
Release Notes Documentation

Release 17

AdaCore

Dec 11, 2018

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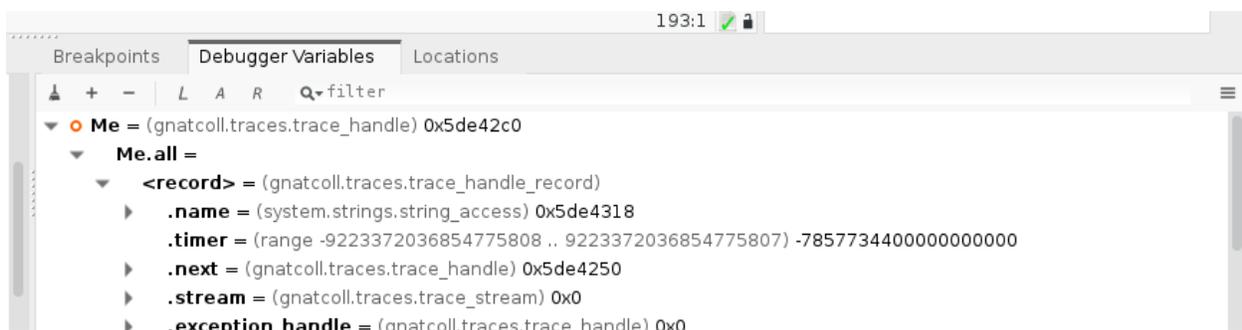
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DEBUGGER

A new *Debugger Variables* view displays the same type of information as the *Data Window* (i.e. the value of variables) but in a tree, which might help keep things organized.



It is now possible to set breakpoints before a debugger is started. This can be done as usual via the *Debug* → *Set Breakpoint* contextual menu, or by clicking on the side of editor lines. The line number for lines with breakpoints is now highlighted, and no longer displays a red dot on the side of the line. The color of this highlight is different for disabled and conditional breakpoints.

A number of improvements was done for the *Breakpoints* view. Its layout has been modified so that it is now smaller and can more easily be a permanent fixture of the desktop. Long-clicking on a breakpoint will display all its properties (both basic and advanced), and double-clicking will open the corresponding editor. Since it is now possible to set breakpoints even when no debugger is running, it is also useful to edit them outside of the Debug perspective.



The contextual menu *Debug* → *Set watchpoint* on a variable while the debugger is running allows to set a watchpoint, so that the debugger stops any time the variable is modified.

The *Call Stack* view now has a local configuration menu to choose which information should be displayed. When you choose not to show subprogram parameters, gdb is configured so that it does not try to compute them, which, on some systems, might significantly speed up operations with the debugger.

GPS no longer supports the debugger preference to show lines with code. This preference had been disabled by default for a while now, and could cause slow downs since it requires a lot of interaction with the debugger (and while the debugger is working on getting us the info, we can't send other commands like setting breakpoints).

See also [Debugger improvements in GPS 17 blog post](#).

EDITORS

When using the `Home` key while in an editor (or any key bound to the action *beginning of line*), GPS will first go to the first column (as it has always done), but if you do it a second time it will then go to the first non-blank character of the line.

A new action *select subprogram* has been added to GPS. This selects the current subprogram, extending the selection to the enclosing subprogram if a subprogram is already selected. This can be useful, for instance, to limit a search to the context of the current subprogram.

Lines for which a bookmark has been set will now show special highlighting in the scrollbar of editors, as well as an icon on the left side of the line, as a quick way to identify them.

GPS now checks the permissions on the disk before saving a file (rather than just the read-only status of the editor). If the file is read-only on the disk, it displays a confirmation dialog to let you choose whether to overwrite (and, in the context of Clearcase, hijack the file).

The preference *Always Use External Editor* has been removed. Such editors do not conveniently give access to cross-references, outline, and all the other facilities provided by GPS.

MDI & DIALOGS

A new action *maximize window* is provided to make the central area of the desktop (that contains the editor) occupy the full GPS window, hiding all other views. Executing the action again goes back to the previous layout. You can bind a key shortcut to this action via the *Edit → Preferences → Key Bindings* menu.

The GPS color theme was modified so that the view that currently has the keyboard focus has a special color in its notebook tab. Changing the color theme will change the colors, but will still make this tab unique.

New preference (*Edit → Preferences → Windows*) was added to configure default tab orientation. This allows, for example, to put tabs horizontally at right side of a window.

The `Escape` key can now be used to close floating dialogs (such as the *Search* dialog, or the *Preferences* dialog) even when the input focus is not currently on these dialogs.

The size of simple text input dialogs (e.g: the *Build → Run* dialog) is now preserved: GPS will now restore it when the dialog is displayed again in the future (either in the current session or in a later session).

MENUS

The *Help* → *GNAT Runtime* menu is now computed from the runtime that is actually being used for the current project, rather than a static image of a native runtime.

New menu *File* → *Reset All Perspectives* restores the default window layout. This is in particular useful to reset the *Debug* perspective that has changed in this release of GPS.

The menu *Project* → *Save All* was moved to *File* → *Save More* → *Projects* to make its semantics easier to understand.

When a project (and its subprojects) have a small number of main units, and the root project is not an aggregate, we display the *Build* → *Project*, *Build* → *Run* and *Debug* → *Initialize* menus as a flat list of mains, rather than introduce one extra level of menu for the name of the project.

On OSX and Unity, GPS is now able to display the menubar outside of the main window. This is disabled by default, since these menus are not able to display tooltips or key shortcuts. They can be enabled via an advanced preference.

When an editor or a browser is made floating, its window now includes a menubar similar to the one used in the main GPS window. This makes it more convenient to execute actions via menus. It also includes a copy of the global toolbar.

SEARCH & REPLACE

The *search and replace all occurrences* action has been sped up by a factor of seven in some cases.

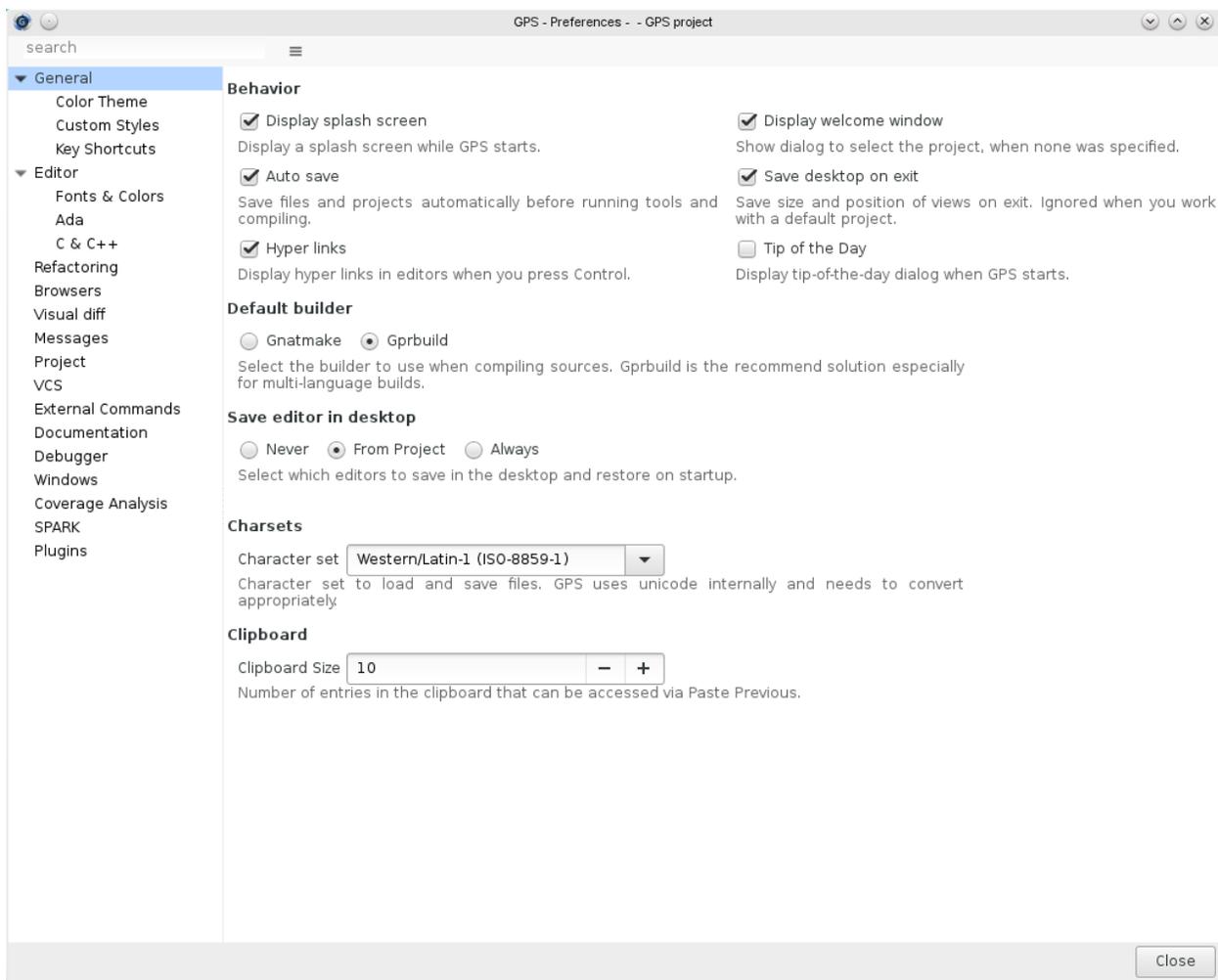
5.1 Omnisearch

The Omnisearch feature has received a number of enhancements:

- A default key shortcut (`control-u`) brings up the omnisearch
- When bringing up the omnisearch through the key shortcut completions start appearing even before anything is typed in the entry. This allows, for instance, using the `arrow` keys to select one of the currently open windows.
- The size of the popup window has been increased to take up to 2/3 of width and full height of the main window. This is useful when listing directories with long names, for instance. Also, local configuration setting to automatically resize the popup window was removed.
- The highlighting of the fuzzy-matched characters now uses a color.
- If the text in the global entry has been manually deleted, it no longer reappears next time the search is activated.
- When you search via the omnisearch, GPS will now ensure that matches in runtime files appear only after matches in user code.
- The Omnisearch can now also display project relative paths instead of absolute ones. This behavior can be controlled via a local configuration settings.
- It is now possible to type simple mathematical expression in the omnisearch (“`2 + 3**2`”) to get their result in decimal, hexadecimal and binary.

PREFERENCES

The *Preferences* dialog was completely reworked. The color theme picker, the key shortcuts and plugins editors are now directly accessible from the preferences dialog.

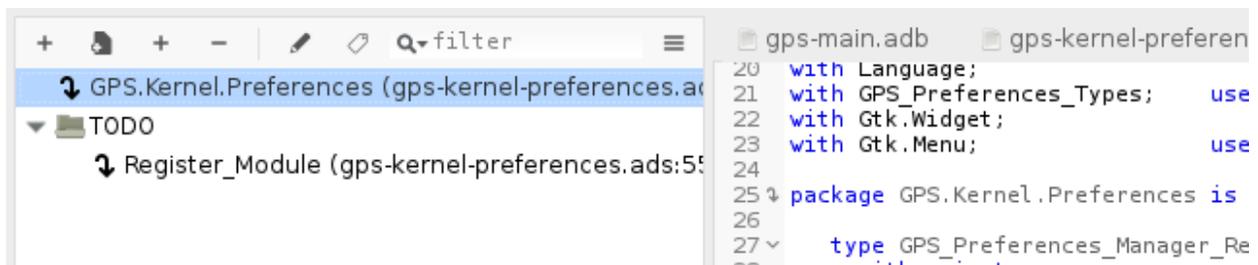


A new look-and-feel has been introduced, gathering the preferences in groups and with the documentation being directly displayed under each preference.

It is possible to search among preferences using the omniseach bar or the preferences dialog local search bar.

GPS hidden preferences can now be displayed and edited by activating the *Show advanced preferences* setting from the dialog's local menu.

7.1 Bookmarks



Number of improvements was done for *Bookmarks* view:

- double-click on a bookmark jumps to the corresponding editor, and long-click starts editing (there is a button in the local toolbar for that purpose too).
- bookmarks are no longer sorted by default. Instead, you can use drag-and-drop to organize them in the order you want.
- bookmarks can be grouped: when you drag and drop a bookmark on top of another bookmark, a new group is created that contains both. These groups can be used to organize large numbers of bookmarks.
- a filter was added, to match what is done for other views.
- comments can be added to bookmarks, either that an explicit toolbar button or dragging and dropping text from a source editor.
- a new local configuration setting *link with editor* is also available, which automatically selects the first bookmark associated with the current editor line, whenever the latter changes.

See also [Bookmarks in the GNAT Programming Studio \(GPS\) blog post](#).

7.2 Files

A new local configuration *All files from prj dirs* has been added to the *Files* view, to show all files in any of the directories of the project. In particular, this shows the object and executable files in the object directories.

GPS now exports a new action to find the current file in the *Files* view. This action is not visible by default in the contextual menu (as opposed to *Locate in Project view*) in an effort to keep the menu simple. However, it can be added with a small python script. The menu *Navigate → Locate in Files view* has been added.

7.3 Locations View

It is now possible to select multiple items in the *Locations* view, in particular to remove or export them all in a single operation.

When the *Locations* view contains build errors, and one of the files is being recompiled, the *Locations* view will now only update the entries for that file (and corresponding specification file if applicable), rather than removing all build errors.

For messages which have an associated background color (for instance compiler errors), the *Locations* view shows this background color on the side of the row for this message.

7.4 Outline View

A few improvements were done on the *Outline* view:

- the *with Clauses* node is not displayed if no clause was found
- a new setting allows to hide the name of parameters in the profile of subprograms. This saves some space, and helps differentiate homonym subprograms
- it is now possible to use `enter` to jump to the corresponding entity (same as clicking on the line)

7.5 Project View

There are two enhancements of how long names of files and directories are displayed, both controlled by local configuration menu: only basenames are displayed, and ellipsis are displayed in the middle of file name if the *Project* view is not wide enough to fit the entire name.

The performance of *Project* view was significantly improved on project load, which is noticeable on projects that have a large number of files.

A new button in the local toolbar of the *Project* view, to collapse all project nodes was added. This is a way to quickly cleanup the display after using *Locate in Project View* for a while.

7.6 Windows

Two new settings have been added to the *Windows* view: you can now choose whether to show nodes for notebooks that have a single window (the default is still to display the window itself, but not its notebook in this case); and you can choose whether to sort windows alphabetically, or to preserve the order of tabs within the notebooks. When the notebooks are not displayed, and sorting is disabled, the order depends on which window had the keyboard focus last, which provides a convenient way of switching quickly between a few editors among a lot of them.

The *Windows* view now also has a local filter, to help search for specific windows.

TOOLS INTEGRATION

8.1 QGen

A convenient interface to QGen, the code generator for Simulink models, is provided now. This includes:

- displaying graphically the diagrams from MDL files (read-only),
- toolbar buttons to easily generate code then build (and optionally then debug),
- tight integration with the debugger so that whenever the debugger stops, GPS highlights the current block in the diagram, adds contextual menus to easily break on specific blocks, and shows the current value of signals.

8.2 CodePeer

Improvements in *Locations* view to handle selection of multiple messages allows to review multiple CodePeer messages at once.

Single message review dialog now contains information about a message in the same way as multiple message review dialog does. Proposed value of message review status has been changed to current status of the message.

CodePeer's messages with lifeage "removed" are displayed with different font to help distinguish them from regular messages. Also, filter of "removed" messages is deselected each time CodePeer report is open.

CROSS-REFERENCES ENGINE

It is now possible to force GPS to index runtime files so that you can perform cross-references from them (it was always possible to cross-ref from your own sources to the runtime). This takes longer to index, so is disabled by default. See the preference *Project* → *Cross References in Runtime Files*.

The action *find all references* on an entity now includes by default all the entities overriding it, all entities it overrides, and all entities overriding the entities it overrides.

The optional *listvars.py* plugin (which adds a contextual menu *Variables used in ...*) now also shows the type of reference for those variable (read, write, dispatching call, ...)

BUILD TARGETS

A new macro *%TP* is available in builder targets. It will be replaced with the name of the project file to which the main unit belongs. It is for instance used when you do not want to pass the root project to *gprbuild*, but directly the unit's own project

The configuration file (.cgpr) set by the “*-config*” command-line switch is now passed on to the builder. Also, GPS now also passes the configuration file which was automatically generated when the “*-autoconf*” option was given.

Switches defined for a specific tool using XML can now be filtered by specifying a named filter for the *filter* attribute of a switch tag. These filters can be either predefined in GPS or created by the user (see the *<filter>* tag in the XML files).

It is now possible to rename targets directly in the *Target Configuration* dialog: double-click on a target name in the tree to give it a new name.

BAREBOARDS SUPPORT

GPS now supports OpenOCD in order to flash and/or debug an external board. In order to use OpenOCD, set the *IDE'Connection_Tool* project attribute to 'openocd' and specify a board-specific OpenOCD configuration file via the *IDE'Connection_Config_File* project attribute (both attributes are editable in the 'Embedded' Project Properties editor page).

GPS now supports the arm-sysgo-pikeos toolchain.

GNATDOC

Attribute *Documentation_Dir* is defined in *Documentation* package now. Attribute with same name in package IDE is obsolete. Its support will be removed in future version of GNATdoc.

MISCELLANEOUS UI IMPROVEMENTS

The tooltips in notebook tabs, in the *Project* view and in the *Windows* view now show both the absolute name for files as well as their location relative to the root project. The latter path can often be much shorter, depending on your setup.

It is now possible to bind keys to actions without unbinding the key. This means that the same key binding might apply to several actions, and the action that gets executed is the first one for which the filter matches. In particular, this allows reusing keys like `enter` or `tab` in contexts other than the editor.

The mouse buttons 4 and 5 (available on some high-end mice) are mapped to the locations command, and used to move in the locations history (back to the previous position, and back). This is hard-coded, and cannot be changed.

A new preference *Windows* → *Window Title* has been added to configure the title of the GPS window. Through it, you can chose whether to display any of base names, directory names, project name, . . . in the title bar.

The *About* dialog now contains the name of the current project's toolchain if this toolchain is not the native one.

A `Gtk_File_Chooser` dialog is used for choosing files if the system doesn't have its own dialog, or if this forbidden through preferences and the filesystem is local. It is possible to use the GPS dialog by turning off the `gtk_file_selector` trace.

In the *Call Graph Browser*, file locations are now clickable and open the corresponding file/line.

A new action and contextual menu allow exporting the contents of the *Call Trees* view to an editor.

A new button was added to the local toolbar of the *Run* view, to save the run command output to a file.

The *Edit Source* button in project properties rewrites the project file (with user confirmation) before opening it in an editor and closing the dialog.

The GPS code fixing capability was enhanced to handle compiler messages such as *Elaborate_All pragma required for NAME*. To fix this GPS will add pragma *Elaborate_All (NAME)* after the corresponding with-clause in the spec or body of given compilation unit.

The plug-in *auto_highlight_occurrences.py* highlights all occurrences of the word under the cursor in the whole file (possibly using smart cross reference information to only highlight the specific entity and not its homonyms). This plug-in has now learned not to highlight the language's keywords ("constant", "begin", . . .) which is useless and might be slow since these keywords generally occur often.

In the main toolbar, the button next to the summary of running tasks now brings up an ephemeral window which contains a task manager view, to view and interrupt tasks directly from the toolbar, without the need to have the *Task Manager* view present in the MDI.

The *OS Shell* window sometimes need a "stty echo" command to properly display the keys typed on the keyboard. GPS now has a preference to automatically emit this command. The new shell also has a *GPSSHELL* environment variable set automatically, so that you can test it in your shell's configuration files to enable or disable specific behaviors.

XMING COMPATIBILITY

A new trace *Views.No_Transient_Views* has been added. When activated (in *.gps/traces.cfg* or via the *-traceon* switch), this prevents the use of “transient” windows for floating views. This is needed mostly for compatibility with the Xming X11 server which does not allow resizing transient windows, and calculates their size wrongly.

Another trace *Store_Window_Positions* has been added: this is on by default, and, when switched off, will prevent GPS from saving the size and positions of floating windows.

GPS CUSTOMIZATION

GPS searches for icons used in plug-ins in any of the directories specified in the environment variable `GPS_CUSTOM_PATH`.

15.1 Python API

A menu no longer is necessarily a graphical object (it could be displayed outside of the application on some systems like Ubuntu or OSX), so inheritance of `GPS.Menu` from `GPS.GUI` has been removed. Most functions have been reimplemented though using the action associated with the menu.

GPS exports more debugger functions to python, allowing scripts to be more independent of which exact debugger is actually used. These are `GPS.Debugger.value_of`, `GPS.Debugger.set_variable`, `GPS.Debugger.break_at_location` and `GPS.Debugger.unbreak_at_location`.

GPS now exports the list of breakpoints that are currently set in the debugger by function `GPS.Debugger.breakpoints`. This is both more efficient and more reliable than having scripts parse it again, and avoids hard-coding gdb commands in scripts.

The Python `GPS.Process` now accepts the command as a list of arguments instead of a string, which makes it easier to handle arguments with spaces (no need for quoting).

A new `GPS.BuildTarget.get_command_line` method has been added in order to be able to retrieve the current command line of a specific Build Target.

A new python function `GPS.Entity.instance_of` is now available to find the generic entity that the current one instantiates.

A new browser can now be created with a custom toolbar. It is thus possible to add buttons via `GPS.Action.button` that will only apply to this browser.

15.1.1 Incompatible changes

This section lists changes done in the Python API that are no longer compatible with previous versions of GPS.

- `GPS.*Context` removed

All classes related to contexts were merged into a single `GPS.Context` class, which provides the same features as all the others combined. The previous names have been left for backward compatibility, but users are encouraged to only use `GPS.Context` from now on. If your script was explicitly testing classes (`"if isinstance(ctx, GPS.FileContext)"`), you should instead test whether specific information is available (`"if ctx.file()"`).

- `GPS.Toolbar`, `GPS.Combo`, `GPS.ToolButton` and `GPS.Button` removed

These classes have been removed. Only buttons associated with named actions can now be added (See `GPS.Action.button`). A benefit is that buttons can now be added to either the main toolbar or to the local toolbars

of the various views. GPS can also repeat the main toolbar in every floating window. Since actions can also be associated with menus and key shortcuts, this also encouraged code reuse.

- `GPS.Menu.create` obsolescent

This function is now obsolescent, and its use is discouraged (use `GPS.Action.menu` instead). A temporary version still exists, but will be removed in future versions. We encourage you to change your plug-ins to use `gps_utils.interactive` instead, since the latter creates proper actions which can be reused for contextual menus or key shortcuts.

The benefit is that menus are now always associated with named actions, which can also be bound to keyshortcuts or toolbar buttons. This encourages code reuse, and allows disabling all GUI items related to a given action more easily.

- `GPS.Menu.pywidget()` is no longer available
- `GPS.Menu.rename()` is no longer provided

Instead, destroy the menu and create a new one associated with the same action.

- the function `GPS.Menu.create` is now obsolescent. A simple replacement is provided for a few releases, but
- `debugger_breakpoints_changed` hook can receive a `None` `debugger`

Breakpoints can be set before a debugger is started, but the hook is still run. In this case, the `debugger` parameter is set to `None`.

- `source_lines_revealed` hook has been removed

As part of the simplification of the code.

- `task_changed` and `task_removed` hooks have been removed

Use `GPS.Task.list()` periodically to get the list of tasks.