# IPython Kernel Documentation

*Release 4.7.0.dev*

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# Contents

This contains minimal version-sensitive documentation for the IPython kernel package. Most IPython kernel documentation is in the IPython documentation.

Contents:

# CHAPTER 1

## Changes in IPython kernel

## 4.6

### 4.6.1

- 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.

### 4.6.0

- 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

## 4.5

### 4.5.2

4.5.2 on GitHub

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

### 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

### 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.

## 4.4

### 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.

### 4.4.0

4.4.0 on GitHub

- Use MPLBACKEND environment variable to tell matplotlib >= 1.5 use 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 >= 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.

## 4.3

### 4.3.2

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

### 4.3.1

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

### 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 refrences 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.

## 4.2

### 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

### 4.2.1

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

### 4.2.0

- 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`.

## 4.1

### 4.1.1

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

### 4.1.0

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

## 4.0

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

# CHAPTER 2

# Indices and tables

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