TTY Line Discipline

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*

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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 wonâ€™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)

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```
.. 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)

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```
.. 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)

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```
.. 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*

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

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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)

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```
.. 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*

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

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

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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)

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