Chapter

5

Printing Documents and Diagrams

This chapter describes the different *Print* dialogs in Telelogic Tau and the printing differences between the Organizer, the SDL suite and the TTCN suite.

In the beginning of the chapter you can also find some introductory examples of how to print.

General

You can print from virtually all Telelogic Tau tools that provide a graphical user interface. It is possible to print the information that is managed by an individual tool, such as a graphical editor or a viewer, or to print all (or parts of) information that is related to a document structure, from the Organizer.

Print Dialogs

You specify the print options in *Print* and *Print Setup* dialog. These dialogs have different appearances, depending on where they are invoked from – the Organizer, the TTCN suite or an SDL suite tool. The TTCN suite **in Windows** also provides a print preview.

Output Formats

The following output formats are provided:

- *PostScript Output* (including *Encapsulated PostScript*)
- *FrameMaker Output*
- *Interleaf Output*
- *Web Files (HTML+PNG)*
- *MSWPrint Output (Windows only)*
- *Microsoft Word Output (Windows only)*

When you print a TTCN document, only PostScript output is available. However, in the TTCN suite **in Windows**, it is also possible to export a document to HTML, see "Converting to HTML" on page 1268 in chapter 31, *Editing TTCN Documents (in Windows)*.

Print Preferences

It is also possible to set the default print options. For more information, see "Print Preferences" on page 255 in chapter 3, *The Preference Manager*.

Printing Documents – Some Examples

This section is a brief guide to how to print some types of documents. The remaining sections of this chapter contains more detailed reference information about the print function and the *Print* dialogs.

You can print documents either from the Organizer or from within an individual Telelogic Tau tool.

Printing from the Organizer

This is an example of how to print a table of contents, one or more SDL interaction diagrams and type views from the Organizer. It is assumed that you have SDL interaction diagrams included in the Organizer and that a Type Viewer is running. The example describes how to print specific diagrams, but what is explained here may of course apply to other types of diagrams.

To print from the Organizer:

- Select *Print* | *Print All* from the *File* menu.
  - Alternatively, click the quick-button for *Print*.

  The *Print* dialog will be issued, where you may change the print settings.

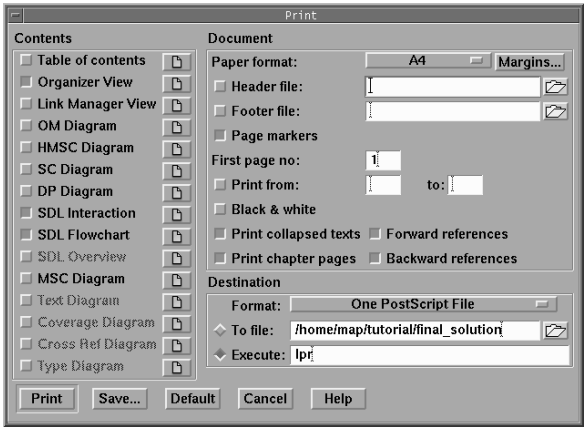


Figure 73: The Organizer Print dialog

You will start by changing the options in the *Contents* area:

1. Turn the *Table of contents* toggle button on.
2. Turn the *SDL Interaction* toggle button on.

3. Click the setup button to the right of the *SDL Interaction* toggle button.

   The *Print Setup* dialog will be issued where you may specify other options:

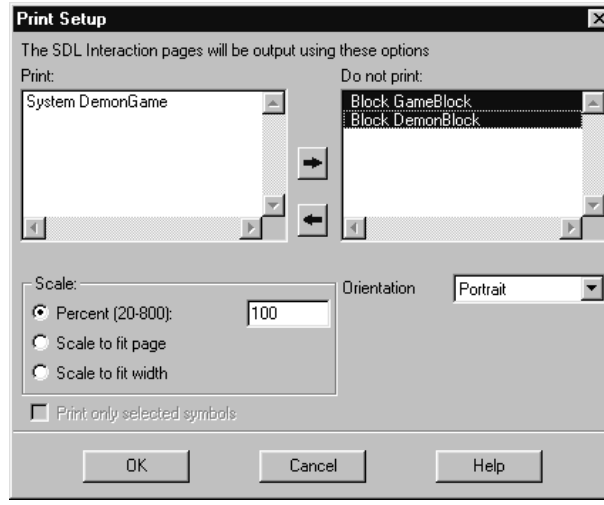


Figure 74: The Print Setup dialog

– You select what to print by using the arrow buttons to move diagrams between the *Print* and *Do not print* lists. Multiple selection is possible.

– You may change the *Scale* of the printout.

– You may change the *Orientation* of the printout.

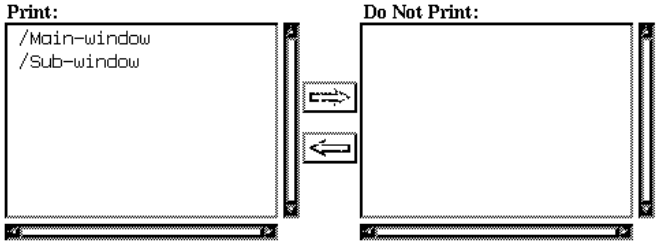
4. Click *OK*.

   The dialog will be closed.

5. Turn the *Type Diagram* toggle button on, and click the setup button to the right of the toggle button.

   The *Print Setup* dialog will be issued and you may set additional options.

   – In the *Print* and *Do not print* lists, you may specify if any of the Type Viewer main window or Tree window (identified as *Subwindow* in the list) is to be excluded.



– You may also change the other settings in the dialog.

6. Click *OK*.

   The *Print Setup* dialog will be closed.

You may also want to specify the options in the *Document* area and the *Destination* area of the *Print* dialog:

1. Select the *Paper format* that you want to use.

2. Click the *Margins* button, to open the *Paper Format Setup* dialog.

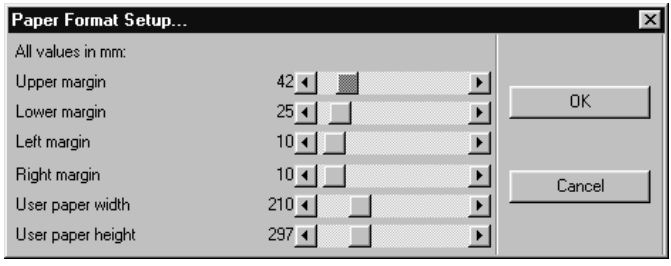


Figure 75: Setting the margins

In the dialog, you may change the paper margins, and in addition you may define your own paper size.

3. You may also want to change other settings in the *Document* area.
4. Select the output format in the *Format* option menu. You may choose between:

- *One PostScript File*, suitable if you are going to print the documents on a PostScript printer.
- *One EPS File* (Encapsulated PostScript), suitable if you are going to include graphics in a document. Select *One EPS File Per Page* if multiple pages are to be printed.
- *One FrameMaker MIF File*, suitable if you want a file that can be imported into FrameMaker. Select *One MIF File Per Page* if multiple pages are to be printed.
- *Import into FrameMaker (UNIX only)*, suitable if you want to import the file directly into a currently opened FrameMaker document.
- *One Interleaf IAF File*, suitable if you want a file that can be imported into Interleaf. Select *One Interleaf IAF File Per Page* if multiple pages are to be printed.
- *MSW Print* **(Windows only)**, which will make the print function use the printer you have set up with the Microsoft Windows Print Manager.
- *One Word DOC File* **(Windows only)**, suitable if you want a file that can be used in Microsoft Word 97 or Word 2000.
- *Word Files (DOC + EMF)* **(Windows only)**, suitable if you want to edit the document file in Microsoft Word and be able to regenerate the pages.
- *Web Files (HTML+PNG)*, suitable if you want to publish the document on the Web. HTML (text) and PNG (picture) files are produced that can be viewed in a web browser.

5. Select the destination of the printout – a file or a printer.
   - If you want to save the printout on a file, you should make sure that the *To file/Map file* radio button is on. The button is labelled *Map file* if multiple pages are to be printed (when you have selected a *One file Per Page* option in the format menu). The map file will contain a translation table that shows the correspondence between the input diagrams and the generated files.

– If you want to send the printout to a printer, you should ensure that the *Execute* radio button is on. You also have to type a printer command in the field, for example `lpr`. (It is possible to enter any post-processing command, such as a PostScript pre-viewer like `ghostview`.)

6. Click the *Print* button to generate the printout.

For more information on how to use advanced printing features, see "Advanced Print Facilities" on page 348.

Printing from the SDL Suite

In these examples you will learn how to print from the MSC Editor and the Type Viewer. As most settings in those print dialogs are similar to the ones in the Organizer dialog, described above, the explanations below will be quite brief.

Printing from the MSC Editor

1. Open a diagram in the MSC Editor.
2. Select *Print* from the *File* menu.

   The MSC Editor *Print* dialog will be issued.
3. Optionally, change the settings in the dialog.
4. Click the *Setup* button.

   The *Print Setup* dialog will be issued, where you may specify some additional options:

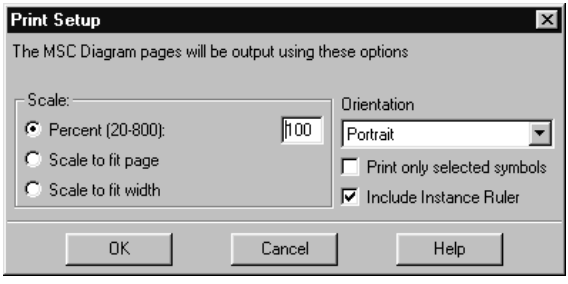


Figure 76: The MSC Editor Print Setup dialog

5. Turn the *Print only selected symbols* toggle button on, if you have selected parts of the MSC diagram that you want to print. Deselected symbols will not be printed.

6. Turn the *Include Instance Ruler* toggle button on, if you want to add an instance ruler into each printed page of an MSC. This means that the instance heads will be visible on each page – useful if you have a vertically extended MSC diagram that will cover more than one page.

7. Click the *OK* button in the *Print Setup* dialog.

8. Click the *Print* button in the *Print* dialog.

   The printout will be generated.

Printing from the Type Viewer

1. Make sure the Type Viewer is running.

2. Locate either the main window (the window labelled *Type Viewer*) or the Tree window.

3. You may also want to change the contents of the window by using commands in the *View* menu.

4. Select *Print* from the *File* menu in either the main window or the Tree window of the Type Viewer.

   If you select *Print* in the main window, the printout will be a type list. If you select *Print* in the Tree window, the printout will be an inheritance tree.

   The *Print* dialog will be issued.

5. Adjust, if required, the options in the *Print* dialog and the *Print Setup* dialog.

6. Click the *Print* button.

   The printout will be generated, based on the contents of the window that the *Print* command was selected in.

Default Scope of Print

In this section you will find information on what will be printed by default if you do not change any settings. It may also be possible to select what documents – of parts of documents – to print. See "Print Setup Dialogs" on page 328 for more information on how to include more in the printout or how to restrict it.

> **Note:**
> Link endpoints are never shown in a printed document.

Printing from the Organizer

The default printout in the Organizer depends on selections and which tools are running:

SDL, OM, SC, MSC and HMSC Diagrams; Text Documents; Cross Reference Files

If choosing Print | Print All or Print | Print Selected and no item is selected in the Organizer, **all documents** that are managed by the Organizer (i.e. are visible in the Organizer view) will by default be included in the printout. If choosing Print | Print Selected and an item is selected in the Organizer, only the document(s) included in that item, and their sub-structure (if any), will by default be included in the printout.

Coverage Files

Coverage files cannot be included in the structure that is managed by the Organizer. The graphical presentation of a coverage file is computed as you request it by running the Coverage Viewer.

Therefore, the graphical presentation of coverage information will be included in the printout if the Coverage Viewer is **running**. The resulting printout will reflect the current contents of the windows, that is, the *Main Window* and the *Coverage Details Window* of the Coverage Viewer.

SDL Types and Type Instances

These entities cannot be included in the structure that is managed by the Organizer. Furthermore, this information is computed automatically by the Type Viewer. Therefore, the Type Viewer must be running in order

to include the information in the resulting printout. The contents of the *Main Window* and *Tree Window* of the Type Viewer may be included.

TTCN Documents

If a TTCN document is selected in the Organizer, it is possible to print it, and the default scope of print is the selected document. A TTCN document cannot be included in a global printout, i.e. from the main *Print* dialog in the Organizer.

Printing from the SDL Suite

When you are going to print from an SDL suite tool, the printout will be the information that is currently visible in the active tool window.

The *Setup* button issues the *Print Setup* dialog which is used for specifying the scope of print. For example, if you print from the SDL Editor, the default scope of print is the active SDL Editor window, i.e. the SDL page currently being edited. In the *Print Setup* dialog, the scope of print may include any of the pages contained in the SDL diagram, or be restricted to the SDL symbols currently selected in the active window.

OM, SC, HMSC, SDL, MSC and Text Editor

The default scope of print is the active Editor window, i.e. the diagram page or the MSC currently being edited.

SDL Overview Viewer

The default scope of print is the active SDL Editor window, i.e. the SDL Overview diagram currently being viewed.

Type Viewer, Index Viewer and Coverage Viewer

In a Viewer, the scope of print is the contents of the window from where you invoked print.

Preference Manager and Link Manager

The scope of print is the current contents of the window.

Printing from the TTCN Suite

The default scope of print is the entire, currently active, TTCN document. The printout will contain one table per page.

The *Print* Dialogs in the SDL Suite and in the Organizer

To print, you select any of the submenus in the *Print* menu from the *File* menu. This will open a *Print* dialog. Since the print functions in the tools are not identical, the print dialogs look somewhat different depending on where they are invoked from. As you can see in Figure 77 and Figure 78, the differences are that the Organizer print dialog includes the *Contents* area, whereas the SDL suite tool print dialogs include a *Setup* button.

The main differences between printing from the Organizer and an SDL suite tool are:

- In an SDL suite tool, it is only possible to print the information or document that is opened in the tool. In the Organizer, you can select to print all or any of the documents that are managed by the Organizer.
- It is possible to print only selected symbols (when applicable) from an SDL Suite Editor, which is not possible from the Organizer.
- When you print from a viewer, the printout will be the contents of the active window. If you print from the Organizer, it is possible to include or exclude a window from the printout, independently of which window is currently active.
- In the Organizer it is also possible to print a table of contents and the contents of the Organizer window.

Note:

Endpoints are not displayed in printed documents/diagrams, regardless of the value of the *Show Link Endpoints* option.

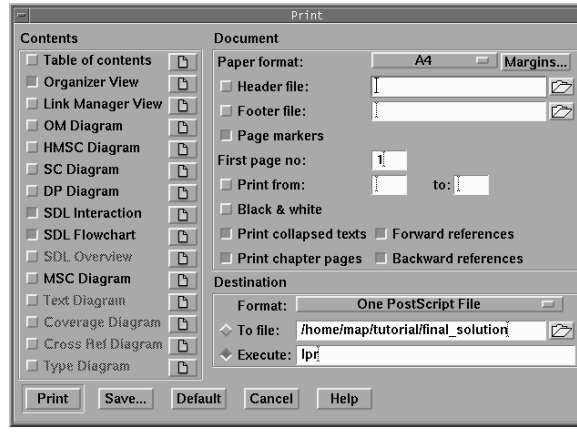


Figure 77: The Organizer Print dialog

Figure 78: An SDL Suite tool print dialog

Both dialogs contain the following areas and buttons:

- *Document Area*
- *Destination Area*
- *Print* button
- *Default* button
- *Cancel* button

The Organizer print dialog also contains the *Contents* area with setup buttons, and a *Save* button. A *Setup* button is also included in each the SDL suite tool print dialog. The setup buttons in the *Contents* area of the Organizer print dialog are equivalent to the *Setup* button in an SDL suite tool print dialog. The *Save* button is used to save print dialog settings in print selection files, for later use in the print dialog.

All dialog areas and buttons will be described in this chapter.

Contents Area in the Organizer Dialog

The *Contents* area is only available in the Organizer *Print* dialog. In the area, it is possible to control what information to print, through a number of toggle buttons and *Setup* buttons. Each of the toggles identify a group of documents that may be printed:

- Table of contents
- Organizer view
- Link Manager view
- OM diagram
- HMSC diagram
- SC diagram
- SDL interaction
- SDL flowchart
- SDL overview
- MSC diagram
- Text document
- Coverage diagram
- Cross reference diagram
- Type diagram

Note:

It is not possible to include TTCN documents in a global printout from the Organizer. See "The Print TTCN Dialog in the Organizer" on page 322 for information on how to print TTCN documents from the Organizer.

Some toggle buttons may be turned on by default. This is determined by which document types that are present in the default scope of print.

Table of Contents

This option determines whether a table of contents should be generated or not. The table of contents consists of a textual list with information about what source diagrams and generated diagrams that are included in the printout, with references to physical page numbers. There is also a possibility to only include Organizer chapters in the table of contents, i.e. all other printed entities are suppressed in the table of contents.

The table of contents is either printed on the first pages that constitute the resulting printout, or after an initial text document acting as a title page.

Organizer View

This option determines whether a printout of the *Organizer main window* should be included or not in the generated output. Only the visible parts (i.e. expanded nodes) are included.

The resulting printout will match the Organizer's *View Options*, i.e. file names, directories, etc. will be shown if they are in the Organizer Main window.

Link Manager View

This option determines whether a printout of the *Link Manager Window* should be included or not in the generated output. Only the visible parts (i.e. expanded nodes) are included.

OM/HMSC/SC/MSC/Text Diagram, SDL Interaction, SDL Flowchart, SDL Overview

These options determines whether the documents and diagrams that are visible in the Organizer should be included or not in the printout. The SDL *Interaction diagrams are: system, system type, block, block type, substructure, package diagrams.* The SDL *Flow diagrams are: process, process type, service, service type, procedure, operator, macro diagrams.*

Note:

Endpoint markers will not be included in printed diagrams.

Coverage Diagram

This option determines whether *Transition Coverage* and *Symbol Coverage* trees should be included or not in the generated output.

Cross Ref Diagram

This option determines whether *Definitions and Uses* should be included or not in the generated output.

The resulting output will show the graphical appearance as when displayed in the *Index Viewer*, with the exception that only SDL entities defined or used in SDL diagrams printed together with the index will be visible in the index.

Type Diagram

This option determines whether an SDL-92 Type list and SDL Type Inheritance and Redefinition list should be included in the generated output or not.

The resulting output will show the SDL-92 type lists for the SDL system currently in view in the Organizer. The lists will be produced by using the options defined in the *List Options*, *Tree Options* and *Symbol Options* of the Type Viewer.

Setup Buttons in the *Contents* Area

Furthermore, each group of documents that may be printed is supplied with setup buttons. When you click a setup button, a *Print Setup* dialog will be issued, see "Print Setup Dialogs" on page 328. In the dialog, it is possible to set additional options that affect the printout of the current group of documents.

Document Area

The *Document* area contains a number of settings that make it possible to specify the size of the paper to use, the print range and additional information to be printed on each individual page.

The *Document* options are:

- *Paper format*
- *Margins*
- *Header file*
- *Footer file*
- *Page markers*
- *First page no*
- *Print from/to*
- *Black & white*
- *Print collapsed texts*
- *Print chapter pages*
- *Forward references*
- *Backward references*

Note:

When using a printing format other than One Postscript File or MSWPrint the only enabled options in the Document area are Black & white (not for Frame or Interleaf printing) and Print collapsed texts. For these formats the paper layout is determined by the special Print preferences starting with *Frame*PaperFormat*. However when using Word format the margins and layout are determined by the defaults given by the created Word document.

Paper format

The *Paper format* option menu specifies what paper format the print function will use. The paper formats are:

- *A4*, the European standard size(210 * 297 mm)
- *A3*, the European standard double size (297 * 420 mm)
- *US Letter*, the American standard (8.5” * 11”)
- *US Legal* (8.5” * 14”)
- *User Defined*, which makes it possible to customize a size with the *Margins* button. The size may also have been set in the *Preferences Manager*.

Margins

The *Margins* button provides access to the *Paper Format Setup* dialog where the print margins may be specified.

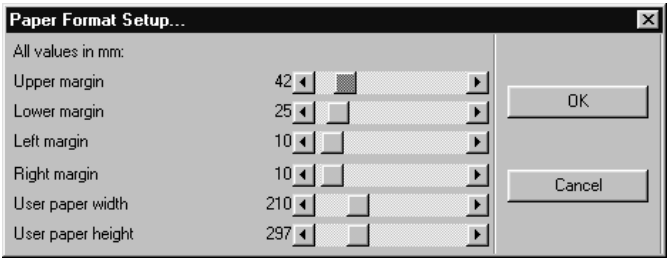


Figure 79: The Paper Format Setup dialog

The print margins govern how much space is reserved around the area used when printing. Values are expressed in millimeters.

- There are four slide bars for the adjustment of the margins:
  - *Upper margin*
  - *Lower margin*
  - *Left margin*
  - *Right margin*

  Margins are calculated with respect to the closest border and remain unaffected when rescaling, changing the paper size or the orientation of the printout.
- The dialog also contains two slide bars used for controlling what paper format to use when the *Paper format* option *User Defined* is set:
  - *User paper width*
  - *User paper height*
- The *OK* button applies the values as currently defined and closes the dialog.
- The *Cancel* button closes the dialog without changing any values.

Header file
Footer file

This feature controls whether or not a header/footer should be printed on each page. The page header/footer is defined in a text file of its own, which you need to supply. For information about the contents and syntax of this file, see "Footer and Header Files" on page 335.

- The header/footer file options are turned on/off with toggle buttons.

- When you click the folder button, a *Select File* dialog will be issued. In this dialog you may select the header/footer file.
- It is also possible to type the name and directory of the file directly into the text field.

Note:

Header or footer files are only supported in *PostScript Output* (not EPS) or *MSWPrint Output (Windows only)*.

Page markers

An SDL/OM page or an MSC diagram may require multiple physical pages when printed. If you want to print an SDL/MSC/OM document and the document is physically spread over more than one physical page, the *Page markers* toggle button facilitates the reassembling of the paper sheets into the original page.

- If the toggle button is on, adjacent page markers will be inserted on the edge of each physical page. An adjacent page marker looks like a small arrowhead which refers to the adjacent page. If there are lines crossing a physical page border, line identifiers (like X1, X2... or Y1, Y2...) will be attached to the line, making it easy to find the continuation of the line on the other page.

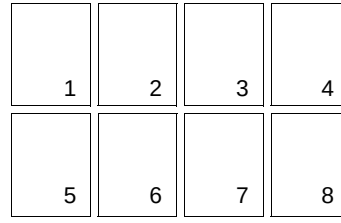


Figure 80: The page numbering

Physical page numbering follows a "first right, then down" fashion.

Note:

The physical page breaks are indicated with dashed lines in the diagram editors. A page number is inserted at the lower right corner of each page in the editor.

Page markers and all other options where page numbers are used are only supported in *PostScript Output* (not EPS) or *MSWPrint Output (Windows only)*.

It is possible to print an individual page number on each printed page. This is done by using a header file. Read more about header files in "Footer and Header Files" on page 335.

First page no

When you order multiple print jobs, you may want to restart the page numbering on each printout with a number different from 1, which is the default value.

If you want to change the number of the first page, you should type the number in the *First page no:* field.

Print from/to

It is possible to exclude a number of pages form a printout. To specify the print range, you type the page numbers in the *Print from* and *Print to* fields. Make sure that the toggle button is on, your settings will have no effect otherwise.

When the toggle button is off, all physical pages that constitute the printout will be generated.

Note:

The print range must be in accordance with the page numbering; i.e. the offset specified in the *First page no* should be added.

The physical page breaks are indicated with dashed lines in the diagram editors. These page breaks are valid only if the printing scale is not changed.

Black & white

If this option is selected, all symbols and lines will be printed with a black border on a white background. If this option is not selected, sym-

bols and lines will be printed with the color they have on screen. As default, this option is off.

For FrameMaker or Interleaf printing this option is always on and disabled as the printing will always be in black and white.

Print collapsed texts

Text symbols, comment symbols and text extension symbols can be collapsed. When they are collapsed, it is not possible to see the complete text these symbols contain in the diagram. Instead, it is possible to print the complete text as a separate text page after the diagram. This option decides if such a text page should be printed or not. As default, this option is on.

Print chapter pages

(Organizer only.) Decides if text connected to chapter symbols in the Organizer should be printed or not. As default, this option is on.

Forward references

(Organizer only.) Decides if forward paper page references should be printed or not. Paper page references makes the printout easier to read. You can get paper page references for the following relations:

- SDL reference symbol -> SDL diagram
- (H)MSC reference symbol -> (H)MSC diagram
- SDL join/out-connector -> SDL label/in-connector
- SDL procedure call -> SDL procedure diagram
- SDL nextstate symbol -> SDL state symbol

Note:

The three last relations will only be printed if there exists an index/cross reference file in the Organizer view with up-to-date information about the SDL system. You can get an index for a correct SDL system by pressing the *Generate Index* Organizer quick button before bringing up the print dialog

As default, forward paper page references are printed.

There is a preference, Print*MaxPageReferences, that decides the maximum number of page references in one place. The default value is 20. A value of 0 is the same as “no limit”.

Backward references

Similar to forward references, but produces paper page references that allows the reader of the printout to follow the flow backwards instead.

Destination Area

The *Destination* area contains print options that affect the output format and the destination of the resulting output. It is for example possible to send a printout to a printer or to look at the results in a pre-viewer.

The options are:

- *Format*
- *To file / Map file*
- *Execute*

Format

This feature controls what output format will be generated when printing. You select the output format in an option menu. The output formats supported are:

- *One PostScript File*

  This option produces one self contained PostScript document.

- *One EPS File*[1]

  If only one page is to be printed, this option is valid and will result in an EPS File containing one physical page. If the *Print setup* caused more than one physical page to be printed, only the first page will be printed. The layout of the page for EPS printing is determined by the preferences in *Frame*PaperFormat*.

- *One EPS File Per Page*

  This format implies that the output will be in the form of multiple EPS files, placed in a specified directory. Along with the EPS files, a *map file* containing the translation scheme is produced. See "To file / Map file" on page 320.

- *One FrameMaker MIF File*[2]

1. EPS stands for Encapsulated PostScript
2. MIF stands for Maker Interchange Format.

This format signifies the generation of one FrameMaker MIF file. The file will contain a number of contiguous, cropped anchored frames. The layout of the page for MIF printing is determined by the preferences in *Frame*PaperFormat*.

- *One FrameMaker MIF File Per Page*

  This option produces one FrameMaker MIF file per page. A *map file* is also produced, showing the translation table. See "To file / Map file" on page 320, below.

- *Import into FrameMaker* **(UNIX only)**

  If an instance of FrameMaker is found up and running, this option generates a FrameMaker MIF temporary file that will be imported into an anchored frame, placed below the current insertion point in the active FrameMaker document. If no instance of FrameMaker is found, then an attempt is made to start one with the command `maker` and create a new FrameMaker document, showing the contents of the file.

Note:

To have this print option function properly, the SDL suite and FrameMaker must run on the same computer.

Temporary files are stored on the directory designated by the environment variable `TMPDIR`. You have to set up the variable as a complete path specification such as **`setenv TMPDIR /tmp`**
To specify `TMPDIR` such as **`setenv TMPDIR .`** is not sufficient.

See also "Importing into FrameMaker (UNIX only)" on page 344 for how this option functions when multiple instances of FrameMaker are running on your computer.

- *One Interleaf IAF File*[1]

  This format produces one Interleaf ASCII Format file. The layout of the page for IAF printing is determined by the preferences in *Frame*PaperFormat*.

- *One Interleaf IAF File Per Page*

1. IAF stands for Interleaf ASCII Format.

This option produces one Interleaf ASCII Format file per page. A *map file* is also produced, showing the translation table. See "To file / Map file" on page 320.

- *MSW Print*

  (Windows only)

  The Print function uses the printer that has been set up with the Microsoft Windows Print Manager. If a printer that does not support PostScript is used, this option makes sure the printer driver available in Microsoft Windows is used.

- *One Word DOC File*

  (Windows only)

  This option produces one Word Document format file for use with Microsoft Word 97 or Word 2000. The layout of the page for Word printing is determined by the margins and paper format as defined when a new document in Word is created.

- *Word Files (DOC + EMF)*

  (Windows only)

  This option produces one Word Document format file that is a hub for a set of Enhanced Metafiles. When you select this option you also have to specify the main Word Document file in the *To file* text field. The produced Enhanced Metafiles are auto-named and placed in the same directory as the main Word Document file.

- *Web Files (HTML+PNG)*

  This option produces HTML (text) and PNG (picture) files that can be viewed in a web browser. The PNG file format is similar to the GIF file format and is supported by Netscape Navigator 4.0 and Microsoft Internet Explorer 4.0 or later. When you select this option, you also have to specify the main HTML file in the *To file* text field. All other produced files are auto-named and placed in the same directory as the main HTML file.

To file / Map file

If this radio button is turned on, the output will be a file. The name of this radio button depends on the format specified in the *Format* option menu. If the format selected will generate one output file – i.e. the for-

mat name ends with *Per Page* – the name will be *Map file*. Otherwise it will be *To file*.

A map file contains a translation scheme of all files generated (containing information about SDL diagram / page and the corresponding printout file). The naming algorithm of the generated files will ensure a fixed mapping between a diagram and the generated files between two subsequent Print jobs. However, if the input to the Print function is changed (its size!), this is not necessarily true.

See "Map File" on page 341 if you want detailed information on the syntax of a map file.

- When you click the folder button, a *Select File* dialog will be issued. In this dialog you may select the name of the file and where it is to be saved.
- It is also possible to type the name of the file directly into the text field. The directory where the file will be saved is the most currently selected.

Execute

If this radio button is on, the output file will be used as input to an OS command. An example of this is to load a printer with a PostScript file. It may also be used to send the resulting PostScript code to a PostScript previewer. For instance, if type a previewer command in the field – `ghostview` for example – you may preview the PostScript file.

The command `lpr` (or any other related) will send the printout to a printer.

The default command is specified in the *Preference Manager*. In the **Windows** version, the command `lpr` is available, which functions much like the corresponding UNIX print spool command.

Setup

When you click the *Setup* button (only available in an SDL suite tool *Print* dialog), a *Print Setup* dialog will be issued. In the dialog, it is possible to set additional options. The additional options differ between the the SDL suite tools. See "Print Setup Dialogs" on page 328 for more information.

The *Print TTCN* Dialog in the Organizer

To print one or more TTCN documents from the Organizer, you select one of the TTCN document in the Organizer and then you select *Print* from the Organizer *File* menu. This will issue the Organizer *Print TTCN* dialog.

When you print a TTCN document, the main difference between printing from the Organizer and printing from the TTCN suite is:

- If you have more than one TTCN document included in the Organizer, you may select which of the documents to print. In the TTCN suite, it is only possible to print a document that is displayed in the active Browser.

See also "The Print Dialogs in the TTCN Suite" on page 324.

The Organizer *Print TTCN* dialog contains options for the print range and first page number and whether the document is to be printed to a file or a printer. More options are available in the *Print TTCN Setup* dialog.

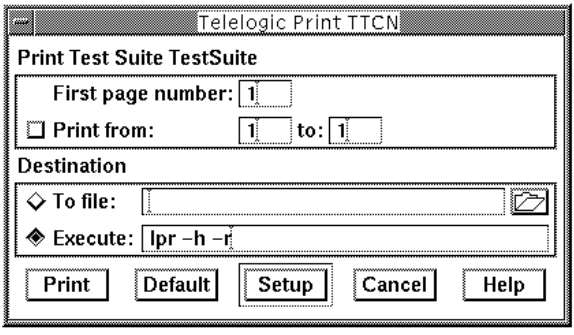


Figure 81 The Organizer Print TTCN dialog

First page number

The number that you type in this field, will be the page number inserted on the first page.

Print from/to

It is possible to exclude a number of pages form a printout. To specify the print range, you type the page numbers in the *Print from* and *Print to* fields. Make sure that the toggle button is on, your settings will have no effect otherwise.

When the toggle button is off, all physical pages that constitute the printout will be generated.

Destination Area

The options in the *Destination* area affects the destination of the printout.

To file

If this radio button is on, the printout will be a PostScript file. You also have to specify the name of the file and where it is to be saved.

- When you click the folder button, a *Select File* dialog will be issued. In this dialog you may select the name of the file and where it is to be saved.
- It is also possible to type the name of the file directly into the text field. The directory where the file will be saved is the most currently selected.

Execute

If this radio button is on, the output file will be used as input to an OS command. An example of this is to load a printer with a PostScript file. It may also be to send the resulting PostScript code to a PostScript previewer. For instance, if type a previewer command in the field – `ghostview` for example – you may preview the PostScript file.

The command `lpr` (or any other related) will send the printout to a printer.

Setup

When you click the *Setup* button, a *Print Setup* dialog will be issued. In the dialog, it is possible to set additional options, such as which of the existing TTCN documents to print. See "Print Setup Dialogs" on page 328 for more information.

The Print Dialogs in the TTCN Suite

To print from the TTCN suite:

- Select *Print* from the *File* menu. (**On UNIX**, this menu choice is included in the Browser.)

  – **In Windows**, if the test suite overview has not been generated previously, you will have to confirm the generation before the test suite can be printed.

  In the *Print* dialog that will be opened, you may specify the page range and if the file is to be printed to a file or a printer. The output will be in TTCN-GR format – the graphical format of TTCN – according to ISO/IEC 9646-3, and it will include document indices and automatic page numbers.

When you print a TTCN document, the main difference between printing from the Organizer and printing from the TTCN suite is:

- If you have more than one TTCN document included in the Organizer, you may select which of the documents to print. In the TTCN suite, it is only possible to print a document that is currently displayed in the active Browser.

See also "The Print TTCN Dialog in the Organizer" on page 322.

Printing in the TTCN Suite in Windows

In Windows, the print dialogs are Windows standard. Besides the actual *Print* dialog there are also *Print Setup* and *Print Preview* dialogs.

To open a *Print Setup* dialog:

- Select *Print Setup* from the *File* menu.

  In the dialog, it is possible to specify what printer, paper size and paper orientation to use.

To open a print preview dialog:

- Select *Print Preview* from the *File* menu.

  In the dialog, the TTCN document is displayed as it will be printed and it is possible to zoom and browse the document.

Printing in the TTCN Suite on UNIX

On UNIX, you can select which Browser parts and items, for example a single table or sets of tables, to include in the printout. The selections may be arbitrary – they will be printed as a coherent document anyway. It is also possible to change the page numbering of the printout.

The settings in the print dialog will be described below:

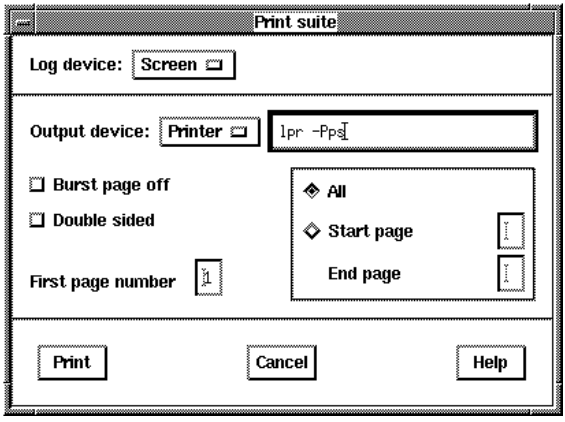


Figure 82: The TTCN suite Print dialog **on UNIX**

- *Log device*

  Controls the log device for the print function. The default value is *Screen*, but the log can be directed to a named file (*File*) or turned off altogether (*None*).

  For more information, see "The TTCN Suite Logs" on page 6 in chapter 1, *User Interface and Basic Operations*.

- *Output device*

  If you specify the output device to be a printer, you also have to fill in a print command. If you want to print to a file, you will have to specify the destination. See also "Printing PostScript Files" on page 326.

- *Burst page off*

  If this option is set, the burst page will not be printed. The burst page is a generated, unnumbered cover page for the TTCN document, containing the print date and time.

- *Double sided*

  If this option is set, the TTCN document will be printed in a page format suitable for a double-sided copying, otherwise it will be printed in a single-sided format. The appearance of both formats is controlled by resources and can therefore be changed (see the file `<Itex.sample>` in the TTCN suite directory).

- *First page number*

  You may change the page number of the first page. However, to ensure consistency between the page numbering of the printed TTCN document and the page numbers that appear in the TTCN document overview, make sure that:

  – The Overview Part is generated before you print.

  – The same first page number is used both in the document overview and the printout.

- Printing page ranges

  – *All* causes all pages of the document to be printed.

  – *Start page* and *End page* restricts the printout.

Example 13 ----------

If a TTCN document contains ten pages numbered 1 to 10, then *Start page* = 3 and *End page* = 3 will cause only page 3 to be printed.

Printing PostScript Files

The editable field of the *Print* dialog not only allows to change the name of the printer or to apply flags to the print command. It is also possible to insert the name of a filter for the produced PostScript code. In the public domain there exist a package of programs called `pstools` that make various magic operations with a PostScript file. The following example will print four TTCN suite pages on each A4 page (the syntax of `pstops` is somewhat hard to read though):

Example 14 ----------

```
pstops '4:0@0.5(0.8cm,14cm)+1@0.5(10.5cm,14cm)\
+2@0.5(0.8cm,0cm)+3@0.5(10.5cm,0cm)' | lpr
```

Other filters are able to print double sided intended to bind into a book, print odd pages first etc.

By using a PostScript viewer as Ghostview instead of the normal print command, the printout of the TTCN document can be viewed on screen rather than being printed:

Example 15 ----------

```
ghostview -
```

The text in this field is controlled by the resource `Itex.print.commandPrefix`. This is by default `lpr -P` or `lp -s` depending on platform but can be altered (note that the content of the environment variable PRINTER/LPDEST is concatenated to this string). See chapter 30, *Customizing the TTCN Suite (on UNIX)* which contains a description on how to modify resources in the TTCN suite.

Print Setup Dialogs

A *Print Setup* dialog will be issued when you click the *Setup* button in an SDL suite tool *Print* dialog, or when you click any of the setup buttons in the *Contents* area of the Organizer *Print* dialog. When you click the *Setup* button in the Organizer *Print TTCN* dialog, the *Print TTCN Setup* dialog will be issued. The settings in a setup dialog will affect the current group of documents.

The setup dialogs look somewhat different depending on the tool they are invoked from. There are four types of print setup dialogs:

- *Print Setup* dialog for Table of contents in the Organizer, see Figure 83.
- *Print Setup* dialog in the SDL, OM, SC and HMSC Editors and, when applicable, in the Organizer, see Figure 84.
- *Print Setup* dialog in the MSC Editor, see Figure 85.
- *Print Setup* dialog in tools not mentioned above and, when applicable, in the Organizer, see Figure 86.
- *Print TTCN Setup* dialog in the Organizer, see Figure 87.

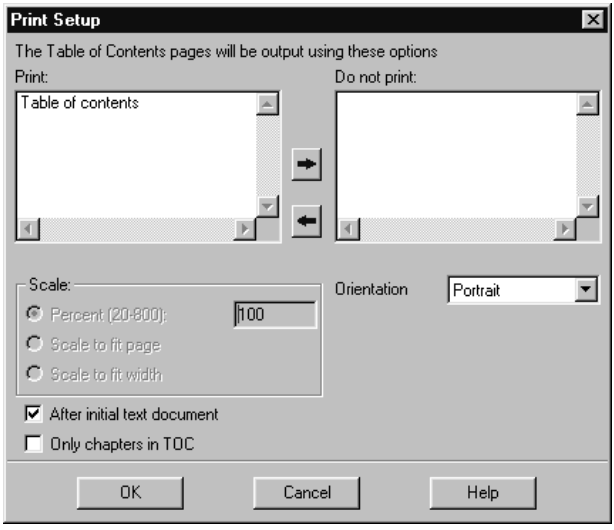


Figure 83: The Table of contents Print Setup dialog

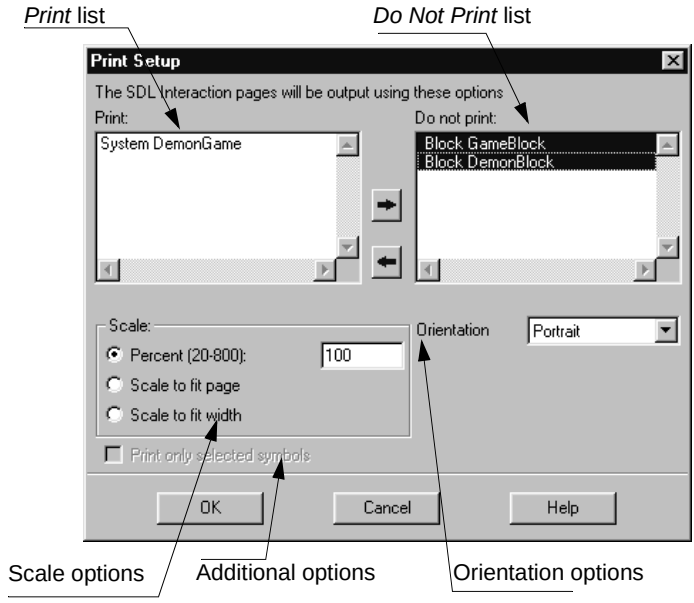


Figure 84: The Organizer Print Setup dialog

The Print Setup dialog looks the same in the Organizer and the SDL, OM, SC and HMSC Editors.

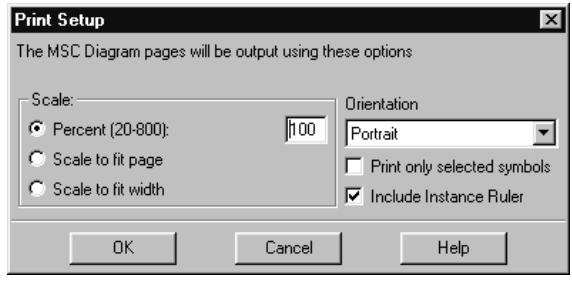


Figure 85: The MSC Editor Print Setup dialog

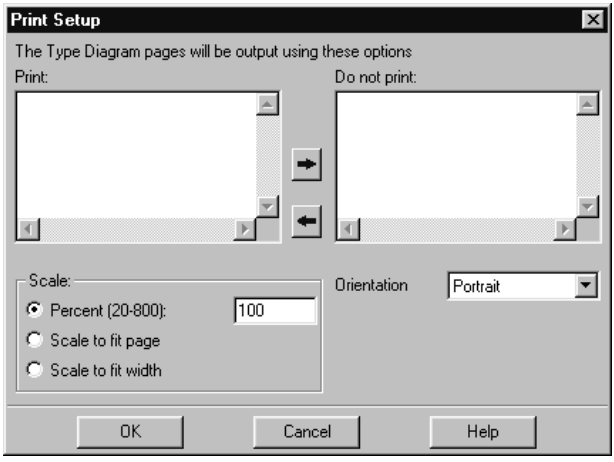


Figure 86: A viewer Print Setup dialog

The Print Setup dialog looks the same in the Link Manager, Type Viewer, the Index Viewer, the Coverage Viewer and the Text Editor.

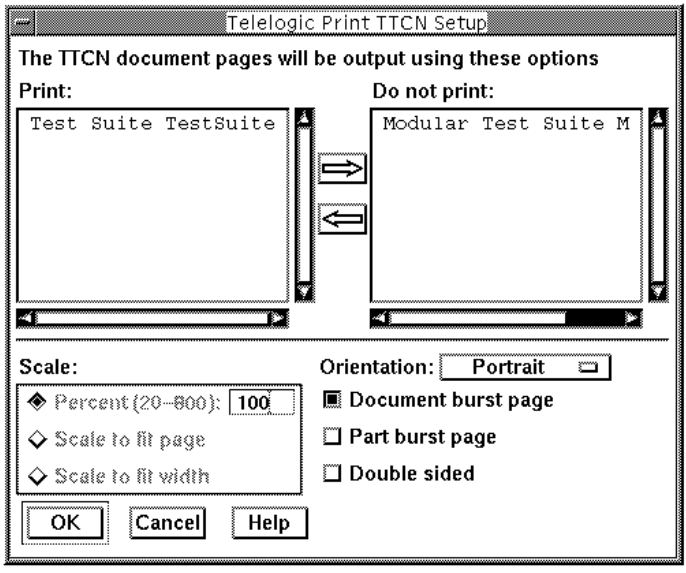


Figure 87 The Organizer Print TTCN Setup dialog

The setup dialogs contain the following:

- All dialogs contain the *Scale* area, the *Orientation* option menu, and the *OK*, *Cancel* and *Help* buttons.
- When applicable, the SDL, HMSC, OM and SC Editor and the Organizer *Print Setup* dialogs, as well as the Organizer *Print TTCN Setup* dialog, also contain the *Print / Do not print* lists.

  The lists are only included in the *Print Setup* dialog of an editor if the diagram that is to be printed consists of more than one page.

  In the Organizer, the *Print Setup* dialog will not contain the lists if you clicked the *Link Manager View* setup button.
- The *Print only selected symbols* toggle button is included in the SDL, HMSC, OM and SC Editor *Print Setup* dialogs.
- The MSC *Print Setup* dialog contains the *Include Instance Ruler* toggle button. This button is also included when MSC setup is invoked from the Organizer *Print* dialog.
- The Organizer View *Print Setup* dialog contains the *Paper page references* toggle button.
- The Table of contents *Print Setup* dialog contains the toggle buttons *After initial text document* and *Only chapters in TOC*.
- The *Print TTCN Setup* dialog contains the toggle buttons *Document burst page*, *Part burst page* and *Double sided*.

All areas and options mentioned will be explained below.

Print / Do not print

- The *Print* list shows the documents/pages that will be printed.

  If the *Print Setup* dialog is invoked from the Organizer, the list contains the documents included in the Organizer scope of print. When the dialog is invoked from the SDL, OM, SC or HMSC Editor, the list contains the current page.

  In the *Print TTCN Setup* dialog, this list shows the TTCN document that was selected in the Organizer (or all TTCN documents within a TTCN Module). Any other TTCN documents are listed in the *Do Not Print* list.

- The *Do not print* list shows the documents/pages that will not be printed.

  When invoked from the SDL, OM, SC or HMSC Editor, the list contains the pages that are included in a diagram, except the current page.

To specify what is to be printed and not:

1. Select one or several items in one of the lists, if you want to move them to the other. Multiple selection is possible.

2. Use the arrow buttons to move selected items from one list to the other.

> **Note:**
>
> **On UNIX**, you may transfer **all** diagrams/pages between the two lists by pressing `<Shift>` while clicking an arrow button.

Scale

It is possible to set the scale in almost all *Print Setup* dialogs. You can select *Percent*, *Scale to fit page* or *Scale to fit width*.

> **Note:**
>
> It is not possible to set the scale in the Text Editor *Print Setup* dialog or in the Organizer *Print TTCN Setup* dialog.

Percent

With the *Percent* radio button on, the printout of the current document category will be scaled according to the value defined in the *Percent* text field. The default value is 100% but you may of course change this.

Scale to fit page

With the *Scale to fit page* radio button on, the printout will be rescaled – if needed – to fit the physical paper size.

Scale to fit width

With the *Scale to fit width* button on, the documents will be rescaled in order to fit the physical paper width. The result becomes a column of pages constituting each document.

Orientation

In the *Orientation* options menu you may choose between the following orientations of the printout:

- *Portrait*
- *Landscape*

By changing the options, you can rotate the printout in order to optimize paper use.

> **Note:**
>
> The Orientation option is only enabled for the output formats One PostScript File or MSWPrint. Other formats use the portrait orientation but the layout can be adjusted by the preferences Print*Frame*XXX.

Additional Options

Below the *Orientation* option, there are a number of additional options, depending on which *Print Setup* dialog you have opened.

Print only selected symbols

If this toggle button is on, only objects that are selected in a window will be printed. This option is not available when you print from the Organizer. In an SDL suite tool, it is disabled if no object is selected or if more than one window contain a selection.

Include Instance Ruler

This toggle button is only available in the MSC *Print Setup* dialog. It specifies whether an instance ruler (see "Instance Ruler" on page 1680 in chapter 40, *Using Diagram Editors*) should appear on each printed page or not. The instance ruler is, when printed, given an appearance similar to the one shown in the MSC Editor window.

Paper page references

This toggle button is only available in the Organizer View *Print Setup* dialog. It specifies whether paper page references to all printed diagrams and documents should be included in the Organizer view listing.

After initial text document

This toggle button is only available in the table of contents *Print Setup* dialog. It specifies whether the table of contents should be printed after a plain text document placed first among the diagrams and documents that are to be printed. The initial text document then acts as a title page before the table of contents.

Only chapters in TOC

This toggle button is only available in the table of contents *Print Setup* dialog. It specifies whether only the chapters in the Organizer view should be included in the table of contents, or if all diagrams and documents also should be included.

Document burst page

This toggle button is only available in the Organizer *Print TTCN Setup* dialog. If the toggle is on, a document burst page will be printed. The burst page is an unnumbered cover page for the TTCN document, where the name of the test suite and the print date are printed.

Part burst page

This toggle button is only available in the Organizer *Print TTCN Setup* dialog. If the toggle is on, part burst pages will be printed. The part burst pages are unnumbered cover pages, that separate the different parts of a TTCN document. The name of the part, the test suite and the print date, are printed on each part burst page.

Double sided

This toggle button is only available in the Organizer *Print TTCN Setup* dialog. If the toggle is on, the TTCN document will be printed with a page format suitable for a double-sided copying. The appearance is controlled by resources and can therefore be changed (see the file `Itex.sample` in the TTCN suite directory of the Telelogic Tau installation).

Footer and Header Files

You may specify if a header and/or footer is to be inserted on each printed page. The first thing you have to do is to define the header and footer in separate text files. The format is ASCII based and line oriented. A number of variables are available, providing additional information of the kind of diagram printed.

Text is written on a white background, which becomes visible if the text appears on top of any graphical object.

Printing Order

The priority order for writing headers and footers is as the inverse order in which the items appear in the file. That is any text, variable or graphical symbol, overwrites an already written item. (The last row in the file has the highest priority).

Syntax

The syntax used in the header and footer files is given below in a BNF notation:

```
File            ::= ( <LINE> | <EXTENSION-LINES> |
<EPSF> ) *
<LINE>          ::= <X> <Y> ( <TEXT> | <VARIABLE> )
+ \n
<X>             ::= integer, x - position in
millimeter
<Y>             ::= integer, y - position in
millimeter
<TEXT>          ::= any ASCII text - no newlines
allowed
<VARIABLE> ::= any variable as described  in
"Variables" on page 336,
<EXTENSION-LINES> ::= any of the extensions as
defined in "Extensions" on page 338.
<EPSF>          ::= EPSF <X> <Y> <FILE>
<FILE>          ::= user provided filename
containing EPS code
```

Note:

The positions are relative the **upper left corner** of the physical paper in the header and the **lower left corner** in the footer.

Variables

The following variables are supported in header and footer files:

Variable	Explanation
<date>	As set by the Print preference *date*.
<diagramname>	The name of the diagram. Ignored if the printed diagram was not one of: • SDL diagram • SDL Overview diagram • MSC.
<diagramtype>	The type of the diagram. Ignored if the printed diagram was not one of: • SDL diagram • SDL Overview diagram • MSC.
<pagename>	The logical name of current page. Ignored if the printed diagram was not one of: • SDL diagram • SDL Overview diagram.
<file>	The current file being printed. Ignored if no corresponding file exists. It could be a *New* (unsaved) file being printed or it could be a *Type View* which has no corresponding file.
<page>	The current page number.
<directory>	The directory where the current file is located. Ignored if no corresponding file exists. It could be a *New* (unsaved) file being printed or it could be a *Type View* which has no corresponding file.
<chaptername>	The current chapter name, defined by a chapter symbol in the Organizer View.
<chapternumber>	The current chapter number, defined by a chapter symbol in the Organizer View.
<totalpages>	The total number of printed pages, excluding the title page and the table of contents.

Obsolete Variables

(i.e. variables used in SDT 2.3)

Variable	Explanation
`<area>`	Prints *Work Area* or *Original Area* in plain text depending on if the diagram was found in the source directory or not. The variable is available for backwards compatibility only.

Example 16 ––

For example, you may have a process called Myproc that you are going to print out. First you write a footer file with the following contents:

```
10 20 Telelogic AB
10 15 <date>
150 15 <diagramtype> <diagramname> <pagename>
180 20 Page <page>
```

If the date is March 1, 1999, the 15th printed page would look something like this:

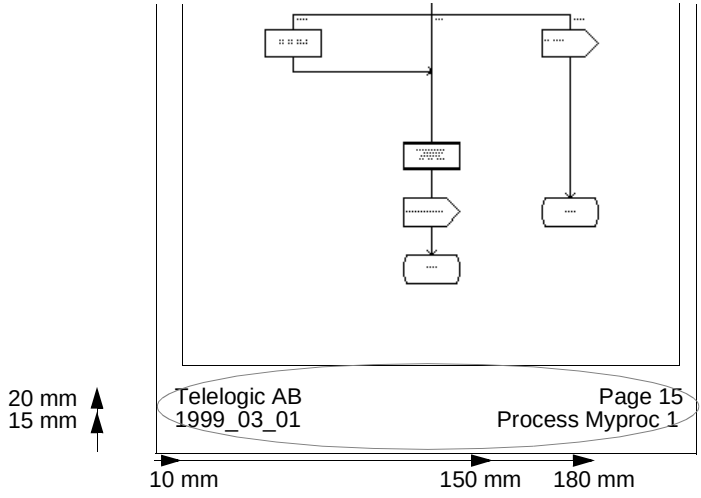


Figure 88: The resulting footer

––

Extensions

Below are listed the extensions that enhance the appearance of the header and footer.

Frames

The keyword `FRAME` makes a frame appear at any position on the paper. The function is intended for framing the header and/or footer.

Format

The exact format is:

```
FRAME x1 y1 x2 y2 [type]
```

where the start and stop positions are given in millimeters. The optional type argument may be either `3D` or `plain` (default).

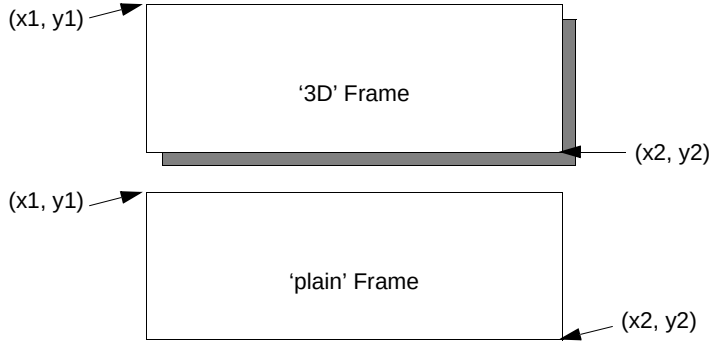


Figure 89: 3D frame and plain frame

Separators

A separator is a horizontal line which is intended to separate the header and/or footer from the data area of a printed page.

Format

The SEPARATOR statement has the general format:

```
SEPARATOR x1 y1 length [type]
```

where the start position and length of the separator are given in millimeters. The optional type argument may be either:

- Filled
- Double
- Single (default)

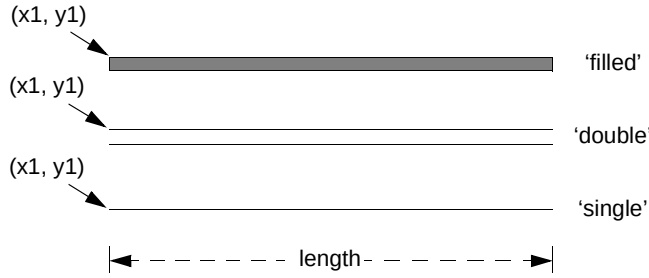


Figure 90: Filled, double and single separators

Boxes

Use the BOX keyword to make a filled rectangle appear anywhere on the paper. It can be used for highlighting sections of the header and/or footer.

Format

The format is:

```
BOX x1 y1 x2 y2 [grayscale]
```

where the start and stop positions are given in millimeters. The optional grayscale argument is a number in the range 0 to 100 (default is 50).

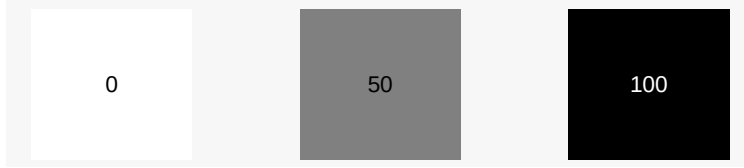


Figure 91: Boxes

Grayscale=0 = white, grayscale=50 = medium gray and grayscale=100 = black.

Defining Multiple Footers and Headers

It is possible to have a separate footer or header for the first printed page. There are three keywords that can be typed on a separate line in a footer or header definition file to achieve this:

- IFFIRST

Definitions after this keyword will only be used for the first printed page.

- IFNOTFIRST

Definitions after this keyword will be used for all pages after the first page, but not for the first page.

- ENDIF

Definitions after this keyword will be used for all pages.

Map File

When multiple output files are generated for one input diagram, a map file is also generated. It shows the translation table between input diagrams and resulting files. The name of this file should be specified in the *Map file* field.

Syntax

The map file is an ASCII text file containing lines of the format:

```
<filename> "[<diagram type>]" "[<diagram name>]"
"[<page name>]"
```

where `<filename>` is an absolute path to a generated file. The file name is composed of:

- the first four letters of the diagram name (fewer if the diagram name is shorter than four letters)
- the first two letters of the page name
- an extension.

If this naming scheme generates two files with the same name, a number (1-99) is added to the second file name, preceding the extension.

Example 17: Contents of a UNIX Map File ––––––––––––––––––––

```
...
/usr/ope/doc/ContDe.eps "Block" "Controller"
"Declarations"
...
/usr/ope/doc/ContDe1.eps "Block" "Container"
"Declarations"
...
```

Example 18: Contents of a Windows Map File––––––––––––––––––

```
...
C:\tau\doc\ContDe.EPS "Block" "Controller"
"Declarations"
...
C:\tau\doc\ContDe1.EPS "Block" "Container"
"Declarations"
...
```

––

Should either of the descriptive `<diagram type>`, `<diagram name>` or `<page name>` fields be inapplicable to an item, the corresponding field in the map file will be empty (i.e. “”).

More Information on Output Formats

PostScript Output

PostScript output may be generated as one standard PostScript file or one or more Encapsulated PostScript (EPS) files. When multiple EPS files are generated, a translation table will also be produced in a *Map File*, linking the name of a generated file to the contents.

Standard PostScript

A normal print operation generate one PostScript document. All data is represented uniformly, using the same paper format, header, footer etc. Only the scale and orientation might vary between pages.

Encapsulated PostScript (EPS)

The EPS output makes use of the scale and orientation settings for each document category. Since EPS files are not clipped, the internal scale has little importance when the file is imported into an external documentation or desktop publishing system.

Header, footer and adjacent page markers are not included in the output. Paper layout are determined from the Print preferences *Frame*Paper-Format*.

Scaling in EPS Files

The scaling options are handled as follows:

- *Scale to fit page*

  Each logical page is output as one EPS file with an internal scale adjusted to fit the entire logical page into the bounding box given by the current paper format and margins. When the EPS files are scaled into external documentation software, this will correspond to the “Fit Into Page” option for PostScript files.

- *Percent*

  As *Scale to fit page*, but with a user defined internal scale.

- *Scale to fit width*

As *Scale to fit page*, but with the internal scale adjusted to fit the width of the logical page into the space given by the paper width and the left and right margins.

Handling of Expanded Text in PostScript

Expanded texts are the text contained in such symbols that are minimized[1] in a graphical page, see "Text / Additional Heading / Package Reference Symbols" on page 1825 in chapter 44, *Using the SDL Editor*.

Standard PostScript

Expanded text is output as plain text using the font specified by the `SDT*PrintFontFamily` and `SDT*PrintTextHeight` preferences.

Encapsulated PostScript

Expanded text in EPS output is stored on separate files. One text file is generated for each logical page containing expanded text, regardless of the number of expanded texts in that logical page.

- When generating multiple EPS files, the text file for a logical page called `<x>.eps` will be `<x>.exp`.
- When printing to one EPS file, the text file for `<x>` will be `<x>.exp`.

PostScript Standard Conformance

The generated PostScript code conforms to either of these standards:

- PostScript Language Document Structuring Conventions - Version 3.0
- Encapsulated PostScript File Format - Version 3.0.

FrameMaker Output

FrameMaker output may be generated either as:

- One MIF[2] file containing *cropped anchored frames*
- One or more MIF files containing one logical page each

1. Meaning resized to a minimal size.
2. MIF stands for Maker Interchange Format.

The generated pages are the same in both cases. A translation table is also generated in the latter case.

- One temporary MIF file that can be imported directly into FrameMaker. See "Importing into FrameMaker (UNIX only)" on page 344.

Depending on the scale setting (see "Scaling in EPS Files" on page 342), each logical page will be represented as one or more *cropped anchored frames* in the output.

Header, footer and adjacent page markers are not included in the output. Paper layout are determined from the Print preferences *Frame*Paper-Format*.

Handling of Expanded Text in MIF

Expanded text (see "Handling of Expanded Text in PostScript" on page 343 for an explanation) is inserted as plain text after the anchored frames generated for the corresponding logical page. In order to preserve the appearance of the users original text, hard returns are inserted where new lines are found.

MIF Conformance

The generated MIF files conform to FrameMaker Interchange Format version 4.00, which can be read into FrameMaker version 4.x, 5.x and 6.x without problems.

Importing into FrameMaker (UNIX only)

The X Window root window has an atom (property) that governs how FrameMaker communicates with Telelogic Tau. The name is arbitrary, but must defined both in Telelogic Tau and FrameMaker. In the example below, the name `_Frame_Tau_Import` will be used.

To have Telelogic Tau and FrameMaker behave in accordance, you should specify what resource to be used by Telelogic Tau when starting FrameMaker. The resource values should be entered in the SDT resource file (in which case all users are affected) or in a suitable user X resource file. The resource is called `sdtfmimp*rpcProp`.

Example 19: X Resource file sample ––––––––––––––––––––––––––

```
...
sdtfmimp*rpcProp: _Frame_Tau_Import
...
```

––

There are multiple ways to set up FrameMaker. The resource `Maker.rpcProp` may be used for this.

Interleaf Output

Interleaf output may be produced as:

- one IAF[1] file containing *anchored frames*, or
- one or more IAF files containing one logical page each.

The generated pages are the same in both cases. A translation table is also generated in the latter case.

Depending on the scale setting (see "Scaling in EPS Files" on page 342), each logical page will be represented as one or more *anchored frames* in the output.

Header, footer and adjacent page markers are not included in the output. Paper layout are determined from the Print preferences *Frame*Paper-Format*.

Handling of Expanded Text in IAF

Expanded text (see "Handling of Expanded Text in PostScript" on page 343) is inserted as plain text after the frames generated for the corresponding logical page. In order to preserve the appearance of the users original text, hard returns are inserted where new lines are found.

IAF Conformance

The generated IAF files conform to Interleaf ASCII Format version 8.0 (used in Interleaf 5).

MSWPrint Output (Windows only)

The MSWPrint output can be used on Windows to print on any Windows printer, thus this is suitable if the printer does not support Post-

1. IAF stands for Interleaf ASCII Format.

script. As the complete print output using this option will be divided into several print jobs the printing should be done only on one side of the paper, otherwise the page numbering will not be as expected.

Handling of Expanded Text in MSWPrint

Expanded text (see "Handling of Expanded Text in PostScript" on page 343) is handled the same as for standard PostScript.

Microsoft Word Output (Windows only)

Word output can be used to print as a Microsoft Word document. A complete Word document is created and the generated pages are created as enhanced metafiles.

Header, footer and adjacent page markers are not included in the output. Paper layout are determined from the defaults when creating a new Word document.

Handling of Expanded Text in Word output

Expanded text (see "Handling of Expanded Text in PostScript" on page 343) is inserted as plain text after the frames generated for the corresponding logical page. In order to preserve the appearance of the user's original text, hard returns are inserted where new lines are found.

Adding Printer Fonts (UNIX only)

By default only three printer fonts are available in printouts: Times, Courier and Helvetica. It is possible to add other printer fonts. The requirement is that there exist AFM (Adobe Font Metrics) files for the desired fonts. An AFM file contains the character metrics necessary for correct layout of text in printouts.

1. Locate AFM files for the regular, bold, italic and bold italic versions of the font. Many AFM files are available from Adobe Systems Inc. through on-line services (e.g. via ftp from `ftp.adobe.com`).
2. Store the files in the directory `$telelogic/fontinfo`.
3. Name the files according to the scheme in the table below. Note that you have to specify *<basename>* by using lower case characters (e.g. `palatino-I.afm`). Otherwise, you are free to choose any `<basename>` that does not conflict with other fonts or font files.

File contents	File name
regular font	`<basename>.afm`
bold font	`<basename>-B.afm`
italic font	`<basename>-I.afm`
bold italic font	`<basename>-BI.afm`

4. You may then choose the font as `<basename>` in the Preference Manager (case is not important in this context):

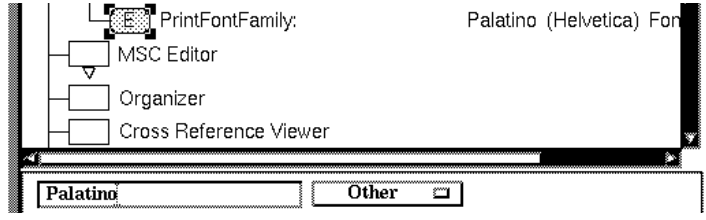


Figure 92: Specifying print font as Other.

Palatino is selected in the current example.

The generated files will use the true name of the font, extracted from the FontName and FamilyName attributes in the AFM files.

Advanced Print Facilities

This section is divided into three parts.

- The first part lists all advanced print facilities.
  See "List of Advanced Print Facilities" on page 348.
- The second part describes how to use the advanced print facilities to produce a nice printout, starting with an SDL system that is not already prepared for printing with advanced print facilities.
  See "Introducing Advanced Print Facilities" on page 359.
- The third part is about using the advanced print facilities when an SDL system is prepared for printing with advanced print facilities.
  See "Using Advanced Print Facilities" on page 373.

List of Advanced Print Facilities

The following print facilities will be described in this section:

- Headers
- Chapters
- Title Page
- State Matrices
- Index
- Fonts
- Text Indentation

Headers

You can create a textual header definition file that defines the appearance of a header that is found at the top of each printed page. All the possibilities for creating a header is described in "Footer and Header Files" on page 335, here you will only find the most important ones.

Figure 93: A header example

Creating a Header Definition File

The Organizer preference ShowHeader defines if the header symbol should be visible as default in the Organizer view. If the header symbol is not visible, you can make the symbol visible by selecting *Header File* in the *View > View Options* dialog.

Figure 94: The header symbol in the Organizer view

You can double-click on the header symbol to open a Text Editor to be able to define the header and create a header definition file. When you have defined the header (read more about some of the possibilities for that below), save the file and you are done with this step.

Defining Text in Headers

In the header definition file, insert a line like this:

```
60 20 This printout was produced by X
```

This means that 60 millimeters from the left border and 20 millimeters from the top border, the text “This printout was produced by X” will be placed.

Using Header Variables

In a header definition file, insert a line like this:

```
100 10 <page>(<totalpages>)
```

This means that 100 millimeters from the left border and 10 millimeters from the top border, a text such as “3(9)” will be placed, informing the reader of the printout that this is page three of nine.

Using Pictures in Headers

You can introduce pictures in the headers. The pictures must be in Encapsulated PostScript file format (EPSF), and they are referenced from the header definition file. If you have a picture of for instance your company logo in a file `/home/lat/logo.eps`, then you can get it into your header with the following line:

```
EPSF 10 35 /home/lat/logo.eps
```

This line means that the picture defined in the referenced file will be placed 10 millimeters from the left border, and 35 millimeters from the top border.

Separate First-page Header

You can have one header for the first page, and another header for all other pages. To achieve this, you can divide your header definition file in three parts by using three different keywords, or rather keylines:

```
IFFIRST
(Part 1. Place everything that is unique for the
first page header here.)
ENDIF

IFNOTFIRST
(Part 2. Place everything that is unique for the
other header here.)
ENDIF

(Part 3. Place everything that is common to both the
first page header and the other header here.)
```

Chapters

You can divide the diagrams and documents in your Organizer view into different chapters by using the chapter symbol. You add a chapter symbol to the Organizer view with *Edit > Add New*. In the dialog that follows, select one of the *Chapter* alternatives under the *Organizer* document type group, and specify the chapter name under *New document name*. (If you do not want to create a chapter introduction text (see below), make sure that the *Show in editor* toggle button is off before closing the dialog.)

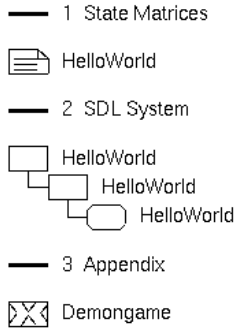


Figure 95: Chapters in the Organizer view

Chapters can be auto-numbered and can be moved with the up and down quick buttons. You can select a chapter symbol to restrict the scope for diagrams and documents that are going to be printed.

Creating a Chapter Introduction Text

It is possible to associate a text with a chapter symbol. The text will be printed at the position of the chapter symbol, and the text can be regarded as a chapter introduction text.

To create a chapter introduction text, you should invoke the Text Editor. This can be done in two ways:

- If you have not closed the *Add New* dialog, then you can bring up the Text Editor by making sure the *Show in editor* toggle button is on, before closing the dialog.
- If you have closed the *Add New* dialog, then you can double-click on the chapter symbol. In the dialog that follows, select *Edit chapter symbol*. In the second dialog that follows, make sure that the *Show in editor* toggle button is on and close the dialog to bring up the Text Editor.

In the Text Editor, type in the chapter introduction text and save the file.

Starting a New Chapter in the Middle of an SDL Diagram

For a large SDL diagram with many pages, it is convenient to divide the different pages of the diagram into different sub chapters.

To make this possible, you have to make the page symbols visible in the Organizer, if they are not visible already. This is done in the *View Options* dialog by turning on *Page Symbols.*

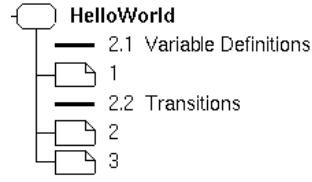


Figure 96: Chapters between SDL pages

When page symbols are visible, you can move chapter symbols into the correct place within the SDL system by using the up and down quick-

buttons. You can also create new chapter symbols directly at the correct place, by selecting the SDL symbol that the chapter symbol should be placed after, before invoking *Add New*.

Note that MSCs can be placed in the middle of an SDL system or diagram, in the same way as chapters. This is useful if you want to print an MSC close to the corresponding SDL.

Defining the Start Chapter Number

Normally, the start chapter number is 1 (or 1.1 if the first chapter symbol has the type *Chapter 1.1*.) You can change this number in the *View > Chapter Options* dialog.

Deciding Maximum Chapter Level in the Table of Contents

As default, all chapters are visible in the table of contents. If you have a lot of chapters, you can limit the number of chapters in the table of contents by using the *View > Chapter Options* dialog. A maximum chapter level of 2 will only include chapter symbols of type *Chapter*, *Chapter 1* and *Chapter 1.1* in the table of contents.

Printing a Table of Contents with Only Chapters

To print a table of contents, you have to turn on the *Table of contents* toggle button in the *Contents* section in the *Print* dialog.

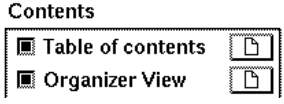


Figure 97: The Table of Contents entry in the Print dialog

As default, the table of contents includes chapters, diagrams and documents. To restrict the table of contents to just chapters, there are two ways:

- If you want to do a temporary restriction just for one printout, then there is a toggle for doing so in a sub dialog to the *Print* dialog: To get to the sub dialog from the *Print* dialog, press the setup button with a picture close to the Table of contents entry in the Contents section. In the sub dialog, turn on the toggle *Only chapters in TOC*.

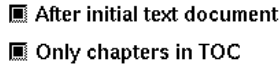


Figure 98: Part of the Print Setup dialog for Table of contents

- If you want the restriction to be more permanent, go to the *Preference Manager*. In that tool, double-click on the *Print* symbol to expand its contents, and set the value of the preference OnlyChaptersInTOC to on. Save the preferences and restart Telelogic Tau.

Title Page

A plain text document can become a title page by placing it first among the diagrams and documents that are printed. There is nothing special about a title page, except that it can be placed before the table of contents.

Figure 99: A title text document in the Organizer view

Getting the Title Page before the Table of Contents

To print a table of contents, you have to turn on the *Table of contents* toggle button in the *Contents* section in the *Print* dialog.

Normally, you do not have to do anything to get the title page before the table of contents, because the print operation will as default treat an initial text document as a title page. There is however a way to turn this on and off. This is done in the Print Setup dialog for the *Table of contents* entry in the *Contents* section in the *Print* dialog. You can get to this dialog from the *Print* dialog by pressing the setup button with a picture close to the *Table of contents* entry.

State Matrices

State Matrices are described in detail in chapter 6, *The Text Editor*. Here are only the most important things discussed, enabling you to get a nice printout of state matrices for processes in your SDL system.

Creating State Matrices

When you have a correct SDL system, you can create state matrices with the *Generate > State Overview* menu choice. A state information file (`*.ins`) will be created in your target directory, a plain text symbol connected to the file will be added in the Organizer view, and a Text Editor will pop up, acting as a State Matrix Viewer.

```
Process HelloWorld: nextstates
States
a Start state
b waiting
c stop
          |  STATES
SIGNALS   |  a    b    c
          |-------------
-         |  b
Hello     |       c
```

Figure 100: A state matrix

Filter State Matrices

The Text Editor has two menu choices that you can use to get the state matrices that you want.

- *View > State Matrix > Filter Processes*. This menu choice allows you to hide state matrices for SDL processes that you are not interested in.
- *View > State Matrix > Transition Information*. This menu choice decides the information that should be presented for transitions in your state matrices. As default, you will get two state matrices for each SDL process: One with paper page references to the corresponding SDL transition and one with nextstate information. You can with this menu choice also have state matrices with output/signal sending information and procedure call information.

The options in the two dialogs above can also be set in a more permanent way, using preferences. To do this, use these Text Editor preferences:

- StateMatrixFilter
- StateMatrixCalls
- StateMatrixNextstates
- StateMatrixOutputs
- StateMatrixPageNumbers

Printing State Matrices with Paper Page References

When you view state matrices on-line, you will not see any paper page references in a page number state matrix. All page numbers are undefined and replaced by a "*". The page numbers are only visible in your printout, and only if you print the SDL processes together with the state matrices from the Organizer.

Index

The index is described in detail in chapter 47, *The SDL Index Viewer*. Here are only the most important things discussed, enabling you to get a nice printout of an index of all SDL entities defined and used in your SDL system.

Creating an Index

When you have a correct SDL system, you can press the *Generate Index* quick button in the Organizer. This will pop up an index viewer with an index of all SDL entities defined and used in your SDL system.

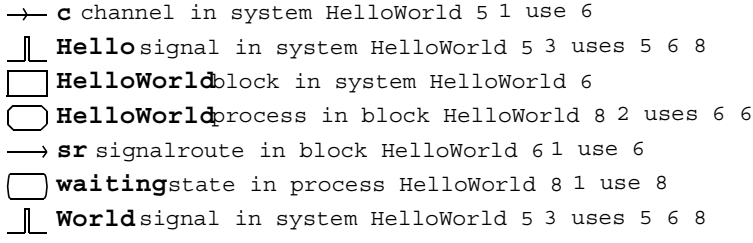


Figure 101: An SDL entity index example

Filter Index Information

The generated index may be too long to be printed in its entirety. You can make the index smaller by filtering out information that you consider unimportant.

You can filter out SDL entities defined in specific SDL diagrams. This is done with the *View > Filter Diagrams* dialog. A common use of this possibility is to filter out SDL entities defined in package Predefined.

You can filter out SDL entity types. This is done in the *View > Filter Types* dialog. For instance, if you want an index of just the signals in your SDL system, then you can use this possibility to filter out all other SDL entity types.

To make your filter more permanent than just for the current Index Viewer session, you should define your filter settings in the Preference Manager before starting the Index Viewer. These two preferences are appropriate:

- FilterDiagrams
- FilterTypes

Deciding Index Appearance

Each SDL entity in the index can be presented in four different ways. You can change the index appearance for the current Index Viewer session with the *View > Index Appearance* dialog. To make your changes more permanent, use the Preference Manager and the following preference:

- IndexAppearance

As default, the index appearance is set to *Detailed*. This setting is appropriate for on-line viewing. For a printout, it might produce unnecessary large indexes. To get a smaller index in a printout, use the *Compact* index appearance.

Printing an Index with Paper Page References

It is possible to get paper page references for both definitions and uses of SDL entities in a printout of an index. To achieve this, leave the Index Viewer window on screen while doing a printout from the Organizer that includes your SDL system and the index view.

Fonts

There are two kinds of fonts:

- Proportional fonts such as Times. These fonts have the advantage of not needing much space.
- Non-proportional fonts such as Courier. These fonts have the advantage of being useful for creating tables where it is important that the same character position on different lines are aligned.

Below, you will learn how to set up Telelogic Tau to use appropriate fonts for different uses.

Using a Non-Proportional Font in the Text Editor

State matrices are viewed and printed from the Text Editor. State matrices should be presented using a non-proportional font. To get a non-proportional font in printouts of state matrices, set the preference SDT*PrintFontFamily to Courier.

Using a Non-Proportional Font for SDL Text Symbols

Sometimes, it is convenient to make aligned tables in SDL text symbols. This requires a non-proportional font. On the other hand, you do not want a non-proportional font for all other symbols in a process diagram, because you want to squeeze as much text as possible into a flow symbol without going outside the symbol border.

You can have a separate, non-proportional font for SDL text symbols. This is achieved by setting Editor*FontText*TextSymbolFontFamily to Courier. This preference is valid both on-line and in print. All the other symbols use the fonts set by Editor*FontText*ScreenFontFamily and Editor*FontText*PrintFontFamily.

Title Fonts: Size and Boldness

The table of contents has a title named “Contents” that is always presented in bold.

Font size and boldness for chapter names in text page titles are determined by the chapter level:

- Chapter level 1 (for instance 1) uses 14 pt bold.
- Chapter level 2 (for instance 1.1) uses 12 pt bold.

- Chapter level 3 (for instance 1.1.1) uses 11 pt bold.
- Chapter level 4 (for instance 1.1.1.1) uses 11 pt, not bold.

A normal text, and a chapter without a chapter number (chapter level 0), uses the same font appearance for the title as the font used for the following text.

To get header titles in a larger font (14 pt) and with a bold text, use a header definition file with a *Title* keyword. (<#Title>, <#Title 2> or something similar.)

Text Indentation

There are three text indentation levels, and each text indentation level has a corresponding preference:

- Print*TextIndentation1. Used by text pages for presenting chapter numbers. Default: 44 mm from the left paper edge.
- Print*TextIndentation2. Used by text pages for presenting chapter names and normal text. Also used by the table of contents for presenting chapter numbers. Default: 67 mm from the left paper edge.
- Print*TextIndentation3. Used by the table of contents for presenting chapter names. Default: 90 mm from the left paper edge.

Introducing Advanced Print Facilities

In this sub section we will take a more detailed and practical look at how an ordinary SDL system can be turned into an SDL system with enhanced print facilities.

> **Note:**
>
> As default in this section, we are talking about menu choices and dialogs in the Organizer.

Initial Setup

Before starting doing print enhancements for the specific SDL system, we should set up some preferences affecting how the final printout will look like.

1. Bring up the Preference Manager with the menu choice *Tools* > *Preference Manager*.
   - To get a non-proportional font in printouts of state matrices, set the preference SDT*PrintFontFamily to Courier.
   - To get a non-proportional font in text symbols in SDL diagrams, set the preference (SDL) Editor*FontText*TextSymbolFontFamily to Courier.
2. Save the preferences and exit the Preference Manager.

The Example SDL System

We will use an SDL system called HelloWorld as an example. When we start, we have a correct SDL system that is not adapted in any way for producing a nice printout. If we just do a plain printout of HelloWorld, we will get the following:

> **Note:**
>
> The figures below are not exact copies of a printout, they have been modified slightly to fit in this manual.

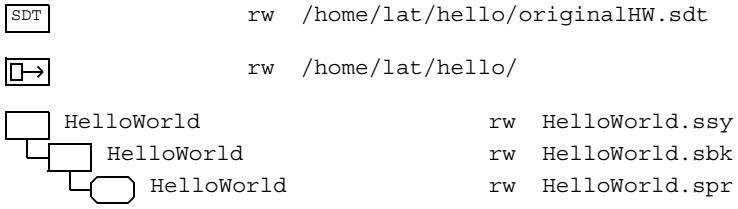


Figure 102: HelloWorld, Organizer view

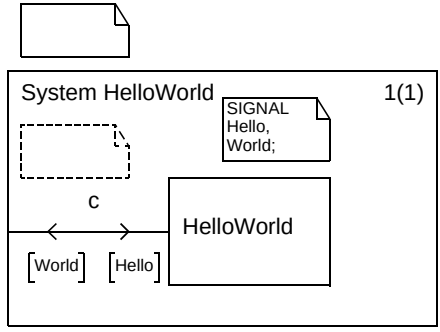


Figure 103: HelloWorld, system diagram

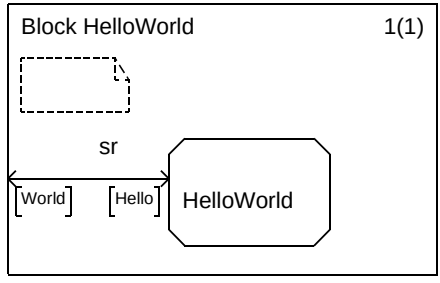


Figure 104: HelloWorld, block diagram

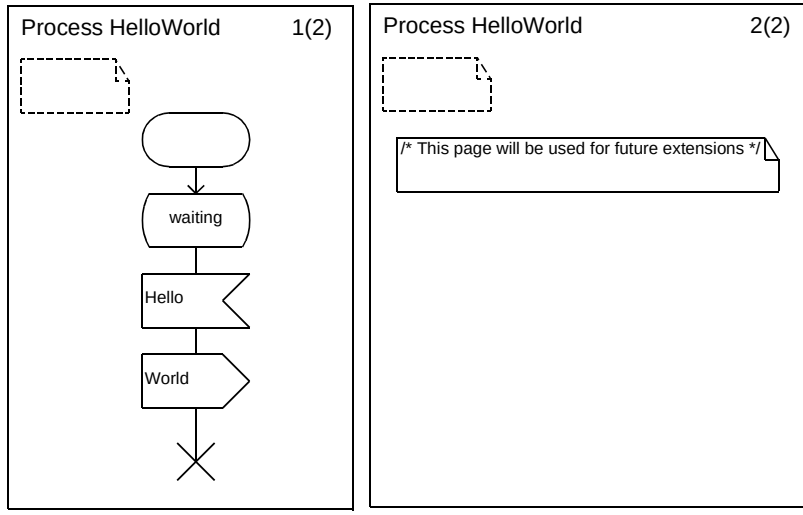


Figure 105: HelloWorld, process diagram

To get a better printout, we will add the following:

- A Header on Each Printed Page
- A Title Page
- Chapters and Sub Chapters
- State Matrices for the SDL Process
- An Index of SDL Entities

When we have done that, we will perform a print operation to actually get our enhanced printout.

A Header on Each Printed Page

The header should have the following properties:

- A separate header appearance for the first page.
- The company logo should be visible on every page.
- The header should include information about page number, total pages, chapter number and chapter name.

Fortunately, someone at our company has provided a company logo in Encapsulated PostScript format (`*.eps`), and a template header definition file. The template looks like this:

```
IFFIRST
18 28 Name of designer
ENDIF

IFNOTFIRST
183 20 <page>(<totalpages>)
90 24 Chapter <chapternumber> <chaptername>
ENDIF

EPSF 10 25 /home/lat/hello/telelogic.eps
90 20 Name of SDL system
```

Action

1. The header symbol is not visible in the Organizer view. To make it visible, bring up the *View Options* dialog and select the *Header file* item and press *Apply* and *Close*.

2. To create a new and unique header for the SDL system, double-click on the header symbol in the Organizer view.

3. In the Edit dialog that follows, we should specify the template file under *Copy existing file*. In our case, someone has put the template file in `/home/lat/hello/headerTemplate.txt`.

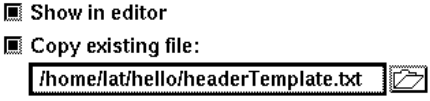


Figure 106: Specifying the template header file in the Add New dialog

4. When we close the Edit dialog, the text editor pops up with a copy of the template header file.

5. To get a unique header for our SDL system, we change the following things:

```
Name of designer -> Lars Tufvesson
Name of SDL system -> HelloWorld
```

6. When that is done, we save our specialized header file in the same directory as our SDL diagrams.

A Title Page

A title page is a plain text document that is placed first among all printed pages and documents.

Action

1. We should add a new plain text document to our SDL system. To make sure it is placed first, select the header symbol before invoking *Add New*.

2. In the Add New dialog, set the document type to *Plain Text* and set the document name to *TitlePage*.

3. When you close the dialog, the Text Editor pops up. Type in an appropriate title page text (like the one below) and save the text file in the same directory as the SDL diagrams.

```
******************
*System HelloWorld*
******************

A revolutionary SDL system software package
```

Chapters and Sub Chapters

We would like to divide our diagrams and documents in three chapters:

- The first chapter contains state matrices for the SDL process(es).
- The second chapter contains the SDL system.
- The third chapter is an appendix that contains the index of SDL entities.

The second chapter will be further divided into two sub chapters. Each chapter and sub chapter should have a chapter introduction text.

Action

1. We would like to place the first chapter directly after the title page text symbol. Select the title page text symbol and bring up the *Add New* dialog.

2. Set the document type to *Organizer > Chapter 1*, and the document name to *State Matrices*.

3. When you close the dialog, the Text Editor will pop up. Type in an appropriate chapter introduction text (like the one below) and save the text file.

```
This chapter contains two state matrices for the
SDL process: One with page numbers to the SDL
process and one with nextstate information.
```

We will produce the state matrices for this chapter in the next sub section. For now, we leave this chapter empty.

4. We introduce a second chapter for the SDL system. Select the *State Matrices* chapter symbol and bring up the *Add New* dialog. Set the document type to *Organizer > Chapter 1*, and the document name to *SDL system*. When you close the dialog, the Text Editor will pop up. Type in an appropriate chapter introduction text (like the one below) and save the text file.

   ```
   In this chapter, you will find the actual SDL
   system.
   ```

5. The SDL system chapter should have two sub chapters for the SDL process. To be able to begin a chapter between two pages in one SDL diagram, we must make page symbols visible in the Organizer. This is done in the *View Options* dialog by selecting *Page symbols* and pressing *Apply* and *Close*.

6. The first sub chapter should begin where the process diagram begins. Select the process diagram symbol and bring up the *Add New* dialog. Set the diagram type to *Organizer > Chapter 1.1*, and the document name to *First process page*. When you close the dialog, the Text Editor will pop up. Type in an appropriate chapter introduction text (like the one below) and save the text file.

   ```
   In this sub chapter, the first process page will be
   defined.
   ```

7. The second sub chapter should be placed between the two pages of the SDL process. Select the first process page symbol and bring up the *Add New* dialog. Set the diagram type to *Organizer > Chapter 1.1*, and the document name to *Second process page*. When you close the dialog, the Text Editor will pop up. Type in an appropriate chapter introduction text (like the one below) and save the text file.

   ```
   In this sub chapter, the second process page will be
   defined.
   ```

8. Finally, we should have an appendix chapter for the index of SDL entities. This chapter should be placed last in the Organizer view.

Select the last symbol in the Organizer and bring up the *Add New* dialog. Set the diagram type to *Organizer > Chapter 1*, and the document name to *Appendix*. When you close the dialog, the Text Editor pops up. Type in an appropriate chapter introduction text (like the one below) and save the text file.

```
The appendix contains an index of all SDL entities.
```

State Matrices for the SDL Process

The Organizer can with the help of the Analyzer generate a state overview information file (`*.ins`). The file is placed in the target directory. The Text Editor can display this file as state matrices.

Action

1. First, we should set the target directory to an appropriate directory where we can allow Telelogic Tau to create files. Bring up the *Set Directories* dialog and type in an appropriate target directory. When that is done, close the dialog.

2. Select the SDL system diagram and invoke the state overview information file generation with *Generate > State Overview*. The Analyzer will check your SDL system and produce some files in the target directory. One of these files is the `*.ins` file.

3. When the Analyzer is ready, the Text Editor will pop up, showing you the state matrices created from the information in the state overview file (`*.ins`). When you have examined the state matrices, exit the Text Editor.

4. The plain text symbol connected to the `*.ins` file should be placed in the first chapter instead of in the same chapter as the SDL system. To move the plain text symbol for the `*.ins` file to the correct location, select the symbol and use the up quick button as many times as required to get the symbol into the first chapter.

An Index of SDL Entities

We would like an index of SDL entities defined in our SDL system last in the printout. The Organizer can with the help of the Analyzer produce a cross reference file. The Index Viewer can present the information in the cross reference file as an index. To keep the size of the index small,

we filter out some SDL entities and we present the index in an as compact way as possible.

Action

1. Make sure that the target directory is set to an appropriate directory where the Analyzer can create some files.
2. Select the SDL system diagram symbol and press the *Generate Index* quick button. The Analyzer will check your SDL system and generate some files in the target directory. One of the files is named `*.xrf` and contains the cross reference information. The Index Viewer pops up when the Analyzer is ready, and presents the cross reference information as an index.
3. If you examine the index, you will notice that there are a lot of SDL entities defined in *package Predefined*. Let us assume that we are not interested in these SDL entities. To get rid of them, we bring up the *Filter Diagrams* dialog and select *package Predefined*. When the dialog is closed, our Index will be much smaller.
4. To get an even smaller index, bring up the *Index Options* dialog and set the index appearance to *Compact*.
5. Now, the index is ready for printing. Since there is no symbol in the Organizer view for the cross reference file, we have to leave the Index Viewer window open until we have completed the print operation.

Performing the Print Operation

Now, everything is in place to do the actual print operation.

Action

1. Make sure you have no selection in the Organizer. This can be done by clicking somewhere outside a symbol or text line. This is done to tell the Organizer that we want to print everything, and not just what we have selected.
2. Bring up the *Print* dialog.

3. Make sure that the following entries in the Contents area are selected:

   – Table of contents
   – Organizer View
   – SDL Interaction
   – Text Diagram
   – Index View

   No other entries in the Contents area should be selected.

4. Bring up the *Table of contents* setup dialog with the picture button close to the *Table of contents* entry. In the setup dialog, make sure that both *After initial text document* and *Only chapters in TOC* are both selected. Close the setup dialog.

5. Make sure that the header file check button is on.

6. Make sure that the settings in the Destination area are appropriate.

7. Click the *Print* button. We will get a printout, looking approximately as the figures below.

HelloWorld

Lars Tufvesson

```
********************
*System HelloWorld*
********************
A revolutionary SDL system software package
```

Figure 107: The title page

HelloWorld ii(12)
Chapter

Contents

Figure 108: The table of contents

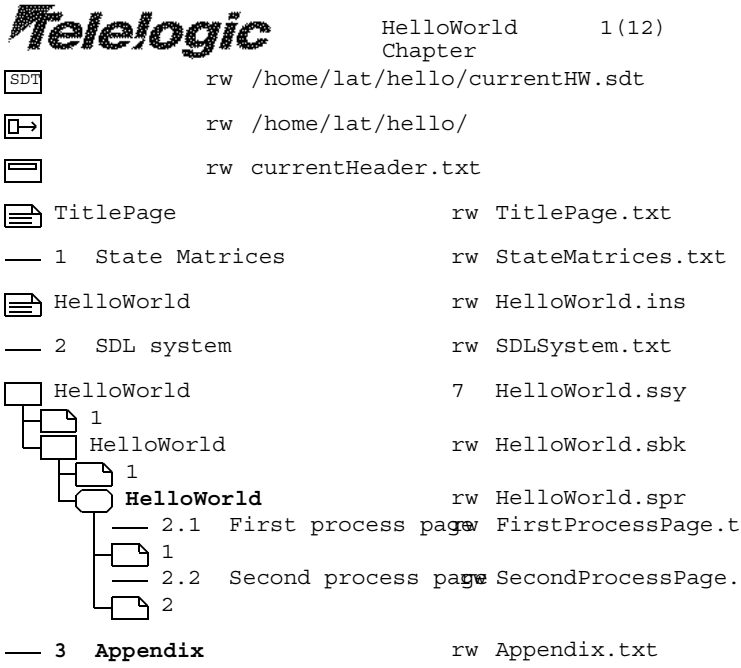


Figure 109: The Organizer view

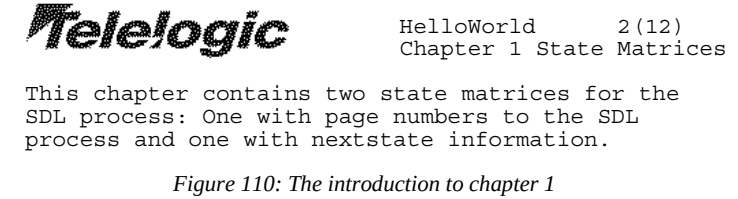


Figure 110: The introduction to chapter 1

```
                                HelloWorld      3(12)
                                Chapter 1 State Matrices
Process HelloWorld: page numbers
States
a Start state
b waiting
c stop
          |  STATES
SIGNALS   |  a    b    c
          |-------------
-         |  8
Hello     |       8

Process HelloWorld: nextstates
States
a Start state
b waiting
c stop
          |  STATES
SIGNALS   |  a    b    c
          |-------------
-         |  b
Hello     |       c
```

Figure 111: The state matrices

```
                                HelloWorld      4(12)
                                Chapter 2 SDL System

In this chapter, you will find the actual SDL system.
```

Figure 112: The introduction to chapter 2

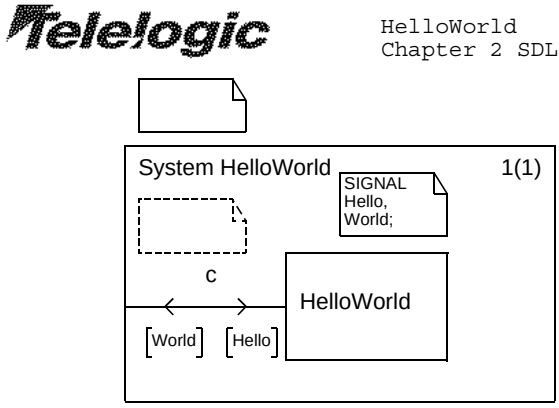


Figure 113: The SDL system diagram

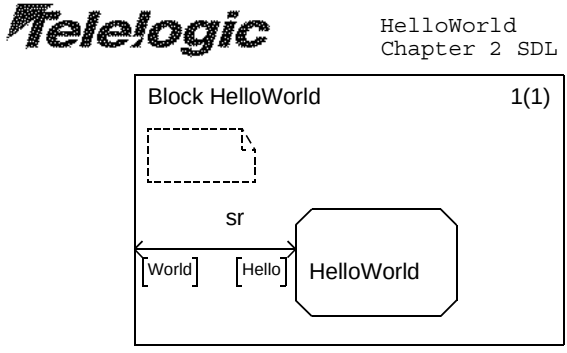


Figure 114: The SDL block diagram


```
HelloWorld      7(12)
Chapter 2.1 First process page
This sub chapter contains the first part of the SDL
process
```

Figure 115: The introduction to chapter 2.1

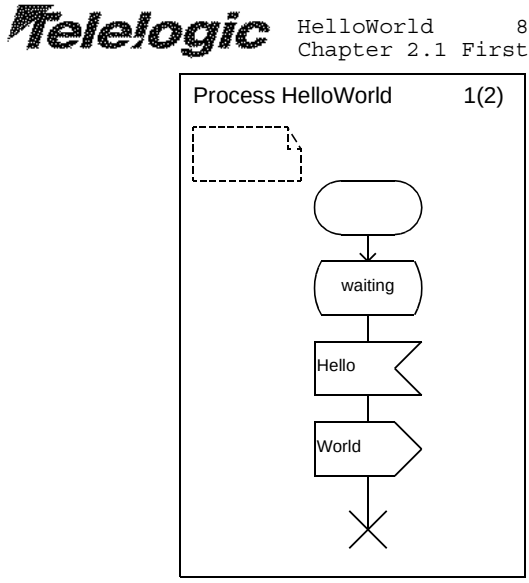
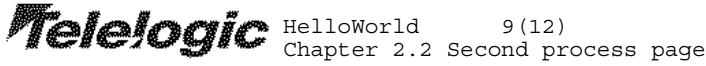


Figure 116: The first process page



This sub chapter contains the second part of the SDL process

Figure 117: The introduction to chapter 2.2

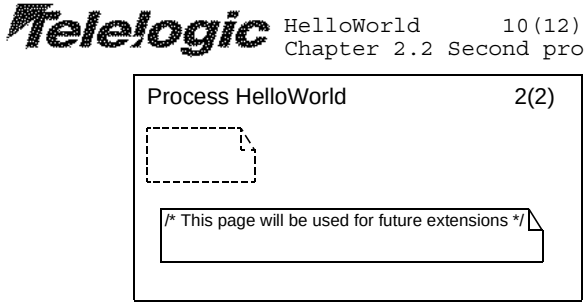
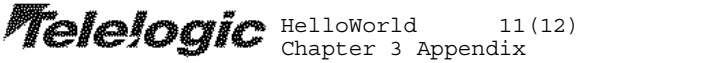


Figure 118: The second process page



The appendix contains an index of all SDL entities.

Figure 119: The introduction to the appendix

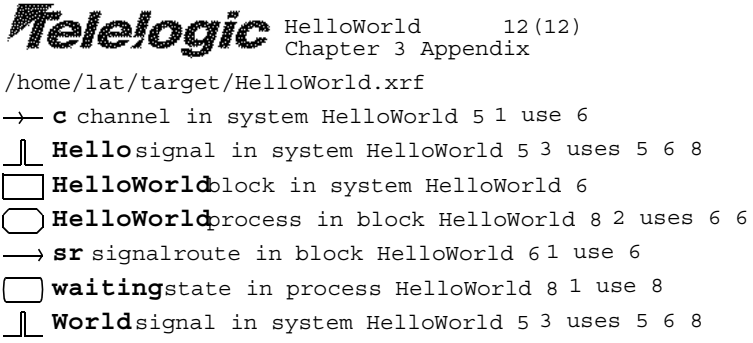


Figure 120: The index

Using Advanced Print Facilities

In the previous section, we took an ordinary SDL system and made enhancements to get a nice printout. In this section, we will look at how we can make the enhancements as permanent as possible. We would like to be able to load a system file, invoke the print operation and get a nice printout without changing any print settings.

Let us take a new look at all the changes we have made, to see how we can make a future print operation as painless as possible.

A Permanent Title Page

Every time the print dialog is invoked, the *Table of contents* setup option *After initial text document* will be turned on. This means that the title page will show up as a title page in future print operations also. No extra actions necessary here.

Permanent Chapters and Sub Chapters

The chapter symbols should stay where they were initially placed. Due to implementation reasons, chapter symbols placed between SDL page symbols might be a little more volatile than they should be. The position of a chapter symbol is determined by remembering the name of the next SDL page symbol. If you rename that SDL page symbol, the chapter looses its hook and may end up in the wrong position.

The chapter options that you can set in the *Chapter Options* dialog are reset every time Telelogic Tau is restarted. This means that if you want the start chapter number to permanently be anything other than 1.1.1.1, or you want to hide sub chapters in the table of contents, then you have to check the *Chapter Options* settings before each print operation.

Permanent State Matrices

State matrix options are not saved together with the state overview file (`*.ins`), but they are saved in the system file (*.sdt) and in print selection files (*.sel).

The state overview file (`*.ins`) is generated in the target directory. You may regard the target directory as a temporary directory where files can be erased after a Telelogic Tau session is ended. It might be cumbersome to regenerate a state overview file each time you want to do a printout. In this situation, it might be a good idea to move the state over-

view file to the source directory, where your SDL diagram files resides. The file move is most easily done outside of Telelogic Tau, but you have to reconnect the plain text symbol in the Organizer view to the state overview file in the source directory with Telelogic Tau.

A Permanent Index

Index options are not saved together with the cross reference file (*.xrf), but they are saved in the system file (*.sdt) and in print selection files (*.sel).

The cross reference file (`*.xrf`) is generated in the target directory. You may regard the target directory as a temporary directory where files can be erased after a Telelogic Tau session is ended. It might be cumbersome to regenerate a cross reference file each time you want to do a printout. In this situation, it might be a good idea to move the cross reference file to the source directory, where your SDL diagram files resides. The file move is most easily done outside of Telelogic Tau.

To get paper page references in the index, the index has to be printed from the Organizer together with the SDL system.

Performing a Permanent Print Operation

Every time the print dialog is invoked, the *Table of contents* setup option *Only chapters in TOC* will be set to off. This means that if you want only chapters in the table of contents, you have to turn this option on every time you want to print.

In a similar manner, every time Telelogic Tau is started, the *Table of contents* toggle button in the main print dialog is set to off. This means that every time you want to do a print, you have to check the *Table of contents* toggle button and turn it on, if it is off.

Print Selection Files and Print Selection Symbols

Most print, index and cross reference options are saved in the system file (*.sdt). This is often enough for most of your print needs. However, in some situations you might want to save more than one set of print settings: You want to easily switch...

- Header and footer information
- The set of documents/diagrams/pages that should be printed.

This can be done by saving a couple of print selection files with different print settings, and reference these files with print selection symbols in the Organizer.

1. To save print settings in a print selection file, bring up the Organizer print dialog, as you would for performing a normal print operation.
2. Adjust the settings in the dialog to what you want printed, both by changing what diagrams to print and by changing how the print will be performed (paper format etc.).
3. When all settings are correct, use the *Save* button to save the print selection file. In the dialog that appears, you can both decide the print selection file name to use, and if a print selection symbol should be created in the Organizer or not.

A print selection can be reused in several ways:

- Double-click the print selection symbol.
- Select the print selection symbol and invoke File > Print > Selected.
- Invoke File > Print > Selection File, and specify the print selection file in the dialog that appears.

In all these cases, the Organizer print dialog will appear, with settings according to the reused print selection file.