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## **Red Hat Enterprise Linux Release 9.2 Manual Pages on 'ioctl\_ficlonerange.2' command**

**\$ man ioctl\_ficlonerange.2**

IOCTL\_FICLONERANGE(2) Linux Programmer's Manual IOCTL\_FICLONERANGE(2)

### **NAME**

ioctl\_ficlonerange, ioctl\_ficlone - share some the data of one file

with another file

### **SYNOPSIS**

```
#include <sys/ioctl.h>
#include <linux/fs.h>
int ioctl(int dest_fd, FICLONERANGE, struct file_clone_range *arg);
int ioctl(int dest_fd, FICLONE, int src_fd);
```

### **DESCRIPTION**

If a filesystem supports files sharing physical storage between multi?

ple files ("reflink"), this ioctl(2) operation can be used to make some

of the data in the src\_fd file appear in the dest\_fd file by sharing

the underlying storage, which is faster than making a separate physical

copy of the data. Both files must reside within the same filesystem.

If a file write should occur to a shared region, the filesystem must

ensure that the changes remain private to the file being written. This

behavior is commonly referred to as "copy on write".

This ioctl reflinks up to src\_length bytes from file descriptor src\_fd

at offset src\_offset into the file dest\_fd at offset dest\_offset, pro?

vided that both are files. If src\_length is zero, the ioctl reflinks

to the end of the source file. This information is conveyed in a

structure of the following form:

```
struct file_clone_range {  
    __s64 src_fd;  
    __u64 src_offset;  
    __u64 src_length;  
    __u64 dest_offset;  
};
```

Clones are atomic with regards to concurrent writes, so no locks need to be taken to obtain a consistent cloned copy.

The FICLONE ioctl clones entire files.

## RETURN VALUE

On error, -1 is returned, and errno is set to indicate the error.

## ERRORS

Error codes can be one of, but are not limited to, the following:

EBADF src\_fd is not open for reading; dest\_fd is not open for writing or is open for append-only writes; or the filesystem which src\_fd resides on does not support reflink.

EINVAL The filesystem does not support reflinking the ranges of the given files. This error can also appear if either file descriptor represents a device, FIFO, or socket. Disk filesystems generally require the offset and length arguments to be aligned to the fundamental block size. XFS and Btrfs do not support overlapping reflink ranges in the same file.

EISDIR One of the files is a directory and the filesystem does not support shared regions in directories.

## EOPNOTSUPP

This can appear if the filesystem does not support reflinking either file descriptor, or if either file descriptor refers to special inodes.

EPERM dest\_fd is immutable.

## ETXTBSY

One of the files is a swap file. Swap files cannot share storage.

EXDEV dest\_fd and src\_fd are not on the same mounted filesystem.

## VERSIONS

These `ioctl` operations first appeared in Linux 4.5. They were previously known as `BTRFS_IOC_CLONE` and `BTRFS_IOC_CLONE_RANGE`, and were private to Btrfs.

## CONFORMING TO

This API is Linux-specific.

## NOTES

Because a copy-on-write operation requires the allocation of new storage, the `fallocate(2)` operation may unshare shared blocks to guarantee that subsequent writes will not fail because of lack of disk space.

## SEE ALSO

`ioctl(2)`

## COLOPHON

This page is part of release 5.10 of the Linux man-pages project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at <https://www.kernel.org/doc/man-pages/>.

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