

ProofPower

Compliance Tool Installation and Operation

PPTex-2.7.6

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Information on the current status of ProofPower is available on the World-Wide Web, at URL:

<http://www.lemma-one.demon.co.uk/ProofPower/index.html>

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## ABOUT THIS PUBLICATION

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### 0.1 Purpose

This document describes the contents of the Compliance Tool release PPTex-2.7.6, and provides instructions for its installation and subsequent use.

### 0.2 Readership

The document is intended to be read by systems administrators before installing the Compliance Tool.

### 0.3 Related Publications

A bibliography is given at the end of this document.

- A description of the installation of ProofPower may be found in:  
ProofPower Installation and Operation [1].
- A guide to using the Compliance Tool may be found in:  
Compliance Tool — User Guide[3].
- A guide to using the Proof Facilities of the Compliance Tool may be found in:  
Compliance Tool — Proving VCs[4].
- A language description for the Compliance notation supported by the Compliance Tool may be found in:  
Compliance Notation — Language Description[5].
- A description of ProofPower may be found in:  
ProofPower Software and Services [2],  
which also contains a full list of other ProofPower documentation.

### 0.4 Prerequisites

It is necessary for ProofPower to have been installed prior to installing the Compliance Tool.

## 0.5 Acknowledgements

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## INTRODUCTION

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This document is a supplement to *ProofPower Installation and Operation* [1]. The Compliance Tool software is provided with your release of ProofPower. The installation of the Compliance Tool requires that you have already completed the installation of ProofPower. See the README files for more information. To perform the installation and testing of Compliance Tool, turn to chapter 3.

### 1.1 Contents of This Document

Chapter 2 describes the contents of the binary and documentation distribution.

Chapter 3 describes the installation of the Compliance Tool software.

Section 3.1 describes the installation confidence test.



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## RELEASE CONTENTS

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The Compliance Tool software is overlaid on the ProofPower installation directory. This section describes the files in the ProofPower installation directory that are specific to the Compliance Tool. Consult the files `README` supplied with the distribution for more information on loading the files from the distribution media. The following sections describe the files in the directory structure which are specific to the Compliance Tool.

### 2.1 Installation Directory

The installation directory is the same as the installation directory used when installing ProofPower. This is set by the `PPINSTALLDIR` shell variable. There are no specific Compliance Tool files in this directory — the Compliance Tool software and documentation resides in subdirectories of `$PPINSTALLDIR`.

### 2.2 Binaries Directory

The directory `$PPINSTALLDIR/bin` contains the Compliance Tool database. When ProofPower is invoked with this database, the Compliance Tool facilities are available. The binary files specific to the Compliance Tool are described in table 2.1.

### 2.3 Documentation Directory

The directory `./doc` includes the design documentation of the Compliance Tool. An example Compliance Notation script is also provided and constitutes the basis for confidence testing of your configuration. The documentation files specific to the Compliance Tool are described in table 2.2.

### 2.4 Application Defaults Directory

The directory `./app - defaults` is used by Motif for defaults information, and a sample defaults file for the Compliance Tool is provided. The application default files specific to the Compliance Tool are described in table 2.3.

### 2.5 Bitmaps Directory

The directory `./bitmaps` contains bitmaps which are used by the `xpp` tool to display the template selection box and any other bitmaps which ProofPower requires. The bitmap files specific to the Compliance Tool are described in table 2.4.

Name	Description
<code>bin/daz.arch-opsys.db</code>	This file is the master <b>ProofPower</b> database for the Compliance Tool when running under Standard ML of New Jersey. <i>arch</i> depends on the hardware target for the database: <code>x86</code> or <code>sparc</code> <i>opsys</i> depends on the operating system target: <code>linux</code> or <code>solaris</code> . This file is not present in the binary distribution when compiled with Poly/ML.
<code>bin/daz.polydb</code>	This file is the master <b>ProofPower</b> database for the Compliance Tool when running under Poly/ML. It is not present in the binary distribution when compiled with Standard ML of New Jersey.
<code>bin/dxaz.polydb</code>	This file is the master <b>ProofPower</b> database for the Compliance Tool when running under Poly/ML including X/Motif support. It is not present in the binary distribution when compiled with Standard ML of New Jersey.
<code>bin/sieveview</code>	This is a sieveview file which is customised for Compliance Tool. It differs from the <b>ProofPower</b> or <b>ProofPower-Z</b> sieve steering file in that it has additional entries for dealing with Compliance Notation.

Table 2.1: Contents of the Binaries Directory

Name	Description
<code>./doc/wrk501.doc</code> <code>./doc/wrk501.dvi</code> <code>./doc/wrk501.sml</code> <code>./doc/wrk503.doc</code> <code>./doc/wrk503.dvi</code> <code>./doc/wrk503.sml</code> <code>./doc/wrk507.doc</code> <code>./doc/wrk507.dvi</code> <code>./doc/wrk507.sml</code> <code>./doc/wrk513.doc</code> <code>./doc/wrk513.dvi</code> <code>./doc/wrk513.sml</code>	These documents provide examples of Compliance Notation. <i>wrk501</i> is the “1000 Primes” example; <i>wrk503</i> includes an example of a document containing several Compliance Notation scripts; <i>wrk507</i> is an example including complete proofs of a simple calculator program; <i>wrk513</i> gives proofs for the same example following on from the treatment in <i>Compliance Tool — Proving VCs</i> [4].
<code>./doc/usr501.dvi</code> <code>./doc/usr501.ps</code> <code>./doc/usr501A.ps</code> <code>./doc/usr501B.ps</code> <code>./doc/usr501C.ps</code> <code>./doc/usr501D.ps</code> <code>./doc/usr502.dvi</code> <code>./doc/usr503.doc</code> <code>./doc/usr503.dvi</code> <code>./doc/usr503.sml</code> <code>./doc/usr504.dvi</code>	These documents comprise the user documentation for the Compliance Tool. <i>usr501</i> is a guide for Using the Compliance Tool; <i>usr502</i> is this installation guide; <i>usr503</i> is the guide to the proof tools; and <i>usr504</i> is the Compliance Notation language description.

Table 2.2: Contents of the Documentation Directory

<code>./app-defaults/Xpp</code>	The defaults for <code>xpp</code> for use with the Compliance Tool.
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Table 2.3: Contents of the Application Defaults Directory

<code>./bitmaps/cnarbada.bmp</code> <code>./bitmaps/cncompunit.bmp</code> <code>./bitmaps/cnkslot.bmp</code> <code>./bitmaps/cnrefine.bmp</code> <code>./bitmaps/cnreplace.bmp</code> <code>./bitmaps/cnspecstat.bmp</code>	These are the bitmaps representing Compliance Notation constructs in xpp's Templates Tool.
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Table 2.4: Contents of the Bitmaps Directory



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## INSTALLATION

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In the following steps, it is assumed that you are running X and the Motif window manager and that your default shell is the *Bourne* shell (or one of its derivatives).

1. The only installation step required is to create a working Compliance Tool database. Login as the user which you used to install **ProofPower** and check that the shell variable `PPINSTALLDIR` is set to the location of your **ProofPower** installation. Then in a command tool, type the following commands.

```
cd $PPINSTALLDIR/bin
pp_make_database -p daz daz
```

### 3.1 Running the Confidence Tests

The following procedure constitutes the installation confidence test for the Compliance Tool.

1. Initially, in the installation directory, create a test directory and copy in an example literate script by typing the following:

```
mkdir daztest
cd daztest
cp ../doc/wrk501.sml .
```

2. To get started, create a Compliance Tool database and start up *xpp* running a session of the Compliance Tool on that database by typing the following into a command tool or *xterm*.

```
pp_make_database -p daz dazinst
xpp -command pp -d dazinst &
```

3. You should now have a Compliance Tool session running in the journal area of *xpp*, displaying a banner giving start-of-session information, licensing information and the release number, followed by the Compliance Tool prompt: “:).” (The session may take a minute or so to get started.)

Start up a command line tool in *xpp*, from its **Tools Menu**.

In the command line tool text area type:

```
use_file "wrk501";
```

and hit the execute button. This will make the tool process the literate script in the file *wrk501.sml* which is the “1000 Primes Example”.

The loading of the file should run to completion without error, which takes no longer than 5 minutes on a SPARCstation 1+.

Note that during processing of the script, the SPARK program will have been output to a file called *wrk501.ada*, and the Z document to a file called *wrk501.zdoc*.

4. Using the *xpp* File Menu, you may load the file *wrk501.ada* and have a look at the generated SPARK program.

Similarly, you may load the file *wrk501.zdoc* and have a look at the generated Z document.

5. Now load the Z document you have just generated back into the Compliance Tool. From the *xpp* Execute Menu, restart the tool, and when the pop-up window asks for confirmation, hit the *OK* button.

Next, bring up the command line tool, and type into it the following line:

```
use_file"wrk501.zdoc";
```

and hit the execute button.

This will process the Z document in the file *wrk501.zdoc* which we have just generated.

The loading of the file should run to completion without error.

This completes the confidence tests and you may wish to delete the directory *daztest* and its contents.

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## REFERENCES

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- [1] DS/FMU/IED/USR007. *ProofPower Installation and Operation*. Lemma 1 Ltd., <http://www.lemma-one.com>.
- [2] DS/FMU/IED/USR014. *ProofPower Software and Services*. Lemma 1 Ltd., <http://www.lemma-one.com>.
- [3] ISS/HAT/DAZ/USR501. *Compliance Tool — User Guide*. Lemma 1 Ltd., <http://www.lemma-one.com>.
- [4] ISS/HAT/DAZ/USR503. *Compliance Tool — Proving VCs*. Lemma 1 Ltd., <http://www.lemma-one.com>.
- [5] ISS/HAT/DAZ/USR504. *Compliance Notation — Language Description*. Lemma 1 Ltd., <http://www.lemma-one.com>.