

AN INTRODUCTION TO WINDOWS INTERNET CONNECTION SHARING AND HOW TO USE IT WITH THE COMREX ACCESS CODEC

Windows Internet Connection Sharing (ICS) is a feature that is included in all recent versions of Microsoft Windows. ICS is used to share access to an Internet stream among several devices. It can be used to share an Ethernet-based connection to other Ethernet users (assuming your computer has two Ethernet ports). More powerfully for our application, ICS can be used to share a wireless Internet connection to an Ethernet-based connection like the Comrex ACCESS Rack. As shown in Fig 1, since the ACCESS Rack has only a provision for an Ethernet port, wireless Internet connections are usually not possible. ICS may be used to transform that connection to Wifi, 3G, or any other type of Internet service supported by the computer.

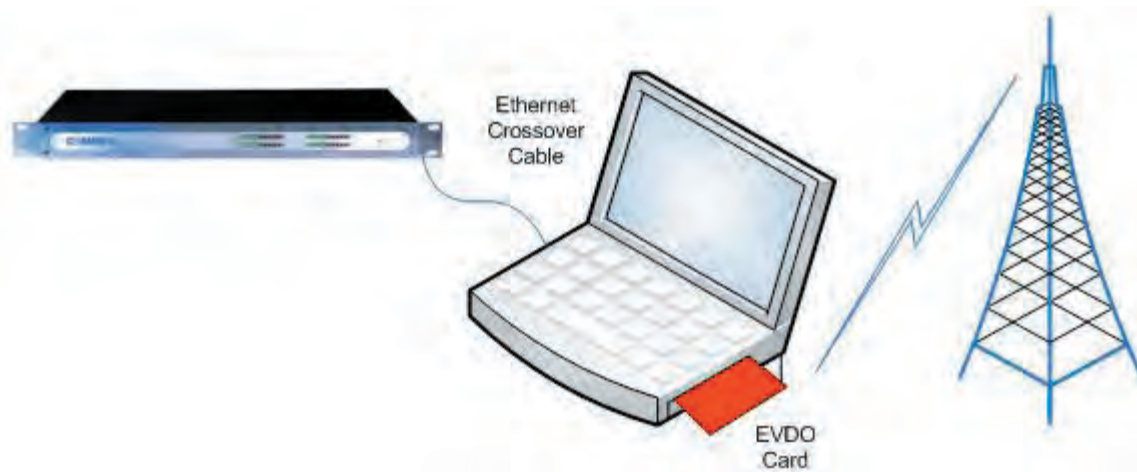


FIG 1- WINDOWS ICS CONNECTION

For the purposes of this discussion, we'll assume the computer you're using is a laptop running Windows XP. One thing you'll need to know about ICS is that once it's implemented on your Ethernet port, it will blow away any previous static IP settings you had in there. So if in doubt, record all your static IP info before turning it on. You'll need an Ethernet crossover cable (as opposed to a straight-

through patch cable) to make this work. If you don't have access to a crossover cable, you can put a simple Ethernet switch in the link and use normal patch cables.

One side benefit to using ICS with the ACCESS rack: The ACCESS rack requires a browser to control it, so use of a laptop running ICS serves dual functions—it will share the wireless link as well as provide a browser interface to “drive” the ACCESS rack. Note that the forthcoming ACCESS portable product will solve this problem by including an embedded web browser on the user interface.

SETTING UP WINDOWS ICS

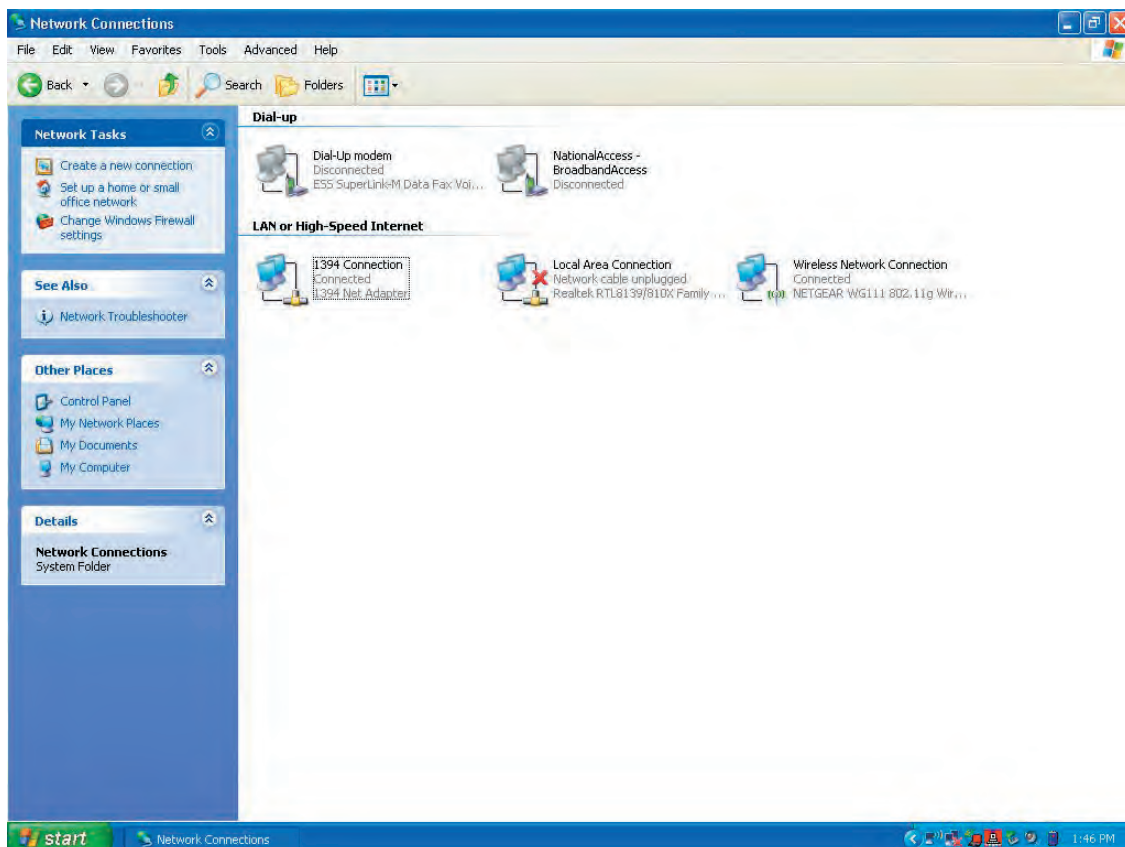


FIGURE 2: WINDOWS NETWORK CONNECTIONS

Figure 2 shows a typical laptop's network settings menu (this is accessed with Start->Control Panel->Network Connections). This particular computer has several Network Connections from which to choose. Under Dial-up options there appears a dial-up modem and an EVDO connection (labeled National/Broadband Access, which is Verizon's brand name). Under Lan connections, we see a Firewire adapter (1394), an Ethernet port (Local Area Connection) and a WiFi (Wireless Network Connection).

We need to right-click on the connection we wish to share. Note this is the connection we will use as our main Internet link, not the one connected to the ACCESS product. E.g if we are sharing an EVDO connection with an ACCESS connected to the Ethernet port, we would right-click the National/Broadband icon here. In the window that pops up after the right-click, select properties.

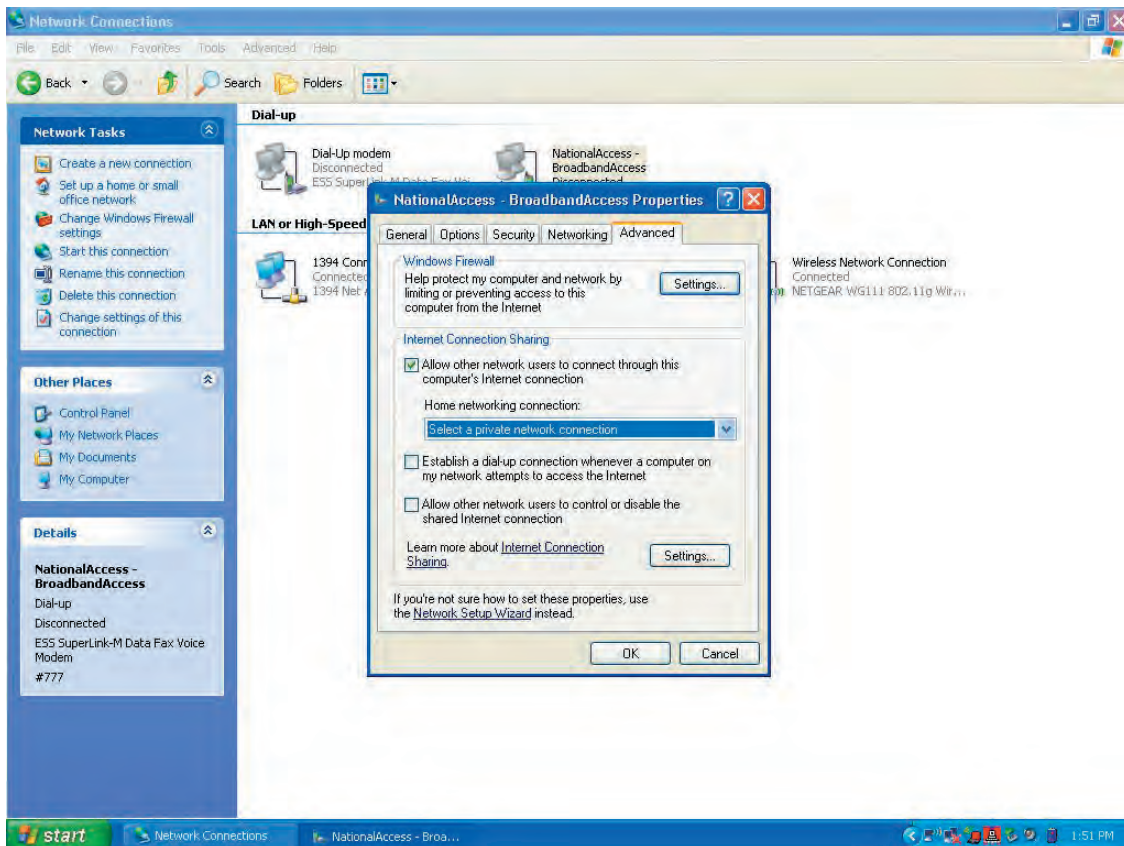


Figure 3- Network Advanced Tab

Figure 3 shows the properties window for a particular network connection. On the advanced tab, we need to select the box labeled Allow other network users to connect through this computer's Internet connection. Below this option is a pull-down menu to allow you to select which network connection the ACCESS unit will be on (this is called the Home Network Connection). Normally, you will select your Ethernet port here. If only one other network connection exists, this option will not be visible.

By enabling your Ethernet port as the Home networking connection, you've done several things:

- 1) You have deleted any previous IP information on your Ethernet port and set it to a static address of 192.168.0.1
- 2) You have enabled a DHCP server in the laptop, which will supply IP information to any device connected to the Ethernet port in the 192.168.0.x range

CONNECTING AND USING ACCESS WITH ICS

GETTING THE ACCESS IP ADDRESS

As mentioned, you'll need to connect your ACCESS to your laptop using a crossover Ethernet cable. Windows ICS is set up to deliver an IP address to ACCESS. This works fine, and you can extract the assigned IP either by connecting a video monitor to the ACCESS video port (something that's not always terribly convenient on the road) or watching the front panel LEDs as ACCESS boots. This process is described in Appendix A. A simpler way to know the IP address of ACCESS is to assign it statically using the config program before you start. Choose an address within the ICS subnet (192.168.0.7 works for us) and set the gateway address to the laptop's 192.168.0.1 number. This way it never changes and you can easily "find" the ACCESS using your browser.

RUNNING ACCESS

To make the system sing, you must first establish a connection to the Internet from your laptop. This may involve using some sort of program, e.g. Verizon EVDO uses a connection manager provided on CD. Once the connection is established, test it by opening a browser and looking at a website (We recommend Comrex.com to get all the latest cool info). Now you can point your browser to the IP address of the ACCESS, and you should see the system's login screen. From this point on, you should be able to make connections as you normally would if you were on a LAN.

ADDITIONAL APPLICATIONS

Windows ICS is also useful in connecting to Wi-Fi services that have a log-in page or terms-of-service that must be agreed to before use. Wi-Fi-to-Ethernet bridges exist, but are limited in allowing ACCESS connections to these types of networks. This is because many paid Wi-Fi services (as well as free services that have terms-of-service) record the Ethernet MAC address of the computer that logs in. Since rack ACCESS has no browser of its own, these systems can not be made to work. By using ICS (bridging the Wi-Fi connection to the Ethernet port) only the MAC address of the laptop is presented to the Wi-Fi system, but the ACCESS codec has free use of the Internet stream.

APPENDIX A – EXTRACTING THE ACCESS IP ADDRESS DURING BOOTING

Windows ICS assigns addresses at random in the format of: 192.168.0.xxx

You can visually derive the true IP address by the front panel LEDs. They will display a “coded” version of the IP address assigned for a few seconds during boot just before the ACCESS enters operational mode. During this time, the “Ready” light on the front panel flashes quickly, and the level LEDs display the last 4 decimal digits of the IP address. This is best shown by example:

Let's assume that when connected, the ACCESS is assigned an IP address of 192.168.0.17. The LEDs will display the last four decimals of this address (including zeros) so during boot you will see the following code:

L input will display 0 LED

R input will display 0 LEDs

L output will display 1 LED

R output will display 7 LEDs

You can now assume that your ACCESS has the address of 192.168.0.017