Read/Write

Input and output devices support the :c:func:`read()` and :c:func:`write()` function, respectively, when the `V4L2_CAP_READWRITE` flag in the `capabilities` field of struct :c:type:`v4l2_capability` returned by the :ref:`VIDIOC_QUERYCAP` ioctl is set.

Drivers may need the CPU to copy the data, but they may also support DMA to or from user memory, so this I/O method is not necessarily less efficient than other methods merely exchanging buffer pointers. It is considered inferior though because no meta-information like frame counters or timestamps are passed. This information is necessary to recognize frame dropping and to synchronize with other data streams. However this is also the simplest I/O method, requiring little or no setup to exchange data. It permits command line stunts like this (the vidctrl tool is fictitious):

To read from the device applications use the :c:func:`read()` function, to write the :c:func:`write()` function. Drivers must implement one I/O method if they exchange data with applications, but it need not be this. [1] When reading or writing is supported, the driver must also support the :c:func:`select()` and :c:func:`poll()` function. [2]

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[1] It would be desirable if applications could depend on drivers supporting all I/O interfaces, but as much as the complex memory mapping I/O can be inadequate for some devices we have no reason to require this interface, which is most useful for simple applications capturing still images.

[2] At the driver level :c:func:`select()` and :c:func:`poll()` are the same, and :c:func:`select()` is too important to be optional.

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