

# TTY Line Discipline

- [Registration](#)
- [Other Functions](#)
- [Line Discipline Operations Reference](#)
- [Driver Access](#)
- [TTY Flags](#)
- [Locking](#)
- [Internal Functions](#)

TTY line discipline process all incoming and outgoing character from/to a tty device. The default line discipline is `:doc:N_TTY<n_tty>`. It is also a fallback if establishing any other discipline for a tty fails. If even `N_TTY` fails, `N_NULL` takes over. That never fails, but also does not process any characters -- it throws them away.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 9); [backlink](#)**

Unknown interpreted text role "doc".

## Registration

Line disciplines are registered with `tty_register_ldisc()` passing the `ldisc` structure. At the point of registration the discipline must be ready to use and it is possible it will get used before the call returns success. If the call returns an error then it won't get called. Do not re-use `ldisc` numbers as they are part of the userspace ABI and writing over an existing `ldisc` will cause demons to eat your computer. You must not re-register over the top of the line discipline even with the same data or your computer again will be eaten by demons. In order to remove a line discipline call `tty_unregister_ldisc()`.

Heed this warning: the reference count field of the registered copies of the `tty_ldisc` structure in the `ldisc` table counts the number of lines using this discipline. The reference count of the `tty_ldisc` structure within a tty counts the number of active users of the `ldisc` at this instant. In effect it counts the number of threads of execution within an `ldisc` method (plus those about to enter and exit although this detail matters not).

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 34)**

Unknown directive type "kernel-doc".

```
.. kernel-doc:: drivers/tty/tty_ldisc.c
   :identifiers: tty_register_ldisc tty_unregister_ldisc
```

## Other Functions

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 40)**

Unknown directive type "kernel-doc".

```
.. kernel-doc:: drivers/tty/tty_ldisc.c
   :identifiers: tty_set_ldisc tty_ldisc_flush
```

## Line Discipline Operations Reference

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 46)**

Unknown directive type "kernel-doc".

```
.. kernel-doc:: include/linux/tty_ldisc.h
   :identifiers: tty_ldisc_ops
```

## Driver Access

Line discipline methods can call the methods of the underlying hardware driver. These are documented as a part of struct

tty\_operations.

## TTY Flags

Line discipline methods have access to `c:member:'tty_struct.flags'` field. See `doc:'tty_struct'`.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 58); [backlink](#)**

Unknown interpreted text role "c:member".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 58); [backlink](#)**

Unknown interpreted text role "doc".

## Locking

Callers to the line discipline functions from the tty layer are required to take line discipline locks. The same is true of calls from the driver side but not yet enforced.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 68)**

Unknown directive type "kernel-doc".

```
.. kernel-doc:: drivers/tty/tty_ldisc.c
   :identifiers: tty_ldisc_ref_wait tty_ldisc_ref tty_ldisc_deref
```

While these functions are slightly slower than the old code they should have minimal impact as most receive logic uses the flip buffers and they only need to take a reference when they push bits up through the driver.

A caution: The `c:member:'tty_ldisc_ops.open()'`, `c:member:'tty_ldisc_ops.close()'` and `c:member:'tty_driver.set_ldisc()'` functions are called with the ldisc unavailable. Thus `tty_ldisc_ref()` will fail in this situation if used within these functions. Ldisc and driver code calling its own functions must be careful in this case.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 75); [backlink](#)**

Unknown interpreted text role "c:member".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 75); [backlink](#)**

Unknown interpreted text role "c:member".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 75); [backlink](#)**

Unknown interpreted text role "c:member".

## Internal Functions

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\tty\linux-master) (Documentation) (tty) tty\_ldisc.rst, line 84)**

Unknown directive type "kernel-doc".

```
.. kernel-doc:: drivers/tty/tty_ldisc.c
   :internal:
```