

PyObject_Call() and PyCFunction_Call() now raise a SystemError if a function returns a result and raises an exception. The SystemError is chained to the previous exception.

New os.scandir() function, part of the [PEP 471](#): "os.scandir() function -- a better and faster directory iterator". Patch written by Ben Hoyt.

Reduced the memory consumption of IPv4Address and IPv6Address.

BaseHTTPRequestHandler again logs response code as numeric, not as stringified enum. Patch by Demian Brecht.

In the ssl module, enable OpenSSL's X509_V_FLAG_TRUSTED_FIRST flag on certificate stores when it is available.

Avoid stalling in SSL reads when EOF has been reached in the SSL layer but the underlying connection hasn't been closed.

Added an __all__ to the types module.

Optimized utility functions in urllib.parse.

Flatten nested functools.partial.

Added the __module__ attribute to _tkinter classes.

Improved help() for non-recognized strings. help("") now shows the help on str. help('help') now shows the help on help(). Original patch by Mark Lawrence.

Corrected pure python implementation of timedelta division. Eliminated OverflowError from timedelta * float for some floats; Corrected rounding in timedelta true division.

Popen objects no longer leave a zombie after exit in the with statement if the pipe was broken. Patch by Martin Panther.

Make it possible to show local variables in tracebacks for both the traceback module and unittest.

Add an option to limit the output size in bz2.decompress(). Patch by Nikolaus Rath.

Module-level turtle functions no longer raise TclError after closing the window.

Group references and conditional group references now work in lookbehind assertions in regular expressions. (See also: bpo-9179)

Multibyte codecs with custom error handlers that ignores errors consumed too much memory and raised SystemError or MemoryError. Original patch by Aleksi Torhamo.

io.FileIO() called flush() after closing the file. flush() was not called in close() if closefd=False.

Fixed pydoc failure with non-ASCII files when stdout encoding differs from file system encoding (e.g. on Mac OS).

Remove RC4 from the SSL module's default cipher list.

Fix pydoc.synopsis() and pydoc.apropos() on modules with empty docstrings.

Fixed arbitrary code execution vulnerability in the dbm.dumb module. Original patch by Claudiu Popa.

ssl.match_hostname() now supports matching of IP addresses.

Fix mishandling of absolute Windows paths with forward slashes in pathlib.

Pickle representation of floats with protocol 0 now is the same for both Python and C implementations.

pprint now more efficiently uses free space at the right.

Add allow_abbrev parameter to argparse.ArgumentParser. Patch by Jonathan Paugh, Steven Bethard, paulj3 and Daniel Eriksson.

tarfile.open() now supports 'x' (exclusive creation) mode.

marshal.dumps() is now 20-25% faster on average.

marshal.dumps() with protocols 3 and 4 is now 40-50% faster on average.

Fixed compression in tarfile CLI. Patch by wdv4758h.

Fix possible overflows in the unicodedata module.

Fix possible overflow in Windows subprocess creation code.

logging.handlers.QueueListener now takes a respect_handler_level keyword argument which, if set to True, will pass messages to handlers taking handler levels into account.

turtledemo now has a visual sorting algorithm demo. Original patch from Jason Yeo.

Fix issue where cgi.FieldStorage did not always ignore the entire preamble to a multipart body.

pydebug builds now use "gcc -Og" where possible, to make the resulting executable faster.

Update OS X 10.5 installer build to use OpenSSL 1.0.2a.

Deprecation warning is now raised for builtin types without the __module__ attribute.

Implement [PEP 486](#) - Make the Python Launcher aware of virtual environments. Patch by Paul Moore.

Make user scripts directory versioned on Windows. Patch by Paul Moore.