TCP-IP Networking Overview

In more recent installations the sound processing equipment is being integrated into a theater management system or automation control via the Ethernet interface. It is important to understand the topology of the network for the sound processing equipment being configured and methods used for verification. In many cases the host computer running the GUI application will be required to be configured on the same network to achieve a connection with the equipment. This notice is to provide a basic understanding about "Transmission Control Protocol - Internet Protocol" (TCP-IP) networks.

In a network there are routers and or Ethernet switches that route communication message packets between devices, such as a computer running an application and the various cinema components, like a sound processor. The address assign to a computer can be either fixed (static IP) or "Dynamic Host Configuration Protocol" (DHCP), automatically assigned. Most computers are set for DHCP to obtain their address and may result in an address that is not on the same network as the cinema devices are. When a computer is not on the same network as the cinema device (sound processor, etc.), the computer running the "Graphical User Interface" (GUI) application will not be able to form a TCP-IP connection.

The Internet Protocol (IP) uses a 32-bit address structure. The address is usually written in dot notation (also called dotted-decimal notation), in which each group of eight bits is written in decimal form, separated by decimal points.

10**.**41**.**100**.**5

As an example a Class B network configuration is with the first two octets designating the network assignment of "**10.41.**"

10	41	100	5

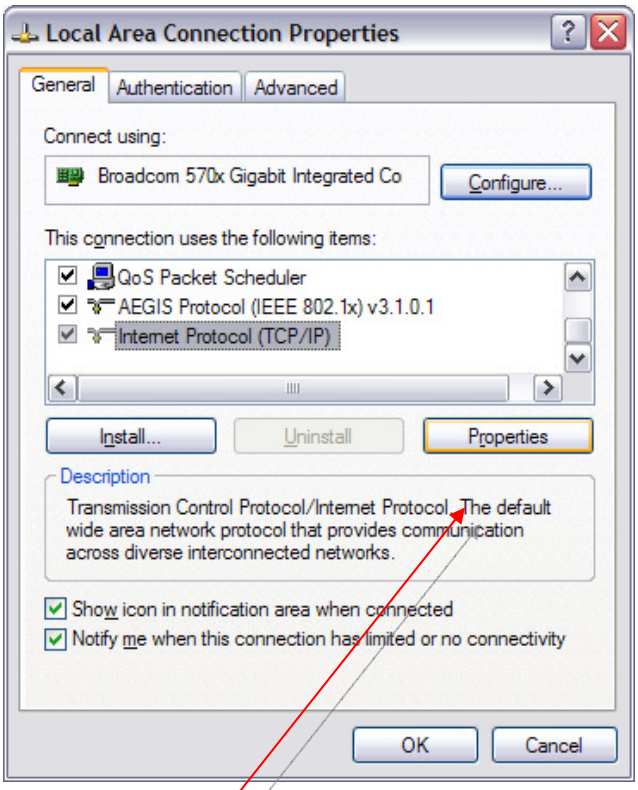
In this configuration if the computer running the GUI is configured for **"192.168.sss.hhh"** will not be able to connect. Note that the next group designated as **"sss"** is the subnet address that may have to match with the computers assignment depending on the network mask setting. Each computer must have a unique host assignment to form a connection.

The network mask is used to control the range of available addresses that a given computer has access to. A network mask is represented in the same dot notation like **"255.255.255.0"**. The network mask is combined with the network address will determine which portion of the TCP-IP address must match to allow a connection.

“10.41.100.hhh” + **“255.255.255.0”** will allocate a range of 0-255. Note that 0 and 255 are reserved for designated network operations such as broadcasting.

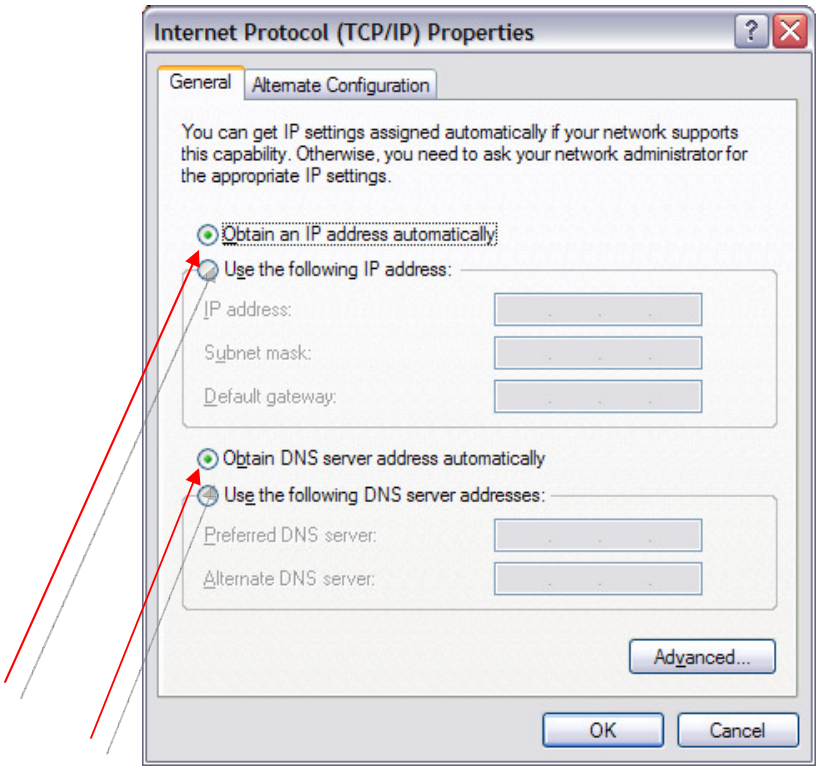
On the computer running the GUI application it is necessary to configure or to verify the TCP-IP settings before a connection can be established.

To manually set a static IP address on an Windows XP system, Open the **Control Panel**, **Network Connections**, find the network connection that represents your connection to the Ethernet port. Most often it's labeled simply **Local Area Connection**. Right click on that and select **Properties**. Now click on the **Internet Protocol (TCP/IP)** item in the list (you may have to scroll down within the list to find it):

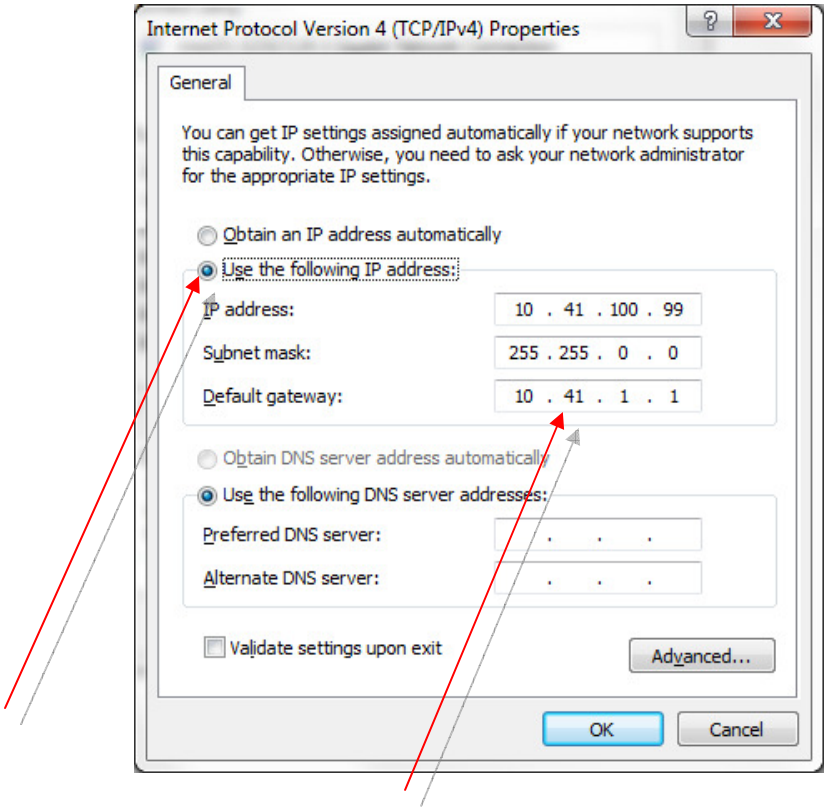


Now click on the properties button.

The typical default configuration will be to Obtain an IP address automatically, and Obtain DNS server address automatically selected.



Click on **Use the following IP address:** and enter a valid IP address, subnet mask, and default gateway information for the network the computer is to be a part of. The default gateway assignment is typically with the last two octets being **"1.1."** For example a typical network would be **"10.41.1.1"**



After entering the setting press Ok and allow a few seconds for them to take place.