4

Running Design Compiler

This chapter provides the information you need to run Design Compiler and use the dc_shell interface. This chapter includes the following sections:

- Using Setup Files
- Starting Design Compiler
- Using Command Log Files
- Using Script Files
- Working With Licenses
- Exiting Design Compiler

Using Setup Files

A setup file contains commands that are automatically executed when you start a software tool. The Synopsys synthesis tools use a setup file called .synopsys_dc.setup. Use the setup file to define the libraries and parameters for synthesis. You cannot define system environment variables (such as $SYNOPSYS) in the .synopsys_dc.setup file.

When you invoke Design Compiler, it reads the .synopsys_dc.setup file from three directories, in the following order:

1. The Synopsys root directory

   This system-wide file resides in the $SYNOPSYS/admin/setup directory for UNIX users, or %SYNOPSYS%/admin for Windows NT users, and contains general Design Compiler setup information. Only the system administrator can modify this file.

2. Your home directory

   This file contains your preferences for your Design Compiler working environment.

3. The current working directory (the directory from which you invoke Design Compiler)

   This file contains project- or design-specific variables.

If the setup files share commands or variables, values in the last setup file read override values in previously read files. The working directory's settings override any default settings in your home or Synopsys directory.

Starting Design Compiler

To see what version of Design Compiler is installed on your system, enter the following command:

```
% dc_shell -version
```

This command displays the version information for dc_shell and then exits.

To invoke dc_shell, enter the `dc_shell` command at the system prompt:

```
% dc_shell
```

When dc_shell starts, the shell

1. Creates a command log file

   See “Using Command Log Files” on page 4-5 for details about the command log file.

2. Reads and executes the .synopsys_dc.setup files (unless you specify the `-no_init` option)

   See “Using Setup Files” on page 4-2 for details about how Design Compiler uses setup files.

3. Checks out any licenses specified on the command line

   Use the `-checkout` option on the command line to specify licenses to be checked out in addition to the default licenses.

4. Executes any script files or commands specified on the command line

Use the `-f` option on the command line to specify a script file to execute during startup. Use the `-x` option on the command line to specify a command to execute during startup.

5. Displays the program header and dc_shell prompt

   The display appears in the window from which you invoked dc_shell. The program header lists all features for which your site is licensed. Figure 4-1 shows the program header and default prompt. Your header might differ, based on your licensed products.

Figure 4-1 Program Header and Default Prompt

```
                        DC Expert (TM)
                        DC Ultra (TM)
                     VHDL Compiler (TM)
                     HDL Compiler (TM)

                  Version 1999.05 -- Jan 15, 1999
            Copyright (c) 1988-1999 by Synopsys, Inc.
                        ALL RIGHTS RESERVED

This program is proprietary and confidential information of
Synopsys, Inc. and may be used and disclosed only as
authorized in a license agreement controlling such use and
disclosure.

Initializing...
dc_shell>
```

Using Command Log Files

The command log records the dc_shell commands processed by Design Compiler, including setup file commands and variable assignments.

By default, Design Compiler writes the command log to a file called command.log in the directory from which you invoked dc_shell. You can change the command log name by setting the `command_log_file` variable in a setup file. If you change the variable interactively during a Design Compiler session, it does not have any effect.

Each Design Compiler session overwrites the command log file. To save a command log file, move it or rename it. Use the command log file to

- Produce a script for a particular synthesis strategy
- Record the design exploration performed
- Document a problem you are having

Using Script Files

You can create a script file, also called a command script, by placing a sequence of dc_shell commands in a text file. You can execute any dc_shell command within a script file.

You can enter comments in a script file by enclosing the comment between “/*” and “*/”. For example,

```
/* This is a comment */
```

Execute a script file by using one of the following commands:

- include (dcsh)
- source (Tcl)

When a script completes processing, dc_shell returns a value of 1 if the script ran successfully or a value of 0 if the script failed.

See the *Design Compiler Command-Line Interface Guide* for more information about script files.

Working With Licenses

This section describes how to perform these licensing tasks:

- Listing the licenses in use
- Getting licenses
- Releasing licenses

Listing the Licenses in Use

Before you check out a license, use the `license_users` command to determine which licenses are already in use.

```
dc_shell> license_users
eng1@bill Design-Analyzer
eng2@matt Design-Compiler, HDL-Compiler
2 users listed.
```

Getting Licenses

When you invoke a tool such as Design Compiler, Synopsys Network Licensing automatically checks out the appropriate license. If you read in an HDL description, for example, Synopsys Network Licensing checks out a license for the appropriate HDL compiler (Verilog or VHDL).

If you know the tools and interfaces you need, you can use the `get_license` command to check out licenses for them. This ensures that a license is available when you are ready to use it.

```
dc_shell> get_license HDL-Compiler
```

Once a license is checked out, it remains checked out until you release it or exit dc_shell.

Releasing Licenses

Use the `remove_license` command to give up a license when you are finished with it.

```
dc_shell> remove_license HDL-Compiler
```

Exiting Design Compiler

You can exit Design Compiler at any time and return to the operating system. However, dc_shell does not automatically save designs when you exit.

Use the `write` command to save your design before exiting dc_shell.

```
dc_shell> write -hierarchy -output my_design.db
```

To exit dc_shell, do one of the following:

- Enter quit.
- Enter exit.
- Press Ctrl-d.

When you exit dc_shell, text similar to the following appears (the memory and the CPU numbers reflect your actual usage):

```
Memory usage for this session 1373 Kbytes.
CPU usage for this session 4 seconds.

Thank you ...
```