
IPython Kernel Documentation

Release 5.1.0

IPython Development Team

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This contains minimal version-sensitive documentation for the IPython kernel package. Most IPython kernel documentation is in the [IPython documentation](#).

Contents:

Changes in IPython kernel

1.1 5.1

1.1.1 5.1.0

5.1.0 fixes some important regressions in 5.0, especially on Windows.

[5.1.0 on GitHub](#)

- Fix message-ordering bug that could result in out-of-order executions, especially on Windows ([PR #356](#))
- Fix classifiers to indicate dropped Python 2 support ([PR #354](#))
- Remove some dead code ([PR #355](#))
- Support rich-media responses in `inspect_requests` (tooltips) ([PR #361](#))

1.2 5.0

1.2.1 5.0.0

[5.0.0 on GitHub](#)

- Drop support for Python 2. `ipykernel 5.0` requires Python ≥ 3.4
- Add support for IPython's asynchronous code execution ([PR #323](#))
- Update release process in `CONTRIBUTING.md` ([PR #339](#))

1.3 4.10

[4.10 on GitHub](#)

- Fix compatibility with IPython 7.0 ([PR #348](#))
- Fix compatibility in cases where `sys.stdout` can be `None` ([PR #344](#))

1.4 4.9

1.4.1 4.9.0

[4.9.0 on GitHub](#)

- Python 3.3 is no longer supported ([PR #336](#))
- Flush `stdout/stderr` in `KernelApp` before replacing ([PR #314](#))
- Allow preserving `stdout` and `stderr` in `KernelApp` ([PR #315](#))
- Override `writable` method on `OutStream` ([PR #316](#))
- Add metadata to help display `matplotlib` figures legibly ([PR #336](#))

1.5 4.8

1.5.1 4.8.2

[4.8.2 on GitHub](#)

- Fix compatibility issue with `qt eventloop` and `pzmq 17` ([PR #307](#)).

1.5.2 4.8.1

[4.8.1 on GitHub](#)

- set `zmq.ROUTER_HANDOVER` socket option when available to workaround `libzmq` reconnect bug ([PR #300](#)).
- Fix `sdist`s including absolute paths for `kernelspec` files, which prevented installation from `sdist` on Windows ([PR #306](#)).

1.5.3 4.8.0

[4.8.0 on GitHub](#)

- Cleanly shutdown integrated event loops when shutting down the kernel. ([PR #290](#))
- `%gui qt` now uses `Qt 5` by default rather than `Qt 4`, following a similar change in terminal IPython. ([PR #293](#))
- Fix event loop integration for `asyncio` when run with `Tornado 5`, which uses `asyncio` where available. ([PR #296](#))

1.6 4.7

1.6.1 4.7.0

[4.7.0 on GitHub](#)

- Add event loop integration for `asyncio`.
- Use the new IPython completer API.
- Add support for displaying GIF images (`mimetype image/gif`).
- Allow the kernel to be interrupted without killing the Qt console.
- Fix `is_complete` response with cell magics.
- Clean up encoding of bytes objects.
- Clean up help links to use `https` and improve display titles.
- Clean up `ioloop` handling in preparation for tornado 5.

1.7 4.6

1.7.1 4.6.1

[4.6.1 on GitHub](#)

- Fix eventloop-integration bug preventing Qt windows/widgets from displaying with ipykernel 4.6.0 and IPython 5.2.
- Avoid deprecation warnings about naive datetimes when working with `jupyter_client` 5.0.

1.7.2 4.6.0

[4.6.0 on GitHub](#)

- Add to `API DisplayPublisher.publish` two new fully backward-compatible keyword-args:
 - `update: bool`
 - `transient: dict`
- Support new `transient` key in `display_data` messages spec for `publish`. For a display data message, `transient` contains data that shouldn't be persisted to files or documents. Add a `display_id` to this `transient dict` by `display(obj, display_id=...)`
- Add `ipykernel_launcher` module which removes the current working directory from `sys.path` before launching the kernel. This helps to reduce the cases where the kernel won't start because there's a `random.py` (or similar) module in the current working directory.
- Add busy/idle messages on `IOPub` during processing of aborted requests
- Add `active` event loop setting to GUI, which enables the correct response to IPython's `is_event_loop_running_XXX`
- Include IPython kernelspec in wheels to reduce reliance on “native kernel spec” in `jupyter_client`
- Modify `OutStream` to inherit from `TextIOBase` instead of object to improve API support and error reporting

- Fix IPython kernel death messages at start, such as “Kernel Restarting...” and “Kernel appears to have died”, when parent-poller handles PID 1
- Various bugfixes

1.8 4.5

1.8.1 4.5.2

[4.5.2 on GitHub](#)

- Fix bug when instantiating Comms outside of the IPython kernel (introduced in 4.5.1).

1.8.2 4.5.1

[4.5.1 on GitHub](#)

- Add missing `stream` parameter to overridden `getpass()`
- Remove locks from `iopub` thread, which could cause deadlocks during debugging
- Fix regression where `KeyboardInterrupt` was treated as an aborted request, rather than an error
- Allow instantiating Comms outside of the IPython kernel

1.8.3 4.5.0

[4.5 on GitHub](#)

- Use `figure.dpi` instead of `savefig.dpi` to set DPI for inline figures
- Support `ipympl` matplotlib backend (requires IPython update as well to fully work)
- Various bugfixes, including fixes for output coming from threads, and `input()` when called with non-string prompts, which `stdlib` allows.

1.9 4.4

1.9.1 4.4.1

[4.4.1 on GitHub](#)

- Fix circular import of matplotlib on Python 2 caused by the inline backend changes in 4.4.0.

1.9.2 4.4.0

[4.4.0 on GitHub](#)

- Use `MPLBACKEND` environment variable to tell matplotlib ≥ 1.5 use the inline backend by default. This is only done if `MPLBACKEND` is not already set and no backend has been explicitly loaded, so setting `MPLBACKEND=Qt4Agg` or calling `%matplotlib notebook` or `matplotlib.use('Agg')` will take precedence.

- Fixes for logging problems caused by 4.3, where logging could go to the terminal instead of the notebook.
- Add `--sys-prefix` and `--profile` arguments to **`ipython kernel install`**
- Allow Comm (Widget) messages to be sent from background threads.
- Select inline matplotlib backend by default if `%matplotlib magic` or `matplotlib.use()` are not called explicitly (for matplotlib \geq 1.5).
- Fix some longstanding minor deviations from the message protocol (missing status: ok in a few replies, connect_reply format).
- Remove calls to NoOpContext from IPython, deprecated in 5.0.

1.10 4.3

1.10.1 4.3.2

- Use a nonempty dummy session key for inprocess kernels to avoid security warnings.

1.10.2 4.3.1

- Fix Windows Python 3.5 incompatibility caused by faulthandler patch in 4.3

1.10.3 4.3.0

4.3.0 on GitHub

- Publish all IO in a thread, via `IOPubThread`. This solves the problem of requiring `sys.stdout.flush()` to be called in the notebook to produce output promptly during long-running cells.
- Remove references to outdated IPython guiref in kernel banner.
- Patch faulthandler to use `sys.__stderr__` instead of forwarded `sys.stderr`, which has no fileno when forwarded.
- Deprecate some vestiges of the Big Split: - `ipykernel.find_connection_file()` is deprecated. Use `jupyter_client.find_connection_file()` instead. - Various pieces of code specific to IPython parallel are deprecated in `ipykernel` and moved to `ipyparallel`.

1.11 4.2

1.11.1 4.2.2

4.2.2 on GitHub

- Don't show interactive debugging info when kernel crashes
- Fix handling of numerical types in `json_clean`
- Testing fixes for output capturing

1.11.2 4.2.1

[4.2.1 on GitHub](#)

- Fix default display name back to “Python X” instead of “pythonX”

1.11.3 4.2.0

[4.2 on GitHub](#)

- Support sending a full message in initial opening of comms (metadata, buffers were not previously allowed)
- When using `ipython kernel install --name` to install the IPython kernelspec, default display-name to the same value as `--name`.

1.12 4.1

1.12.1 4.1.1

[4.1.1 on GitHub](#)

- Fix missing `ipykernel.__version__` on Python 2.
- Fix missing `target_name` when opening comms from the frontend.

1.12.2 4.1.0

[4.1 on GitHub](#)

- add `ipython kernel install` `entrypoint` for installing the IPython kernelspec
- provisional implementation of `comm_info` request/reply for msgspec v5.1

1.13 4.0

[4.0 on GitHub](#)

4.0 is the first release of `ipykernel` as a standalone package.

CHAPTER 2

Indices and tables

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