in this input field. The selection list only displays the available slot numbers in the relevant SCSI channel.

Tip:

The *Slot number* input field is only displayed for jukeboxes that are built into a cabinet. Please read the information in the section "Information on setting slot numbers".

SCSI number

Define the SCSI number of the jukebox in this input field. You can only use the available SCSI numbers for the previously selected controller.

Tip:

You can only set the SCSI number for virtual configurations. With installed jukeboxes you must change the SCSI number on the device itself. Any changes you make in this input field will be rejected during a subsequent hardware analysis.

Drives

In this input field you can define which 8mm MTC, ROD, or WORM drives are part of the jukebox. Depending on the type of jukebox, you can choose between all the drives that are configured on the same controller.

Tip:

A hardware analysis cannot establish which drives are contained in a jukebox that has already been installed. You must therefore announce the relevant drives at this point.

The output fields display additional information on the jukebox, such as the character path of the related special file.

3.2.12.8 Displaying SCSI printers

When you select a SCSI printer from the *storage devices* window the attributes for the selected SCSI printer are displayed in another window. These attributes include, for example, the character path of the related special file or the current status of the printer.

3.2.13 Configuring serial devices

The *serial devices* menu item allows you to configure special devices with a V.24 or SS97 interface, apart from terminals and printers. Serial devices may be ID card readers, PROM programming devices or radio clocks.

When you select the menu item *serial devices* from the *Configuration* window, another window containing a selection list of all the configured serial devices is displayed. You can add new devices, and copy, rename, or remove existing devices in this window.
When you select a serial device in the window, the program displays a form, in which you can edit the attributes for this serial device.

Tip:

When you add a serial device, a special file is created under */dev/term*. No other actions that may be necessary for operating the serial device are carried out.

Interface

Define the system interface for the serial device in this input field. Please note that interface converters and modems are not taken into consideration here.

Attach. Type

In this input field you can define the type of attachment device to which the serial device is to be connected. The serial device can be connected either directly to a board or over a distribution device, depending on the system interface.

Tip:

When you configure serial devices on distribution devices, the distribution device must always be configured first.

Attach. device

In this input field you define the name of the attachment device to be connected to the serial device.

Tip:

This attachment device must already be configured in the system using this name.

Connector name

In this input field you can define the name of the connector on the attachment device to which the serial device is to be connected. The selection list only displays the free connectors on the selected attachment device.

Modem capability

In this input field you can define whether the serial device is to be connected over a modem and whether modem signals are required (*yes*) or not (*no*).

TTY label

You define a TTY label as a default setting for the serial device in this input field. TTY labels define line parameters that are used to operate PCs, terminals, printers, or serial devices. TTY labels for serial devices are defined in section " Line settings for PCs, terminals, printers, and serial devices".

Enable service
: In this input field you define whether the ttymon service should be activated (*yes*) or not (*no*). If the service is activated, the ttymon keeps the line open, and the set line parameters are activated. If the service is not activated, you must ensure the line monitoring by means of a separate process.

Comment
: You can enter any comment in this input field, e.g. the location of the device.

The *Node name* output field displays the name of the special file for the related serial connection.

3.2.14 Settings

Under the menu item *settings* in the *Configuration* window you can set line parameters for PCs, terminals, printers and serial devices, as well as attribute sets for SNMP-capable Taclan terminal servers.
After selecting this menu item the *settings window is opened which contains the following menu items*:

Line settings for PCs & terminals
: Under this menu item you can set line parameters for PCs and terminals.

Line settings for other devices
: Under this menu item you can set line parameters for printers and serial devices.

Taclan settings
: Under this menu item you can edit attribute sets for Taclan terminal servers managed via SNMP.

RTY settings
: You can use this menu item to set the line parameters for LAN devices whose connections are to be monitored by the rtymon port monitor.

3.2.14.1 Line settings for PCs, terminals, printers, and serial devices

When you select the menu item *Line settings for PCs & terminals* and/or *Line settings for other devices*, a window of the same name is opened containing so-called TTY labels as menu items. In this window you can add new TTY labels and select existing TTY labels for processing, or copy, rename, or remove them.
TTY labels define line parameters with which locally connected devices are operated. The TTY label can be found in the file */etc/ttydefs*. When configuring locally connected devices one of these TTY labels must be entered in the *TTY label* input field.

Tip:

As well as the operating system attributes visible under *SYSADM*, additional attributes are also added to each TTY label to guarantee error-free installation of the devices. You can change these attributes using the Reliant UNIX command *sttydefs*, or by editing the file */etc/ttydefs*.

Warning:

If you change the parameters of an existing TTY label that has already been used, you change the line parameters of all devices that use this label. You should copy an existing label and change this copy in order to avoid any undesired side effects.

Tip:

Please note that the setting of the line parameters in *SYSADM* must correspond to the settings on the device side. This affects both the settings of the line from the device to the system and also the settings of the line between two devices (e.g. when connecting a printer to a terminal).
In the case of a terminal emulation on PC the settings in *SYSADM* must correspond to the settings set by you during installation/configuration of the terminal emulation.
The settings on the device side for lines between two devices must be set both in the port device (e.g. terminal), and also in the peripheral device (e.g. printer), where possible.
When connecting a device to a terminal server managed via SNMP, the settings in *SYSADM* are loaded automatically in the corresponding terminal server port. In the case of terminal servers not managed via SNMP, the settings of the corresponding port should be set with the administration command *na*.
If in doubt you should use the default values given in the device operating manual and/or on the terminal emulation documentation for setting line parameters in *SYSADM*.

Since the number and type of definable line parameters are the same for all devices, these are described using the example of PC and terminal settings.
If you select a TTY label in the *Line settings for PCs & terminals* window, the form for the attribute settings of this TTY label is opened.

Baud rate
: In this input field you define the baud rate with which a device is to be operated.

  Tip:

  To operate HDLC-PCs and/or terminals with a baud rate of 64K you must enter the value 38400. The device driver automatically supports 64K. To operate HDLC-PCs and/or terminals over a modem you must enter the value 134.

Character size
: In this input field you define the character length (7-bit or 8-bit representation).

Parity
: In this input field you define whether a device for monitoring transmission errors should be operated with a parity bit (*even* or *odd*), or without parity bit (*none*).

Modem control
: In this input field you define whether a device requires the modem signal (*yes*) or not (*no*). The system is informed of the switching on and off of the device by the modem

signal.

3.2.14.2 Taclan settings

When you select the menu item *Taclan settings*, a window of the same name opens containing attribute sets as menu items. In this window you can add new attribute sets for the terminal server managed via SNMP, and select existing attribute sets for processing, or copy, rename or remove them.

Tip:

The option of editing attribute sets is reserved for system specialists familiar with the material (see also manual page *mibtool*(1M)).

We differentiate between readable and modifiable attribute sets. The names of the modifiable attribute sets begin with the prefix *B-* for base-related and *P-* for port-related attribute sets.
You can specify base-related attribute sets in the *Add. settings* input field during configuration of terminal servers, in order to benefit from the additional functions of the terminal server (see "Add. settings").
You can specify port-related attribute sets in the *Alt. settings* input field for the individual terminal server ports, in order to override the port settings (see "Alt. settings").
When you add new attribute sets or copy or rename existing attribute sets, you must use one of the prefixes previously mentioned. You can create new attribute sets without a prefix, however these will not be evaluated by *SYSADM*.
The following modifiable attribute sets are predefined by the manufacturer:

B-passive_routing
: This attribute set means that the terminal server can also be used as a router.

B-image
: With this attribute set the software package to be loaded in the terminal server is selected.

P-slave
: With this attribute set the operating mode of the terminal server port is set to *SLAVE*.

P-cli With this attribute set the operating mode of the terminal server port is set to *CLI*.

P-dedicated
: With this attribute set the operating mode of the terminal server port is set to *DEDICATED*.

P-need_tc_en
: With this attribute set the TC signal is switched on.

P-need_tc_dis
: With this attribute set the TC signal is switched off.

P-fctl_XonXoff
: With this attribute set the software flow control is switched on.

P-appendix
This attribute set contains a range of attributes that function as examples to help you create your own attribute sets.

Warning:

If you remove or rename the attribute sets predefined by the manufacturer, it may subsequently be impossible to configure terminal servers, or devices on terminal servers.

When you select an attribute set in the *Taclan settings* window, the form with the ANNEX attributes of this attribute set is opened. If this is a modifiable attribute set you can define attributes for the attribute set in this form:
The individual attributes consist of attribute names with suffixes, the data type, the value, and an optional comment. You can find possible attributes and also their data types and values in the definition file */var/sadm/terms/tsvrtypes/annex8/annex8.dat*.

Tip:

When you define new attribute sets, or change existing attribute sets, you can only use attributes flagged as *read-write* in this file.

The attribute sets can be found in the file */var/sadm/terms/tsvrtypes/annex8/add-on.def* and are structured as follows:
Label : *Attribute.suffix* : *Data type* : *Value* : *Comment*

Label Name of the attribute set allocated when it was created.

Attribute.suffix
Name of an attribute with suffix. Possible suffixes are:

`.0` = The attribute is related to the terminal server (base-related attribute)

`.i` = The attribute is related to a terminal server port (port-related attribute; *.i* is replaced by the port number at runtime

Data.type
Data type of the attribute. Possible data types are:

`-a` = IP address

`-D` = Display string

`-i` = Integer Value
Value of the attribute. Possible values are:
Constant
${*Variable@Initialization*}
${*Variable*}
When specifying values you should use constants or initialized variables as *SYSADM* does not support non-initialized variables. No restrictions apply to the variable names.

Comment
: Any comment, optional

Tip:

If you select an attribute set with no prefix for editing you can neither change nor delete the individual attributes of this set, nor can you add new attributes. You will recognize these attribute sets by the fact that the form for these attribute sets has no *ANNEX attribute* input field, and also that the **[CONT]** function key is displayed rather than the **[SAVE]** function key.

Tip:

If you wish to change the line parameters *baud rate*, *character size*, *parity* and *modem control* in an attribute set you must do so under the corresponding TTY label for PCs and terminals as well as for other devices, since the corresponding attribute sets are generated automatically from the TTY labels.

3.2.14.3 RTY settings

A remote TTY or RTY indicates the connection of a LAN device (PC, terminal, printer or serial device) to a UNIX host, so that the UNIX host behaves like a normal TTY terminal. The connection to the LAN device is set up and monitored by the *rtymon* port monitor (see *rtymon*(1M)).
RTY labels define line settings that can be used for operating such LAN devices.
When you select the menu entry *rty settings*, a submenu is opened. Three parameter sets can be selected here:

IN mode
: This entry allows you to edit RTY labels for RTY connections where the connection setup is started from the LAN device.

OUT mode
: This entry allows you to edit RTY labels for RTY connections where the connection setup is started from the UNIX host.

DATA mode
: You can use this entry to process RTY labels for RTY connections where the connection setup was started from the host.
In contrast to *OUT mode* the connection setup to the LAN device is only started when any character has been received from this device.

RTY-Label
Selecting one of the above menu items opens a form for the RTY label concerned (see also *rtymon*(1M)). You have to set the following parameters in this form: *Connection flags*, Hup mode, Init string and *Service*.

Warning:

If you change the attributes for an existing RTY label, you will also change the line attributes for all devices already using this RTY label. You should therefore copy an existing RTY label and modify the copy. You will avoid any undesirable side effects in this case.

Connection flags

In this input field you define how the connection to the LAN device is to be operated in this selection list. Enter one or more flags using the **[MARK]** function key.

keep_alive

The *KeepAlive* option is set for the network connection. This option initiates periodic checking of the connection if there is otherwise no data traffic.

on_the_fly

The *rtymon* monitor normally tries immediately at startup to set up all necessary network connections. This flag only allows the *rtymon* to set up this connection when there is an *open*() at the USER_CHANNEL. The network connection is cleared down again with the final *close*() for the USER_CHANNEL.

poll A *Connection refused* from the remote station is not considered to be an error (e.g. when the device is disabled at the TACLAN terminal server with need_dsr = y). Following a break (generally 6 seconds) the attempt is repeated. The number of retries is unlimited.

telnet

When a new connection is set up, the Telnet protocol is halted. This means that an "IN" device can accept an incoming connection setup request from the *telnet*(1) command and halt particular protocol sequences. The monitor is no longer needed (see *telnetd*(1M)). When the connection has been set up, the data is transmitted by the *rtymux* driver in compliance with the protocol.

Host monitoring

You define how the host is to be monitored in this selection list.
In the case of *OUT* devices, host monitoring only works if the host only permits one connection at the specified tcp port. The principle with host monitoring in the case of *OUT* devices is that an attempt is made to set up a second connection in parallel with the existing connection. This attempt should be rejected ("Connection refused") as an indication that the original connection is still intact. The interval between the individual checks is generally 300 seconds.
In the case of *IN* devices, further connection requests are accepted at the local tcp port for host monitoring, after the first connection has been accepted (and the *rtymux* driver has been linked).
The following types of host monitoring are possible:

no_hup

No host monitoring (default). A silent log off from the host (crash, breakdown of communications link etc.) is not noticed in this case.

late_hup
: If a new connection has been established, the *rtymux* driver is linked from the old (dead) connection (from the perspective of the USER_CHANNEL, this corresponds to switching off the device, a HANGUP is generated if stty was not set locally). The *rtymux* driver is linked to the new connection.

imm_hup
: As above. In addition, however, the *rtymux* driver is already linked from the connection if the host cannot be reached ("Host down", "Host not reachable", ...). There is no difference to *late_hup* in the case of "IN" devices.
You should select this type of setting if the fail or not-reachable status #is to be set the same as if the device is switched off.

Init string
: When the connection has been set up, this character string is sent to the LAN device. All characters are to be specified in decimal notation (separated by blanks).

Service
: You can enter the shell commands in this field that are to be executed once the LAN device has been switched on. The commands are executed as a child process of the monitor by means of /sbin/sh -c "..." and have access to the enabled connection via stdin, stdout and stderr (file descriptors 0, 1, 2) (STREAMS: tcp --> tirdwr --> ptem --> ldterm).
This field could be used, for example, to load the keyboard tables (see keyload(1)).

You can find further information about RTY label under *rtymon*(1M).

3.2.15 Configuring frequently used terminals

The configuration of terminals relates in many installations to certain types of terminals that are used very often. The configuration steps for the terminal types *97801-x* and *9766,* for example, are illustrated in various figures in this section.
Before you actually start to configure a certain terminal type, you should set the line parameters for this terminal type in *SYSADM* (see section "Settings"). You can then set default values for this terminal type (see section "Default terminal type") and its attributes (see section "Default settings"). When you configure a terminal of this type, these default values are automatically transferred into the relevant form, thereby saving time.
For reasons of clarity, only the direct, straight-forward configuration method is described here. Possible alternatives or error messages that may be displayed as a result of incorrect default settings, are not dealt with here.

3.2.16 What to do if ...?

This section contains a list of errors that may occur when you are running *SYSADM*.

Error:
: The configuration session cannot be started.

Possible causes:
1. *SYSADM* is already started.

2. When you powered on the computer, a background process started a hardware analysis which is not yet complete. The hardware analysis was started either because no database was found or because the system configuration was changed between two configuration sessions.

Solution:
to 2.
Wait until the hardware analysis is complete (*oedcom* process). If there are a lot of devices on your system, e.g. more than 100, the analysis may take quite a long time.

Error:
A configured device "hangs".

Cause:
Software problem.

Solution:
Remove all active processes on the device, then remove the device, if necessary, using the action *remove* and then reconfigure it.

Error:
A configured device cannot be removed.

Cause:
Special files in the directory */dev/term* or */dev/dptg* were deleted.

Solution:
Contact the Siemens Nixdorf Service department.

Error:
A device cannot be operated even though it was configured successfully.

Cause:
Incorrect line parameter settings or hardware problem.

Solution:
Check the cables that are attached to the device. You should also check the parameters that can be set on the device, and compare these with the configuration that was carried out on the system, e.g. the parameters that were set in the Setup mode for the *BA80* terminal. Refer to the relevant operating manual to find out which parameters you need to set on the device.

3.3 Managing storage devices

Extended functions for managing storage devices are available in UNIX System V.4 systems. Device-specific properties are stored in a device table, the */etc/device.tab* file. Application programs can read out this information and use it for execution. The maintenance and management of this device table is an important task of the functions described here. You can also perform the following functions under the *storage_devices* main menu item:

- copy, delete, and format removable data media
- display information on partitions of your hard disk
- combine devices to form device groups, thus enabling access to all devices in a group during data backup, for example
- reserve devices for specific programs and specific times

The table below lists the shell commands that correspond to the menu items:

Menu item	Shell command
copy	*dd(1)*
devices - add	*putdev -a(1M)*
devices - modify - add	*putdev -m*
devices - modify - list	*devattr -v(1M)*
devices - modify - modify	*putdev -m*
devices - modify - remove	*putdev -d*
devices - list	*getdev(1M)*
devices - remove	*putdev -d*
devices - reservation - free	*devfree(1M)*
devices - reservation - list	*devreserv(1M)*
devices - reservation - reserve	*devreserv(1M)*
display	*devattr(1M) device displaycmd*
erase	*devattr device erasecmd*
format	*devattr device fmtcmd*
groups - add	*putdgrp(1M)*
groups - list	*getdgrp -l(1M)*
groups - membership - add	*putdgrp*
groups - membership - list	*listdgrp (1M)*
groups - membership - remove	*putdgrp -d*
groups - remove	*putdgrp -d*

Table 10: Shell commands for managing storage devices

The shell commands are described in detail in the Reliant UNIX system documentation.

3.3.1 Describing and reserving devices

You can use the menu item
storage_devices -> devices
to modify the contents of the device table */etc/device.tab*. You can list and modify device descriptions, and access the reservation system for managed devices. When you select the *devices* menu item, the menu for managing device descriptions is displayed containing the items *add*, *modify*, *list*, *remove*, and *reservation*.

Adding a device
When you select *storage_devices -> devices -> add*, a form is displayed in which you must specify the following device information:

Device Alias
: Enter a unique alias name here. The alias name can only contain alphanumerical characters and the special characters ., -, _ and $, and may comprise up to 14 characters. It is recommended that you select meaningful names to describe the device, e.g. *diskN* for hard disk drives.

Description
: In this field, enter a brief description of the device, e.g. *Hard disk 0*.

Type
: In this field, enter a term that indicates the typical feature of the device. The default types are *ctape*, *disk* (hard disk), *directory*, *diskette*, and *dpart* (partition).

Character special device pathname
: With character-oriented devices, you must enter the complete path name of the associated special file in this field.

Block special device pathname
: With block-oriented devices, you must enter the complete path name of the associated special file in this field.

The bottom part of the window contains a number of field pairs labelled *Attribute* and *Value*. In these fields, you can enter various device-specific features. The table below contains possible device attributes:

Attribute	**Description**
capacity	Capacity of the device or the removable data medium in 512-byte blocks
erase cmd	Complete path of a command with which all data of the device can be deleted
fmtcmd	Complete path of a command with which the device can be formatted
nblocks	With hard disk partitions, the number of 512-byte blocks

Table 11: Possible device attributes

For further information on possible attribute values, please refer to the description of the command *putdev*(1M) in the manual entitled "System Administrator's Guide".

When you have made your entries in the input fields, you can enter the device in the device table by pressing the **[SAVE]** function key.

Modifying the attributes of a device
You can use the *storage_devices* -> *devices* -> *modify* menu item to modify the attributes of a device entered in */etc/device.tab*. A menu containing the items *add*, *list*, *modify*, and *remove* is displayed.

Adding an attribute to a device
Select the menu item *storage_devices* -> *devices* -> *add*. A form containing the following input fields is then displayed:

Device Alias
: In this field, enter the unique alias name of the device to which you wish to add an attribute.

Attribute
: In this field, enter the name of the attribute that you wish to add to the device.

Value In this field, enter the value of the attribute.
The new attribute is added to the device description when you press the **[SAVE]** function key.

Listing device attributes
Select the menu item *storage_devices* -> *devices* -> *list*. A form is then displayed in which you must enter the alias name of the device whose attributes you wish to list. When you press the **[SAVE]** function key, the device attributes are output to the screen.

Modifying an attribute
Select the menu item *storage_devices* -> *devices* -> *modify*. A form containing the following input fields is displayed:

Device Alias
: In this field, enter the unique alias name of the device whose attribute you wish to modify.

Attribute
: In this field, enter the name of the attribute you wish to modify.

Value In this field, enter the new attribute value.
When you press the **[SAVE]** function key, the device description is updated.

Removing an attribute
Select the menu item *storage_devices* -> *devices* -> *remove*. A form containing the following input fields is displayed:

Device Alias
: In this field, enter the unique alias name of the device whose attribute you wish to remove.

Attribute
: In this field, enter the name of the attribute you wish to remove.

When you press the **[SAVE]** function key, the attribute is removed from the device description.

Listing the alias names of the devices
Select the menu item *storage_devices -> devices -> list* to display a list of the alias names of all devices defined in */etc/device.tab*.

Removing a device description
Select the menu item *storage_devices -> devices -> remove* to remove a device description and all its attributes from the */etc/device.tab*file. You must enter the alias name of the device you wish to remove in the following input field. When you press the **[SAVE]** function key, the device description is removed from */etc/device.tab*.

Reserving devices
Select the menu item *storage_devices -> devices -> reservation* to reserve a device for the duration of a process or a program. Programs that use the reservation mechanisms provided by *devreserv(1M)* and *devfree(1M)* can thus obtain exclusive access to a device.

Tip:

> Application programs can, but need not, use the reservation mechanisms. Transmission errors may therefore occur if concurrent processes attempt to access the device directly, i.e. if they do not use the reservation mechanisms described here.

When you select the *reservation* menu item, another menu containing the items *free*, *list*, and *reserve* is displayed.

Reserving a device
Select the *reserve menu item*. In the *Device* input field, enter the alias name of the device you wish to reserve. A reservation is indicated by the unique process ID of the reserving process (in this case, the process ID of *SYSADM*). When you press the **[SAVE]** function key, the selected device is reserved.

Listing reservations
Select the *list* menu item. All device reservations are listed. This list contains the alias name of the reserved device, and the identifier (usually the PID) with which the device was reserved.

Freeing a reserved device
Select the *free* menu item. In the *Device* input field, enter the alias name of the device you wish to release. When you press the **[SAVE]** function key, the selected device is released.

3.3.2 Displaying information on storage devices

You can select the *display* menu item under the *storage_devices* main menu item to display information on storage devices. This function can only be executed for those devices for which the *displaycmd* attribute is set in the */etc/device.tab* device table.
From a list, you must select the device type for which you require information. A form then appears containing the *Device drive* input field. In this field, enter the device for which you require information. When you press the **[SAVE]** function key, *SYSADM* executes the command defined in the *displaycmd* attribute in the */etc/device.tab* file. The result is displayed

in another window on the screen. The format of the output depends on the value of the *displaycmd* parameter.

3.3.3 Managing device groups

Several devices entered in the device table can be combined to form a group. All devices in a group can be addressed by means of a common group name. The device groups are entered in the */etc/dgroup.tab* file.
To access the functions for managing device groups, select the *groups* menu item under the *storage_devices* main menu item. A menu containing the items *add*, *list*, *membership*, and *remove* is displayed on your screen.

Adding a device group
Select *storage_devices* -> *groups* -> *add*. A form is displayed. In the *Device Group Name* input field, enter a name for the new group. This name may contain up to 14 alphanumeric characters and the special characters ., -, _ and $.
In the bottom part of the form, there are nine input fields, in which you can enter the alias names of the devices that are to be members of the newly added device group.

Tip:

> If an alias name is entered, which has not yet been defined, the function outputs a warning. The alias name is nevertheless incorporated as a member of the group.

When you press the **[SAVE]** function key, the new group is added to the */etc/dgroup.tab* file.

Listing device groups
Select *storage_devices* -> *groups* -> *list*. The names of all groups defined in */etc/dgroup.tab* are displayed on the screen.

Managing group membership
Select *storage_devices* -> *groups* -> *membership*. Another menu containing the items *add*, *list*, and *remove* is displayed.
Select *add* to add a new member to the group. A form containing the input fields *Device Group Name* and *New Member* is displayed. Enter the name of the device group and the alias name of the device you wish to add to the group, and then press the **[SAVE]** function key.
Select *list* to list all members of a device group. In the *Device Group Name* input field, enter the name of the device group, whose members you wish to list. When you press the **[SAVE]** function key, a list of all group members is displayed on the screen.
Select *remove* to remove a member from a group. A form containing the input fields *Device Group Name* and *Member* is displayed. Enter the name of the device group and the alias name of the device you wish to remove from the group, and then press the **[SAVE]** function key.

Removing a device group
Select *storage_devices* -> *groups* -> *remove*. In the *Device Group Name* input field, enter the name of the device group that you would like to remove from the in the*/etc/dgroup.tab* file.
When you press the **[SAVE]** function key, the device group is deleted.

3.4 Configuring terminal line settings

When you select the *ports* -> *tty_settings* menu item, a menu containing the items *add*, *list*, *modify*, and *remove* is displayed on the screen.

3.4.1 Creating line settings and hunt sequences

When you select *ports* -> *tty_settings* -> *add*, a form containing the following input fields appears on the screen:

Ttylabel
: The TTY label identifies this line setting. In this field, enter a meaningful name, e.g. the line speed.

Enable autobaud?
: In this field, enter *yes* here if the transmission speed is to be recognized automatically.

Baud rate
: Press the **[CHOICES]** function key to select the transmission speed.

Nextlabel
: In this field, enter an alternative TTY label that is used if this entry does not provide a compatible transmission speed.

Initial line settings
: The *Initial line settings* define the transmission properties that apply when the user accesses a port with this TTY label for the first time. For further information on the transmission properties, please refer to *termio(7)*.

Final line settings
: The *Final line settings* define the final transmission properties. For further information on the transmission properties, please refer to *termio(7)*.

3.4.2 Listing line settings and hunt sequences

You can select the *ports* -> *tty_settings* -> *list* menu item to display detailed lists of individual line settings. In this list, you can select a line setting via your TTY label. If you then press the **[RETURN]** key, detailed information on the line setting and its transmission properties is displayed.

3.4.3 Modifying line settings and hunt sequences

When you select *ports* -> *tty_settings* -> *modify*, you must then define the line setting to be modified via your TTY label. You can display a list of all the available line settings by activating the **[CHOICES]** function key, and select the required line setting from this list. When you have made your selection and pressed the **[SAVE]** function key, a form is displayed on your screen with the input fields described above.

3.4.4 Removing line settings and hunt sequences

When you select *ports* -> *tty_settings* -> *remove*, a list of all line settings is displayed. You can mark one or more entries in this list and remove them from the */etc/ttydefs* file.

4 Communicating with other systems

This chapter describes how to use *SYSADM* to configure your system in a networked environment.
Additional application-specific items can be added to the menu for managing network services, *network_services*. For example, if you are using the SINIX Communications Manager, the menu contains the additional items *CMX_Admin* and *CMX_Init* (see the manual "CMX V5.0, Communications Manager in SINIX").

4.1 Mounting systems

To mount the system in the network, you must know the following Internet addresses and names:
- the Internet address of your system
- the Internet address of the network management system
- the alias name of your system
- the node name of your system
- the name of your network domain

Make sure that your system is made known in the network management system. To do this, the system administrator of the network management system must choose the SYSADM menu *network_services -> LAN -> administer -> hosts -> add*.

Defining node names

Choose the menu item *nodename* to display the node name and system name of your system or to modify the node name. On the basis of the node name, various communication networks can identify this system. The system name is the name of the operating system. The system architecture and many add-on products require that the system name remains unchanged.
If you want to display or modify the node name, choose the menu item *system_setup -> nodename*. Another menu is displayed with the two items *display* and *set*.
If you want to simply view the defined values, choose the item *display*. The node name and system name of your computer are then displayed in a text window.
If you want to change the node name, choose the menu item *set*. A form is displayed with the field *Node name:* Enter the node name which is to identify the system when communicating with other networks. The name can contain up to 8 or 14 alphanumeric characters - depending on the network type - and can begin with a letter: *A* to *Z*, *a* to *z*, *0* to *9* and the hyphen "-" and underscore "_". If the name is longer than eight characters, problems may occur with certain applications.
When you press the **[SAVE]** function key, the desired modification is implemented. A system message is then output regarding the status of the modification.
If you have defined the node name for the first time, you should pass it on to other users in the network who want to communicate with your system.
If you have modified the node name, you should ensure that all other references to the old node name are also changed in the network.
Carry out the following steps:
- Change the name of the network management system using the functions

network_services -> *LAN* -> *administer* -> *hosts* -> *remove* and then *add*.

- On the local system, select:
  network_services -> *LAN* -> *connect*.

Configuring the motherboard

To configure the LAN controller, choose the menu item *configuration* -> *load* -> *boards* -> *motherboard* (possibly also other boards). For information on configuring boards, see the section "Configuring boards".
After selecting a board, a form is displayed where you must enter the Internet address, host name, and alias name. To operate CC, CL, CL14P LAN interfaces, CS, CSI, HIOS/XSP LAN interfaces, LCE, LCF and LCT boards in the network, you must specify at least the Internet name and the host name. Open the form for the corresponding board and enter the following values:

Internet address
: Define the Internet address for the LAN interface on the board in this input field. The address must be specified in decimal notation (e.g.: 132.132.16.244). Consult your network administrator to find out the valid address. If the board is an LCE2 board, this input field appears twice.

Host name
: Define the host name for the LAN interface on the board in this input field. This name is used by other systems in the network if your system is to be reached using this board. A valid host name can contain up to 64 characters. Consult your network administrator to find out the valid host name. When you activate the configuration, the host name is entered in the file */etc/inet/hosts*. If the board is an LCE2 board, this input field appears twice.

Alias names
: In this input field you can specify one or more alias names that can be used instead of the host name. Each entry must be separated by spaces. Valid alias names can contain up to 64 characters. When you activate the configuration, the alias names are entered in the */etc/inet/hosts* file, or if alias names have already been entered, the new alias names are added to these. If the board is an LCE2 board, this input field appears twice.

Comment
: You can enter any comment in this input field. If the board is an LCE2 board, this input field appears twice.

Internet mask
: Define the Internet mask that corresponds to the network class of your LAN in this input field. The address must be entered in hexadecimal form (e.g.: *ffffff00*). Consult your network administrator to find out the valid address. If the board is an LCE2 board, this input field appears twice.

Broadcast address
: Define the broadcast address for the LAN interface on the board in this input field. The address must be entered in decimal notation (e.g.: *132.132.16.244*). Consult your

network administrator to find out the valid address. If the board is an LCE2 board, this input field appears twice.

Tip:

If you leave the input field blank and exit with **[RETURN]**, a valid address is automatically calculated at a later stage.

Multicasting (HIOS/XSP LAN submodule only)

In this input field you define whether IP multicasting is to be activated or deactivated for this board. IP multicasting enables a group of subscribers to be addressed using a multicasting address assigned to this group. Compared with normal addressing, the multicasting address has a special format. The default setting is "off", i.e. multicasting addresses can neither be formed nor recognized. Ask your network administrator whether or not this function should be activated.

The output fields in this form contain information on the board.
When you have made the entries for the board, press the **[SAVE]** function key. If you also want to configure other boards, repeat the procedure.
When finished, press the **[CANCEL]** function key twice to switch to the *Hardware Configuration* menu. Choose *activate* to enter the new values in the database. If you do not want to save the new values, choose the menu *Hardware Configuration -> quit* instead.

Entering the Internet address of the network management system
To make the Internet address of the network management system known in your system, choose:
network_services -> name_to_address -> inet -> host.
A form is displayed in which you must enter the name and Internet address of the network management system.

Connecting the system in the network
To connect the system, select:
network_services -> LAN -> connect.
Enter the appropriate values and press the **[SAVE]** function key.
Please note that the menu items *LAN* and *Mail List* are not included as standard in *SYSADM*, rather are incorporated using add-on modules. For this reason, they are not described in more detail here. For further information, refer to the manual "SINIX V5.43, Network Administration".

4.2 Distributed file system

DFS stands for *Distributed File Systems* and is the umbrella term for distributed file systems like NFS (Network File System). Using DFS packages, the resources of other network computers can be accessed and local resources can be released for remote systems. In the UNIX world, NFS is the de facto standard for distributed file access and is a component of System V Release 4.
If you want to configure and manage NFS (or another distributed file system), select the menu item *network_services -> remote_files*.
Please also note that other menu items may appear under the *remote_files* menu item described here if other network management packages, e.g. RFS, are installed on your system. These items are not described in this manual.
Different entries under the menu item *remote_files* can have the same function. If you want to start NFS, for example, you can choose the menu item *setup - nfs - start* or *specific_ops -> nfs - control -> start*.
You can execute the following actions using the four menu items under *remote_files*:

local_resources - Managing local resources
Makes local resources available to remote systems and cancels access

remote_resources - Managing remote resources
Mounts and unmounts resources made available by other systems

setup - Configuring NFS (during startup)
Inputs all data required for operating NFS

specific_ops
Starts and stops NFS and queries the operating status

The table below compares the *SYSADM* functions for managing file systems with the corresponding commands on shell level:

SYSADM menu	**Shell command**
local_resources - list	*share -F nfs* (current resources)*cat /etc/dfs/dfstab* (automatic resources)
local_resources - modify	*share -F nfs* (current resources) Editor on */etc/dfs/dfstab* (automatic resources)
local_resources - share	*share -F nfs*
local_resources - unshare	*unshare -F nfs* (current resources) Editor on */etc/dfs/dfstab* (automatic resources)
remote_resources - list	*mount* (current resources)*cat /etc/vfstab* (automatic resources)
remote_resources - modify	Editor on */etc/vfstab* (automatic resources)

remote_resources - mount	*mount -F nfs* (current resources) Editor on */etc/vfstab* (automatic resources)
remote_resources - unmount	*umount* (current resources) Editor on */etc/vfstab* (automatic resources)
setup - nfs - start	*nfsd (1M)biod (1M)*
setup - nfs - share	*share -F nfs*
setup - nfs - mount	*mount -F nfs* (current resources) Editor on */etc/vfstab* (automatic resources)
specific_ops - nfs - control - check_status	*ps(1)*
specific_ops - nfs - control - start	*nfsd (1M)biod (1M)*
specific_ops - nfs - control - stop	*unshare (1M)umountall (1M)*

Table 12: Shell commands for managing DFS

4.2.1 Starting NFS

If you are working with NFS for the first time, you must first configure your NFS system with the *setup* menu item. You can start the NFS system, release local resources, and mount remote resources. In day-to-day operation, the NFS system is normally started up automatically. Select the menu item
network_services -> remote_files -> setup and then select *nfs*.
If you select the menu item
network_services -> remote_files -> setup -> start
you can start the NFS if it is not already started. If you are not sure whether or not NFS has already been started, you can query the operating status under the *specific_ops* menu item. When you have successfully started NFS, the following message is output:

```
Network File System Operations have been started
```

4.2.2 Configuring an NFS server

An NFS server is a system containing one or more file systems or "local resources" which it makes available in the network. The NFS server decides whether a resource can be mounted by other systems, the NFS clients.

Releasing resources
You can use the menu item *network_services -> remote_files -> local_resources* to make resources on your system available to other machines. You can determine whether resources are to be released automatically at system startup and/or during operation. You can also define the options to be used for releasing resources via NFS, and you can display a list of the resources on your system that are available to other machines.
If you select the menu item

network_services -> remote_files -> local_resources -> share
you can make resources available to remote systems (NFS clients). This menu item can also be accessed via
network_services -> remote_files -> setup -> share
In the input field *Directory*, enter the path name of the local resource that you want to make available in the network. You must also specify whether the resource is to be released immediately and whether it is to be released automatically the next time the system is started. Finally, in the input field *ID for unknown users*, enter the user ID (UID) for the login name *root* (UID 0) of client systems who want to use the resource. By default, the value 60001 of the constant UID_NOBODY is entered here (defined in <*sys/param.h*>). The login name *root* of a client receives system administrator privileges on the server if the value 0 is entered for *ID for unknown users*.
When you have pressed the **[CONTINUE]** function key, you can define which systems have access to which resources and with what access rights:
- read/write access
- read access
- *root* rights

For further information, press the **[HELP]** function key.

Listing resources
Choose the menu item
network_services -> remote_files -> local_resources -> list
to display a list of the local resources available on your system. In this regard, you can define in a form whether to display all resources currently available or all resources automatically available when NFS starts up. The path name of the resource, a description of the resource, and the type of access (*read/write* or *read-only*) are displayed in this sequence.

Modifying access to resources
Choose the menu item
network_services -> remote_files -> local_resources -> modify
to change the properties of local resources on your system that are accessed by remote systems. First of all, you must identify the local resource by means of its path name. You can change the properties of local resources in the following forms:
- User ID (UID) for the login name *root* of client systems which use this resource (input field *ID for unknown users*). The default value for this field is the constant *UID_NOBODY* (i.e. effective UID 60001). The login name *root* of a client only receives system administrator privileges on the server if UID 0 is specified here or if the name of he client is entered in the list of clients with *root* authorization.
- The access mode of the resource (input field *Mode of authentication*). The value *default* requires that clients use the *AUTH_UNIX* mode of authentication when accessing NFS resources. If you request the *AUTH_DES* mode of authentication and thereby close a security gap in NFS, you must enter *secure*.
- List of clients with their access rights.

Unreleasing resources
Choose the menu item
network_services -> remote_files -> local_resources -> unshare
to cancel remote system access to resources on the NFS server. The following form contains a single input field, *Directory name*, where you must specify the path name of the

released local resources that you no longer wish to make available to remote systems.

4.2.3 Mounting and unmounting remote resources on NFS clients

The menu item *remote_resources* is used to manage the resources made available on your client system by the server via NFS. In order to release these "remote resources", they must be mounted on your system exactly like file systems in the file tree. Resources can be mounted explicitly at the current point in time or automatically each time the system starts up. Correspondingly, resources that are no longer required can be unmounted. In addition, you can use parameters to define the properties with which remote NFS resources are to be mounted on your system. Finally, you can display a list of the resources mounted on your system via NFS.

Mounting resources
Select the menu sequence
network_services -> remote_files -> remote_resources -> mount -> nfs
to make remote resources available to users of your system. This menu item can also be accessed under
network_services -> remote_files -> setup -> mount.
A form is displayed with the following input fields:

Server
: Enter the name of the server whose resources you want to access.

Remote pathname
: Enter the local path name of the resource on the server.

In the next two input fields, you can decide whether the resource is to be available immediately and/or whether it is to be mounted automatically the next time the system is started.

Mountpoint
: Enter the name of the local directory where the remote resource is to be made available.

Access
: Decide between read access and read/write access.

Allow setuid programs
: By entering or selecting *Yes*, *No*, or *na*, you can determine whether *setuid* privileges are to be permitted or excluded for this file system, or whether they are not available. The default value is *Yes*.

Tip:

setuid privileges allow programs to operate temporarily with the rights of other users in this file system. This may be necessary, for example, if users have to modify data in protected system files, e.g. */etc/passwd*, where personal passwords are managed.

Remount read/write
: Select *yes* if you want to permit read/write access for a resource that is currently read-only.

Retry method
: Select *background* so that renewed attempts to mount resources can run in the background. Otherwise, the retries run in the foreground and block this function until mounting is successful or the maximum number of permitted retries (input field *Maximum Retries*) has been reached.

Timeout
: The number entered here specifies the length of time (in tenths of a second) awaited by NFS after an unsuccessful attempt to mount a resource before it will try again.

Listing resources

Choose the menu item
network_services -> remote_files -> remote_resources -> list
to list all resources currently mounted on the local system from remote systems, or automatically mounted from remote systems as soon as NFS is started. The following information is displayed:
- name of the server (from */etc/hosts*)
- path name of the resource on the remote machine
- mount point of the resource on the local machine
- access mode to the remote resource

Modifying access options

Choose the menu item
network_services -> remote_files -> remote_resources -> modify
to modify the access options that are to apply for mounting. You must first decide whether the changes are to be implemented immediately or whether they should only relate to automatic mounting. A window is displayed containing the options to be changed. The different options are explained below, using the description of the *mount* menu item as an example.

Unmounting remote resources

Choose the menu item
network_services -> remote_files -> remote_resources -> unmount
to reverse the automatic mounting of remote resources. You can also unmount remote resources that are currently mounted. You must specify the name of the remote resources in the input field *Resource* in the form *<Servername>:<RemotePath>*. By pressing the **[CHOICES]** function key, you can display a list of all remote resources mounted in your system.

4.3 Serial connections (UUCP)

The *basic_networking* menu item provides you with administrative access to the various files for controlling BNU (basic networking utilities) operations. You can edit the BNU files that are used by the commands of the *UUCP* system. Please note that the operations of the *basic_networking* menu item also affect other commands that communicate with remote systems (e.g. *mail(1)*).
The *UUCP* system provides programs that are used to implement basic communication functions, such as file transfer or program execution on remote systems. The *UUCP* system is available on all UNIX systems and is thus widely used. Furthermore, communication via the programs of the *UUCP* system is extremely cost-effective, as the only hardware requirement is a cable between the serial interfaces of the machines that are to communicate. *UUCP* also supports the establishment of dial-up connections using a modem via public networks.
The *UUCP* system is named after the *uucp* command, which is however only part of the *UUCP* system. The table below provides an overview of the most important commands in the *UUCP* system:

Command	Function
uucp	File duplication between two UNIX systems
uux	Command execution on a remote machine
uucico	Connection setup and data transfer
uuxqt	Execution of a command request from a remote machine

Table 13: Programs of the UUCP system

Most of the files required for managing basic networking utilities are located in the */etc/uucp* directory. In the following sections, the descriptions of the respective *SYSADM* functions are accompanied, where necessary, by a brief explanation of the files.
For further information, please refer to the "Network Administration" manual.
In the table below, the various menu items for basic networking utilities management are compared with the corresponding shell commands:

SYSADM menu	Shell command
devices - add	*sacadm -a; pmadm -a;* editor on */etc/uucp/Devices*
devices - list	*cat /etc/uucp/Devices*
devices - remove	Editor on */etc/uucp/Devices*
polling - add	Editor on */etc/uucp/Poll*
polling - list	*cat /etc/uucp/Poll*
polling - remove	Editor on */etc/uucp/Poll*
setup - add	*sacadm -a; pmadm -a;* editor on */etc/inittab*

systems - add	Editor on */etc/uucp/Systems*
systems - list	*cat /etc/uucp/Systems*
systems - remove	Editor on */etc/uucp/Systems*

Table 14: Shell commands for basic networking utilities management

If you want to manage the basic networking utilities, select *basic_networking* from the *network_services* initial menu.

4.3.1 Configuring interfaces

Under the menu item
network_services -> basic_networking -> devices
you can access functions for managing the hardware interfaces or "network devices" available on your system in order to support BNU functions. You can
- add network devices to your system
- list available network devices
- lock network devices

The network devices available on your system are managed in the */etc/uucp/Devices* file. This file contains information on all devices that can be used for setting up a *uucp* connection to a remote system. This can include direct connections, automatic call units, and network connections.
When you select the *devices* menu item, another menu containing the items *add*, *list*, and *remove* is displayed.

Adding network devices
Choose the menu item
network_services -> basic_networking -> devices -> add.
You must specify the category of the device to be added in the following form. If you press the `[CHOICES]` function key, a list of valid categories is displayed. The following entries are permitted:

Direct
: A direct connection (e.g. via a serial interface) to another machine is added. If you press the `[SAVE]` function key, a form is displayed where you must define the device file of the desired connection and the transmission speed.

Modem
: A modem with an automatic dial function or an automatic call unit is added. In the following form, you must define the modem type and the command language that your modem understands. Another form is then displayed where you must enter the special file connected to the modem and the transmission speed of the modem.

Network
: Select this item to access a transport service (e.g. TCP) via the transport layer interface library. In the following form, you must enter a name that identifies the network and a special file that is used when accessing the network. In the case of certain networks, a corresponding entry must exist in the */etc/uucp/Devconfig* file (see the "System Administrator's Guide").

Other
: Select this item if you want to enter another device in the */etc/uucp/Devices* file. When

you press the **[SAVE]** function key, a form is displayed where you must enter all of the values required for the */etc/uucp/Devices* file. A detailed description of the file format is contained in the "Network Administration" manual.

4.3.2 Configuring network connections

Using the functions of the menu item
network_services -> *basic_networking* -> *systems*
you can determine which remote systems can be accessed by the *UUCP* functions. The relevant information is managed in the */etc/uucp/Systems* file. For further details on the format of this file, please refer to the "System Administrator's Guide".
When you select the *systems* menu item, another menu with the items *add*, *list*, and *remove* is displayed. These items are explained below.

Adding remote systems
Choose the menu item
network_services -> *basic_networking* -> *systems* ->*add*.
You must then enter the following details in the subsequent from:

System
: You must specify the node name of the remote system.

Days and times to call
: Enter the times at which the system can be called. If the system can be called at any time, enter *Any*. If you would like to lock the system for calls, enter *Never*. You can use abbreviations to limit possible calls to specific days or times. For further details, press the **[HELP]** function key.

Device category
: You must enter the device category of the device via which communication is to be established with the remote system. Depending on the category selected, various forms are displayed for entering other, device-specific information. The following categories are permitted:

Direct
: A direct connection (e.g. via a serial interface) to another machine is added. When you press the **[SAVE]** function key, a form is displayed where you must define the special file of the desired port, the transmission speed, a login name, and a password for the remote system.

ModemA modem with an automatic dial function or an automatic call unit is added. You must enter the modem type, transmission speed, call number, a login name, and a password for the remote system.

Network
: Select this item to access a transport service (e.g. TCP) via the transport layer interface library. In the following form, you must enter a name that identifies the network, a network address, a login name, and a password for the remote system.

Other If you want to establish a connection via another device, select this entry. In the

following form, you must define the device type, transmission speed, call number, a login name, and a password for the remote system.

Listing remote systems
Choose the menu item
network_services -> basic_networking -> systems -> list.
In the next form you can limit the display to a specific system, or you can list all systems by entering *All*. The contents of the */etc/uucp/Systems* file are then output to another form.

Removing remote systems
Choose the menu item
network_services -> basic_networking -> systems -> remove.
In the next form, you can specify whether you want to remove a specific system or all systems that can be addressed via the BNU functions. A list of all defined systems is displayed when you press the **[CHOICES]** function key. If you press the **[SAVE]** function key after you have selected the system, the relevant entries are removed from */etc/uucp/Systems*.

Tip:

If you would like more detailed information on the complex functionality of the basic networking utilities, please refer to the "Network Administration" manual.

Listing network devices
Choose the menu item
network_services -> basic_networking -> devices -> list.
In the following form, you can specify the devices on which information is required. The form has two input fields*:*

Device type
Enter the device type on which you require information. If you would like information on all of the devices installed on your system, enter *All*. A list of all valid device types is displayed when you press the **[CHOICES]** function key.

Port Enter the special file for the port for which you require information on connected devices. If you require information on the devices of all ports, enter *All*.
When you press the **[SAVE]** function key, the corresponding lines from */etc/uucp/Devices* are output to another form.

Removing network devices
Choose the menu item
network_services -> basic_networking -> devices -> remove.
In the following form, you can specify which devices are to be removed from the list of devices available for BNU. The form contains the two input fields *Device type* and *Port* described above. Select the devices to be removed. When you then press the **[SAVE]** function key, the corresponding entries are removed from */etc/uucp/Devices*.

4.3.3 Configuring network polling

Using the functions of the menu item
network_services -> basic_networking -> polling

you can define the times at which remote systems are to be polled automatically by BNU. The relevant information is managed in the */etc/uucp/Poll* file. Further information on the format of this file is contained in the "Network Administration" manual.
When you select the *polling* menu item, another menu with the items *add*, *list*, and *remove* is displayed. The meanings of these items are explained below.

Adding systems to be polled
Choose the menu item
network_services -> basic_networking -> polling -> add.
In the following form, you must specify which system is to be addressed at which times. Enter the name of a system in the *System* input field; this name must be defined in the */etc/uucp/Systems* file. In the *Times* input field, you must enter a list containing integer values between 0 and 23. The entries must be separated from one another by blanks or commas. If you enter *0 8 16* the system will receive a send request once every eight hours.

Listing systems to be polled
Choose the menu item
network_services -> basic_networking -> polling -> list.
In the following form, you can select the systems for which information is to be displayed. If you require information on all systems to be polled, enter *All*. When you press the **[SAVE]** function key, the corresponding entries in */etc/uucp/Poll* are displayed in another form.

Removing systems to be polled
Choose the menu item
network_services -> basic_networking -> polling -> remove.
In the following form, you can select the system that is no longer to be polled. Use the **[CHOICES]** function key to display a list of all the systems to be polled. If you press the **[SAVE]** function key after you have selected the system, the corresponding entries are removed from */etc/uucp/Poll* after you have confirmed this action.

4.3.4 Initializing the UUCP configuration

In order to initialize the network management files in the */etc/uucp* directory, you must select the *setup* menu item from the *basic_networking* menu. A menu with a single item *add* is then displayed. If you press the **[RETURN]** key, you can initialize the files for devices (*/etc/uucp/Devices*), systems (*/etc/uucp/Systems*), and systems to be polled (*/etc/uucp/Poll*). The sequence in which the relevant files are configured is significant here.
Before remote systems can be initialized, a device must exist that can communicate with the system. You must therefore add the devices first, then the systems, and finally the systems to be polled. *SYSADM* supports this sequence, in that the menu items *add_systems* and *add_polling* can only be activated after a device has actually been added.

Tip:

> The functions available under the menu items correspond to the *add* functions under the items *devices*, *polling*, and *systems* in the *Basic Networking Utilities Management* menu.

The difference in selecting *setup* is that you cannot add devices, systems, and polls independently of each another. The reason for this is that with new systems you start by defining a complete connection, with an associated special file, remote system, and poll.

4.4 Managing Internet addresses

The menu item
network_services -> name_to_address
enables you to add machine addresses and service connection information for the protocols installed on your machine. By mapping freely selectable names to protocol-specific addresses, you can use the name to access the services of a remote machine, without knowing the underlying protocol or the type of address. Other machines can address application programs using the names defined here instead of the service addresses.
If you select *name_to_address* from the *Network Services Management* menu, a menu is displayed where you can choose from the protocols installed on your system.
The two menu items *inet* (Internet protocols) and *loopback* (local return protocols) are explained briefly as examples.

4.4.1 Local return protocol

The *loopback driver* is an important tool for the system administrator when testing the TCP/IP subsystem. The loopback driver operates a virtual output device whose task is to immediately place transferred data into the input queue of a protocol stack without making any changes. In this way, the local TCP/IP subsystem can be tested without using a network controller. If it is possible to set up this local connection, the source of any communication problem can only lie in the network connection, the controller hardware, or the controller driver.
You can use the menu item
network_services -> name_to_address -> loopback
to determine which communications services are to be available to the local return protocol. The services are entered in the corresponding services files */etc/net/<transport-protocol>/services*. All services available on your system should be entered in the services files.

4.4.2 Internet protocol

The Internet protocol is a component of the TCP/IP subsystem and is responsible for fragmenting data packets, providing them with specific addresses, and transferring them to the network controller. The menu item
network_services -> name_to_address -> inet
is used to assign symbolic names to the unique Internet addresses of remote systems. You can access the remote systems via these names without knowing the structure of the Internet addresses. In the case of the Internet protocol, names are assigned to addresses in the */etc/hosts* file.
Under the *inet* menu item, service names are assigned to port numbers that identify a TCP/IP connection at transport level and are used for addressing. This assignment is made in the */etc/services file*. Detailed information on the format of the files mentioned above is contained in the "Network Administration" manual.
The table below compares the menu items with the corresponding commands:

Function	Menu item	File

Internet protocols (TCP and UDP)	*inet*	Editor on */etc/hosts* or */etc/services*
Local return protocol	*loopback*	Editor on */etc/net/<transport>/hosts*

Table 15: Files for the management of machine and service addresses

4.5 Managing network selection

In order that special network applications can be transferred to different environments, the user process must have a standard interface via which a connection can be set up to the numerous networks in any given environment. The network selection function provides a simple and consistent interface that allows applications to select networks (on the transport level). This means that these applications are independent of protocols and transmission media. UNIX System V network management applications that enable the user to influence network selection, use the standard interface described here.
The information on network selection is managed in the */etc/netconfig* file. The table below contains the corresponding shell commands:

SYSADM menu	Shell command
display	cat */etc/netconfig*
modify	Editor on */etc/netconfig*

Table 16: Shell commands for managing network selection

If you choose the menu item
network_services -> selection
and then choose *display*, a text window is displayed containing the configuration data for network selection. The following information is displayed:

Network Id
: A name used to identify the network.

Network Device
: Complete path name of the special file used for connection setup.

Semantics
: Description of the transport service interface.

ProtoFamily
: Name for categorizing the network in a protocol family.

Visible
: The value *yes* is set here if the network is addressed by the network selection by default, if the environment variable *NETPATH* is not set.

When you have selected an existing network identifier, you can modify the configuration under the *modify* menu item.
In this form you can modify the network identifier in the input field *Network Identifier*, and define whether the network is addressed by network selection by default in the input field *Default Network*.

Tip:

If you want to use the network selection function, a detailed description of the functionality is contained in the "Network Administration" manual. This also describes the environment variable *NETPATH* and the format of the */etc/netconfig* file.

5 System support tasks

5.1 Managing users and groups

The *SYSADM* menus under the main menu item *users* are used for managing user and group IDs. However, SINIX/windows can also be used to manage users. For more information, see the manual "SINIX/windows User Environment: Guide for Experts and System Administrators".
You can use the add menu item to create a user or group on your system. You will be asked whether you want to create a user or a group and, after you have confirmed your selection with **[SAVE]**, a form will be displayed in which you can enter all the information regarding the new user.
The table below compares the available functions with the corresponding utilities on shell level.

Function	**Menu item**	**Shell command**
Add users or groups	*add*	*useradd (1M)groupadd (1M)passwd (4)*
Defaults for adding users	*defaults*	Editor on */usr/sadm/defadduser*
List users or groups	*list*	*logins (1M)*
Define user language and international environment	*locale*	Editor
Change attributes of users or groups	*modify*	*usermod (1M)groupmod (1M)*
(Re)define user password information	*password*	*passwd (4)*
Remove users or groups	*remove*	*userdel (1M)groupdel (1M)*

Table 17: Shell commands for managing users and groups

The commands are described in detail in the Reliant UNIX system documentation. The individual items in the *users* initial menu are described below with their functions.

5.1.1 Creating new users

If you want to create a new user, choose the menu *users* -> *add*, select the item *users*, and press the **[SAVE]** function key. A form is displayed in which you can enter all the information

on the new user.
The input fields of the form have the following meanings:

Comments
Here you can enter comments relating to this login name. It is recommended to enter the name and possibly the telephone number of the new user. The character string entered must not contain the characters: :|´'"${}~'^.

Login Specify the login name to be assigned to the new user. If the user already exists, you can change the login name here. The login name is the character string entered by the user to log on to the system. It must comprise a character string with 1 to 8 characters, and must be unique on your system.

User ID
Enter the identification number (UID) to be assigned to the new user. The UID identifies the new user in the system. The number must lie between *100* and the value of the *MAXUID* constant defined on your system, which is usually *60000*. The next non-reserved user ID (UID) is automatically entered in this field by the system.

Primary group
Specify the primary group of the new user.The primary group is the group to which the user is assigned when he or she logs on. All files are assigned to this group. A valid group name must be entered in the *Primary group* field.

Tip:

The active group of a user, initially the primary group, can be changed using the *newgrp(1M)* command. All new files are assigned to the active group.

Supplementary group(s)
In this field you can specify a list of all groups to which the user is to belong, in addition to the primary group. You can only specify groups that already exist. After logging on, the user can activate the *newgrp(1M)* command for each of these secondary groups, in order to belong to the particular group for the duration of a working session. This field does not contain any default value and can remain free.

Home directory
Specify the pathname for the home directory of the new user. This must be an "exclusive" directory, i.e. the directory must not yet exist when a new user is created. The default value for this field is *<default_base_home_dir>/<login>*. Here, *<default_base_home_dir>* corresponds to the specification */home*, provided you have not changed the defaults (*defaults* menu item). *<login>* is the user ID of the new user.

Tip:

As soon as users log on to the system, they are in their particular home directory. Users generally have comprehensive access rights to programs and files in their own home directory.

Shell Enter the complete pathname of an existing shell. This must be an existing and executable file. The shell is a program that displays the input line on the screen and processes and interprets the user's inputs. This field is preset with the shell defined under the *defaults* menu item. You can press the **[CHOICES]** function key to display a list of the shells available on your system.

Login inactivity
Here you specify the number of days the login name can remain inactive before it is locked.

Login expiration date
Here you can enter the date on which the user's login name is to expire. The date entered must be in the future and must have one of the formats: *MM/DD/YY* or *Month DD, YYYY*, where *MM*, *DD*, *YY* and *YYYY* are the corresponding figures for the day, month, or year; *Month* is the name of the month.

System Administration Privileges
In this field you can specify whether the user is permitted to perform system administrator tasks under *SYSADM*. Enter *yes* if you want to assign system administration rights to the user; otherwise specify *no*.

Tip:

For security reasons, the group of users with system administrator rights should be kept as small as possible and such privileges should only be assigned when absolutely necessary.

When you have entered all the information or selected with **[CHOICES]**, press **[SAVE]**. A message is output indicating that the user has been added to the system.
In addition, another form appears on the screen in which you must enter information on the password for the user. The four fields of this form have the following meanings:

Password status
Specify the password status for the user ID. If you press **[CHOICES]**, the following entries are offered:

lock The password is locked; the login name cannot be used.

No password
No password is assigned to the login name

Password
A password is assigned to the login name

Tip:

If the status *lock* is set, the login name cannot be used. If the status *No password* is set, the ID is not protected against unauthorized use.

The next three fields are only significant if you want to define a password:

Maximum number of days the password is valid

Specify the maximum length of time that the password is valid. If you do not enter a value here, the password is valid for an unlimited period.

Minimum number of days allowed between password changes

You can specify the minimum number of days that must elapse before the password is changed again. If you do not enter a value, the setting is *0*.

Number of days for warning message

Specify the number of days a warning message is to be output before the validity of the login name expires.

When you have made all your entries, press the **[SAVE]** function key to continue processing. If you have decided to assign a password, you exit the *SYSADM* environment temporarily and the UNIX utility *passwd* displays the input request *New password*. Enter the new password. The input request *Re-enter new password* then appears. To exclude the possibility of typing errors, you must reenter the new password. When you have confirmed your input and entered the same password twice, you return to the *SYSADM* environment. A window is opened with the following information on the modified or new password:

- ID of the user for whom the password was edited
- Password status in accordance with the following list:
  - *PS*, a password is assigned to the user ID
  - *NP*, no password is assigned to the user ID
  - *LK*, the password is locked
- Date on which the password was last modified
- Minimum period (in days) between two password modifications
- Validity period of the password (in days)
- Number of days a warning message is to be output before the validity of the password expires

If you then press the **[CANCEL]** function key, you return to the menu for managing user and group IDs. Press **[CONTINUE]** to add further users.

5.1.2 Defaults for adding users

The menu item
users -> defaults
allows you to display and modify the defaults used by the *add* function to create a new user ID. Any modifications to the defaults have no effect on existing user IDs, rather only come into effect when creating new user IDs. The defaults are stored in the */usr/sadm/defadduser* file.
If you want to display or modify the defaults, select the menu item *defaults* from the *users* menu. A form is displayed with six input fields:

Primary group membership

Specify the group defined by default as the primary group for new users. The group must already be created. With new Reliant UNIX systems, this field is preset with the group *other* (GID 1).

Base home directory

Specify the base directory to be used for all subsequent definitions of user login

names. The standard home directory for new users is formed by appending the login name to the name entered here. The specified directory must actually exist. The default for the base home directory is */home*. The home directory */home/user1* would thus be assigned to a new user called *user1*.

Skeletal home directory
Specify the name of the skeletal directory. The skeletal directory contains standard files which are copied to the user's home directory when the user is created. This directory generally contains initialization and configuration files that are automatically made available to all new users. An example of such a file is the shell configuration file *.profile*. The skeletal directory specified here must actually exist. The default is */etc/skel*.

Shell
Specify the program name of the shell used as the standard shell for the new user. You must specify the name of an existing executable file. The default can be */sbin/sh* (Bourne shell) or */sbin/ksh* (Korn shell), for example.

Login inactivity
Here you specify the number of days the login name can remain inactive before it becomes invalid. If you specify *0*, there is no time limit for non-use. The default is *0*.

Login expiration date
Specify the date on which the user's login name is to expire. If you leave this line blank, no expiry date is set. The date entered must be in the future and must have one of the formats: *MM/DD/YY* or *Month DD, YYYY*. For example, if the ID is to expire on December 7, 1995, enter either *12/07/95* or *December 07, 1995*. If you choose the latter option, you must use the English name of the month. With new Reliant UNIX systems, this field is not preset.

5.1.3 Listing users

If you want to display the users entered, choose the menu item
users -> list,
select the entry *user*, and press the **[SAVE]** function key. A list of all users entered on your system is then displayed:

- The first line contains the login name, the user ID (UID), the primary group, the group ID, and a comment regarding the user (in that order).
- The second line contains the home directory of the user.
- The third line indicates the shell executed when the user logs on.
- Finally, the following information is displayed on the user password:
  - Password status (*PS* - password assigned, *NP* - no password, *LK* - login name locked)
  - Date of last modification
  - Minimum number of days between two password modifications
  - Validity period of the password in days
  - Number of days a warning message is to be output before the validity of the password expires

If not all users are visible in the window, you can use the function keys **[NEXTPAGE]** and **[PREVPAGE]** to page through the list.

5.1.4 Modifying users

If you want to modify an existing user definition, choose the menu
users -> modify,
select the item *user*, and press **[SAVE]**. A form is displayed in which you must enter the ID of the user whose attributes you want to change. The user information is changed using the *usermod(1M)* utility.
The changes are made in a form with the same layout as the form for creating a new user. The input fields are explained in detail from section "Creating new users". When you have entered the modifications and confirmed by pressing the **[SAVE]** function key, a message is output indicating that the user definition has been changed.

Warning:

If you change the identification number (UID), the access rights for the home directory of the user may be invalid because the owner of a file is identified by his or her UID, not by the login name.

5.1.5 Removing users

If you want to remove a user, choose the menu
users -> remove,
select the item *users*, and press **[SAVE]**. A form is displayed in which you must enter the ID of the user you want to remove. Enter a valid user ID or press [**CHOICES**] to choose from a list of all user IDs currently defined in this system. When you have selected an ID and pressed **[SAVE]**, the following form is displayed.
The form contains some information on the selected user. The last line of the form contains the security question *Remove home directory and all files?* The default answer is *yes*.

Warning:

If you press **[SAVE]** in this case, not only the user ID but all files of this user in his or her home directory with all subdirectories will be deleted. If the home directory is to be retained, answer the question with *no*.

After successful deletion, a message is output indicating that the selected user has been removed from the system. If you then press the **[CANCEL]** function key, you return to the menu for managing user and group IDs. Press **[CONTINUE]** to remove another user.

5.1.6 Adding new groups

If you want to create a new group, press the **[CHOICES]** function key in the *users -> add* menu and select the item *group*. If you then press **[SAVE]**, a form is displayed in which you can enter the information for the new group:

Group name
Enter the name of the new group in this field. The length of the name is limited to sixteen alphanumeric characters. The name must be unique within the system.

Group ID

Specify the identification number (GID) which is to be assigned to the new group and which uniquely identifies the new group in the system. The number must lie in the range between *100* and the value of the *MAXGID* constant defined in your system (usually *60000*). This field is preset with the next non-reserved group ID. You can accept this value or change it.

Primary member(s)

In this field you specify the list of all users for whom the specified group is to be the primary group. The list items must be separated by commas. It is easier to press **[CHOICES]** to display a list of the relevant users. In this list, use the **[MARK]** key to mark all the users for whom the new group is to be the primary group. When you have selected all of the users, press the Enter key to transfer these user IDs to the field. The primary group is the current group on the system when the user logs in. Enter either login names or user IDs in this list.

Supplementary member(s)

Specify the list of all users who are to belong to the created group as supplementary members. As in the previous field, the list entries must be separated by commas. You can select the members from a list, as described above. When supplementary members log on to the system, they can use the *newgrp(1M)* command to activate the created group. Enter either login names or user IDs in this list.

When you have made all your entries, close the form by pressing **[SAVE]**. A message is then output indicating that the group has been added to the system. If you then press the **[CANCEL]** function key, you return to the menu for managing user and group IDs. Press **[CONTINUE]** to add another group.

5.1.7 Listing groups

If you want to display a list of the groups entered, choose the menu *users* -> *list*. Now press the **[CHOICES]** key so that the item *group* appears in the form instead of the default entry *user*. If you press **[SAVE]**, a list of all groups currently defined in the system is displayed:
For each of the groups defined in your system, a four-line entry is displayed with the following information:

- group name
- identification number of the group (GID)
- primary members of the group
- supplementary members of the group

If not all groups entered are visible in the window, you can use the function keys **[NEXTPAGE]** and **[PREVPAGE]** to browse through the list.

Tip:

Each user is a primary member of precisely one group. When the user logs on to the system, the primary group is the active group of this user. Newly created files are assigned to the active group, for example. The access rights of this group then apply to these files. Users can execute the *newgrp* command to activate one of the groups in which they are supplementary members.

5.1.8 Modifying groups

If you want to modify a group definition, you must enter the value *group* in the form *users -> modify*. If you press the **[SAVE]** function key, a form is displayed in which you must enter the ID of the group whose definition you want to change. The group information is modified using the *groupmod(1M)* utility.
The modifications are made in a form with the same layout as the form for adding a new group. The input fields are explained from section "Adding new groups". When you have entered the new information and confirmed all modifications by pressing the **[SAVE]** function key, a message is output indicating that the group definition has been changed.

5.1.9 Removing groups

if you want to remove an existing group definition, press **[CHOICES]** to select the entry *group* in the *Remove Users or Groups* form. In the following form, you must enter the name of the group you want to delete. Specify a valid group name or press **[CHOICES]** to select from a list of the groups currently defined in this system. When you have selected the group and pressed the **[SAVE]** function key, a form is displayed with all the information on the group you want to remove.

Tip:

Deleting groups does not affect the user definitions of any users who may belong to this group. As a result, the user information may contain invalid references to the associated groups. It is advisable to remove all members from a group before deleting the group.

At this point you can still decide whether to press **[CANCEL]** in order to terminate the function without removing the group, or press **[CONTINUE]** to remove the group. In the latter case, a message is output indicating that the group has been removed from your system.

5.1.10 Changing password information

If you want to manage or modify a user password, choose the item *password* from the *users* menu. A form is output with five input fields:

User Specify the login name whose password you want to change.

Password status
Specify the password status for the login name. If you press **[CHOICES]**, the following entries are offered:

lock The password is locked, the ID cannot be used.

New password
The existing password is modified.

No password
No password is assigned to the ID.

Password

A new password is assigned to the ID if the password was previously locked or if no password was assigned to the user.

Tip:

If the status *lock* is set, the ID cannot be used. If the status *No password* is set, the ID is not protected against unauthorized use.

Maximum number of days the password is valid
Specify the maximum length of time that the password is valid. If no value is entered here, the password is valid for an unlimited period.

Minimum number of days allowed between password changes
You can specify the minimum number of days before the next password modification. If no value is entered here, the default setting is *0*.

Number of days for warning message
Specify the number of days a warning message is to be output before the validity of the login name expires.

When you have made all your entries, press the **[SAVE]** function key to continue processing. If you have decided to assign a password by selecting *New password* or *Password* in the *Password status* field, you temporarily exit the *SYSADM* environment. The UNIX utility *passwd* then displays the input request *New password*. Enter the new password. The input request *Re-enter new password* is then displayed. To exclude the possibility of typing errors, you must reenter the password. When you have confirmed your input and entered the same password twice, you return to the *SYSADM* environment. A window is opened displaying the following information on the new or modified password:

- Login name of the user whose password was edited
- Password status (*PS* - password assigned, *NP* - no password, *LK* - login name locked)
- Date of last password modification
- Minimum number of days between two password modifications
- Validity period of the password in days
- Number of days a warning message is to be output before the validity of the password expires

If you then press the **[CANCEL]** function key, you return to the menu for managing user and group IDs. Press **[CONTINUE]** to modify the password information for another user.

5.2 Configuring the system

To adapt your system to the working environment, you must define a number of settings: the system date and time, system language, system name and password, default values for main memory dumps. Menus for these tasks can be found under the *system_setup* main menu item.

5.2.1 System date and time

Under the *datetime* menu item you can display the system date and time (*display* menu item) or set the system clock (*set* menu item).
In the form for setting the system time, you can jump from one field to the next using the tab key.

5.2.2 System language

You can use the menu items *display* und *set* to view and modify the default national language and the country-specific format of the date and time, currency symbol and formats, etc. When you have entered the desired values, press the **[SAVE]** function key.

5.2.3 Setting the user language and international environment

Using the functions of the *users -> locale* menu item, you can implement user-specific settings for the international environment. The values of the environment variables listed in table "Environment variables for setting the international environment" can be defined for this purpose. The global system settings relating to internationalization can thus be overwritten by user-specific values.

Environment variable	Meaning
LANG	Name of the database under */usr/lib/locale* with the language-specific information
LC_COLLATE	Definition of a language-specific sort sequence for sorting character strings
LC_CTYPE	Definition of the character class to which a character belongs
LC_MESSAGES	Language for message texts (overrides *LANG*)
LC_MONETARY	Currency symbol and currency formats
LC_NUMERIC	Numeric representation (decimal point, exponent, separator)
LC_TIME	Format of date and time

Table 18: Environment variables for setting the international environment

Depending on the shell defined for the user, the settings in the *.profile* file (Korn or Bourne

shell) or in the *.login* or *.cshrc* file (C shell) are incorporated in the home directory of the user.
If you want to set the environment variables for internationalization, choose the menu item *locale*. Note that the value of the variables is not evaluated if the LC_MESSAGES variable is set. In this case, only the value of LC_MESSAGES applies.
In the first input field *user ID*, specify the login name of the user for whom you wish to set the international environment. The current values of the environment variables to be set are then read from the configuration files and displayed.
The form contains an input field for each environment variable. You can enter the value for the corresponding environment variable in these fields. The input fields are preset with the current value of the environment variables. When you enter the desired values and then press the **[SAVE]** function key, the environment variables are updated. The updates do not come into effect until the user next logs on to the system.

5.2.4 Setting system tuning

The following functions are available under the *performance* main menu item:
- display and control of all system processes
- display of various performance data relating to your system
- improve system performance (system tuning)

This manual does not describe in detail what you have to do to improve the performance of your system, it only tells you how to use SYSADM to easily change some of the system parameters that are important for system tuning. Detailed information on the topic of "system tuning" can be found in the "*Tuning Guide*".
When you select the menu item Tuning, a further menu appears with the entries:
- core parameters
- drivers
- system core
- daemons

If you select Core parameters, the menu stune selections, offering the following options, is displayed:
- the current values of the core parameters defined in the stune file (also refer to the "SINIX V5.43: Tuning Guide RM200, RM300, RM400, RM600")
- suggestions for the values of the core parameters, corresponding to the various main memories of the computers (32MB, 64MB and more)
- any old backup versions of the stune file

If the size of the main memory has been changed, you should generate a system core which matches the memory size. You may adopt one of the options for stune offered in the menu.
Please note that new settings do not become effective until you have regenerated the system core and rebooted the system (see the description of the *idbuild* command). In general, the activation and deactivation of daemons is effective immediately.

Configuring drivers and file systems

With the aid of the Drivers menu item, you can open a selection form in which you specify whether various drivers and file systems should be activated. If a driver controls several units, several units can also be activated. The following are possible:
- disk support
- peripheral interface drivers

- file system
- Internet service
- integrated workstation environment
- core options
- network drivers
- Network File System (NFS) and lock manager
- optional drivers available for special peripheral devices and network services
- creation of core profiles
- specific drivers for RM200
- RPC and DCE
- SCSI drivers
- STREAMS modules
- Transport Service Interface
- drivers for the X Window system

In the case of drivers that are part of the basic system, a short description is displayed in the screen mask. No description is provided for optional drivers.

Generating a new system core

The new system core must be generated in order to activate changes to the core parameters, for example. The System core menu item provides functions which you can use either

- to generate a new single-processor or multi-processor system core (submenu idbuild) or
- to query information on a system core that has already been generated (submenu info)

After you select the submenu idbuild, you must decide whether you wish to generate a single-processor or multi-processor core.

If you select a monoprocessor core with the keyword Single, a system core without multiprocessor support is generated.

Deactivating unnecessary daemons

You can reduce the basic load on your system by deactivating daemons which are not required and were started via the rc2.d scripts. Under the menu item Daemons, you are presented with a form which lists the daemons essential to the system. The form also displays the name and description of the daemon along with an input field.

The input field shows whether or not the daemon is active; Y stands for "active" and N for "inactive".

With `[CHOICES]` you can change the status of the daemons. The system checks for possible dependencies and ensures that rules are observed.

When you select `[SAVE]`, the daemons of all the modified fields are either

- started on transition to Y or
- stopped on transition to N

The changes made do not become active until the system is rebooted, since several daemons do not have a stop function when the system is running.

5.3 Starting operations automatically

Under the *schedule_task* main menu item, you can define entries in a cron table to ensure that certain programs are started automatically at specific times. This SYSADM function is used to manage the cron table of the user root.
A part from the time specification (month, day, day of the week, hour, minute), the program to be started automatically must be entered with absolute path name and arguments.

5.4 Managing software

This section describes how to install additional software which does not belong to the Reliant UNIX operating system. It also describes how to display an overview of the installed software and how to deinstall it. You can use the *SYSADM* user interface for this purpose.

5.4.1 Selecting the appropriate menu item

SYSADM offers two menu items for installing, listing and deinstalling software: *software* and *software_prod*. The most suitable menu item depends on the type of software to be processed.
A distinction is made between two types of software:

1. **System software**
   Designates the software belonging to the Reliant UNIX operating system. System software is system-specific, i.e. it will only run on specific RM systems. System software is traditionally structured in packages. There are currently around 100 packages.

   Installation:
   You need a system CD-ROM, which contains the model of your system. You can then execute either a new or update installation (see the corresponding section in the "Reliant UNIX Installation and Operation" manual). You can install individual system software packages with *pkgadd*(1M).

   Deinstallation:
   You can deinstall individual software packages with either the *software* or *software_prod SYSADM* menu item (pseudo product "OTHERS": all packages not contained in a product).
2. **Application software**
   Designates the software belonging to applications. It is irrelevant whether the applications come from SNI or other companies. Also called add-on products.
   Add-on products are only installed after the Reliant UNIX operating system is running. They will generally run on all SNI RM systems. You will find a few add-on products on the system CD-ROM (e.g. drivers for various controllers). Additional add-on products can, for example, be found on the "CD-SYS-MI" CD-ROM.
   Add-on products are also structured as packages. The utility which is started via the *software_prod* menu item uses a product structure to improve legibility. In this structure, all packages belonging to a common add-on product are grouped together under the product name. Packages not belonging to an add-on product are assigned to the "OTHERS" pseudo product (e.g. the system software packages). The utility stores the information on the installed products and their packages in a separate product database.

   Installation:
   You can install add-on products you receive on CD-ROM via the *SYSADM* menu item *software_prod*, and other add-on products via the *software* menu item.

   Deinstallation:
   You should use the *software_prod SYSADM* menu item to deinstall add-on packages. *SYSADM* then automatically deinstalls all software packages belonging

to the add-on product and also updates the product database.
It is, however, also possible to use the *software* menu item instead. In this case, you must ensure that all software packages belonging to the add-on product are deinstalled. The product database is, however, not updated and the next time you use the *software_prod* menu item you will receive the message: *n package(s) inconsistent in data base*, where *n* stands for the actual number of inconsistent packages.

Tip:

If you use an RM200 graphic terminal as a console, you can also install and deinstall via the SINIX/windows *Software Manager*.

The following table provides an overview of the tasks for which each of the two *SYSADM* menu items can be used:

Task	**Menu item*software_prod***	**Menu item*software***
Installation	""	" Installing individual software packages"
Install add-on products from the system CD-ROM (e.g. drivers for controllers or a UPS)	yes	
Install add-on products from a product topic area CD-ROM	yes	
Install software from tape cartridge or floppy disk		yes
Install key diskette ("Installing the key diskette")	yes	yes
Post-install separate system software packages		"Managing software user profiles"
Deinstallation	" Deinstalling software products"	" Deinstalling individual software packages"

Deinstall add-on products	yes	
Deinstall individual software packages	yes	yes
Information	"Information on add-on products"	""
Display information on installed add-on products	yes	
Display overview of installed packages		yes
Display detailed information on installed packages	yes	yes
Print information on add-on products or packages	yes	

Table 19: Using SYSADM software_prod and SYSADM software

5.4.2 Installing software products

Many Reliant UNIX add-on products are supplied on CD-ROM. This section explains how to install such add-on products on your system.

Tip:

Some add-on products and software packages require a key diskette containing a special authorization file. Please install the key diskette before you install the add-on product or package belonging to it. Please refer to the section "Installing the key diskette".

Tip:

If you wish to install software which is not on a CD-ROM, please read the section " Installing individual software packages".

Tip:

If you wish to post-install system software packages, please use the *pkgadd*(1M) command (or carry out a new installation).

5.4.2.1 Preparing for installation

Add-on products can be installed locally or remotely and each requires different preparatory steps.

Local installation

» Insert the CD-ROM into the CD-ROM drive on the **local** computer.

Please refer to the section "CD-ROM form" for further details.

Remote installation

Before installing add-on products remotely, you must select a server which contains a CD-ROM drive. You must then prepare the selected server for the remote installation:

» Place the CD-ROM in a caddy (if there is one).
» Insert the caddy (or CD-ROM) in the CD-ROM drive on the **server**.
» Start *SYSADM*.
  The main menu appears.
» Select the *software_prod* menu item.
  The *Process_Products* menu appears.
» Select the *miscellaneous* menu item.
  The *Miscellaneous Functions* menu appears.
» Select the *prepare_server* menu item.

The *Prepare as Server* mask appears, in which you must enter the following information:

CD-ROM device name
: Device name of the CD-ROM drive.
  The name of the special file or the alias name as entered in the */etc/device.tab* file is permitted. Press the `[CHOICES]` function key to determine the valid device names.

Local mountpoint
: Name of the directory under which the CD-ROM drive is mounted.

Clients
: Names of all client systems
  The name of a client system corresponds to the output of *uname -n*. The names must be separated from each other by a blank.

» Fill in the mask.
» Press the `[SAVE]` function key.
» Press the `[RETURN]` key.
» Exit *SYSADM*.
  Press the `[EXIT]` function key.

You can now change to the console of the first client system. The remaining part of the installation procedure is the same as that on a local system.

CD-ROM form

» Start *SYSADM*.
  The main menu appears. For an overview of the remaining program process, see figure "Overview of SYSADM - software_prod - products_on_CD" on the following page.
» Select the *software_prod* menu item.
  The *Process_Products* menu appears.
» Select the *products_on_CD* menu item.
  The *Process Multi-Product CD-ROM* mask appears. A CD-ROM containing one or more add-on products is called a "product topic area CD-ROM".

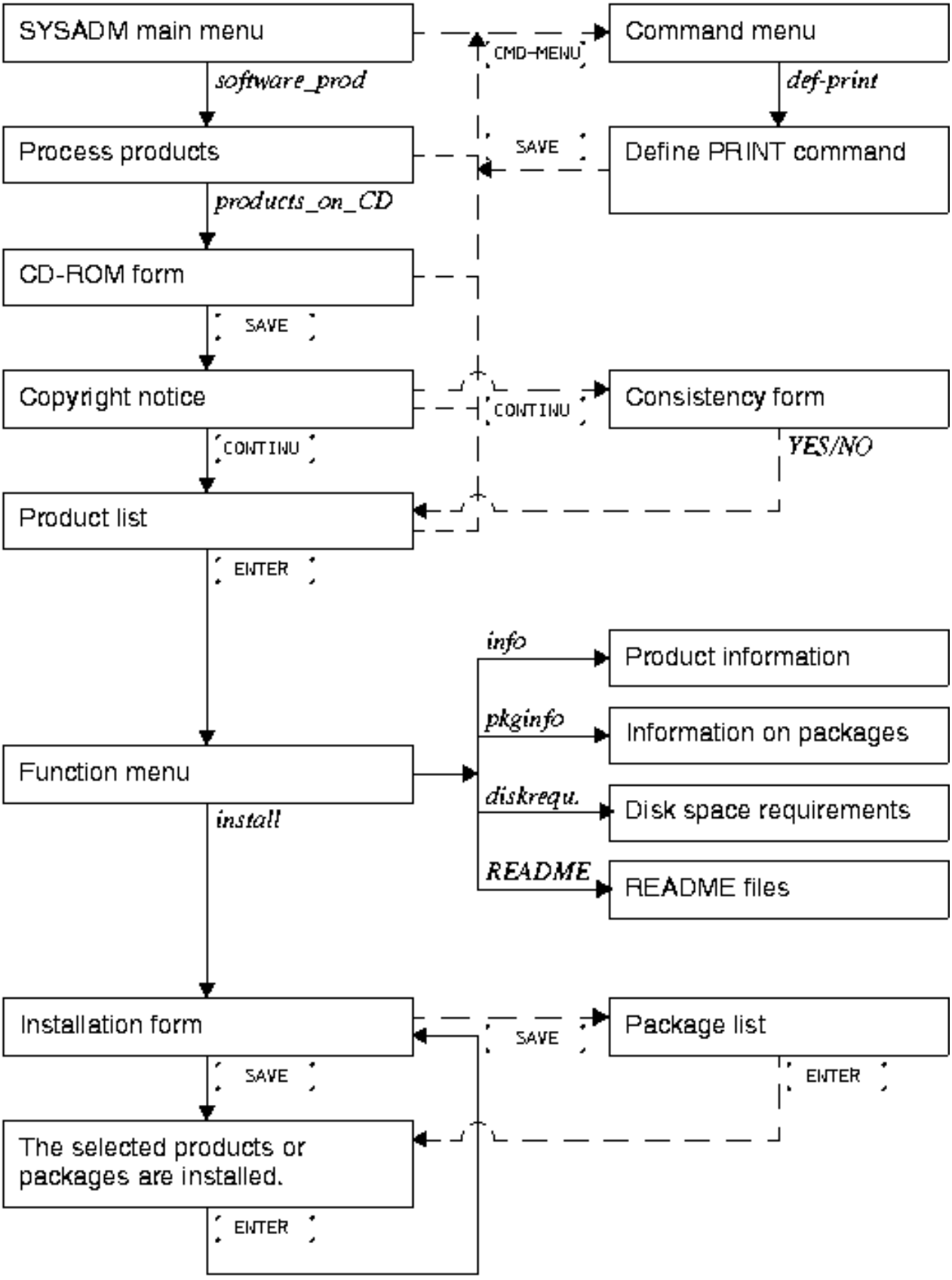
SYSADM main menu
CMD-MENU
Command menu
software_prod
def-print
Process products
SAVE
Define PRINT command
products_on_CD
CD-ROM form
SAVE
Copyright notice
CONTINU
Consistency form
CONTINU
YES/NO
Product list
ENTER
info
Product information
pkginfo
Information on packages
Function menu
diskrequ.
Disk space requirements
install
README
README files
Installation form
SAVE
Package list
SAVE
ENTER
The selected products or packages are installed.
ENTER

Figure 3: Overview of SYSADM - software_prod - products_on_CD

Server

Name of the computer to which the CD-ROM drive is connected.

Local installation:	*local* (default)
Remote installation:	name of the server

CD-ROM drive device name

The field is only significant if the CD-ROM drive is connected to the local computer. The name of the special file or the alias name as entered in the */etc/device.tab* file is permitted.

Remote pathname/Local mountpoint

- Local installation (parameter "Server" **equal to** *local*):
  Name of the directory under which the CD-ROM drive is mounted.
- Remote installation (parameter "Server" **not equal to** *local*):
  Name of the *nfs* file system under which the CD-ROM drive is accessible.

» Fill in the mask.
Selection menus are available for " CD-ROM drive device name" and "Remote pathname/Local mountpoint" and can be reached via the **[CHOICES]** function key.
» Press the **[SAVE]** function key.
A text window containing the copyright notice appears.
» Acknowledge the copyright notice with the **[CONTINUE]** function key.

The CD-ROM data format is checked

CD-ROMs can have different data formats. You do not normally need to worry about this. *SYSADM* automatically checks the format of the inserted CD-ROM and if an error occurs during this check, a corresponding message is output. Example:

```
It is not possible to determine type of CD-ROM format.
Please select from the following menu.
1  pure ISO9660 format (mount with dos option)
2  rock ridge format (mount without dos option)
1,2 (default: 1) --->
```

In such a case, please note:

- The *dos* option refers to the *mount*(1M) command executed automatically by *SYSADM*, which either uses the *-odos* option or not, depending on the CD-ROM data format (see also the two following points).
- The system CD-ROM, for example, has a Rock Ridge format. CD-ROMs with this format should normally be mounted without the *dos* option.
- Add-on product CD-ROMs, for example, have an ISO9660 format. CD-ROMs with this format must be mounted with the *dos* option.

Proceed as follows:

» Select the appropriate menu item.
If the *mount*(1M) command succeeds, the text window containing the copyright notice then appears.
» Acknowledge the copyright notice with the **[CONTINUE]** function key.

If the *mount*(1M) command does not succeed, the "CD-ROM form" reappears. In this case, you should check

- that the CD-ROM is correctly inserted in the drive
- whether you have accidentally selected the wrong menu item

Once you have eliminated the error, press the **[CONTINUE]** function key again.

Consistency form

The system now checks that the installed products are also contained in the product database. If this is not the case, you are asked whether the consistency of the database is to be established automatically:

» Reply with *YES*.

Tip:

Inconsistencies always occur when packages are installed or deinstalled without using the *SYSADM - software_prod* user interface. This is the case with an update installation, for example.
If you reply with *NO*, some of the subsequent information on previously installed products will not be displayed.

Tip:

If the product database is so badly damaged that consistency cannot be reestablished automatically, you can select the *software_prod - miscellaneous - consistency* menu item and reply to the question *Extensive check?* with *y*.

Product list

A list of all products on the CD-ROM is displayed.

» The following information on each product is shown:

- Name
- Version
- Version ID

  S The same version is already installed.

  D Another version is already installed.
- The product has not been installed yet.

  U Undefined, cannot be determined
  (because of an inconsistent product database)

  E Error
- Installation status

  I Completely installed

  P Partially installed

- Not installed

U Undefined, cannot be determined
(because of an inconsistent product database)

E Error

- Brief description

» Mark all products you wish to install.
Use the **[MARK]** function key for this. Pressing **[MARK]** a second time will unmark a (mistakenly) marked product.
» Press the **[ENTER]** function key.

Tip:

You can also print the information displayed in this window and some of the subsequent ones. This option is available if the **[PRINT]** function key is offered. A description of this can be found in the section "Function keys".

5.4.2.2 Function menu

If you selected one or more add-on products from the "Product list", the "Function menu" then appears. Here you can select the actions to be executed with the selected products.

info, *pkginfo*, *diskrequire* and *README*
Information on the products you previously selected is displayed. Examples can be found in section "Displaying information ".

install
The "Installation form" appears.

5.4.2.3 Installation form

If you selected the "install" menu item from the "Function menu", the following mask appears.

Installation extent

Complete Product
All packages of the selected products

Package
Individual packages of the selected products

SIreadmeM
Only packages containing the README files (*SIreadmeM*-packages)

Installation mode
Type of dialog

automatic
The installation parameters are taken from existing reply files.

dialog
The installation parameters for all selected products are requested before starting the installation.

Installation defaults filename
Name of the file containing general installation parameters.
If no absolute pathname is specified, the file is searched for under */var/sadm/install/admin*.

Path to response files
Pathname under which the reply files are stored.
Either *on CD-ROM* (default) must be specified or an absolute pathname under which the reply files for all selected packages are stored.

» Fill in the mask.
Selection menus are available for the "Installation extent" and " Installation mode" fields and they can be reached via the **[CHOICES]** function key.
If you specify the "dialog" parameter as the " Installation mode", the pathname for temporary files into which the replies are written is automatically entered in the "" field. These response files are deleted after installation is completed. You will have to change the default pathname if you want to retain the files for future installations.
» Press the **[SAVE]** function key.

The subsequent sequence depends on the "Installation extent" you selected:
· If you selected "Complete Product" or "SIreadmeM", the installation process now starts (see the section "Installation process").
· If you selected "Package", you must first select the packages you wish to install.

5.4.3 Package list

If you selected "Package" in the "Installation form", a selection list now appears containing all packages you can install.
The following information is displayed for each package:
- Product name
- Product version
- Package name
- Version ID

S The same version is already installed.

D Another version is already installed.

- The product has not been installed yet.

U Undefined, cannot be determined
(because of an inconsistent product database)

E Error

- Installation status

  I Completely installed

  P Partially installed
- Not installed

  U Undefined, cannot be determined
  ((because of an inconsistent product database)

  E Error

» Mark all packages in the list that you wish to install.
  Use the **[MARK]** function key for this.
» Then press the **[ENTER]** function key.

5.4.4 Installation process

The installation process is accompanied by relevant messages. You may also be asked additional questions on the installation sequence and extent. Below is an example for the product *SINIX/monitor*:

```
The following output is logged in: /var/sadm/products/log/25
Installation from CD-ROM: CD-SYS-MI 08/96
Creation time of CD-ROM: Wed Aug 7 13:41:37 MET 1996
Check on product versions subject to multiple selection.
-- SINIX_MONITOR 2.0A00 --
Computing disk space requirement.
-- SINIX_MONITOR 2.0A00 --
NOTICE:
Blocks of which location is undefined: 1484
Corresponding inodes: 55
Filesystem /opt can hold unallocated blocks.There is sufficient disk space.
Checking whether user input is required.
-- SINIX_MONITOR 2.0A00 --
***  Starting the installation.  ***** SINIX_MONITOR 2.0A00 **
Determining packages contained in SINIX_MONITOR 2.0A00.
Installation in progress.  Do not remove the installation media.
.        .        .        .No error occurred.
Protocol file is /var/sadm/products/log/25.
Press ENTER to continue
```

» Press **[RETURN]** after installation is completed.
  This returns you to the section "Installation form".

After installing add-on products and terminating *SYSADM* you are informed that email has arrived for you:

```
you have mail
```

» Call the *mail(1)* command:

```
# mail
```

You are then informed whether the installation was successful:

```
Installation of SINIX/monitor on unbidden as Version 1.0A00 Load 02
of package instance <SImon> was successful.
```

You can also read how the installation progressed in the specified log file (in this case:

/var/sadm/products/log/25).
» Remove the CD from the drive.

5.4.5 Deinstalling software products

This section describes how to deinstall add-on products installed on your system.

Tip:

If you wish to delete individual system software packets, you can also use the *SYSADM software* menu item. In this case, refer to the section " Deinstalling individual software packages".

» Start *SYSADM*.
The main menu appears. An overview of the remaining program process is given in figure "Overview of SYSADM - software_prod - products_on_system".
» Select the *software_prod* menu item.
The *Process_Products* menu appears.
» Select the *products_on_system* menu item.
A check is now made as to whether all installed products are in the product database. If not, the database is updated automatically (i.e. there is no "Consistency form" as with installation).

Tip:

Inconsistencies always occur when packages are installed or deinstalled without using the *SYSADM - software_prod* user interface. This is the case with an update installation, for example.
If all system software packages are inconsistent (e.g. after an update installation), the automatic database update can take a few minutes.

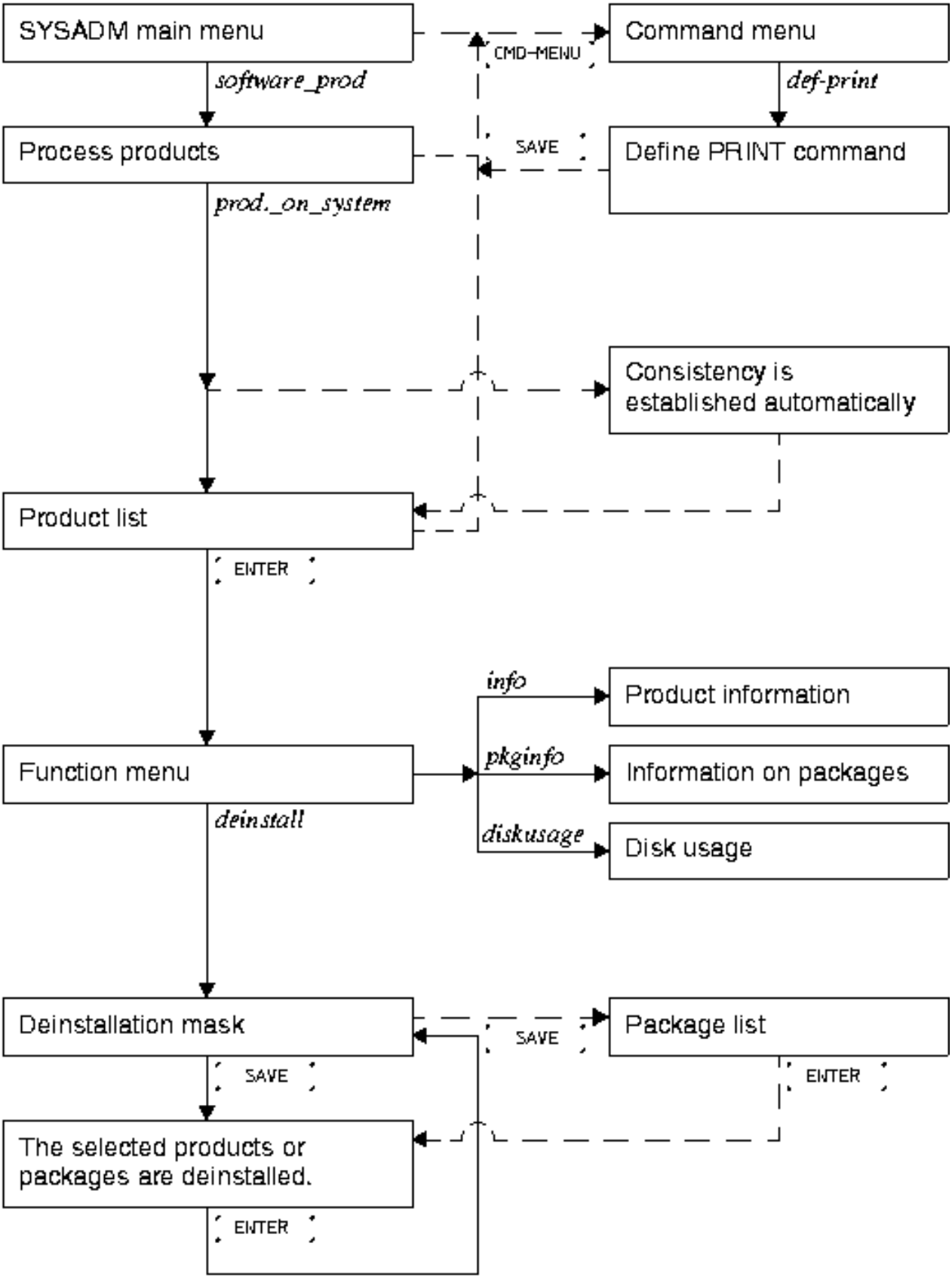
SYSADM main menu
CMD-MENU
Command menu
software_prod
def-print
Process products
SAVE
Define PRINT command
prod._on_system
Consistency is established automatically
Product list
ENTER
info
Product information
Function menu
pkginfo
Information on packages
deinstall
diskusage
Disk usage
Deinstallation mask
SAVE
Package list
SAVE
ENTER
The selected products or packages are deinstalled.
ENTER

Figure 4: Overview of SYSADM - software_prod - products_on_system

5.4.5.1 Product list

A list of all products on the system is displayed.
The following information is displayed for each product:
- Name
- Version
- Installation status

  I Completely installed

  P Partially installed

  U Undefined, cannot be determined
  (because of an inconsistent product database)

  E Error
- Brief description
  All packages not belonging to an add-on product are grouped together under the "OTHERS" pseudo product. This includes, for example, all system software packages.
  » Mark all products you wish to deinstall.
  Use the **[MARK]** function key for this. Pressing **[MARK]** a second time will unmark a (mistakenly) marked product.
  » Press the **[ENTER]** function key.

Tip:

You can also print the information displayed in this window and some of the subsequent ones. This option is available if the **[PRINT]** function key is offered. A description of this can be found in the section "Function keys".

5.4.5.2 Function menu

If you selected one or more add-on products from the "Product list", the "Function menu" then appears. Here you can select the actions to be executed with the selected products.

info, *pkginfo*, *diskusage*
Information on the products you selected previously is displayed. Examples can be found in the section "Displaying information ".

deinstall
The deinstallation mask appears.

5.4.5.3 Deinstallation mask

If you selected the "deinstall" menu item from the "Function menu", the following mask now appears:

Deinstallation extent

Complete Product
All packages of the selected products

Package
Individual packages of the selected products

Deinstallation defaults filename
Name of the file containing general deinstallation parameters.
If no absolute pathname is specified, the file is searched for under */var/sadm/install/admin*.

» Fill in the mask.
A selection menu is available for the "Deinstallation extent" field and can be reached via the **[CHOICES]** function key.

» Press the **[SAVE]** function key.

The remaining process depends on the "Deinstallation extent" you selected:

· If you selected "Complete Product", the deinstallation process now starts (see the section "Deinstallation process").
· If you selected "Package" you must first select the packages you wish to deinstall.

5.4.5.4 Package list

If you selected "Package" in the Deinstallation mask, a selection list containing all installed packages belonging to the selected products now appears.
The following information is displayed for each package:

- Product name
- Product version
- Production state
- Package name
- Installation status

I Completely installed

P Partially installed

U Undefined, cannot be determined
(because of an inconsistent product database)

E Error

» Mark all packages in the list that you wish to deinstall.
Use the **[MARK]** function key for this.

Tip:

If you deinstall system software packages, you cannot reinstall them later with *SYSADM*. Use the *pkgadd*(1M) command in such a case (or carry out a new installation).

» Then press the **[ENTER]** function key.

Deinstallation now starts.

5.4.5.5 Deinstallation process

The deinstallation process is accompanied by relevant messages. You may also be asked additional questions on the deinstallation sequence and extent. Below is an example for the product *SINIX/monitor*:

```
The following output is logged in: /var/sadm/products/log/26
Determining packages contained in selected products.
-- SINIX_MONITOR 2.0A00 03 --
Checking whether packages are subject to multiple selection.
Checking whether package is being used by some other product.
-- SINIX_MONITOR 2.0A00 03 --
***  Starting deinstallation.  ***
** SINIX_MONITOR 2.0A00 03 **
- SImoncl -
The following package is currently installed:
SImoncl         SINIX/monitor collect client
(R3000) 2.0A00
Do you want to remove this package [y,n,?,q] y## Removing installed package
instance <SImoncl>
## Verifying package dependencies.
## Processing package information.
## Removing pathnames in <none> class
/opt/monitor <shared pathname not removed>
## Updating system information.
.        .        .        .No error occurred.
Protocol file is /var/sadm/products/log/26.
Press ENTER to continue
```

» Press **[RETURN]** after deinstallation is completed.
You are then returned to the section "Deinstallation mask".

After installing add-on products and terminating *SYSADM* you are informed that email has arrived for you:

```
you have mail
```

» Call the *mail*(1) command:

```
# mail
```

You are then informed whether the deinstallation was successful:

```
Installation of SINIX/monitor on unbidden as Version 1.0A00 Load 02 of package
instance <SImon> was successful.
```

You can also read how the installation progressed in the specified log file (in this case: */var/sadm/products/log/26*).

5.4.6 Installing individual software packages

This section describes how to install individual software packages supplied on tape cartridge or floppy disk (i.e. not on CD-ROM).

Tip:

If you wish to install software products from CD-ROM, please read the section "".

Tip:

If you wish to post-install system software packages, please use the menus under *software -> administration* (see the section "Managing software user profiles") or the *pkgadd* (1M) command (or carry out a new installation).

» Start *SYSADM*
The main menu appears. The following figure provides an overview of the remaining program process.

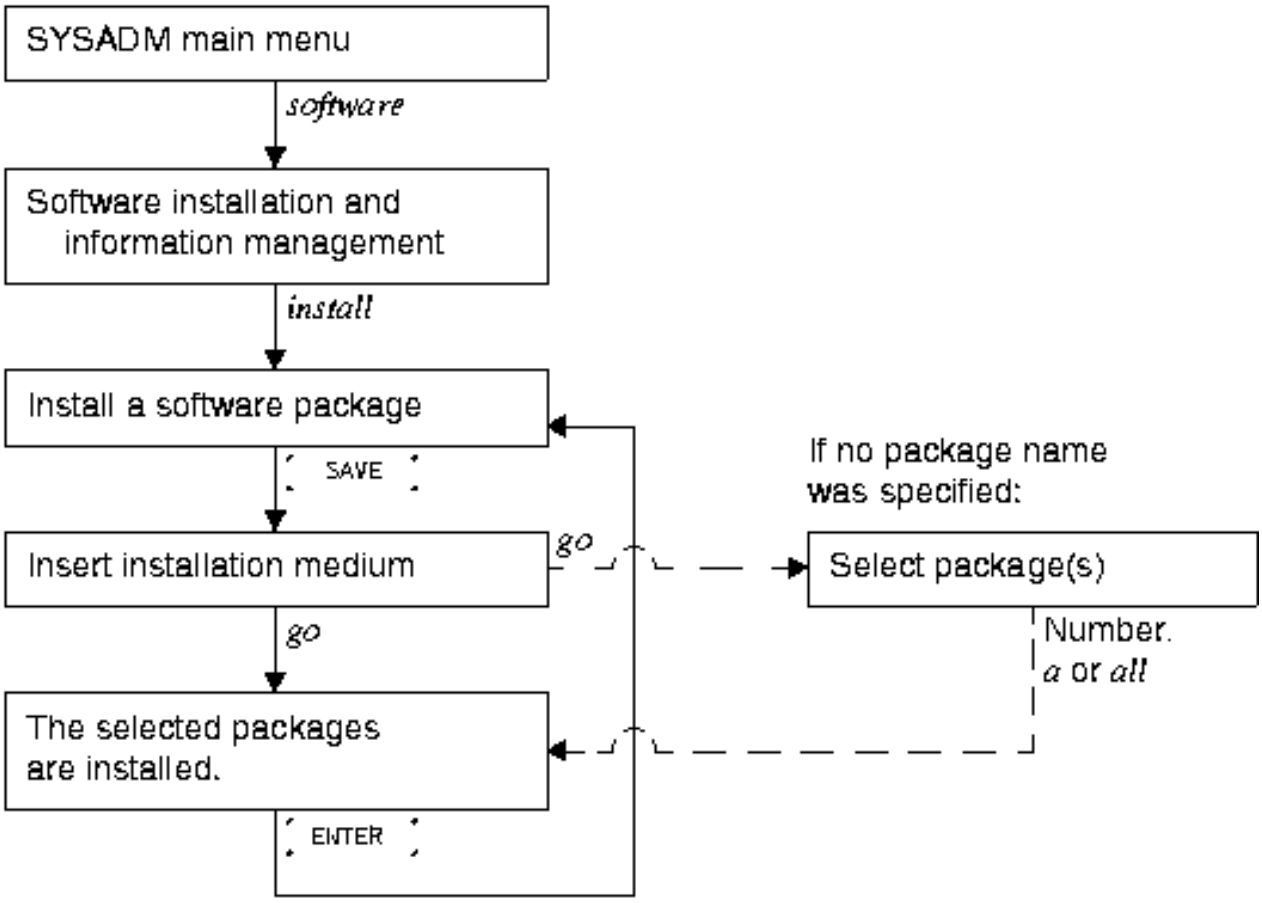

Figure 5: Overview of SYSADM - software - install

» Select the *software* menu item.
The *Software Installation and Information Management* menu appears.
» Select the *install* menu item.
A form is displayed in which you must enter the following information:

Package location

Storage device containing the software to be installed.
Use `[CHOICES]` to obtain a list of all devices.
spool stands for the */var/spool/pkg* directory.

Package name(s)

Names of the packages to be installed.
The names must be separated with a comma. Enter *all* if all packages on the installation medium are to be installed.
If you leave the field empty, a list of all packages on the installation medium is displayed. Select the packages you wish to install.

Path to response file
If the dialog process required by the installation routine was stored in a file, you can specify its pathname here. Otherwise, leave this field empty.

Installation defaults filename
If the defaults required by the installation routine were stored in a file, you can specify its pathname here. Otherwise, specify *default*.

» Fill in the mask.
» Press the **[SAVE]** function key.
You are then requested to insert the installation medium into a specific drive.
» Insert the installation medium into the drive.
» Confirm with *go*.
The installation process now starts. As soon as it is finished, you receive the message:
`Press ENTER to continue`
» Press **[RETURN]**.
You are returned to the *Install a Software Package* mask.

5.4.7 Deinstalling individual software packages

This section describes how to deinstall individual software packages that are installed on your system.

Tip:

If you wish to delete complete software products, you should use the *SYSADM software_prod* menu item. In this case, read the section " Deinstalling software products".

» Start *SYSADM*
The main menu appears. The following figure provides an overview of the remaining program process.

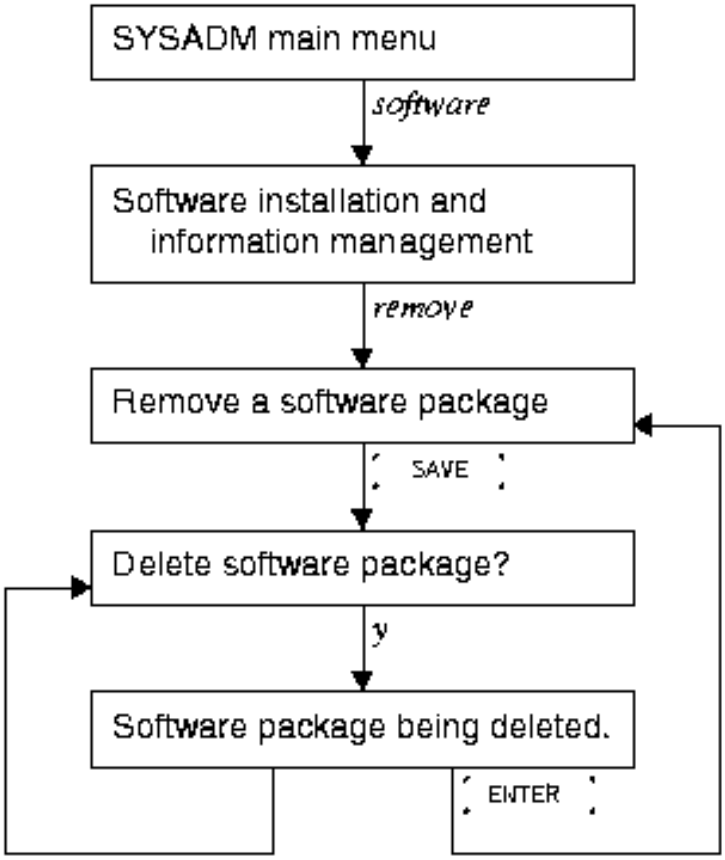

Figure 6: Overview of SYSADM - software - remove

» Select the *software* menu item.
The *Software Installation and Information Management* menu appears.
» Select the *remove* menu item.
A form is displayed containing the following input fields:

Location of the package to be removed
Specify *installed* if only packages installed on the system disk are to be deinstalled.

Package name(s) to be removed
Names of the packages to be deinstalled.
The names must be separated by a comma. You can use **[CHOICES]** to display a list of all installed packages.

» Fill in the mask.
» Press the **[SAVE]** function key.

Warning:

You may also enter *all* in the "" field instead of specific package names. You must never do this on the system disk! Otherwise, it will no longer function as a system disk.

Tip:

If you deinstall system software packages, you cannot reinstall them later with *SYSADM*. Use the *pkgadd*(1M) command in such a case (or carry out a new installation).

Tip:

Deinstalling some packages requires that you generate a new system kernel. In this case, you must reboot your computer with the new operating system.

Warning:

Some add-on products and software packages require a special authorization file. If you accidentally deinstall the corresponding package, the add-on product concerned can no longer be started. If this happens, please read the section "Installing the key diskette" to find out what you have to do.

Package dependencies
If you selected a package for deinstallation on which other packages are dependent, a corresponding warning is output. You must then decide whether you wish to continue the deinstallation or abort it.
This check mechanism allows you to intervene in time to prevent deinstallation of a package on which other packages depend.

5.4.8 Displaying information

You can use the *SYSADM* user interface to display information you require on software. Two menu items are provided for this purpose: *software* and *software_prod*. table "Using SYSADM software_prod and SYSADM software" shows the information you can call up via the two *SYSADM* menu items.

5.4.8.1 Information on add-on products

If you require information on add-on products, you can use the *SYSADM software_prod* menu item. Then change to the "Function menu".

Tip:

You can use the **[NEXTPAGE]** and **[PREVPAGE]** function keys to scroll through the subsequent *SYSADM* windows. Press the **[CANCEL]** function key to terminate the display.
You can also print out the displayed information. Proceed as follows in this case:
» Define a suitable print command (see section "Function keys").
» Press the **[PRINT]** function key.

The following information is displayed for all products you marked in the "Product list" (see also the section "Product list"): product name and version, type of licensing, production state, product directory and installation status.

Tip:

The "OTHERS" pseudo product contains all packages not belonging to an add-on product. This includes all system software packages, for example. No detailed product information is available for the pseudo product.

The following information is displayed for all products you marked in the "Product list":

- Detailed information on the installed packages
- A list of all non-installed packages of the product
- The status of the package containing the README file (*SIreadmeM* package)

Tip:

The displayed information corresponds to that displayed via the *SYSADM software - list - Amount of information to display long* menu item (see "Amount of information to display").

Tip:

A summary of all packages of the products you marked in the "Product list" can be found in the "Package list".

5.4.8.2 Information on individual software packages

Proceed as follows if you require information on individual software packages (e.g. on system software packages):

» Start *SYSADM*.
The main menu appears. The following figure provides an overview of the remaining program process.

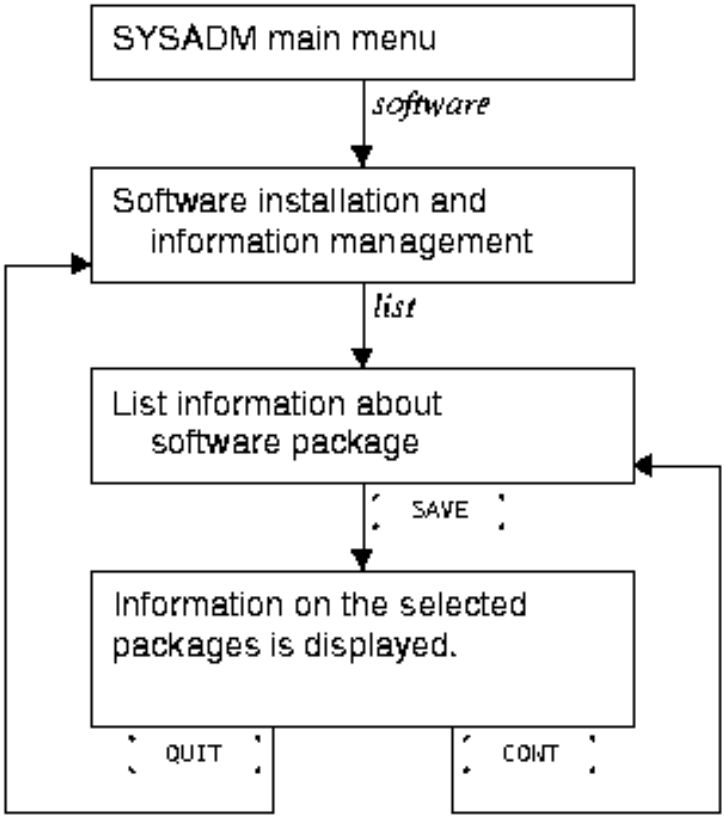

Figure 7: Overview of SYSADM - Software - List

» Select the *software* menu item.
The *Software Installation and Information Management* menu appears.
» Select the *list* menu item.
The *List Information about Software Package* mask appears with the following input fields:

Location of the software
Specify *installed* if you only wish to display software installed on the system disk.

Package name(s)
Specify *all* if you require information on all packages. If you only require information on individual packages, enter their names separated by commas.

Category of packages
Specify one or more categories: *system*, *application*, *optional*. Specify *all* for all categories.

Amount of information to display
The *short*, *medium*, *long* options are available here.

» Fill in the mask.
» Press the **[SAVE]** function key.

The following information is displayed for all packages: category, package name and brief description.
You can use the **[NEXTPAGE]** and **[PREVPAGE]** function keys to scroll through the text windows.

Press either the **[CONTINUE]**, **[QUIT]** or **[CANCEL]** function key to terminate the display.
The following information is displayed for all packages: category, package name, brief description, structure and version.
Detailed information is displayed for all packages.

Tip:

This information corresponds to that displayed via the *SYSADM software_prod - products_on_system - Display Detailed Information on Packages* menu item (see "Information on add-on products").

5.4.9 Installing the key diskette

Some add-on products and software packages require a key diskette containing a special authorization file. You are informed if this applies when you order the product concerned. In case of doubt, you can call up this information via:
- the *software_prod - info* menu item
- the *software_prod - README* menu item

Please install the key diskette before installing the corresponding add-on product or package. Two options are provided within *SYSADM* for this purpose:
- the *software - install* - "Package location": floppy0 or *mdens0HIGH* - "": *all - go* menu item (see also section " Installing individual software packages")
- the *software_prod - miscellaneous - keydiskette* menu item

If you accidentally deinstall the package containing the authorization file, you will no longer be able to start the add-on product concerned. If this happens, simply reinstall the key diskette.

5.4.10 Managing software user profiles

Under the menu item
software -> administration
you can adapt the scope of the installed system software to suit your requirements, i.e. you can modify your "user profile". There are three user profiles:
- Full System
- Core System (can be extended to include German language support)
- Application Client System (can be extended to include German language support and developer support)

Tip:

If the Application Client System has been extended to include developer support, it must be addressed under the name "Developer Client System" when managing user profiles.

A concrete user profile was defined during the initial installation. If you determine during operation that you require additional software from the Reliant UNIX basic system, you can reinstall the necessary groups or packages using *SYSADM*. The same applies if you have installed too much software.
The less system software on the system disk, the less memory is required in the individual partitions. This saves space, which can then be used for other purposes.

Tip:

It is only necessary to reinstall system software if the partitions of the system disk are larger than the minimum values.

If you want to change the current user profile, you must carry out the following actions:

» Select the menu item *software*.
The window *Software Installation and Information Management* appears.
» Select the menu item *administration*.
A menu is displayed with the possible user profiles.

change to profile	currently installed user profile
customize current	new user profile

» Choose the appropriate user profile.
» Press the **[ENTER]** function key.
In a further menu item, you can decide whether the selected user profile is to be installed in its default definition (menu entry Install), or whether you wish to modify it (menu entry Modify).
» Select the desired menu item.
» Press the **[ENTER]** function key.
Selecting the menu item Modify opens a window which lists the package groups currently installed, as well as the additional package groups which also belong to the selected user profile. The column Is contains the following entries:

N	not installed
P	partially installed
R	installed and protected protected package groups cannot be deleted
Y	installed

In the column New, you can enter which packages are to remain installed or are to be installed (enter Y), and which package groups are to be deleted or not installed (enter N), for all packages that are not protected.

» If you wish to delete package groups which are not protected or exclude new package groups from installation, move the cursor to the line containing the package group and enter Y or N.
» If you wish to exclude individual packages from the selected action, press the [CHOICES] function key instead.
A further menu is displayed.
» Select the menu item Modify.
» Press the **[ENTER]** function key.
» If you wish to delete individual packages or exclude them from installation, move the cursor to the line containing the package and enter Y or N. You may also use the [CHOICES] function key.
» Press the **[SAVE]** function key.
The Modify groups window is displayed.

» When the settings are correct, press the [SAVE] function key.
A window is then displayed, again listing all packages that are to be deleted or installed.
» Carefully check whether the correct package groups or packages are displayed and whether the correct actions (delete or install) are marked.
» When the settings are correct, press the [CONTINUE] function key.
» Before the packages are finally deleted or installed, a dialog box is opened for you to confirm your actions again.
» If the settings are correct, enter *Do*; otherwise enter *Cancel*. You can use the **[CHOICES]** function key here.

Warning:

Data is deleted on your system disk under the following conditions:

· If you have selected package groups or packages for deletion in the previous windows.
· If you select *Apply* in this window and press the **[SAVE]** function key.
» If the setting are correct, press the **[SAVE]** function key.

5.5 System monitoring

To debug the system and application programs of your computer, you can use the information under the *SYSADM* menu:
logs -> System Devices and Error Logs
For further information on the functions and menus here, refer to the Diagnosis and Troubleshooting" manual.
System-specific configuration data can be found under the menu item:
machine -> configuration.
If you then select the *summary* menu item, information is displayed on:
- the CPU
- the memory configuration
- the peripherals of your system

If you select the menu item
machine -> configuration -> system
the following data is output:
- internal system name
- network node name
- operating system release
- operating system version
- processor ID

The *machine -> whos_on* menu item lists information on all users currently logged on to the system:
- login name
- special file of the output device on which the user is working
- time at which the user logged on

5.5.1 Analysis of the installed hardware

The items under the main menu item *logs* and the submenu *log* are required for outputting error messages to the input/output devices of your system. After choosing the device type, you must specify the error file from which the log information is to be read. The current error file is called *errfile.current.Z* and is located in the */var/adm/error* directory.
The hardware analysis under the menu item *machine -> configuration* evaluates the installed hardware.
You must carry out an explicit hardware analysis in the following cases:
- you configure new SNMP-capable terminal servers
- changes were made to the current configuration without using *SYSADM*

You should carry out an explicit hardware analysis in the following cases:
- you are not sure whether changes to the system configuration are already known in *SYSADM*
- you want to establish whether cabinets with defective power supply units or fans, or defective boards or storage devices exist (RM600 only)

There are two ways of carrying out a hardware analysis:
- Automatic hardware analysis carried out by a background process when the system is powered on
- Explicit hardware analysis using the **[ACTIONS]** function key and the action *analyze*

When a hardware analysis is carried out, the configuration changes that are found are entered in the database. Entries for database objects that do not exist from a hardware

point of view remain unchanged.

Inconsistent configurations

Inconsistent configurations are incorrect or incomplete configurations which can occur when you add new devices, change attribute settings and implement changes to the overall configuration under the menu item *machine -> configuration*.
Inconsistent configurations can be identified by the fact that the corresponding menu items, device names and attribute settings are marked with an exclamation mark (!).
Inconsistent configurations can occur:

- when you add new devices in the form for setting attributes
- when you change the attribute settings of a device
- when you make changes to the hardware configuration, and then carry out an analysis

The object marked with an exclamation mark contains attributes whose values are invalid or are not set, and cannot be transferred into the database.
To eliminate inconsistencies, you must proceed as follows:

1. Select the object entry which is indicated by an exclamation mark and press the **[ENTER]** function key. Repeat this step as often as required until the form for setting the attributes for the defective device is displayed.
2. Correct the inconsistent attribute settings, working from top to bottom in the form. Wherever possible, you should accept the values that are displayed as options for each field when you press the **[CHOICES]** function key.
3. Save the attribute settings to the database by pressing the **[SAVE]** function key. If the settings are correct, the form is closed; the exclamation mark is no longer displayed.
4. If you cannot eliminate the inconsistent attribute settings in the form, close the form by pressing the **[CANCEL]** function key. The object entry is still indicated in the menu as being inconsistent. The inconsistent configuration is saved to the database. However, this means that all current changes are lost!
5. Once you have changed the parts of the configuration that brought about the inconsistent attribute settings in the form, you can correct the attribute settings of this object in a subsequent configuration session by selecting the object entry again.
6. If you cannot correct the inconsistent attribute settings, press the **[CANCEL]** function key to exit the form and then remove the defective device using the **[ACTIONS]** function key and the action *remove*.

5.5.2 Monitoring ports

The main menu item *ports* provides functions that can be used to monitor the ports of your system, i.e. user access to the operating system via a terminal or a communication line.
Here you can:

- manage port monitors that implement access to the transmission paths
- monitor port services that standardize access to different terminals and data buses
- manage the transmission properties of different terminals under the *tty_settings* menu item

Port monitors are responsible for monitoring the ports of your system, managing port-specific properties (e.g. transmission speeds), and providing port services to users as required. An example of a port monitor is *ttymon(1M)*. Port monitors run under the SAC (Service Access Controller), which is automatically activated at startup when the system switches to multiuser mode. The SAC provides a uniform interface to the port monitors. Users access the port services via the port monitors.

The SAC manages ports using the *sacadm (1M)* and *pmadm (1M)* utilities. The terminal settings are defined by means of the *sttydefs (1M)* command. In table "Complete Product", the items in the *SYSADM* menu are listed with the corresponding command calls at shell level.

Menu item	Shell command
port_monitors - add	*sacadm -a*
port_monitors - disable	*sacadm -d*
port_monitors - enable	*sacadm -e*
port_monitors - list	*sacadm -l*
port_monitors - modify	Editor on */etc/saf/_sactab*
port_monitors - remove	*sacadm -r*
port_monitors - start	*sacadm -s*
port_monitors - stop	*sacadm -k*
port_services - add	*pmadm -a*
port_services - disable	*pmadm -d*
port_services - enable	*pmadm -e*
port_services - list	*pmadm -L*
port_services - modify	*pmadm -r*; *pmadm -a*
port_services - remove	*pmadm -r*
tty_settings - add	*sttydefs -a*
tty_settings - list	*cat /etc/ttydefs*
tty_settings - modify	*sttydefs -r; sttydefs -a*
tty_settings - remove	*sttydefs -r*

Table 23: Shell commands for monitoring ports

Managing port monitors
When you select the *port_monitors* menu item, a menu containing the items *add*, *disable*, *enable*, *list*, *modify*, *remove*, *start*, and *stop* is displayed on your screen.

Adding port monitors
You can select the *add* menu item to add a port monitor to your SAC management file. A form is displayed with the input fields described below:

Port monitor tag
: In this field, enter a name for the port monitor, consisting of up to 14 characters. Directories for storing the configuration files are created with this name under */etc/saf* and */var/saf*.

Port monitor type

In this field, enter a name for the type of port monitor, consisting of up to 14 characters (e.g. *ttymon* or *list*).

Command to start the port monitor
In this field, enter the complete path of the program file.

Version number
In this field, enter the version number of the port monitor. You can display the version number using *ttyadm -V* (type *ttymon*) or *nlsadmin -V* (type *list*).

Start port monitor immediately
If you enter *yes*, the program is started automatically. Otherwise, you must start the program manually.

Start state
Select *ACTIVE* if the program is to be activated after startup. Otherwise, the program will be started, but will be inactive.

Restart count
In this field, specify the number of restart attempts made if the port monitor fails.

File name of the port monitor configuration script
In this field, specify the name of a file that contains a valid configuration description for the port monitor.

Comments
You may enter any comment here. This field is optional.

When you have filled in the form, you must press the **[SAVE]** function key in order to add the port monitor to your system.

Disabling port monitors

You can select the *disable* menu item to disable port monitors. You can also mark one or more port monitors for disabling within a single selection list. Disabled port monitors still exist as processes, but their services are no longer available.

Enabling port monitors

You can select the *enable* menu item to enable a port monitor that has already been started, and thus access its services. If all of the started port monitors have already been enabled, a message to this effect will be output.

Listing information on port monitors

You can select the *list* menu item to obtain information on the port monitors available on your system. Another menu is then displayed containing the items *all*, *by pmtag*, and *by type*, which have the following meanings:

all Select this item if you require information on all of the port monitors entered.

by pmtag
This menu item allows you to select certain port monitors by name from a list. Information is then output only for the selected monitors.

by pmtype
: This menu item allows you to select certain types of port monitor from a list. Information is then output only for the selected monitor types.

When you have made your selection, status information on the port monitors is output.

Modifying port monitors
You can select the *modify* menu item to modify the properties of port monitors. For this purpose, you must select the desired monitor from a list. You can then modify various properties of the selected port monitor in the next form. The input fields are described on "Adding port monitors".

Removing port monitors
You can select the *remove* menu item to remove a port monitor entry from the SAC management file. For this purpose, you must select the desired monitor from a list.

Warning:

Once this action has been performed, it is no longer possible to access the services of the port monitor. Select the *add* menu item if you wish to make the port monitor available again.

Starting port monitors
You can select the *start* menu item to start a port monitor entered in your SAC management file. For this purpose, you must select the desired monitor from a list. Please note that the program need not necessarily be activated afterwards.

Stopping port monitors
You can select the *stop* menu item to stop the process of an active port monitor. For this purpose, you must select the desired monitor from a list.

5.5.3 Monitoring system activities

The following functions are available under the *performance* menu item:
- display and control of all system processes
- display of various performance data relating to your system

Monitoring processes
When you select the *processes* menu item, another menu containing the items *list_all* and *signal* is displayed. If you select *list_all*, the following information relating to active processes is output:
- user ID (UID) of the owner of the process
- unique process ID (PID)
- previous process ID (PPID)
- start time of the process (STime)
- execution time of the process (Time)
- command call that started the process (Command)

If you select the *signal* menu item, you can transmit signals to processes and thus terminate a process, for example. For this purpose, a form is displayed on the screen containing the input fields described below:

Signal Number

In this field, enter the signal number to be sent to the process. You can select a valid signal number by activating the `[CHOICES]` function key. Further information on signal numbers is contained in the description of *signal(5)*.

Process_id(s)

In this field, enter a list of process IDs (PID) to which the signal is to be sent. You can select from all the active processes by activating the `[CHOICES]` function key.

Displaying system activities

You can use the *sar* menu item to dynamically display various system activities on the screen. When you have selected the menu item, a menu containing 15 items is displayed, from which you can select the system activity to be logged. See table "Displaying system activities" below for a list of the menu items and a brief explanation of their function. For further information on the system activities, please refer to the description of the *sar (1)* shell command, or press the `[HELP]` function key on the respective menu item.

Menu item	Function
show_overview	Overview of all important system activities
cpu	Indication of the CPU load (user mode, system mode, I/O load)
run-queue	Utilization level of the run queue, which contains waiting processes
swap/switch	Indication of swaps from RAM to the hard disk and vice versa
buffers	Utilization level of the system buffers in the RAM
paging_in	Report on the paging activities from the file system to the RAM
paging_out	Report on the paging activities from the RAM to a paging file system
pages/blocks	Report on free memory pages and disk blocks that are not being used in the swap area
kernel_memory	Report on the memory allocations of the system kernel
system_tables	Status of the system tables for processes and files
system_calls	Counter for successful system calls
messages/semaphore	Report on inter-process communication
file_access	Report on successful file access operations

block_devices	Report on disk activities
tty_devices	Report on the activities of the terminal devices

Table 24: Displaying system activities

5.6 Managing port services

When you select the *ports* -> *port_services* menu item, a menu containing the items *add*, *disable*, *enable*, *list*, *modify*, and *remove* is displayed on your screen.

5.6.1 Adding port monitoring services

You can select the *add* menu item to add port services to one or more port monitors. A menu containing the items *to_one* and *to_many* is then displayed on your screen. In the first case, you can add the service to one monitor only. In the second case, you can add the service to all monitors of a particular type. In both cases, a form is displayed on your screen. You must enter various information on the port service in the input fields of the form:

Service tag
: In this field, enter a name for the port service, consisting of up to 14 characters.

Service invocation identity
: In this field, enter a login name under which the service is started.

Port/service state
: Select *ACTIVE* if the service is to be activated after startup. Otherwise, the service will be started, but it will be inactive.

utmp entry created for this service?
: If you enter *yes*, the start time is entered in the */etc/utmp* file when the service is started.

Version number
: In this field, enter the version number of the port monitor to which this service is assigned. You can display the version number using *ttyadm -V* (type *ttymon*) or *nlsadmin -V* (type *list*).

File name of the port service configuration script
: In this field, enter the name of a file containing a valid configuration description for the port service. This entry is optional.

Comments
: You may enter any comment here. This entry is optional.

When you press the **[SAVE]** function key, a second form is displayed in which other entries must be made, depending on the selected port monitor. For further information, position the cursor on the relevant input field and press the **[HELP]** function key, or refer to the manual "System Administrator's Guide" and the description of *sacadm(1M)*.

5.6.2 Disabling port services

You can select the *disable* menu item to disable active port services. You can also mark one or more port services for disabling within a single selection list.

5.6.3 Enabling port services

You can use the *enable* menu item to enable port services that have already been started. If all of the started port services have already been enabled, a message to this effect will be output.

5.6.4 Listing information on the port service

You can select the *list* menu item to obtain information on the port services available on your system. Another menu is then displayed containing the items *all*, *by pmtag*, and *by type*, which have the following meanings:

all Select this item if you require information on the services of all port monitors.

by pmtag
: This menu item allows you to select certain port monitors by name from a list. Service information is then output only for the selected monitors.

by pmtype
: This menu item allows you to select certain types of port monitor from a list. Service information is then output only for the selected monitor types.

When you have made your selection, status information on the port services is output.

5.6.5 Modifying port services

You can select the *modify* menu item to modify the properties of port services. For this purpose, you must select the desired service from a list. You can then modify various properties of the selected port service in the next form. There are also additional fields, which differ depending on the port monitor. For further information, position the cursor on the relevant input field and press the **[HELP]** function key, or refer to the description of *sacadm(1M)*.

5.6.6 Removing port services

You can select the *remove* menu item to remove a port service entry. For this purpose, you must select the desired service from a list.

5.7 Creating backup copies

If you select the menu entry *Copy* from the main menu entry *Storage devices*, you can create backup copies of detachable data media. To allow you to do this, a list of all devices available for this function is displayed. You must now select the desired device. Then, a form with two input fields is displayed on the screen:

Device containing the data medium to be copied
: Here, you must enter the alias names of the source drive containing the data to be copied. You can press the **[CHOICES]** function key to obtain a list of all possible devices. The data medium in the source drive should be write-protected to ensure that the contents cannot be inadvertently deleted.

Device to which the data medium is to be copied
: Here, you must enter the alias names of the destination drive to which the data is to be copied. You can press the **[CHOICES]** function key to obtain a list of all possible devices for this function. The data medium in the destination drive must be formatted and contain at least as much space as the data medium in the source drive.

When you press the **[SAVE]** function key, a backup copy of the data medium is created.

5.8 Formatting data media

You can select the *Format* menu item from the *Storage devices* main menu item to prepare a data medium for recording data. This function can only be executed for those devices for which the *fmtcmd* attribute is set in the */etc/device.tab* device table.

Warning:

During formatting, all data available on the data medium is deleted.

From a list, select the device type of the desired device. A form is then displayed containing the input field *Device drive*. In this field, enter the device in which the data medium to be formatted is inserted. When you press the **[SAVE]** function key, *SYSADM* executes the command that is defined in the *fmtcmd* attribute in */etc/device.tab*.

5.9 Erasing data media

You can select the *erase* menu item from the *Storage devices* main menu item to erase the contents of removable data media. This function can only be executed for those devices for which the *erasecmd* attribute is set in the */etc/device.tab* device table.

Warning:

This function cannot be reversed. A data medium cannot be erased if it is mounted or active elsewhere.

From a list, select the device type of the desired device. A form is then displayed containing the input field *Device drive*. In this field, enter the device whose contents you wish to delete. When you press the **[SAVE]** function key, *SYSADM* executes the command defined in the *erasecmd* attribute in the */etc/device.tab* file.

5.10 Shutting down your system

You can deactivate your system using the menu items *machine* -> *reboot* and *machine* -> *shutdown*. In the first case, the system is rebooted immediately.
Before starting the reboot process, the machine terminates all active processes, closes all open files, and writes data to the hard disk. The *reboot* function first displays the users who are logged on to the system and then asks you to enter a waiting time, specified in seconds. The system is not shut down until the waiting time has expired. Users who are logged on are informed that they must log off within this waiting time.

5.11 Supplementary administration functions

Supplementary functions for system administration can be found under the *extensions* menu item. The functions are available on your system only if the corresponding applications have been installed on your machine. If no supplementary system administration functions are installed, the *extensions* menu item is not visible.

6 Appendix A: Alternative keyboard shortcuts

6.1 Navigating through menus

Key name	Alternative	Function
<DOWN-ARROW>	[CTRL] [D]	Moves the cursor down by one menu item. Multi-column menu: moves the cursor from the last menu item to the first menu item in the next column.
<UP-ARROW>	[CTRL] [U]	Moves the cursor up by one menu item. Multi-column menu: moves the cursor from the first menu item to the last menu item in the previous column.
<RIGHT-ARROW>	[CTRL] [R]	Single-column menu: moves the cursor down by one menu item. Multi-column menu: moves the cursor one menu item to the right.
<LEFT-ARROW>	[CTRL] [L]	Single-column menu: moves the cursor up by one menu item. Multi-column menu: moves the cursor one menu item to the left.
<NEXT>	[CTRL] [N]	Moves the cursor down by one menu item.
<PREV>	[CTRL] [P]	Moves the cursor up by one menu item.
<BEG>	[CTRL] [B]	Moves the cursor to the first menu item. Multi-column menu: moves the cursor to the first menu item in the first column.
<END>	[CTRL]	Moves the cursor to the

	[E]	last menu item. Multi-column menu: moves the cursor to the last menu item in the last column.
<HOME>	**[CTRL] [F] [B]**	Moves the cursor to the first menu item. Multi-column menu: moves the cursor to the first menu item in the first column. Multiple-page menu: moves the cursor to the start of the current page.
<HOME-DOWN>	**[CTRL] [F] [E]**	Moves the cursor to the last menu item. Multi-column menu: moves the cursor to the last menu item in the last column. Multiple-page menu: moves the cursor to the end of the current page.
<TAB>	**[CTRL] [I]**	Single-column menu: moves the cursor down by one menu item. Multi-column menu: moves the cursor one menu item to the right.
<BACKSPACE>	**[CTRL] [H]**	Single-column menu: moves the cursor up by one menu item. Multi-column menu: moves the cursor one menu item to the right.
<SPACEBAR>		Single-column menu: moves the cursor down by one menu item. Multi-column menu: moves the cursor one menu item to the right.
<MARK>	**[CTRL] [F] [M]**	In a selection menu, marks the menu item at the current cursor position with an asterisk (*). This function is the same as

		the **[MARK]** function key

Table 25: Alternative keyboard shortcuts for navigating menus

The keys and alternative keyboard shortcuts in table "Alternative keyboard shortcuts for navigating menus" apply for both single **and** multiple-page menus. However, the information in table "Alternative keyboard shortcuts for navigating through multiple-page menus" applies **only** to multiple-page menus. Multiple-page menus are identified by the symbols (Λ) for upwards and (v) for downwards in the scroll box; they cannot comprise more than one column.

6.2 Navigating through multiple-page menus

Key name	Alternative	Function
<NEXTPAGE> or <PAGE-DOWN>	[CTRL] [W]	Moves the cursor to the first menu item on the next page.
<PREVPAGE> or <PAGE-UP>	[CTRL] [V]	Moves the cursor to the first menu item on the previous page.
<SCROLL-DOWN>	[CTRL] [F] [D]	Scrolls down through the menu line by line. The cursor remains at its current position.
<SCROLL-UP>	[CTRL] [F] [U]	Scrolls up through the menu line by line. The cursor remains at its current position.

Table 26: Alternative keyboard shortcuts for navigating through multiple-page menus

6.3 Navigating through text windows

Key name	Alternative	Function
<DOWN-ARROW>	[CTRL] [D]	Moves the cursor down by one line.
<UP-ARROW>	[CTRL] [U]	Moves the cursor up by one line.
<SCROLL-DOWN>	[CTRL] [F] [D]	Scrolls down through the text line by line. The cursor remains at its current position.
<SCROLL-UP>	[CTRL] [F] [U]	Scrolls up through the text line by line. The cursor remains at its current position.
<NEXTPAGE> or <PAGE-DOWN>	[CTRL] [W]	Multiple-page text windows: the next page of text is displayed.
<PREVPAGE> or <PAGE-UP>	[CTRL] [V]	Multiple-page text windows: the previous page of text is displayed.
<BEG>	[CTRL] [B]	Moves the cursor to the beginning of a text window.
<END>	[CTRL] [E]	Moves the cursor to the end of a text window.

Table 27: Alternative keyboard shortcuts for navigating through text windows

6.4 Navigating through forms

Key name	Alternative	Function
<DOWN-ARROW>	[CTRL] [D]	Moves the cursor to the beginning of the next input field. If the cursor is on the last input field, when this keyboard shortcut is entered, the cursor jumps to the first input field, or in the case of a multiple-page form, to the first input field on the next page.
<ENTER>		Moves the cursor to the beginning of the next input field, regardless of whether this field is positioned under or to the right of the current input field. If the input field consists of more than one line, the cursor jumps to the next line.
<END>	[CTRL] [E]	Moves the cursor to the first character in the last input field on the current page of a form.
<NEXTPAGE> or <PAGE-DOWN>	[CTRL] [W]	Moves the cursor to the first character in an input field on the next page of a multiple-page form.
<UP-ARROW>	[CTRL] [U]	Moves the cursor to the beginning of the previous input field. If the cursor is on the first input field when this keyboard shortcut is entered, the cursor jumps to the last input field, or in the case of a multiple-page form, to the last input field on the previous page.
<BEG>	[CTRL] [B]	Moves the cursor to the first character in the first

		input field on the current page of a form.
<PREVPAGE> or <PAGE-UP>	**[CTRL] [V]**	Moves the cursor to the first character of an input field on the previous page of a multiple-page form.
<RIGHT-ARROW>	**[CTRL] [R]**	Moves the cursor character-by-character to the right without overwriting any text. When the cursor reaches the end of a line, it does not jump to the next input field.
<HOME-DOWN>	**[CTRL] [F] [E]**	Moves the cursor to the last character in an input field without overwriting any text. The cursor does not jump to the next input field.
<LEFT-ARROW>	**[CTRL] [L]**	Moves the cursor character-by-character to the left without overwriting any text. When the cursor reaches the beginning of a line, it does not jump to the previous input field.
<HOME>	**[CTRL] [F] [B]**	Moves the cursor to the first character in an input field, without overwriting any text. The cursor does not jump to the previous input field.

Table 28: Alternative keyboard shortcuts for navigating through forms

6.5 Editing input fields

Key name	Alternative	Function
<SPACEBAR>		If you are currently editing new text in an input field, this key replaces the current character with a blank, and the cursor moves one character to the right. If the field contained text before editing (default value), the cursor moves one character to the right, and all text from the cursor position to the end of the line is deleted.
<INSERT-CHAR>	[CTRL] [A]	A single character is inserted at the current cursor position, whereby the current character and the remainder of the text in this line is moved to the right. This action cannot be repeated.
<BACKSPACE>	[CTRL] [H]	Moves the cursor one character to the left, thereby deleting the character at that position.
<DEL> or <DEL-CHAR>	[CTRL] [X]	Deletes the character at the cursor position and closes the space.
<CLEAR-EOL>	[CTRL] [F] [Y]	Deletes the contents of the current line from the cursor to the end of the line.
<RESET>	[CTRL] [F] [R]	Resets the default values for an input field.

Table 29: Keyboard shortcuts for editing input fields

6.6 Special keyboard shortcuts

Key name	Alternative	Function
Function keys F1 to F8	[CTRL] [F] [1] to [8]	This is equivalent to entering the function keys directly.
	[CTRL] [J] or [CTRL] [F] [C]	Activates the command line.

Table 30: Special keyboard shortcuts

Tip:

The names, labels, and symbolic IDs for keys can vary greatly, depending on the keyboard, and some may not exist on certain keyboards. Even the keys themselves may not be present on the keyboard. For this reason, "neutral" English terms have generally been used in the tables, and are enclosed in <angle> brackets. For example, the control key ([CONTROL]) appears as [CTRL] or [STRG] on many keyboards.

7 Appendix B: Connecting devices to the TACLAN terminal server

7.1 Connection concept on the TACLAN terminal server

A different number of devices (terminals, PCs with a terminal emulation, and printers) can be connected to a TACLAN terminal server on the LAN (Local Area Network), depending on the type of TACLAN:

- The models TACLAN 91863-R, TACLAN 91863-RN and TACLAN 91863-RS allow 16, 32, 48, or 64 devices with a V.24 interface to be connected, depending on the configuration level. All V.24 interfaces can support a modem. Individual devices with an SS97 interface can also be connected using the CV01 interface converter. The CV01 is transparent for the configuration.
  Instead of the devices with a V.24 interface, devices with an IHSS interface can also be connected over the SW16 interface converter. The SW16 converts 16 V.24 interfaces into 16 IHSS interfaces, and is transparent for the configuration.
  Rather than using individual connections, devices with a V.24 or IHSS interface can also be connected over data multiplexers (DMX). Data multiplexers are used in pairs. The first data multiplexer concentrates eight V.24 lines on a total line. At the end of the total line, the second data multiplexer divides the total line back into eight V.24 or eight IHSS individual connections. The total line may be a telephone line, which is linked to the data multiplexers via a modem connection.
- The models TACLAN 91863-O1 and TACLAN 91863-OV allow the connection of eight devices with an SS97 interface.
- The models TACLAN 91863-O2, TACLAN 91863-ON and TACLAN 91863-OS allow the connection of eight devices with a V.24 interface. All V.24 interfaces can support modems. Individual devices with an SS97 interface can also be connected using the CV01 interface converter. The CV01 is transparent for the configuration.

7.2 Setting the TACLAN port parameters

If you want to operate devices with a DPTG-2 protocol (BA47, BA80, BA97, and PCs with a corresponding terminal emulation) which are connected to a port on the TACLAN, you must set the values shown below for the following port parameters:

Parameter	Value	Meaning
mode	slave	Port is opened by the host
need_dsr	N	No DSR signal needed for setting up the connection
control_lines	both	Flow control and modem control are both possible
type	hard wired	Directly connected device
bidirectional_ modem	N	The terminal server expects a carrier signal from the peripheral device

If you want to connect devices with an SS97 interface over the interface converter CV01, you must set the values shown below for the following two port parameters:

Parameter	Value	Meaning
control_lines	none	Only software flow control allowed
need_dsr	N	No DSR signal needed for setting up the connection

Tip:

A detailed description of the port parameters can be found in the "TACLAN-ADM863" Administrator's Guide.

8 Appendix C: Terminal programs

When you are configuring a loadable terminal (BA47, BA80, BA97, TC20), there are two ways of defining the terminal program:

1. When configuring using *SYSADM*, specify the keyboard type and the country identifier with values other than *DEFAULT*. From the */var/adm/terms/choices* file, *SYSADM* selects the terminal program suitable for the keyboard type and the country identifier.
   When it is switched on, the terminal is instructed by the computer to load the terminal program selected by *SYSADM*, even if the terminal has already loaded a different terminal program. If you want to load another terminal program, reconfigure the terminal with the desired keyboard type and country identifier. You must then reload the terminal by switching on and off the main power supply.
2. Specify the country identifier with *DEFAULT*. In this case, *SYSADM* does not select a terminal program. If the terminal has still not loaded a terminal program, the terminal program specified in the setup mode of the terminal is loaded when the terminal is switched on.
   If you want to load another terminal program, you must switch the terminal to load mode by switching on and off the main power supply. Using the **[LOCAL]** key, you can cancel the load process that is starting up and switch to setup mode. In setup mode, enter the word *set* and confirm the entry with the **[RETURN]** key. Enter the desired terminal program in the *LOADERNAME* line, and confirm the entry with the **[RETURN]** key. Use the **[LOCAL]** key to return to load mode. The load process is restarted automatically.

Select the terminal program in accordance with the following criteria:

- country identifier
- terminal type
- operating mode
- line type
- keyboard type

The following table contains the terminal programs:

Country identifier in ISO 3166 Alpha-2 country code	Terminal type	Operating mode	Line type	Keyboard type	Ter-minal prog.
AT/DE	BA80/BA97	vt220	DP TG-2	CT06	xb4d
(Austria/Germany)				CT08	xb4D
				CT11/DE80	xb9d
				CT11/SM80	xb9D
			HD LC	CT06	xb8d

				CT08	xb8 D
		vt100	DP TG-2	CT06	xb6 d
			HD LC	CT06	xb6 D
	BA47	vt100	DP TG-2	CT03	xb5 d
			HD LC	CT03	xb5 D
BE/FR	BA80/BA97	vt220	DP TG-2	CT06	xb4 f
(Belgium/France)				CT08	xb4 F
				CT11/DE80	xb9 b
				CT11/SM80	xb9 B
			HD LC	CT06	xb8 f
				CT08	xb8 F
BR/PT	BA80/BA97	vt220	DP TG-2	CT06	xb4 p
(Brazil/Portugal)				CT08	xb4 P
			HD LC	CT06	xb8 p
				CT08	xb8 P
CH.DE	BA80/BA97	vt220	DP TG-2	CT06	xb4 a
(Switzerland (German))				CT08	xb4 A
			HD LC	CT06	xb8 a
				CT08	xb8 A

CH.FR	BA80/BA97	vt220	DPTG-2	CT06	xb4b
(Switzerland (French))				CT08	xb4B
			HDLC	CT06	xb8b
				CT08	xb8B
CR	BA80/BA97	vt220	DPTG-2	CT08	xb4T
(Czech Republic)			HDLC	CT08	xb8T
DE.BA	BA80/BA97	vt220	DPTG-2	CT08	xb7D
(Germany, German institute for labor)			HDLC	CT08	xb7d
DK	BA80/BA97	vt220	DPTG-2	CT06	xb4k
(Denmark)				CT08	xb4K
				CT11/SM80	xb9K
			HDLC	CT06	xb8k
				CT08	xb8K
EL	BA80/BA97	vt220	DPTG-2	CT06	xb4c
(Greece)				CT08	xb4C
			HDLC	CT06	xb8c
				CT08	xb8C
ES	BA80/BA97	vt220	DPTG-	CT06	xb4e

			2		
(Spain)				CT08	xb4 E
				CT11/DE 80	xb9 e
				CT11/SM 80	xb9 E
			HD LC	CT06	xb8 e
				CT08	xb8 E
FI (Finland)	BA80/B A97	vt220	DP TG-2	CT11/SM 80	xb9 F
GB	BA80/B A97	vt220	DP TG-2	CT08	xb4 G
(Great Britain)				CT11/DE 80	xb9 g
				CT11/SM 80	xb9 G
			HD LC	CT08	xb8 G
HR	BA80/B A97	vt220	DP TG-2	CT08	xb4 X
(Croatia)			HD LC	CT08	xb8 X
INT	BA80/B A97	vt220	DP TG-2	CT06	xb4 z
(International)			HD LC	CT06	xb8 z
IT	BA80/B A97	vt220	DP TG-2	CT06	xb4i
(Italy)				CT08	xb4 I
				CT11/DE 80	xb9i
				CT11/SM 80	xb9 I
			HD	CT06	xb8i

			LC		
				CT08	xb8 I
NL	BA80/B A97	vt220	DP TG- 2	CT06	xb4 *l*
(Netherlands)				CT08	xb4 L
				CT11/DE 80	xb9 *l*
				CT11/SM 80	xb9 L
			HD LC	CT06	xb8 *l*
				CT08	xb8 L
NO	BA80/B A97	vt220	DP TG- 2	CT06	xb4 n
(Norway)				CT08	xb4 N
				CT11/SM 80	xb9 N
			HD LC	CT06	xb8 n
PL	BA80/B A97	vt220	DP TG- 2	CT08	xb4 R
(Poland)			HD LC	CT08	xb8 R
SE (Sweden)	BA80/B A97	vt220	DP TG- 2	CT11/SM 80	xb9 S
SE/FI	BA80/B A97	vt220	DP TG- 2	CT06	xb4 s
(Sweden/Finla nd)				CT08	xb4 S
			HD LC	CT06	xb8 s
				CT08	xb8 S
SR	BA80/B	vt220	DP	CT08	xb4

	A97		TG-2		Q
(Slovakia)			HD LC	CT08	xb8 Q
TR (Turkey)	BA80/BA97	vt220	DP TG-2	CT11/SM80	xb9 T
US	BA80/BA97	vt220	DP TG-2	CT06	xb4 u
(USA)				CT08	xb4 U
				CT11/DE80	xb9 u
				CT11/SM80	xb9 U
			HD LC	CT06	xb8 u
				CT08	xb8 U
		vt100	DP TG-2	CT06	xb6 u
			HD LC	CT06	xb6 U
	BA47	vt100	DP TG-2	CT03	xb5 u
			HD LC	CT03	xb5 U

9 Appendix D: Menu hierarchies

An overview of the menu items under the entries in the main menu can be found on the following pages. The menu items are listed in the order in which the entries appear in the main menu.

9.1 Menu structure for managing applications

The items under the *applications* menu are generated automatically by the programs to be managed. The following figure clarifies the menu structure of the *applications* menu using the example of the application program *FACE*.

Unix System V Administration
- » applications
  Administration for available applications
  - » FACE
    Framed Access Command Environment Administration
    - » programs
      Global Program Administration
      - » add
      - » list
      - » modify
      - » remove
    - » spell checker
      Spell Checker Administration
      - » add
      - » remove
    - » user
      FACE User Administration
      - » add
      - » list
      - » modify
      - » remove

9.2 Menu structure of the configuration menu

Unix System V Administration
» configuration
Hardware Configuration
» load
Configuration
» cabinets
cabinets
system/MBII cabinets (1)
peripherals cabinets (2)
external SCSI channels (3)
BBU/UPS cabinets
Display cabinet and slot information (1)
Display and set attributes for SCSI channels (1,2)
Display attributes (3)
Display and set attributes (4)
» boards
Boards
boards
Display and set attributes
» taks
taks
taks
Display and set attributes
» terminal servers
terminal servers
term. servers (SNMP) (1)
term. servers (not SNMP) (2)
Display and set attributes for terminal servers
Display and set attributes for terminal ports
» PCs & terminals
PCs & terminals
» PC & terminal entries
» default terminal type
» default settings
PC & terminal entries
» PCs / terminals
Display and set attributes
default terminal type
» PC / terminal types
Set default type for device to be created
default settings
» PC / terminal types
Display and set attributes
» printers
printers
» printers
Display and set attributes

- » storage devices
  storage devices
  - » storage devices
    Display and set attributes
- » serial devices
  serial devices
  - » serial devices
    Display and set attributes
- » settings
  settings
  - » settings f. PCs & terminals
  - » settings f. misc. devices
  - » Taclan settings
    Display and set line settings for PCs, terminals, printers and serial devices
    Display and set Taclan attribute sets

» info
info
- » about
- » getting started
  Output copyright messages and help for SYSADM hardware configuration

» activate
Save configuration changes in the database and activate them in the system, without quitting SYSADM

» quit
quit
- » activate
  Save configuration changes in the database and activate them in the system; quit SYSADM
- » quit
  Quit configuration session; all non-activated changes will be lost

9.3 Menu structure for managing file systems

Unix System V Administration

» file_systems
Manage File Systems
» check
» defaults
Manage Defaults
» add
» display
» modify
» remove
Form for selecting a file system
Form for displaying or modifying default settings for the selected file system
» diskuse
Form for displaying data relating to disk usage
» display
Form for displaying the installed file system types
» fileage
Form for selecting the directory to be searched
Form for displaying the search result
» filesize
Form for selecting the directory to be searched
Form for displaying the search result
» (identify
Form for selecting the special file and displaying the file system type
» list
Form for displaying the file systems mounted
» make
Form for entering the necessary information on the file system
» mount
Form for entering the special file and the file system name
» unmount
Form for entering the mount point or the special file

9.4 Menu structure for error logging

See the manual "Error Diagnosis and Correction".

9.5 Menu structure of the machine menu

Unix System V Administration

» machine
Machine configuration, Display and Shutdown
- » configuration
  Manage configuration
  - » summary
  - » system
    Form for displaying the system name and the operating system version
- » reboot
  Form for displaying the users logged onto the system
- » shutdown
  Form for displaying the users logged onto the system
- » whos_on
  Form for displaying the users logged onto the system

9.6 Menu structure for managing networks

Unix System V Administration
» network_services
Network Services Management
» basic_networking
Basic Networking Utilities Management
» devices
Adding, Listing and Removing
» add
» list
» remove
Form for entering or displaying the attributes of the network devices
» polling
polling systems
» add
» list
» remove
Form for entering or displaying the attributes of the systems to be polled
» setup
Initial Basic Networking Setup
» add
» add_devices
» add_systems
» add_pollings
Form for entering the attributes of devices and systems, and of systems to be polled
» systems
» add
» list
» remove
Form for entering or displaying the attributes of remote systems
» name_to_address
Name to Address Mapping
» loopback
» inet
Form for entering the assignment
» remote_files
Distributed File System Management
» local_resources
Local Resource Sharing Management
» list
» modify
» share
» unshare
Form for entering or displaying the attributes of shared local resources
» remote_resources
Remote Resources Access Management
» list

- modify
- mount
- unmount
  Form for entering or displaying the attributes for managing shared resources on remote systems

» setup
Setup Distributed File Systems Operations
- nfs
  Initial Network File System Setup
  - start
  - share
  - mount
    Form for entering attributes of resources

» specific_ops
Other Distributed File System Operations
- nfs
  Other Network File System Operations
  - control
    Network File System Control
    - check
    - start
    - stop

» selection
Network Selection Management
- display
  Form for displaying the network selection configuration
- modify
  Existing Network Identifiers
  - Identifier 1
  - Identifier 2
  - Identifier n
    Form for entering the configuration data for the selected network identifier

9.7 Menu structure of performance menu

Unix System V Administration

» performance
Monitoring System Activity and System Tuning
- » processes
  Show Activities and Send Signals
  - » list_all
    Form for displaying all active processes
  - » signal
    Form for entering signal number and process ID
- » sar
  System Activity Report
  - » show_overview
  - » cpu
  - » run-queue
  - » swap/switch
  - » buffers
  - » paging_in
  - » paging_out
  - » pages/blocks
  - » kernel_memory
  - » system_tables
  - » system_calls
  - » message/semaphore
  - » file_access
  - » block_devices
  - » tty_devices
    Different forms for displaying system activities
- » Tuning
  System core and System tuning
  - » Core parameters
    Selection of various stune files
  - » Drivers
    Form for selecting drivers and file systems
  - » System Core
    Form for generating a single or multiple system core
    Form for displaying the generated system core
  - » Daemons
    Form for selecting systemstart-daemons

9.8 Menu structure of ports menu

Unix System V Administration
» ports
Service Access Management
» port_monitors
Port Monitor Management
» add
Form for entering data for the port monitor
» disable
List for selecting the port monitor
» enable
List for selecting the port monitor
» list
» all
» by pmtag
» by pmtype
Output of information on port monitors
» modify
List for selecting the port monitor
Form for entering changes to the port monitor
» remove
List for selecting the port monitor
» start
List for selecting the port monitor
» stop
List for selecting the port monitor
» port_services
Port Service Management
» add
» add
» to_one
» to_many
List for selecting the port monitor
Form for entering the data of the port service
» disable
List for selecting the port service
» enable
List for selecting the port service
» list
» all
» by pmtag
» by pmtype
Output of information on port services
» modify
List for selecting the port service
Form for entering changes to the port service
» remove
List for selecting the port service

- tty_settings
  Terminal Line Setting Management
  - add
    Form for entering data on the terminal line
  - list
    List for selecting the terminal line
    Output of information on terminal settings
  - modify
    Input field for selecting the terminal line
    Form for modifying the terminal settings
  - remove
    List for selecting the terminal settings

9.9 Menu structure of schedule_task menu

Unix System V Administration

» schedule_task
Schedule a Task
- » add
  Form for entering data on the automated task
- » change
  List for selecting the automated task
  Form for entering the modified data
- » delete
  List for selecting the automated task
- » display
  Output of information on automated tasks

9.10 Menu structure of software menu

Unix System V Administration
» software
Software Installation and Information Management
» check
Software Checking Choices
» installed
» original
» spooled
Form for entering the checking options
» defaults
Installation Defaults
» add
» list
» modify
» remove
Form for entering or displaying the options for the installation defaults
» install
Form for entering the data required for installation
» interact
Form for entering information for the interaction file
» list
Form for entering information on the software packages to be listed
» read_in
Form for entering the data required for reading in software
» remove
Form for entering the data required for removing software
» Administration
User Profile Management
Form for selecting user profiles

9.11 Menu structure of software_prod menu

Unix System V Administration

- » software_prod
  Process Products
  - » products_on_CD
    Process Multi-Product CD-ROM
    Mount form
    Copyright file
    Consistency form
    Product menu
    Display and selection of products
    Function menu
    - » info
      Display of product information
    - » pkginfo
      Display of package information
    - » diskneed
      Display of disk space requirements
    - » README
      Display of README texts
    - » install
      Installation form
      - » Package menu
        Display and selection of packages
  - » products_on_system
    Product menu
    Display and selection of products
    Function menu
    - » info
      Display of product information
    - » pkginfo
      Display of package information
    - » diskusage
      Display of disk usage
    - » deinstall
      Deinstallation form
      Package menu
      Display and selection of packages
  - » miscellaneous
    Miscellaneous functions menu
    - » consistency
    - » keydiskette
    - » prepare_server
      Preparation form
    - » withdraw_server
      Withdrawal form

9.12 Menu structure of storage_devices menu

Unix System V Administration

» storage_devices
Storage Device Operations and Definitions
- » copy
  Available Devices
  device 1
  device n
  Form for selecting device data (source/destination)
- » devices
  Device Description Management
  - » add
    Form for entering the device information
  - » modify
    Device Attribute Management
    - » add
    - » list
    - » modify
    - » remove
      Form for entering attribute names and values
  - » list
    Output of the device list
  - » remove
    Form for selecting the device
  - » reservation
    Device Reservation Management
    - » free
    - » list
    - » reserve
      Form for input or output of devices in use
  - » display
    Devices Available
    device 1
    device n
    Form for selecting the device and displaying device data
  - » erase
    Devices Available
    device 1
    device n
    Form for selecting the device
  - » format
    Devices Available
    device 1
    device n
    Form for selecting the device
  - » groups
    Device Groups Management
    - » add

» list
» membership
» remove
Form for entering information on device groups

9.13 Menu structure of system_setup menu

Unix System V Administration

» system_setup
Initial System Setup
» datetime
» display
» set
Form for displaying or setting system date and time
» locale
» display
» set
Form for displaying or setting the international environment
» nodename
» display
» set
Form for displaying or setting the system name and node name
» password
Form for selecting the administrative identifier
Form for entering the password information
» system_dumps
» display
» set
Form for displaying or setting the default values for main memory dumps

9.14 Menu structure of users menu

Unix System V Administration
» users
User Login and Group Administration
» add
Form for selecting user or group
Form for entering user or group information
» defaults
Form for entering the defaults for adding users
» list
Form for selecting user or group
Form for displaying the user or group information
» locale
Form for setting the international environment
» modify
Form for selecting user or group
Form for selecting the user or group ID
Form for entering the modified user or group information
» password
Form for entering user password information
Depending on the selection, form for displaying password information or dialog for changing the password
» remove
Form for selecting user or group
Form for entering the user or group ID
Form with request to confirm final deletion

10 Related publications

Please apply to your local office to order the manuals.

[1] Reliant UNIX 5.44
System Administrator's Reference Manual (4 Volumes)

Target group
System administrators

Contents
Describes commands and application programs for system maintenance as well as file formats and special files for system administration.

[2] SINIX V5.44
System Administrator's Guide
System Administrator Guide

Target group
System administrators

Contents
Overview of UNIX system administration on RM systems and PCs.

[3] Reliant UNIX 5.44
Commands (4 Volumes)
Description

Target group
Reliant UNIX users

Contents
Description of user commands in alphabetical order.

[4] Reliant UNIX 5.44
Network Administration
System Administrator Guide

Target group
Network administrators and system administrators who perform network management tasks.

Contents
The manual describes the network administration work that needs to be done when using the TCP/IP software on Reliant UNIX V5.43 and the Basic Networking Utilities (BNU).

[5] Reliant UNIX 5.44
Networking Reference Manual
System Administrator Guide

Target group

System administrators

Contents
Describes the commands, functions, utilities, and files that are important for computer networks.

[6] SINIX V5.41
The FACE Interface
User Guide

Target group
Users

Contents
Introduction to using SINIX with the FACE menu-driven user interface (FACE = Framed Access Command Environment). In addition to information on the operation of FACE, this manual contains a description of all FACE functions.

[7] Reliant UNIX 5.44
Hardware Configuration with Config under SINIX/windows
Product Manual

Target group
System administrators, service engineers

Contents
Describes the functions of the CONFIG window-oriented user interface for hardware management, under the graphical user interface SINIX/windows.

[8] SINIX TE V2.0
SINIX Terminal Emulation under Windows
Product Manual

Target group
System administrators and users

Contents
This manual describes the use of PCs as workstations on Reliant UNIX systems.

[9] DPTG-WIN V2.1
DPTG Emulation under Windows
Product Manual

Target group
System administrators and users

Contents
Using PCs as workstations on SINIX systems.

[10] IOCS V3.0
Administration, Configuration and Programming of Printers
User Guide

Target group
System administrators and application programmers

Contents
Administration, configuration, and installation of IOCS, as well as programming of printers via IOCS.

[11] TACLAN-ADM863
Administrator's Guide
System Administrator Guide

Target group
System administrators

Contents
Configuration and network administration of the TACLAN Terminal Server.

[12] TACLAN-ADM863
Software Installation (RM400/RM600)
Installation Guide

Target group
System administrators

Contents
Software installation of the TACLAN Terminal Server.

[13] TACLAN 91863-X
Operating Manual
System Administrator Guide

Target group
System administrators

Contents
These manuals describe the hardware installation and initial installation of the various TACLAN Terminal Servers (the *X* in the title refers to the respective models).

[14] SPOOL V4.2A
Users and Administrators Guide
User Guide

Target group
Users and administrators

Contents
Description and sample applications for configuration and printing using commands or menus.

[15] SPOOL V4.2A
Reference Manual
Reference Manual

Target group
Users and administrators

Contents
General product overview and command descriptions.

[16] SINIX V5.43
Tuning Guide
System Administrator Guide

Target group
System administrators with sound knowledge of hardware

Contents
This manual describes how to analyze and improve system performance. It also contains a description of the core parameters.

[17] Reliant UNIX 5.43
Diagnostics and Troubleshooting
System Administrator Guide

Target group
System administrators

Contents
Describes the diagnostic tools for system and application programs.

[18] Reliant UNIX
Veritas File System (VxFS)
System Administrator Guide)

Target group
System administrators

Contents
Introduction to system administration of the VxFS file system and explanation of diagnostic and error messages.

[19] Reliant UNIX
UNIX File System (UFS)
System Administrator Guide

Target group
System administrators

Contents
Organization, administration, maintenance, and consistency checking of the UFS file system.

11 Abbreviations

AFP Alternating edge pulse transmission method

BBU Battery Backup Unit

BNU Basic Network Utilities

CCA Communication Controller Type A

CCS Communication Controller S0

CD-ROM
Compact Disk Read Only Memory

CPU Central Processing Unit

CS7 Communication Controller S7

CSI Central Services & Interfaces

CTRAS Cross Transfer and Access System

DAT Digital Audio Tape

DCS Disk Controller SCSI

DFS Distributed File system

DIP Dual Inline Package

DMX Data Multiplexer

DP Dataproducts

DSR Data Set Ready

DWS Diskless Workstation

EIP Environmental Interface Processor

EISA Extended Industry Standard Architecture

E-SIH Serial Interface Multiplexer Inhouse on EISA bus

E-SIM Serial Interface Multiplexer on EISA bus

FACE Framed Access Command Environment

FDDI Fiber Distributed Data Interface

FMLI Form and Menu Language Interpreter

GID Group Identification

HDLC High Level Data Link Control

IHSS Inhouse interface

IOCS Input/Output Control System

IP Internet Protocol

ITC Intelligent Terminal Controller

ITP Intelligent Terminal Processor

LAN Local Area Network

LAR Logout Auto Recovery

LCE LAN Controller Ethernet

LCF LAN Controller FDDI

LCT LAN Controller Token Ring

MB MultiBus

MBP MultiBus Processor

MBPR MultiBus Processor Remote

MCD Medium Charger Device

MMM Main Memory Module

MTC Magnet Tape Cassette

NFS Network File System

NIS Network Information Services

OA&M Organization, Administration and Maintenance

OLR Online Replacement

PID Process Identification

PROM Programmable Read Only Memory

RAID Redundant Arrays of Independent Disks

RAM Random Access Memory

RFS Remote File Sharing

RISC Reduced Instruction Set Computer

ROD Rewritable Optical Disk

SAC Service Access Controller

SCSI Small Computer Systems Interface

SCU SCSI Conversion Unit

SEC Standard Ethernet Controller

SIH Serial Interface Multiplexer Inhouse

SIM Serial Interface Multiplexer

SIM1 Serial Interface Multiplexer on Multibus 1

SIM2 Serial Interface Multiplexer on Multibus 2

SMC Streaming Mode Cassette

SNMP Simple Network Management Protocol

SPOOL Simultaneous Peripheral Operations Online

SSW16 Interface converter (16 channels)

SW8 Interface converter (8 channels)

SW8R Interface converter (8 channels) Remote

TACLAN
Terminal Attachment via LANs

TACSI Terminal Attachment Concept in SINIX

TAK Terminal Attachment Concentrator

TAK-IH
Terminal Attachment Concentrator Inhouse

TC Terminal Controller

TC4P Terminal Controller 4-Port

TCA Terminal Controller Asynchronous

TCP Transmission Control Protocol

TFTP Trivial File Transfer Protocol

TTY Terminal Type

UID User Identification

UPS Uninterruptable Power Supply

VB8 Distributor Box (8-slot connection)

VBM Variable Block Mode

VGA Video Graphics Array

WORMWrite Once Read Multiple

Glossary

B

backup
Backup is the sum of all measures and methods implemented to protect and save data. In *SYSADM*, this is a program package mounted in the *SYSADM* menu structure.

basic networking utilities (BNU)
Basic networking utilities are utilities with which UNIX systems can communicate via standardized hardware interfaces, without special technical requirements.

block
Physical data unit on a data medium. System V compatible UNIX systems such as Reliant UNIX operate with a block length of 512 bytes.

broadcast
Broadcast mode makes it possible to simultaneously address specific classes of receivers or all connected stations within a local area network.

C

CD-ROM
Optically scanned storage medium operating on the principles of laser technology, used for storing large volumes of data for medium to slow access times.

Centronics interface
8-bit parallel peripheral interface for synchronous data transmission, generally used for connecting a printer.

command line
Prompt within *SYSADM*, which can be used as an alternative to the command menu.

command menu
Special *SYSADM* menu via which functions can be called up for managing *SYSADM*. Examples of such functions include terminating *SYSADM* or executing a shell command.

controller
Intelligent control unit that more or less independently controls the input and output of data between the central processor and a peripheral device.

cron
Daemon program that automatically executes other programs at fixed times, i.e. even if a user is not logged on.

cylinder
All tracks on a magnetic disk which have the same radius, but which can be located on different surfaces. All tracks of a cylinder can be read without having to reposition the read-write head.

D

daemon

Daemon programs are special programs that run cyclically and execute specific tasks. Such tasks include, for example, managing a printer queue or monitoring system connections.

DataProducts interface
8-bit parallel peripheral interface for synchronous data transmission, generally for connecting a printer.

data transmission, asynchronous
Transmission procedure where data is transferred character-by-character from the sender to the receiver. A start and stop bit is added to each character to be transmitted. Synchronization is switched on and off by these bits. The time intervals between the characters transmitted can vary. Data is transmitted in accordance with defined communication protocols, e.g. DPTG-2.

data transmission, synchronous
Transmission procedure where data is transmitted from the sender to the receiver at precise time intervals. The time intervals are set by transmitting synchronization characters before the actual data is transmitted. Start and stop bits are not required for this type of transmission. Transmission is based on defined communication protocols, e.g. HDLC.

defaults
Values that have been preset in the system and which are used when specific functions are being executed, e.g. when creating users or generating file systems.

device group
Combination of several devices in the device table to form a group, thereby enabling easy access to all devices within a group.

device table
The */etc/device.tab* file, in which device-specific information is stored to enable easy device management.

diskless workstation
A personal computer without a hard disk that can be run as a client in a network. Diskless workstations use program and data areas on a hard disk in the server.

DPTG-2
Communication protocol for controlling and backing up asynchronous and synchronous data transmissions. DPTG-2 is the basis for the operation of windows-based screens.

E

environment variable
Data area within the shell which can be used to store information on the environment used (e.g. the terminal or language used) or to define specific directories.

Ethernet
Local area network with a data transfer rate of 10Mbit/s.

express mode
Call mode of *SYSADM* to directly access the menu structure or the input mask of a specific

function.

F **file system**
All files and directories on a partition of a physical data medium.

file system type
File systems can be classified according to different types that define different characteristics. The most common types are *s5* and *ufs*.

form
Input masks of FMLI programs, such as *SYSADM*, that contain one or more fields for entering data.

Form and Menu Language Interpreter (FMLI)
Development tool for generating windows-based, menu-driven application programs. Examples of FMLI programs are *SYSADM* and *FACE*.

Framed Access Command Environment (FACE)
Application program whose administration functions are mounted in the menu structure of *SYSADM*. *FACE* provides the user with a windows-based, menu-driven interface for the Reliant UNIX system.

full window action
A function which is called within *SYSADM* but is executed outside the *SYSADM* environment, and which controls input/output.

G **gateway**
Hardware and software for interconnecting different networks. The task of a gateway is to transfer data from one computer network to another, whereby the key factor is the translation of communication protocols.

group
Combination of several users. The formation of groups means allows several users to access shared data.

H **High Level Data Link Control (HDLC)**
Communication protocol for controlling and backing up synchronous data transmission.

I **inhouse interface**
Bit-serial peripheral interface for synchronous data transmission.

interaction file
Special file for installing software packages. The installation of a software package can be controlled by interaction file instead of the interactive user dialog.

interface, bit-parallel
The data bits of a character are transmitted simultaneously over different lines.

interface, bit-serial
The data bits of a character are transmitted in succession over a line.

internet
Network comprising several Ethernet networks.

L

local area network (LAN)
Collective term for local networks for the internal exchange of data between a number of (possibly heterogeneous) computers within a specific locality. A LAN is privately owned by an operator; data is transmitted bit-serially.

M

modem
Modulator, demodulator; data communication equipment for converting digital signals to analog signals and vice versa in order to use analog systems (e.g. the telephone network) for data transmission.

mount point
Specific point in the file hierarchy at which the data of a file system is made available.

N

network file system (NFS)
Network technology that enables users to transparently use file systems on remote systems.

node name
Symbolic name for the network address of a computer. This means that the computer can be addressed by this name rather than by the network address, which is often very complex. Node names are managed in */etc/hosts*.

P

partition
Subarea of a storage medium. The efficient division of hard disks into partitions, each containing logically and functionally related data, speeds up data access and simplifies data management.

primary group
Main group of a user, who can be a member of several groups. All newly generated data is assigned to the user's primary group.

process
Management unit of an operating system which represents an active program. Each process has a unique ID (PID). Like file systems, the process system has a hierarchical structure.

port monitor
Port monitors are responsible for monitoring the ports on your system, managing port-specific characteristics such as transmission rates, and providing users with a standard interface via port services, as required.

port service
A port monitor provides various port services. Access to different terminals and data transmission paths is standardized by port services.

R

resource
In terms of NFS, the local system views a resource as a device or as part of the file system that is made available to and can be used by other computers.

S

S97
Bit-serial peripheral interface for synchronous and asynchronous data transmission.

share tree
File tree on a server which is shared by several clients, normally diskless workstations.

shell
Special program that represents the interface between users and the operating system. The shell is a command line interpreter with a built-in programming language.

signal
Asynchronous event within the operating system which causes an interruption at the process level. Signals are used to terminate processes at operating system level, or to display operating system program errors.

special file
Specific file type that represents the physical devices in the file hierarchy. Special files are located under the */etc* directory.

spool
Add-on program that is used for managing various printer queues and is mounted in the SYSADM menu structure.

supplementary group
Any group (other than the primary group) of which a user is a member. Users can make any of their supplementary groups into the primary group, as required.

SYSADM
Windows-based, menu-driven user interface for executing the tasks of Reliant UNIX system administrators.

system name
Internal name of the operating system for the computer.

system password
System administrator password that permits access to all data on the system.

U

user
In UNIX, a user is a person or a special system function that owns files and can execute programs. Every user is identified by means of a unique user ID (UID).

user identification number (UID)
A unique number for each user which identifies the user in the operating system.

V

V.24
Bit-serial peripheral interface for synchronous and asynchronous data transmission.

virtual devices
Devices that were added, copied or renamed in the current configuration session. Virtual devices are identified by a question mark beside the device name.

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