

# Quick Start Guide

## SharkTapCC 10/100/1G

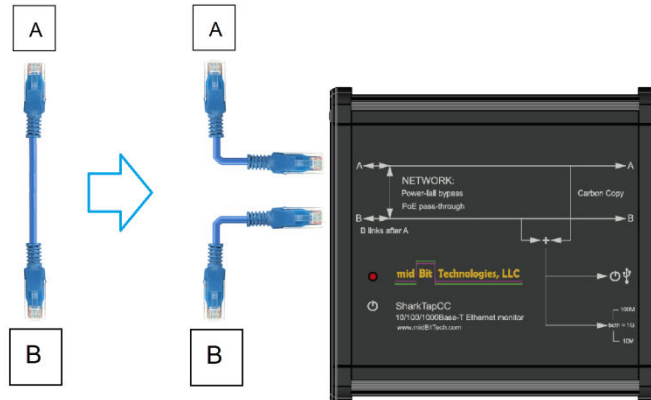


There are 3 steps to installing the SharkTapCC, and can be carried out in any order:

- 1) Connect the network
- 2) Connect power
- 3) Connect TAP port(s)

### Connect the Network: -----

'A' and 'B' represent the two endpoints of an ethernet link. A switch and a router, for example. To monitor the A <-> B link, connect both ends to the SharkTapCC as shown. If one device needs to be aware of link failure (to activate a backup path, for example), connect that device to the B port on the SharkTapCC. This is explained further under 'Error Propagation' below.



### Connect Power: -----

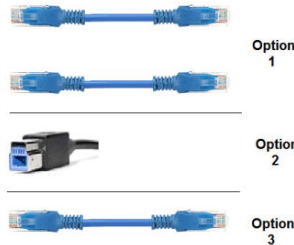
Connect a USB cable to one or both of the USB (type B) jacks:



The USB connector on the left only draws power. You can use a USB2 or USB3 cable to supply power.

The USB connector on the right supplies power and exposes a virtual NIC (ethernet) port (described below).

**Connect TAP port(s):** -----



You can connect all or none of the TAP (Test Access Port) connections without affecting the Network ports. We recommend connecting only one of the 3 options to limit power draw and generated heat, but you can connect them all at once if you want to. You may wish to use an external USB3 hub to apply permanent power, or if you have several SharkTapCC units on a rack.

Option 1: This option requires two ethernet ports on your PC, and the ports must be able to run at the same speed as the NETWORK ports. The Carbon Copy port marked 'A' will provide duplicates of packets received on NETWORK A (and sent to NETWORK B), and Carbon Copy port 'B' provides packets received on NETWORK B. This option allows you to capture a full 2Gb of full-duplex traffic, with a small and constant packet delay (about 500ns). If your NIC has all autonegotiate options enabled, the TAP ports will also reflect the full/half duplex and EEE settings of the NETWORK port.

Options 2 & 3 provide an "aggregate TAP". That is, all packets from NETWORK ports A and B will be duplicated onto this single port.

Option 2: Connecting this USB port to your PC will create a virtual ethernet port on your PC. You will need a USB3 port to capture a full 1Gb of data. This virtual port will show the MAC address printed on the bottom of your SharkTapCC, but this MAC is not actually used for anything.

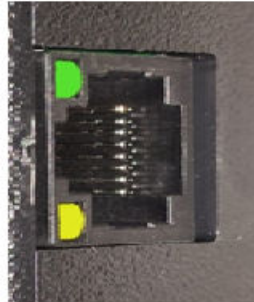
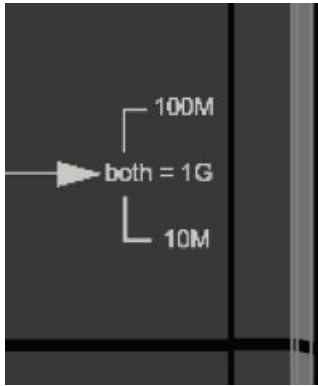
Option 3: This wired ethernet port will provide the same aggregate TAP data as Option 2. If both Option 2 & 3 are installed, packets with FCS errors will only be duplicated onto the wired ethernet port. Normal packets will be duplicated on both ports.

**Indicators:** -----



- The power LED glows orange when adequate power is supplied.
- If this LED is red, your USB connection is not supplying adequate power.
- The SharkTapCC will draw from about 500mA up to about 1A (for NETWORK at 1Gb, no EEE, all TAP ports connected)

**Indicators, continued:** -----



Each wired ethernet port includes LEDs to show the link line speed. If both green and yellow LEDs are lit, the link is 1000Base-T (Gigabit). If only the green LED is lit, the link is 100Mb. If only yellow is lit, the link is 10Mb. The LEDs will blink if there are packets being sent or received.

**More Information:** -----

**Powerfail bypass :** The SharkTapCC includes relays which will provide a physical bypass path for the NETWORK A/B ports. You will get a link through A/B without power. There is no setup for this, it 'just works'.

**PoE pass through:** The SharkTapCC passes Power over Ethernet voltages through the NETWORK A/B ports at all times. There is no setup, the PoE power is always passed through.

**Error propagation:** When the SharkTapCC is powered, NETWORK port B will only link if NETWORK A has a valid link. If port A loses link, port B will also be dropped. So if you have a device that will enable a backup route if the link fails, connect this device to the B port. The NETWORK A port will always link up. There is no setup for this feature, the SharkTapCC will always work this way.

**Speed matching:** The NETWORK and Carbon Copy ports must all run at the same speed. The SharkTapCC will automatically match the lower speed on NETWORK A or B.

The SharkTap directly connects to 10Base-T, 100Base-T and 1000Base-T links.

We use the phrase 'carbon copy' to refer to a copper repeater architecture. Ethernet PHY chips are connected 'back-to-back' through the baseband RGMII interface. So data is copied at a very low level, with a small and fixed delay (of about 500ns). Even data errors will be replicated, though of course the exact analog error can't be reproduced – but the fact of a data error is repeated to the monitoring ports.

**Mounting tabs:** Your SharkTapCC comes with two tabs that can be used for permanent installation. You'll need to remove the TAP side faceplate. Loosen the 4 screws, sequentially, a few turns at a time while gently easing the faceplate away from the body. Then slide the mounting tabs into the bottom slot on each side and tighten the set screws. Replace the faceplate by tightening the faceplate screws sequentially, a few turns at a time. As the faceplate screws down you may need to slightly move the circuit board (the connectors) up or down to slide into the faceplate openings.

## USB Device Driver: -----

When connected to the blue-insert USB jack (with the USB logo), the SharkTapCC will show up on your PC as a new Network Adaptor. On Windows 7 or later, Windows Update will automatically install a driver the first time the SharkTap is plugged in. The SharkTap uses an industry standard Realtek Gigabit Ethernet Adapter chip, which has mainstream support.

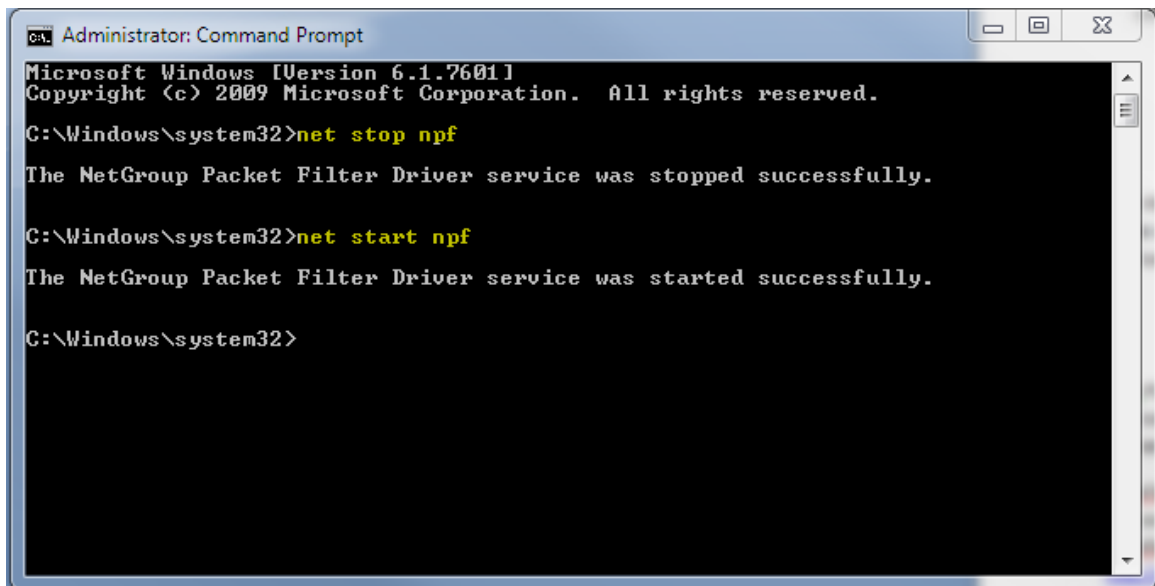
Once the driver is installed, configuring the SharkTap is identical to configuring a built-in Ethernet port. You don't need to assign an IP address or other network configuration. Our website, <http://www.midbittech.com/usb/> provides expert tips for setting up your network adapter for the cleanest WireShark experience. Wireshark or other capture software will set the network port to capture all packets, so any protocol settings are irrelevant.

For recent **Linux** distributions, the SharkTap will "just work" and show up as usbx, or enx70b3d5ebxxx if you have 'predictable interface naming'. You do not need to configure an IP address, and probably don't want to. RTL8153 support has been part of the official tree since 2.6

(Note: Any packets generated by your PC will not actually be routed to the NETWORK ports) They'll show up on a Wireshark capture, but don't go anywhere.

For the very latest driver, or for older Windows or Linux machines, or other OS's, Realtek provides driver support at <https://www.realtek.com/en/component/zoo/category/network-interface-controllers-10-100-1000m-gigabit-ethernet-usb-3-0-software>

**WinPCap Driver:** Wireshark, on Windows, includes a software driver called WinPCap that may not recognize the SharkTap until the PC is restarted. You can avoid doing a restart as follows: Open a Command Prompt with supervisor privileges (right click on the command prompt icon, select 'Run as Administrator'), and type 'net stop npf' <enter> then 'net start npf' You should only need to do this the first time the SharkTap is plugged into your PC.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Windows\system32>net stop npf
The NetGroup Packet Filter Driver service was stopped successfully.

C:\Windows\system32>net start npf
The NetGroup Packet Filter Driver service was started successfully.

C:\Windows\system32>
```