

4. Customizing CM3-IDE

Read this chapter to learn how to customize CM3-IDE.

This chapter contains information about CM3-IDE's configuration page.

This chapter describes how to customize CM3-IDE. The configuration screen is like a control panel for CM3-IDE—it controls many aspects of CM3-IDE's behavior. CM3-IDE's configuration settings are persistent; the configuration information is saved across sessions.

This chapter does not cover configuration of CM3-IDE's builder program, **cm3**. The builder can be invoked from outside CM3-IDE and its configuration settings may be modified independently of CM3-IDE's. See the **cm3.cfg** file in your CM3-IDE installation to configure the behavior of your CM3-IDE builder. To learn more details about configuring the builder, see **Building and Sharing Packages** on page 47.

Since changing your configuration settings has a permanent effect on your development environment, you should apply care when changing configuration parameters.

Navigating to the Configuration Page on page 66 points you to the CM3-IDE configuration page.

Saving Configuration Changes on page 66 shows you how to apply and save changes in your configuration.

Display Settings on page 66 controls the display aspects of CM3-IDE— start screen, and layout of dynamically configured pages.

Package Roots Settings on page 68 allows you to add, delete, or modify package roots.

Communication Settings on page 69 specifies the settings used by CM3-IDE to communicate with your web browser.

Miscellaneous Settings on page 69 allows you to change the number of threads for the CM3-IDE server and verbosity of messages.

Helper Procedures on page 70 tell CM3-IDE how to build, ship, or clean packages, run programs, or edit files.



4.1 CM3-IDE Configuration Screen

From time to time, you may need to change the configuration of your CM3-IDE development environment. For example, you may like to change the layout of lists in CM3-IDE to match your window settings, or you may want to share packages with a co-worker. For these kinds of tasks, you may alter CM3-IDE's behavior from the Configuration page.

4.1.1 Navigating to the Configuration Page

From the CM3-IDE start page, follow the  Configuration link in the System group to navigate to the configuration page.

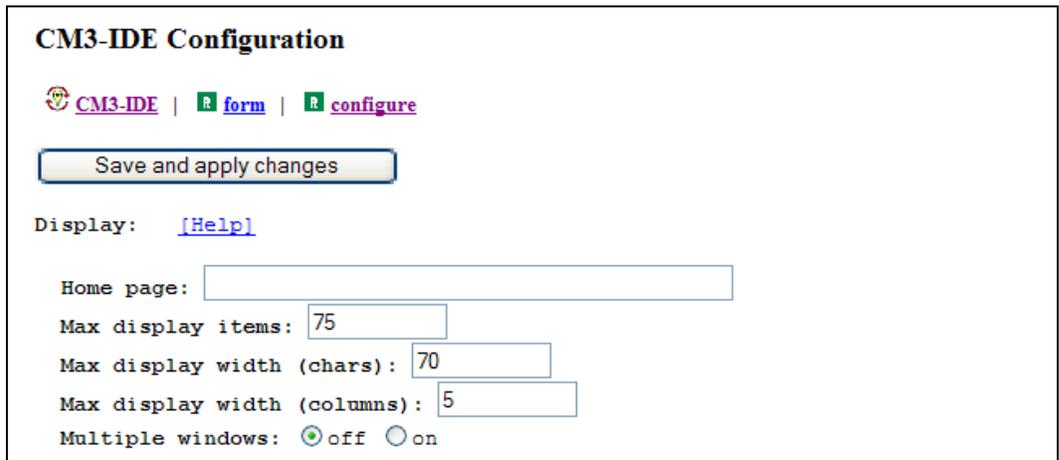
4.1.2 Saving Configuration Changes

At the top and bottom of this page are the Save and Apply Changes buttons (Figure 29). To save changes to your CM3-IDE settings, click on this button.

Important Note. Your personal configuration is kept in:

```
%HOME%\proj\CM3-IDE.cfg (Win32)
$HOME/proj/CM3-IDE.cfg (Unix)
```

If the HOME environment variable is not set when CM3-IDE was started, CM3-IDE won't be able to save your changes to the configuration. Otherwise, changes to your configuration will persist across sessions.



CM3-IDE Configuration

CM3-IDE | R form | R configure

Save and apply changes

Display: [\[Help\]](#)

Home page:

Max display items:

Max display width (chars):

Max display width (columns):

Multiple windows: off on

Figure 29. Save Changes and Display Settings

4.1.3 Display Settings

You can control many aspects of the CM3-IDE screen layout (Figure 29). CM3-IDE's display settings, in conjunction with the display settings of your web browser will allow you to make your navigation in CM3-IDE more comfortable.

Start Page. The start page setting specifies the full path for a file containing the HTML that CM3-IDE displays initially. If a file is specified, CM3-IDE will use it as the start page; otherwise, CM3-IDE will use its own default start page.

When a start page is specified, its parent directory is available at the URL `/user` within your CM3-IDE's namespace, so you may refer to entries in `/user` in your CM3-IDE pages.

For examples of a start page, use your browser's "Save As" command (usually under the File menu) to save a copy of the default start page to your filesystem. You may then modify the file, and point CM3-IDE to the new version of the start page. Another good beginning for a start page is the  Getting Started page, located at the URL `/help/getting-started.html`.

See **CM3-IDE's Web Namespace** on page 42 for more information regarding the specification of URLs in your HTML files.

The rest of the display settings control how CM3-IDE displays lists of items. If you're using a small font or a large screen, you may want to adjust these values to better suit your preferences.

Max display items. Defines the maximum number of items for a list displayed on one page. For lists more than the maximum number of items, CM3-IDE will coalesce entries with common prefixes and suffixes, in an effort to fit the list to the screen size.

Max display width (chars). Defines the maximum number of characters that CM3-IDE will put into a single line of a dynamically generated list. CM3-IDE's lists are usually displayed in fixed-width fonts.

Max display width (columns). Defines the maximum number of columns that CM3-IDE will put into a single line of a dynamically generated list.

Multiple windows. Controls whether CM3-IDE will use non-standard window targeting to direct its output to multiple browser windows (*This is an experimental feature in release 4.1 of CM3-IDE.*)

The screenshot shows the 'configure' window of CM3-IDE. At the top, there are links for 'CM3-IDE', 'form', and 'configure'. A 'Save and apply changes' button is present. The 'Display' section includes a '[Help]' link, a 'Home page' text box, and three numeric input fields for 'Max display items' (75), 'Max display width (chars)' (70), and 'Max display width (columns)' (5). The 'Multiple windows' section has radio buttons for 'off' (selected) and 'on'. The 'Package roots' section has a '[Help]' link and a table with columns for a short name, a full path, and radio buttons for 'browse' and 'build'. The table contains the following entries:

Short Name	Full Path	browse	build
		<input checked="" type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>
proj	C:\MySandbox	<input type="radio"/>	<input checked="" type="radio"/>
public	c:\cm3\pkg	<input checked="" type="radio"/>	<input type="radio"/>
eve	C:\Garden\Eve	<input type="radio"/>	<input checked="" type="radio"/>
adam	C:\Garden\Adam	<input checked="" type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>

The 'Communication' section has a '[Help]' link and three input fields: 'Host name' (localhost), 'IP address' (empty), and 'Server port' (3800).

Figure 30. Package Root and Communication Configuration

4.1.4 Package Roots Settings

CM3-IDE supports browsing and building packages from multiple package roots. Here, you can specify the list of package roots used by CM3-IDE, and their characteristics (Figure 30). For setting each package root, you must specify the following:

- a short name that will be used by CM3-IDE to form URLs. The package roots map to the top of the URL hierarchy, i.e., the package root named **graphics** will map to **/graphics** within CM3-IDE.
- a full path in the file system where the package root resides
- a boolean specifying whether the user is allowed to build packages filed under this root

The default settings map **/proj** to your private packages and **/public** to the public packages in you system.

See **Building and Sharing Packages** on page 47 for more information about package roots.

4.1.5 Communication Settings

When started, CM3-IDE determines the local IP address and name of the machine it's running on, and uses this information for communication with your web browser. If networking is not installed properly, or you are accessing CM3-IDE remotely, you may need to override the default communication configuration (Figure 30).

Host name. Defines the name of the machine running CM3-IDE. The URLs generated by CM3-IDE will contain this name and the browsers attached to CM3-IDE will need the name. The default host name is `localhost`, referring to the host where the CM3-IDE is executing. This value should work on most platforms that support TCP/IP, even those that only have intermittent SLIP or PPP connections. If no value is specified for the host name, CM3-IDE attempts a reverse name server lookup using the host's IP address.

IP address. Defines the IP address of the machine running CM3-IDE. You should not need to explicitly define your IP address unless your networking installation is badly broken, or if you are trying to cross DNS naming boundaries. In case you need it, the IP address bound to `localhost` is usually `127.0.0.1`.

Server port. Defines the TCP port number that CM3-IDE will use. You may need to change CM3-IDE's default value if it conflicts with one of the TCP services already running on your machine. Usually, using port numbers below `1024` requires special privileges. Ports `80` and `8080` are often used by regular web servers.

4.1.6 Miscellaneous Settings

Verbose log. Determines how much information is generated in CM3-IDE's console log. It's best to leave the verbose log off, unless you are trying to track down a problem with CM3-IDE. CM3-IDE's logged messages display on your console window. The last 500 lines of the log are available at the URL `"/log"`.

Server threads. Determines the number of concurrent threads within CM3-IDE that can service HTTP requests. If CM3-IDE becomes sluggish because there are too many users contending for a limited number of server threads, it may help to increase the number of threads. However, it is more likely that CM3-IDE just needs to run on a machine with more memory.

Refresh interval. Determines the number of minutes for CM3-IDE to wait between full rescans of the package roots. Setting too small a value can overload the file system and degrade performance.

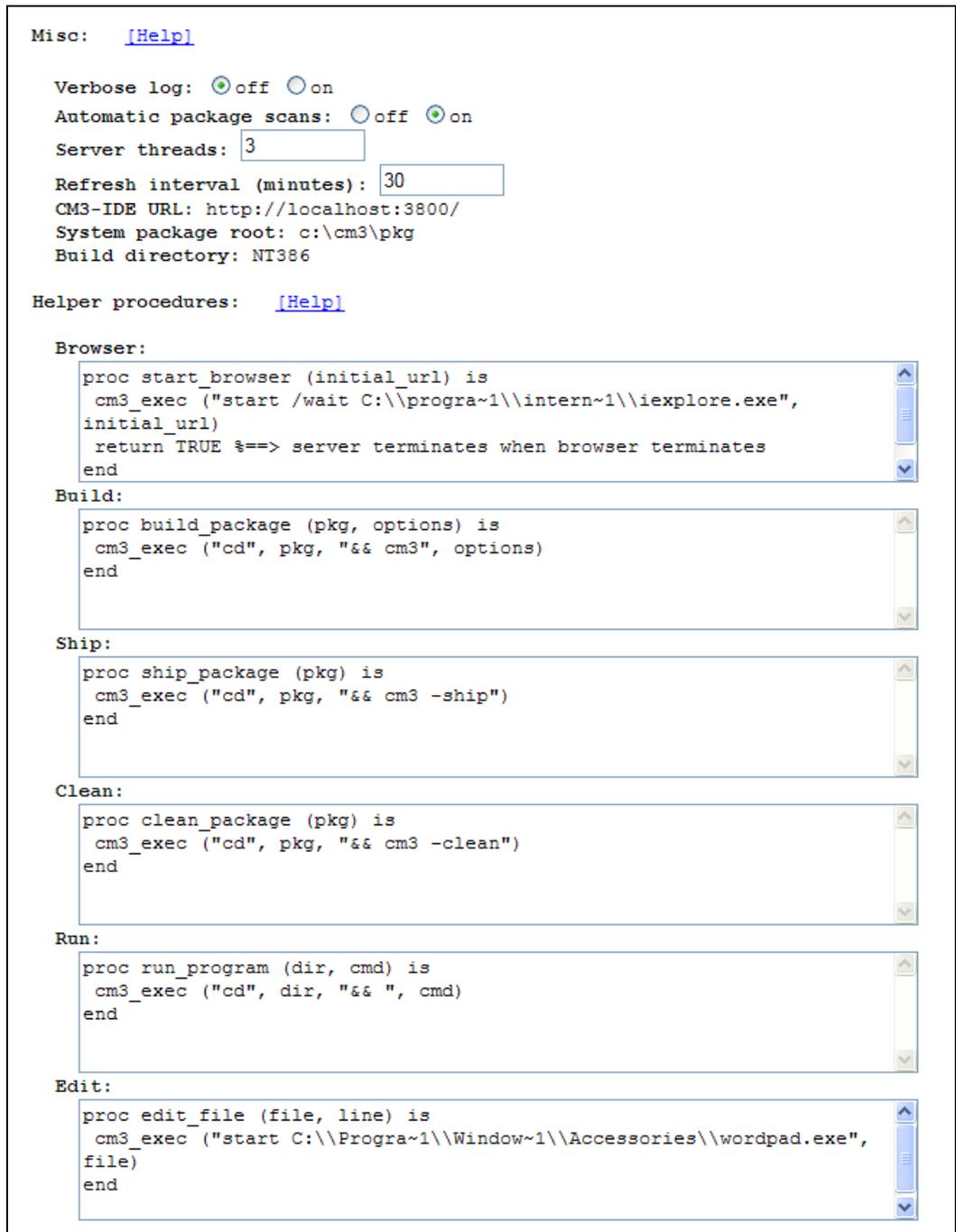


Figure 31. Miscellaneous Settings and Helper Procedures

4.1.7 Helper Procedures

CM3-IDE uses a number of small helper procedures to interact with its external environment (Figure 31). These procedures are written in Quake, a small interpreted language. Modifying helper procedures should be easy and the default helper

procedures are quite short. CM3-IDE's use of these interpreted procedures maximizes your ability to configure and control CM3-IDE's behavior. For more information on Quake see the CM3-IDE on-line help under `/help/cm3/quake.html`.

Helper Procedure for Starting the Browser. When CM3-IDE starts, it calls the `start_browser` helper procedure, passing it the URL of the start screen. If `start_browser` returns FALSE, the server continues running; otherwise, the server terminates when the function returns. The default implementation starts your web browser automatically.

Helper Procedures for Build, Ship, Clean. The helper procedures `build_package`, `ship_package`, and `clean_package` are used to build, ship, and clean a package. They are called when the corresponding action buttons are pressed. The default versions of these procedures call the CM3-IDE builder (`cm3`) after changing the working directory to the package.

Helper Procedure for Run. CM3-IDE calls `run_program` to execute the program whose location is passed as a parameter. You may use this procedure to start debuggers or shell windows (via `xterm -e` command on Unix, or `start` command on Windows). The program summary page allows you specify the arguments passed to `run_program`.

Helper Procedure for Edit. CM3-IDE calls `edit_file(file, line)` to edit `file` initially positioned at `line`. The default procedure assumes that the editor supports a `+line` option common to most programmer's editors. If your editor doesn't support line placement, simply delete the portion of the default procedure that passes the `+line` option in the `exec` call.

4.2 Summary

CM3-IDE's Configuration. The CM3-IDE configuration screen acts as a central control panel for the CM3-IDE environment. You can change many of CM3-IDE's settings to alter its default behavior. To navigate to the configuration page, follow the Configuration link from the start page or go to `/form/configure` within CM3-IDE's namespace.

Save and Apply Changes. You must click on the "Save and Apply Changes" button before your changes to the configuration page can be applied. Once applied, changes persist across CM3-IDE sessions.

Display settings. Change CM3-IDE's start screen or alter the layout of dynamically generated pages by modifying the display settings.

Package Roots Settings. Add or delete package roots from your environment using this setting. See also **Building and Sharing Packages** on page 47.

Communication Settings. Different network environments require different communication settings. You may need to change these settings if you have specialized communication needs, for example, to run without networking or on a remote machine. CM3-IDE uses the host name "localhost" and the port number 3800 by default.

Miscellaneous Settings. Change settings for the number of threads used in CM3-IDE's web server, the verbosity of CM3-IDE's logged messages, and the refresh interval for background scanning.

Helper Procedures. Use the helper procedures to modify how CM3-IDE builds, ships, and cleans packages. You can also change how your editor is invoked, and how CM3-IDE runs programs.

Customizing CM3-IDE's Builder(cm3). To customize the behavior of CM3-IDE's builder (cm3), review and modify the `cm3.cfg` file in your installation of CM3-IDE. The file includes in-line comments regarding the significance of various settings, and should be easy to modify. The `cm3.cfg` configuration file usually resides in the same directory as the `cm3` executable in your file system. To find out for sure, invoke the builder from a shell command line as "`cm3 -config`".