

Using Language Servers

For several programming languages, a *language server* is available that provides information about the code to IDEs as long as they support communication via the [language server protocol \(LSP\)](#). This enables the IDE to provide the following services:

- > [Code completion](#)
- > Sending document formatting requests to the language server to automatically format documents using the settings specified in **Edit > Preferences > Text Editor > Behavior**
- > Highlighting the symbol under cursor
- > [Viewing function tooltips](#)
- > [Semantic highlighting](#), as defined in [Proposal of the semantic highlighting protocol extension](#)
- > Navigating in the code by using the [locator](#) or [moving to the symbol definition](#)
- > Inspecting code by viewing the document outline in the [Outline](#) view or in the **Symbols** list on the [editor toolbar](#)
- > [Finding references to symbols](#)
- > [Renaming the symbol under cursor](#)
- > Code actions
- > Displaying diagnostics from the language server as tooltips. You can also select a code range to display diagnostics for.

By providing a client for the language server protocol, Qt Creator can support the above features for several other programming languages besides C++. However, the client does not support language servers that require special handling.

Adding MIME Types for Language Servers

Qt Creator uses the [MIME type](#) of the file to determine which language server to request information from when you open a file for editing. Add new MIME types or file patterns to match language servers. If you do not set at least one MIME type or file pattern, no files will be sent to the language server. This is done to avoid unnecessary traffic and inaccurate information, as files are only sent to the language server if they are known to be handled by it. For more information about how Qt Creator uses MIME types, see [Editing MIME Types](#).

Specifying Settings for Language Clients

Qt Creator supports adding a Java language server for [Android development](#). A Python language server is added by default and you can edit its preferences. For other languages, you can add generic stdIO language servers.

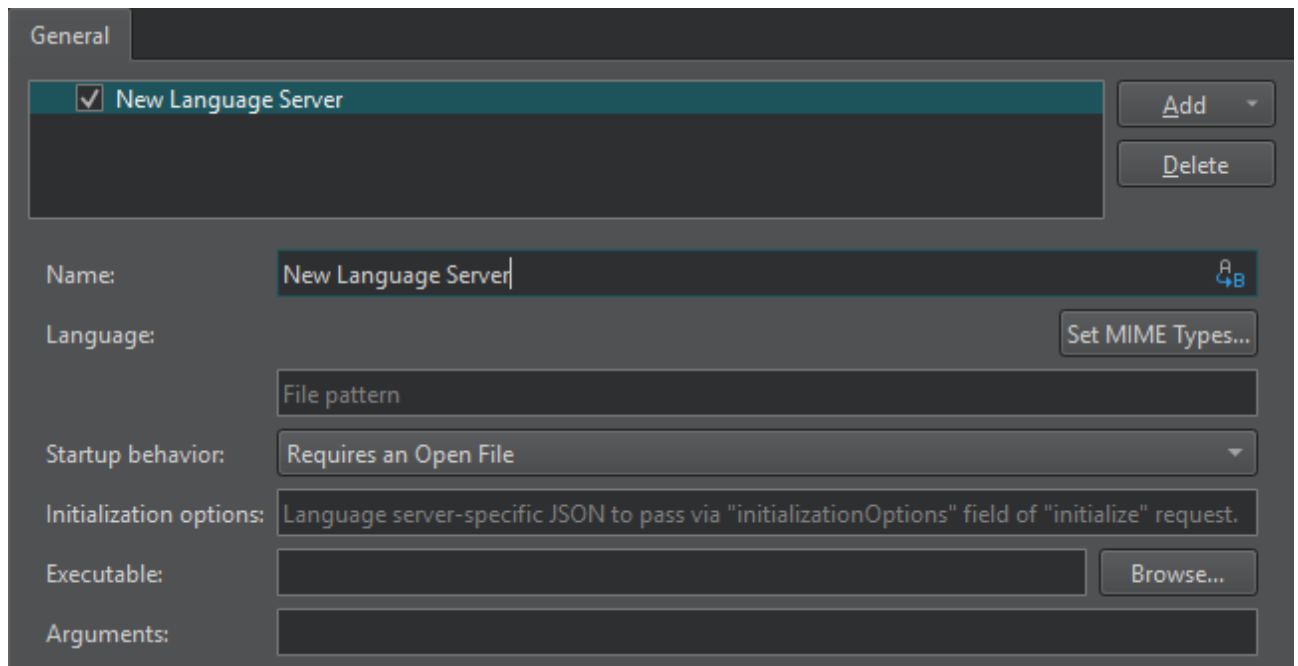
To enable a language server, select the check box next to the language server name and set server preferences.

To remove language servers from the list, select **Delete**.

Generic StdIO Language Server

To add a generic language server:

1. Select **Edit > Preferences > Language Client > Add > Generic StdIO Language Server** to add a generic language server.



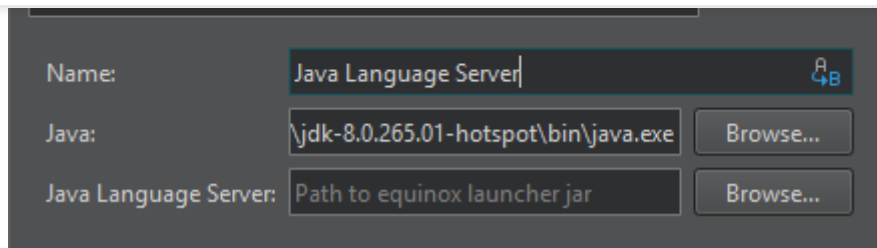
2. In the **Name** field, enter a name for the language server. Select the **Variables** button to use a variable for the server name. For more information, see [Using Qt Creator Variables](#).
3. In the **Language** field, select **Set MIME Types** to select the MIME types of the files to send to the language server. In the field below, you can enter file patterns to extend the MIME types, separated by semicolons.
4. In the **Startup behavior** field, select whether the language server is started when Qt Creator starts or when a project or file with a matching MIME type is opened. [General Messages](#) displays information about the connection to the language server.
5. In the **Initialization options** field, you can add language server specific JSON attributes to pass to an `initialize` request.
6. In the **Executable** field, enter the path to the language server executable.
7. In the **Arguments** field, enter any required command line arguments. Select **Variables** to use variables as arguments.


Java Language Server

To add a Java language server:

1. Select **Edit > Preferences > Language Client > Add > Java Language Server** to add a Java language server.



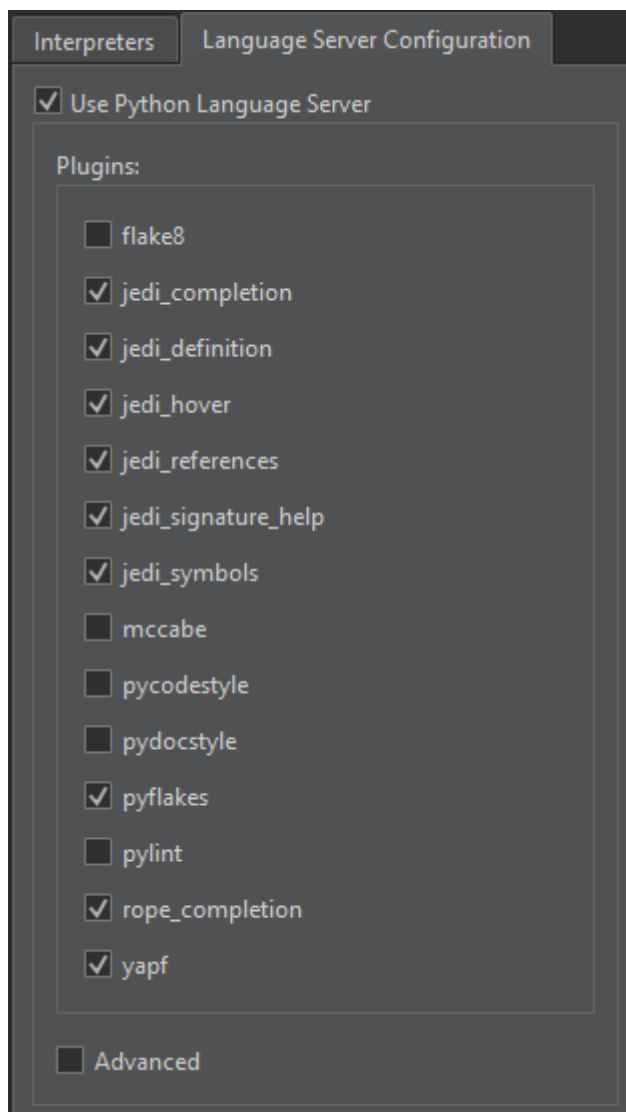


2. In the **Name** field, enter a name for the language server. Select the  (**Variables**) button to use a variable for the server name. For more information, see [Using Qt Creator Variables](#).
3. In the **Java** field, enter the path to the Java executable.
4. In the **Java Language Server** field, enter the path to the Java language server .jar file.

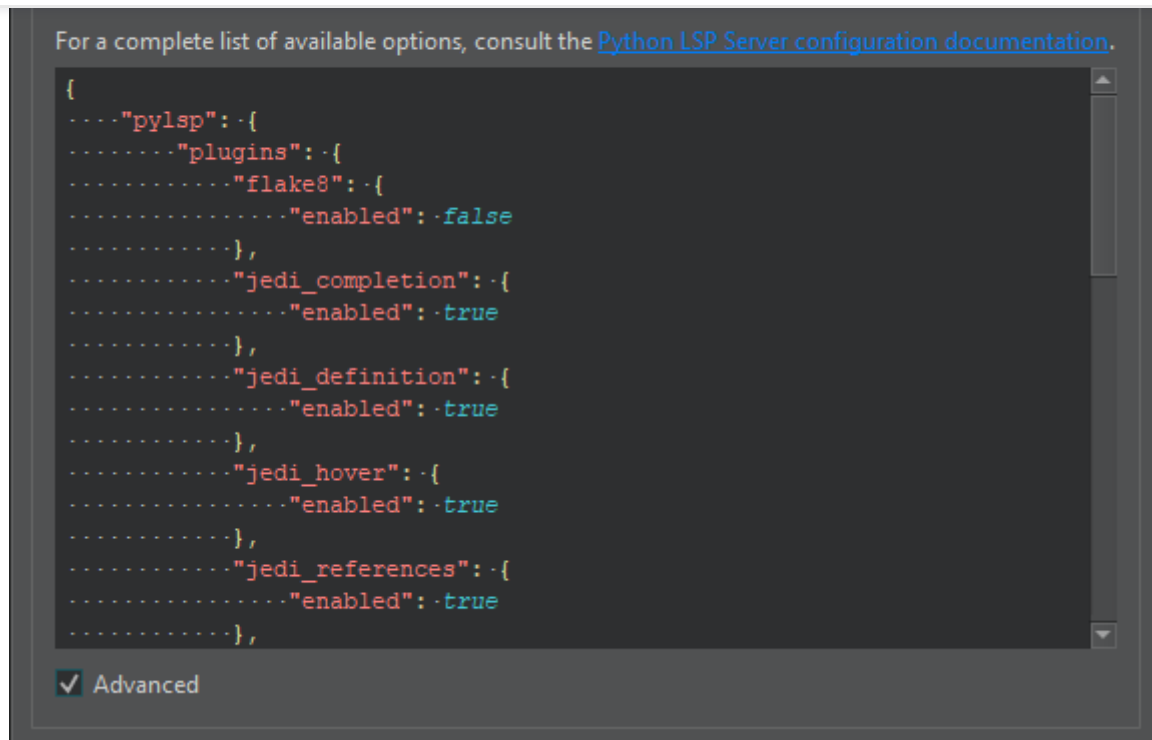
Python Language Server

To set preferences for Python language servers:

1. Select **Edit > Preferences > Python > Language Server Configuration** to select the Python language server plugins to use.



2. Select **Advanced** to configure the plugins.



For a complete list of configuration options, see [Python Language Server Configuration](#).

To disable the Python language server, deselect **Use Python Language Server**.

QML Language Server

Qt 6.4 ships with the `qmls` language server that provides completion and warnings for QML. To set it up as a [Generic StdIO Language Server](#), select `text/x-qml` and `application/x-qt.ui+qml` as MIME types, and `<Qt Installation>/bin/qmls` as executable.

If the language server is used together with the `QmlJSEditor` plugin, duplicate suggestions and warnings might be shown. To avoid this, disable the editor plugin as described in [Enabling and Disabling Plugins](#).

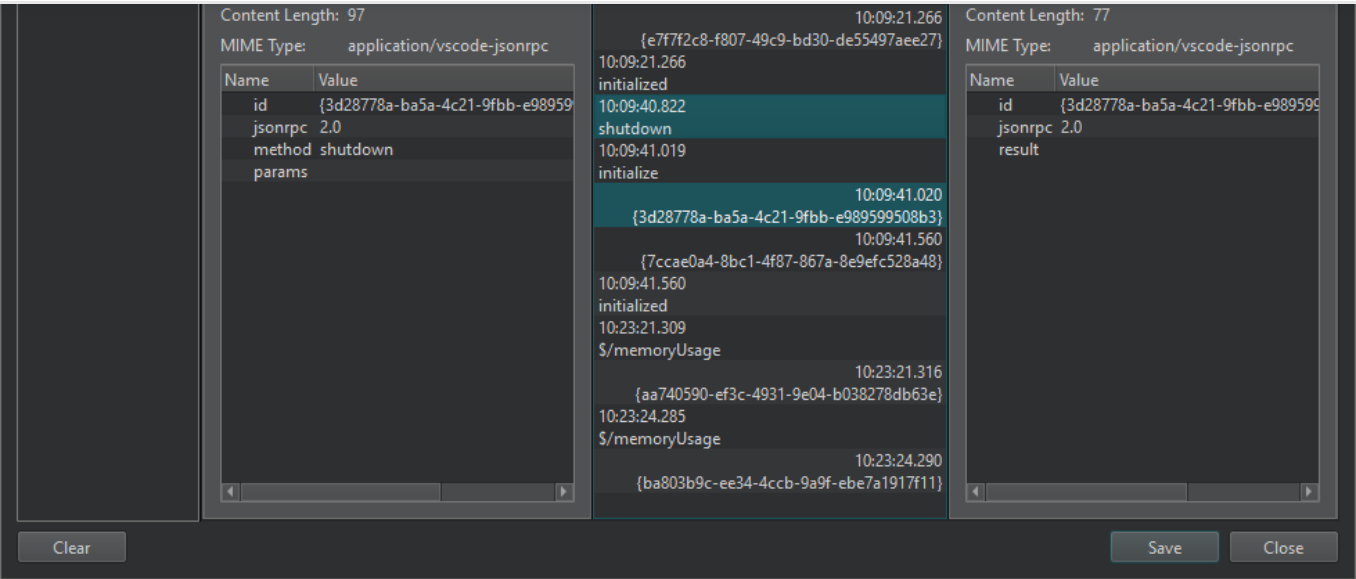
Supported Locator Filters

The locator enables you to browse not only files, but any items defined by *locator filters*. The language client plugin supports the following locator filters:

- Locating symbols in the current project (:)
- Locating symbols in the current document (.)
- Locating class (c), enum, and function (m) definitions in your project

Inspecting Language Clients

Qt Creator sends messages (*Requests*) to the language server and receives responses that contain the requested information if the language server is capable of handling the requests. To inspect the communication between Qt Creator and language servers and view server capabilities, select **Tools > Debug Qt Creator > Inspect Language Clients**.



The dialog shows a list of running language servers. The value of the **Startup behavior** field in the language server preferences determines when the server is started. The information displayed depends on the language server.

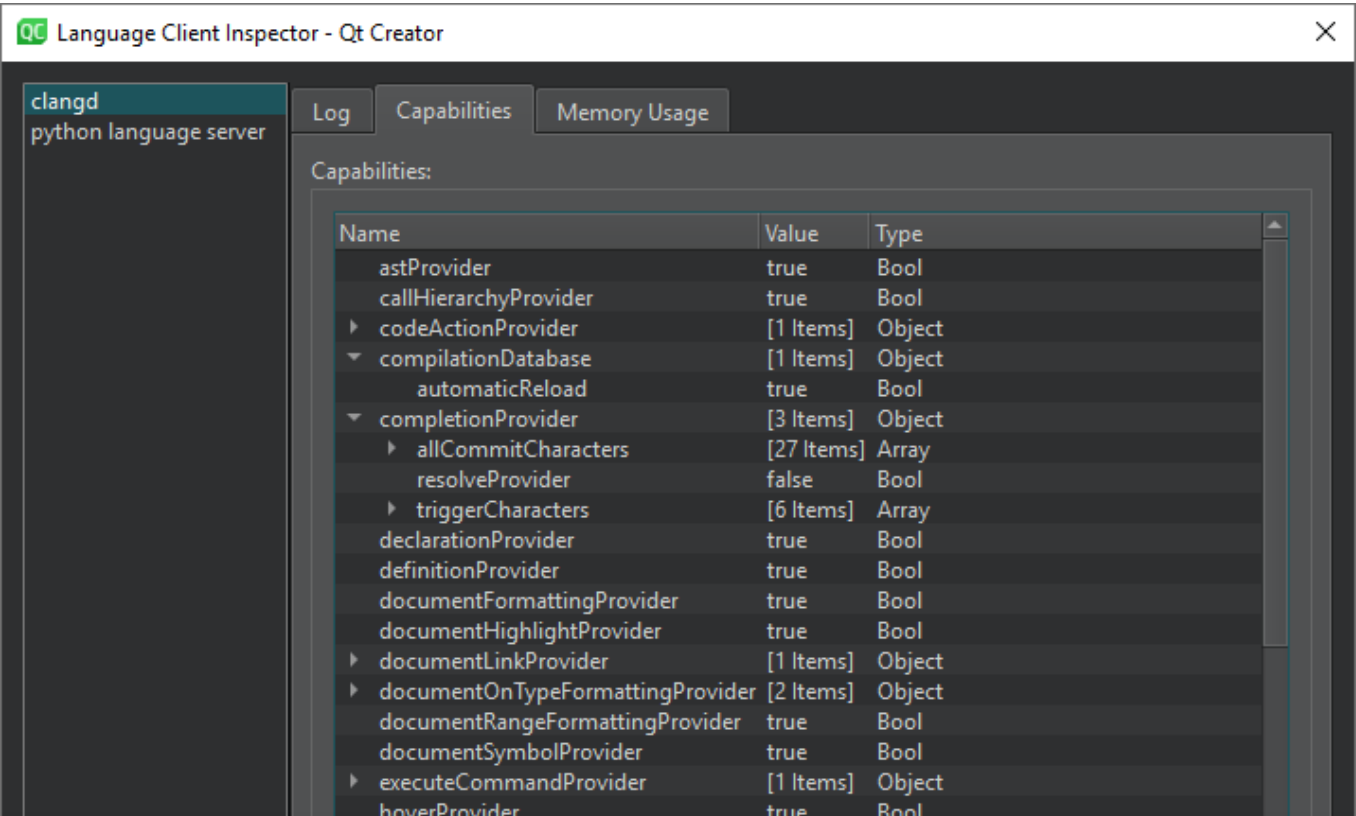
Log displays additional information about the selected log entry. You can see the **Content length** and **MIME type** of a **Client Message** and **Server Message**, as well as inspect the data sent between Qt Creator and the language server.

To remove old entries, select **Clear**.

Capabilities

In **Capabilities**, you can check whether a language server is capable of a specific task. You cannot modify the server capabilities in this dialog.

You can view the **Name**, **Value**, and **Type** of the capability.



Clear

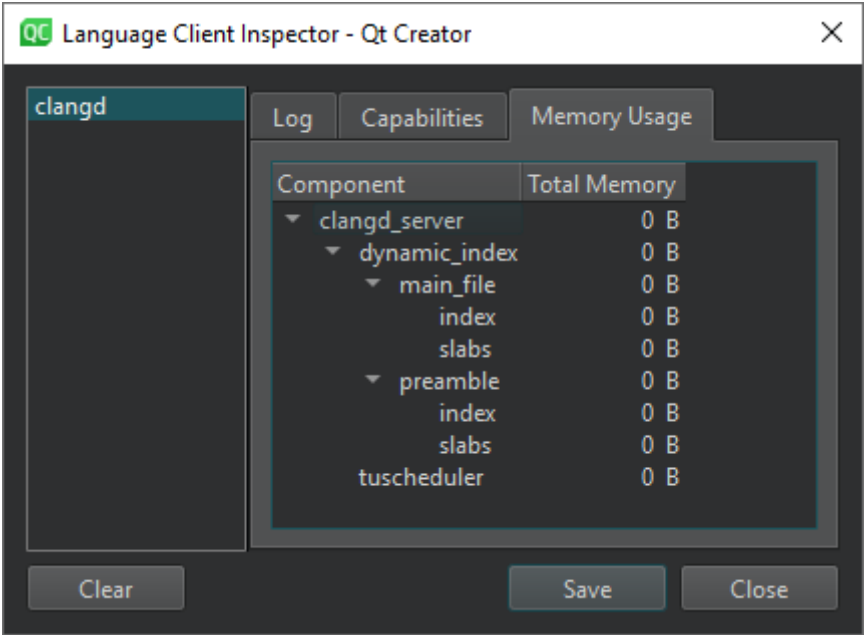
Save

Close

For some language servers, **Dynamic Capabilities** lists the **Methods** and **Options** available.

Memory Usage

For a clangd server, you can inspect the total amount of memory used by a particular component in **Memory Usage**.



Reporting Issues

The language server client has been mostly tested with Python and Java. If problems arise when you try them or some other language, please select **Help > Report Bug** to report them in the [Qt Project Bug Tracker](#). The reports should include Qt Creator console output with the environment variable `QT_LOGGING_RULES=qtcreator.languageclient.*=true` set.

< Using FakeVim Mode

Editing MIME Types >

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