

Alternative Network Configurations

597x GC/MS + Router and 597x GC/MS + dual NIC

The purpose of this document is to provide instructions on how to connect Single Quad GC/MS System with alternative network configurations, which are not recommended and not supported by Agilent.

Supported Network Configurations

NOTICE:

Agilent recommends, sells, and supports only the use of single network adapter (NIC) Single Quad GC/MS system with switch network configuration. Within Agilent, virtually all product development, hardware and software test uses a single network adapter because this is the most cost effective solution and has no known network configuration problems. The network switch supplied with Agilent GC/MS bundles prevents the instrument-to-PC network traffic from entering the house LAN and prevents unnecessary house LAN traffic from interfering with the instrument-to-PC traffic.

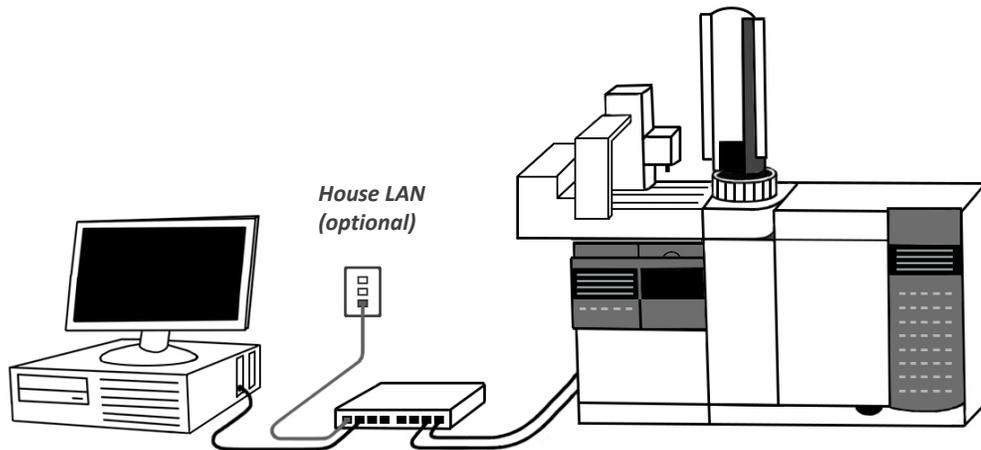


Figure 1

Single NIC + Switch - recommended and supported by Agilent

Configuration requirements:

- MSD series 5977, 5975 or 5973 with factory integrated network adapter.
- GC series 78xx or 68xx with factory integrated network adapter.
- Workstation with 1 or 2 network adapters (NICs).
- 8-Port Network Switch or Router with auto-uplink MDI, MDI-X.
- Workstation - Windows 7 Professional, 64-bit with the latest Service Pack.
- MassHunter GC/MS Acquisition.

This document assumes that the GC/MS system has already been installed, configured, and verified to work in an isolated or standalone instrument network NOT connected to site LAN (Local Area Network) using the default IP addresses.

Unsupported Alternative Network Configurations

Two alternative network topologies are discussed in this document:

- Single NIC to site LAN using Router (Case 1)
- Dual NIC to site LAN using Switch (Case 2)

NOTE: Agilent recommends/prefers the configuration with the router over the Dual NIC because it retains the simplicity and robustness of a single NIC in the PC.

NOTICE:

Agilent has tested the alternative network configurations [Single NIC + Router] and [Dual NIC + Switch] to be functional under the limited set of conditions, including Network Hardware. The configuration and maintenance of the house LAN network is the responsibility of the end user. Agilent is not responsible for any house LAN network configuration, support, or any known issues with dual network cards in the Microsoft Windows™ environment. Similarly, Agilent is not responsible for the configuration issues or incompatibilities of a customer supplied router or second NIC.

Agilent assumes no liability or responsibility of any kind with regards to the alternative network configurations.

Instructions on how to connect the 597x GC/MS instrument with the alternative network configurations.

Prior to continuing, please ensure that the MS, GC and Workstation IP (onboard NIC 1) addresses are correctly entered and are in the same subnet. For reference, see Case 1 (Single NIC to site LAN using Router) or Case 2 (Dual NIC to site LAN using Switch).

CAUTION:

1. For Dual NIC configurations **onboard NIC 1** should be configured in the same subnet as GC/MS Network.
2. With multiple network adapters in your computer **ONLY a single default gateway** is used for all destinations, otherwise information on your network might not be routed to the correct destination. For that reason:
 - a. Configure a default Gateway for the NIC 2 connected to the House LAN network with the most routes and leave the default Gateway for the GCMS Network blank.
 - b. Do not configure a default Gateway for any other network adapters.

Case 1: Single NIC to site LAN using Router

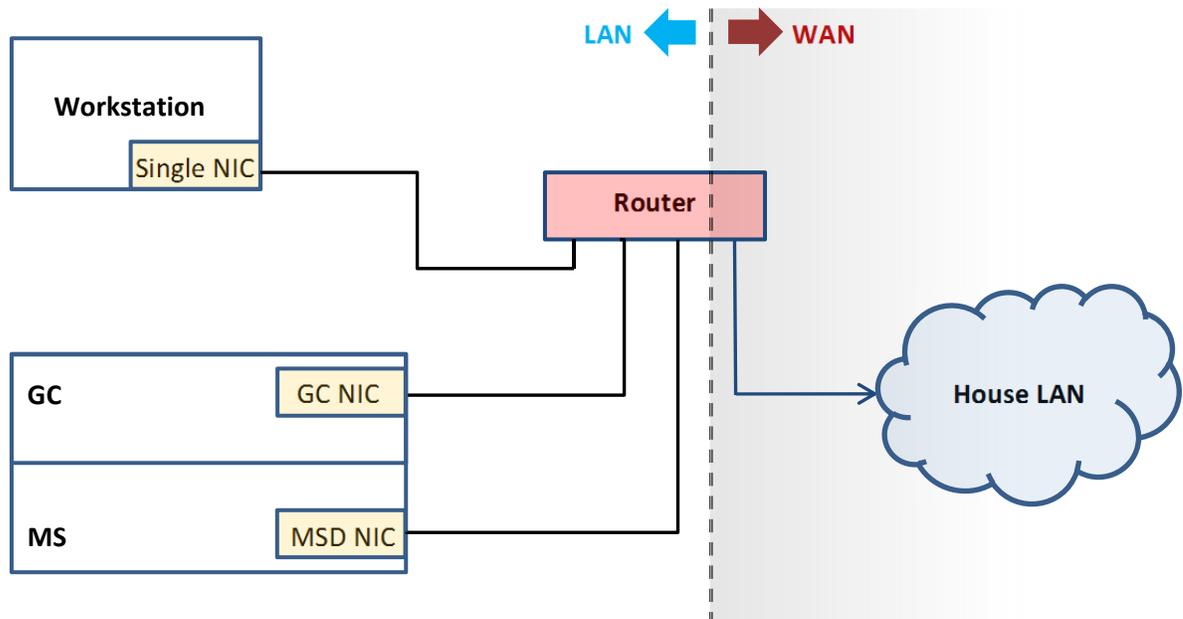


Figure 2

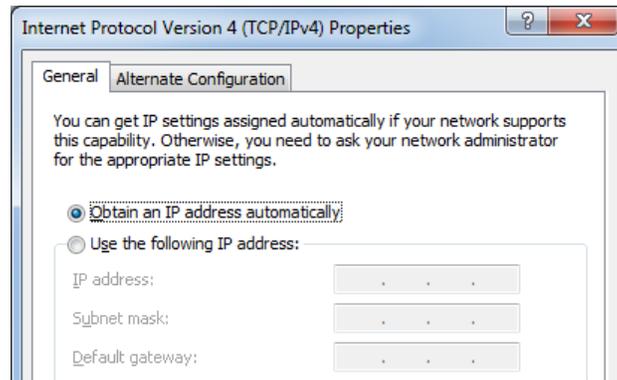
Network configuration with Single NIC and Router - Not recommended by Agilent

A typical router will have (4) LAN ports and one (1) WAN port. The WAN stands for “wide area network”, i.e. house LAN. The LAN stands for “local area network”, or private network that is effectively isolated from the wide area network (WAN).

HINT: To avoid cabling mistakes, the WAN cable should be a different color than the Workstation, MSD and GC.

After validating the functionality of the [Supported Network Configurations](#) described on page 1, perform the following steps:

1. Turn off the switch and the PC.
2. Remove all LAN cables from the switch and put the switch back in its box.
3. Connect the computer’s LAN cable to one of the LAN ports on the router.
4. Connect the House LAN cable to the WAN port on the router.
5. Apply power to the router and wait 1 minute for the router to complete its power on sequence.
6. While the router is booting up, review the router’s documentation to ensure that all LED indicators are in their “ready” state.
7. Apply power to the PC.
8. Convert the PC to use DHCP by selecting *Obtain an IP address automatically* instead of the static IP addresses in the fully supported configuration (refer to [Appendix 2: Updating the IP Settings](#) *)



9. Click on **Start** button, type **cmd** in the Search programs and files box, and click **OK**.
10. Type **ipconfig** and press Enter. Verify that the PC has been given an IP address from the router. Check the router's documentation for the expected IP address – typically it is 192.168.xxx.yyy.
11. Note and write down the gateway address and the subnet address of the PC to make sure that the gateway and subnet address of the GC and MS are the same.
12. Assign IP addresses based on the Table 1 below (refer to [Appendix 2: Updating the IP Settings](#)).
13. Connect the GC's LAN cable to a LAN port on the router.
14. Power cycle the GC.
15. Verify that the GC has the correct IP address assigned in step 11.
16. Verify that the gateway and subnet masks are the same as the Workstation.
17. Connect the MS LAN cable to a LAN port on the router.
18. Power cycle the MS.
19. When the MS reboots correctly, verify that the MS has correct IP address assigned in step 12. If the MS does not complete its reboot and is stuck in the "server not found" condition, press "NO/Cancel" and reconfigure the static IP address again.
20. Verify that you can ping the GC and MS from the PC.
21. Verify that you can ping the GC, and PC from the LUI of the MS.
22. In case you do not receive ping reply, reconfigure the GC/MS instrument using the correct IP addresses for the GC and MS.
23. Apply the patch provided by Agilent (refer to [Appendix 3: Applying the MSSCIL patch](#)).
24. Start the instrument and verify that it starts up correctly. If it fails to start up correctly, configure a GC only instrument to determine if it starts up correctly. If the GC starts up correctly, then configure a MS only instrument to determine if it starts up correctly.

* Key Concerns:

NOTE: Use this list as a guide if end user has specific IT requirements. It is the end user responsibility to ensure the Router configuration and any WAN area inter-network configuration settings.

Case 2: Dual NIC to House LAN using Switch

NOTE: The following instructions for this Dual NIC install procedure do not apply to the other Agilent provided Dual NIC Workstations.

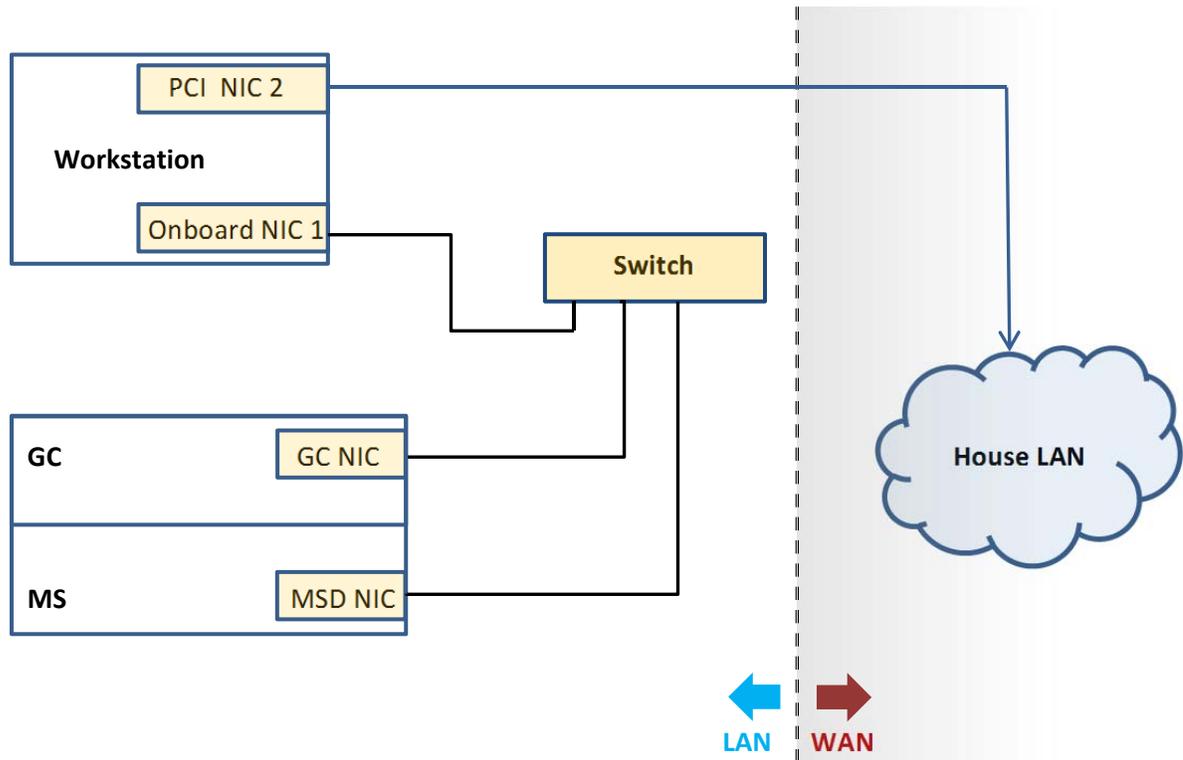


Figure 3
Network configuration with Dual NIC and Switch - Not recommended by Agilent

After validating the functionality of the fully supported configuration described on page 1, perform the following steps:

1. Rename the NIC # 1 to GCMS Network (refer to [Appendix 1: Renaming the Adapter Settings](#)).
2. Power down the PC.
3. Install NIC # 2 into the PCI slot. Agilent supplied Z230 computers will require a half height NIC.
4. Connect the second NIC to the house LAN.
5. Apply power to the PC and turn it on.
6. After logging on to the Workstation, follow any instructions supplied by the manufacturer of the second NIC to ensure that the appropriate driver is installed and that the hardware is working correctly.
7. By default the operating system will name the second NIC card *Local Area Connection 2*. Rename this NIC to *House LAN* network (refer to [Appendix 1: Renaming the Adapter Settings](#)).

8. Run IPCONFIG to verify that you have two NICs configured. One of the NIC should have the static IP address as configured in the fully supported configuration as described on page 1. The other NIC should have an IP address consistent with the house LAN.
9. Verify that the MS, GC, and associated PC NIC do not have a gateway configured. Reconfigure as necessary.
10. Apply the patch provided by Agilent (refer to [Appendix 3: Applying the MSSCIL patch](#)).
11. Run the instrument.
12. Use the table below for IP settings reference:

	IP Address	Subnet Mask	Default Gateway
MS	10.1.1.102	255.255.255.0	(leave blank)
GC	10.1.1.101	255.255.255.0	(leave blank)
Workstation NIC 1	10.1.1.100	255.255.255.0	(leave blank)
Workstation NIC 2 *	192.168.0.10	255.255.255.0	192.168.0.1

Table 1 - IP Settings Reference

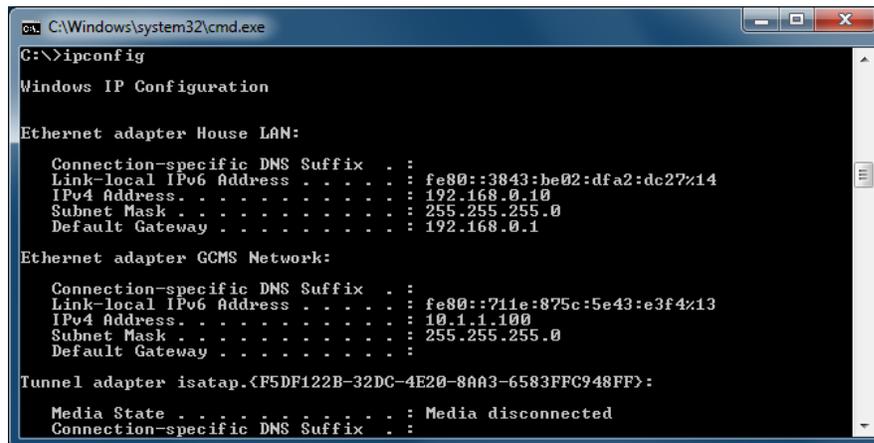
* Only for Dual NIC to House LAN case

Verify that the GC/MS System is NOT in the same subnet as the House LAN

If the Workstation is already connected to the House LAN, you could find the subnet mask and default gateway by following the steps below:

Click on **Start** button, type **cmd** in the *Search programs and files* box, and click **OK**.

1. Type **ipconfig** in the command prompt and press **Enter**. The **Subnet Mask** and **Default Gateway** addresses will appear under the Windows IP Configuration.
2. In case you have Dual network cards installed you will find IPv4 addresses, Subnet Masks and the Default Gateways under GCMS Network and House LAN.



```

C:\Windows\system32\cmd.exe
C:\>ipconfig

Windows IP Configuration

Ethernet adapter House LAN:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::3843:be02:dfa2:dc27%14
    IPv4 Address. . . . . : 192.168.0.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.0.1

Ethernet adapter GCMS Network:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::711e:875c:5e43:e3f4%13
    IPv4 Address. . . . . : 10.1.1.100
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Tunnel adapter isatap.{F5DF122B-32DC-4E20-8AA3-6583FFC948FF}:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 
  
```

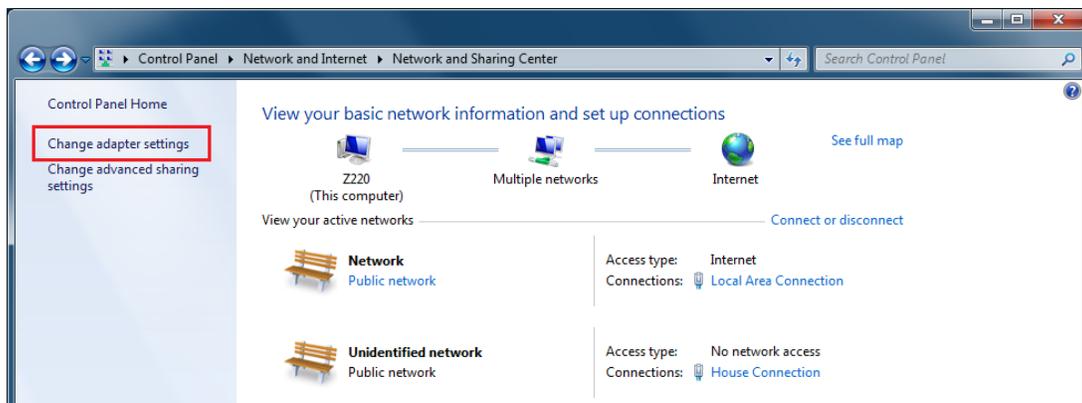
3. To ensure that the two subnets are separate, verify that the subnet mask for both NICs is 255.255.255.0 or 255.255.0.0. It is OK for the subnet mask of the House LAN to be different, but it should start with 255.xxx.xxx.xxx. Compare the IP addresses of the 2 NICs. Verify that the first subnet octets in the IP addresses are different (**i.e. 192.168.0.xxx and 10.1.1.yyy**)
4. If the subnet octets are the same, check LAN settings and reconfigure static IP addresses for the GC, MS and associated NICs to make the first digit to be a different number.

Appendix 1: Renaming the Adapter Settings

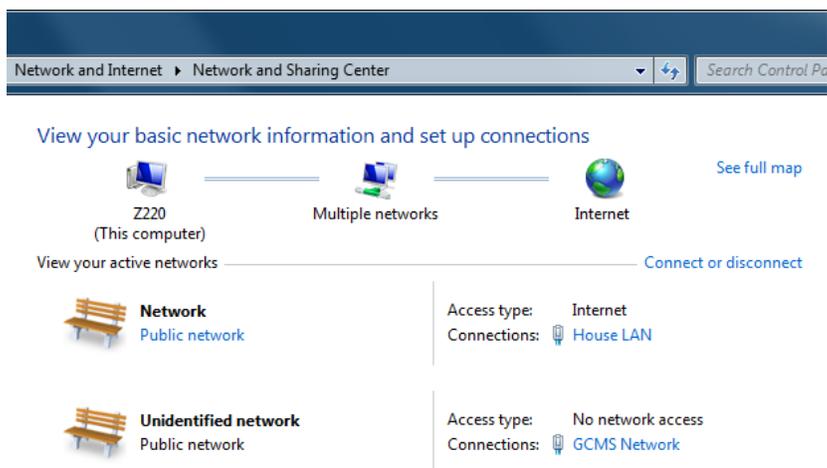
It is mandatory to have the GC/MS System configured in different subnet from the House LAN with the alternative network configurations [Single NIC + Router] or [Dual NIC + Switch]. You have to split both networks to be in different subnets. (e.g. 192.168.0.xxx and 10.1.1.yyy).

It is recommended also to rename the network adapters for better identification:

1. Select **Start -> Control Panel**.
2. Select **Network and Internet -> Network and Sharing Center -> View Network Status and Tasks**
3. From the left panel, select **Change adapter settings**, see below:



4. Identify the onboard network adapter.
5. Right click for the onboard network adapter and select **Rename**. Change the name to **GCMS Network**.
6. Right click over the other Network and select **Rename**. Change the name to **House LAN**.



Appendix 2: Updating the IP Settings

A. Update the MS IP Settings (if applicable)

1. Turn on the MS and hold down the **[No/Cancel]** key on the MSD local panel for approximately 5 seconds. You will see a display that Bootp Service has been disabled and *Loading MSD Firmware* message will appear.
2. Press **[Menu]** key until the **+Network** menu appears.
3. Press **[Item]** key until you see **MSD IP Address**. If the Bootp service was aborted, the default IP address will be 0.0.0.0. If the IP address was downloaded from the Bootp Service, the IP address will be 10.1.1.102 (default).
4. Press the **[Yes/Select]** key to edit the MSD IP address. The following message will be displayed:

EDIT MSD IP
>000<000.000.000

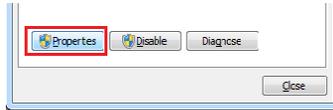
5. Change the IP as desired by pressing **UP** or **DOWN** arrow key (increase or decrease the value).
6. To move to the next octet, press **[Item]** key.
7. When you finish editing the IP address, press **[Yes/Select]** key to save the changes.
8. Repeat step 4,5 and 6 to configure the Gateway and Subnet Mask.
9. Press **[Item]** key until you see message *Reboot with new network settings?*
10. Press **[Yes/Select]** key. A message *Updating Boot Line ...* will be displayed.
11. Wait until you see *Agilent 59xx* prompt.

B. Update the GC IP Settings (if applicable)

1. Turn on the GC and press **[Options]** key.
2. Scroll down to **Communications** and press **[Enter]**.
3. Scroll down to **Enable DHCP** and if necessary turn it off. Note: the GC has to be rebooted.
4. Press **[Options]** key, scroll down to **Communications** and press **[Enter]**.
5. Scroll to **IP** and add the new IP address of the instrument. Note: do not put leading zero in front of the octet (e.g. 10.001.001.101 should be typed as 10.1.1.101).
6. Press **[Clear]** button when asked to power cycle the GC.
7. Scroll down to **GW**, enter the Gateway IP and press **[Enter]**.
8. Press **[Clear]** button when asked to power cycle the GC.
9. Scroll down to **SM**, press **[Mode/Type]** and choose the appropriate Subnet Mask from the list.
10. Press **[Clear]** button when asked to power cycle the GC.
11. Scroll down to **Reboot GC** and press **[Enter]**. New changes will be applied at this point.

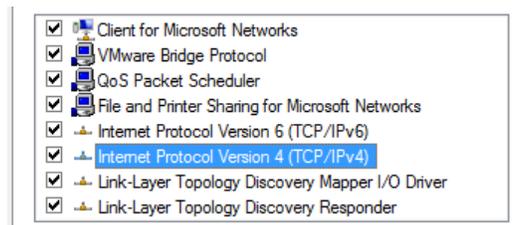
C. Update the Workstation IP Settings (if applicable)

1. Click **Start** button and then **Control Panel**.
2. Click **Network and Internet** and then **Network and Sharing Center**.
3. Click over the connection you want to configure (**GCMS Network** or **House LAN**) and then **Properties***.

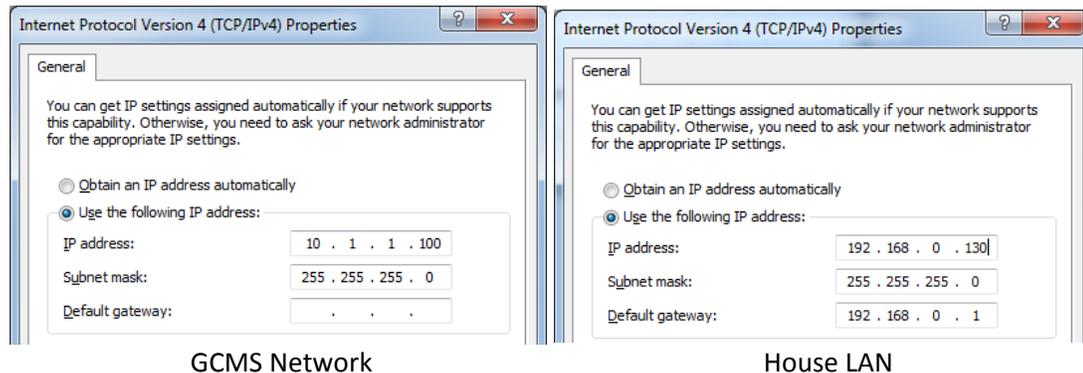


*NOTE: For Dual NIC configurations the onboard NIC 1 should be configured in the same subnet as GC/MS System.

4. Choose Internet Protocol Version 4 (TCP/IPv4) from the list and click **Properties**.

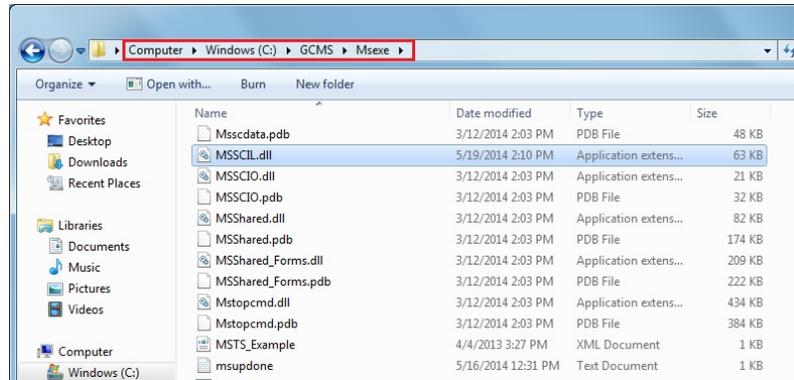


5. Enter the desired **IP** address, **Subnet Mask** and **Gateway** and click **OK**.

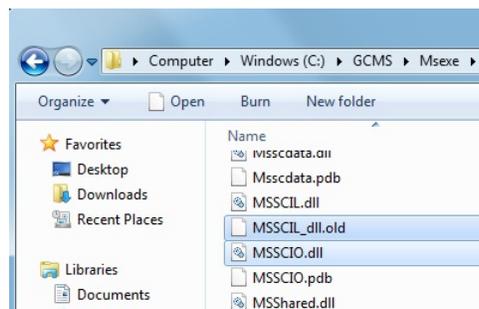


Appendix 3: Applying the MSSCIL patch (applies to MassHunter GCMS Acquisition B.07.01 only)

1. Shut down any instrument that is running before installing the patch.
2. On your Workstation open **Windows Explorer** and go to **C:\GCMS\Msexex** directory.
3. Find **MSSCIL.dll** file and rename it to **MSSCIL_dll.oid**



4. Download the Agilent supplied patch [MassHunter GCMS Acquisition B.07.01 Patch 1 Dual NIC.zip](#) in **C:\temp\xxx** directory.
5. Extract the **MSSCIL.dll** from the ZIP file to your desktop.
6. Go to your desktop copy **MSSCIL.dll** and paste it to **C:\GCMS\Msexex** directory.
7. Verify that you have both **MSSCIL_dll.oid** and **MSSCIL.dll** files.



9. Delete the unzipped **MSSCIL.dll** from your desktop.