USB CDC / USBnet (ECM, NCM, ACM)

USB CDC-ACM (Abstract Control Model), CDC-ECM (Ethernet Networking Control Model), CDC-NCM (Network Control Model), OBEX (Object Exchange) and WCM-Device Management USB class and function drivers

CDC-ACM (Abstract Control Model) allows any communication device to provide a serial communication interface (e.g modem devices that send and receive AT commands).

/lib/modules/$(uname -r)**/kernel/drivers/usb/class目录下看到cdc-acm.ko文件。**

CDC-ECM (Ethernet Networking Control Model) offers device manufacturers to interface as a standard NIC (Network Interface Card) device. This interface is usually adopted by high speed LAN networking devices allowing high speed Ethernet data transfer over USB.

CDC-NCM (Network Control Model).

OBEX (Object Exchange) is compliant with the Wireless Mobile Communication OBEX function model, supporting OBEX applications over USB.

WMC-Device Management is compliant with the Device Management function model, supporting a minimal AT command based control model.

RNDIS - provides CDC like communication capabilities on Windows PCs supporting the Microsoft RNDIS protocol. Please refer to theRNDIS webpage for more info.

- ACM - Abstract Communication Model
- ECM - Ethernet Control Module
- NCM - Network Control Model
- OBEX - Object Exchange Function Model
- WMC - Device management Function Model

The **CDC ACM driver** exposes the USB device as a virtual modem or a virtual COM port to the operating system.
The driver enables sending both data and AT commands, either through ACM (separating data and AT commands over different channels) or through Serial Emulation (passing the AT commands as is and as part of the data stream).

The ECM (Ethernet Networking Control Model) protocol is used for exchanging Ethernet-framed data between the device and host. A CDC ECM compliant device exposes itself as a virtual NIC to the host operating system. The NIC is assigned with a MAC and an IP address.
A general use case of a CDC ECM device is a point-to-point Ethernet adapter to a LAN/WLAN.

The NCM (Network Control Model) protocol is used for exchanging High Speed Ethernet-framed data between the device and host. A CDC NCM compliant device exposes itself as a virtual NIC to the host operating system. The NIC is assigned with a MAC and an IP address.
A general use case of a CDC NCM device is a Wireless Network Adapter which supports 3.5G/4G networks such as: HSPA+ and LTE.