

DS6001 Network Settings

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This document covers Network Settings for four different hardware configurations connecting a Windows PC running VehicleSim on a DS6001.

On the dSPACE DS6001 processor board there are two network ports: one is “Host PC” and another is “Ethernet”. The “Host PC” port is **only** for the dSPACE applications/tools, e.g. ConfigurationDesk/ControlDesk. VehicleSim products, CarSim/TruckSim/BikeSim, use the port “Ethernet”. Users must setup the static IPv4 address for this port to work with VehicleSim products. Setting DS6001 static IP address requires a configuration file, “ethernet_global.conf.” Contact our support to obtain this file. Mechanical Simulation has an excerpt from dSPACE included at the end of this document, “Default IPv4 Address”.

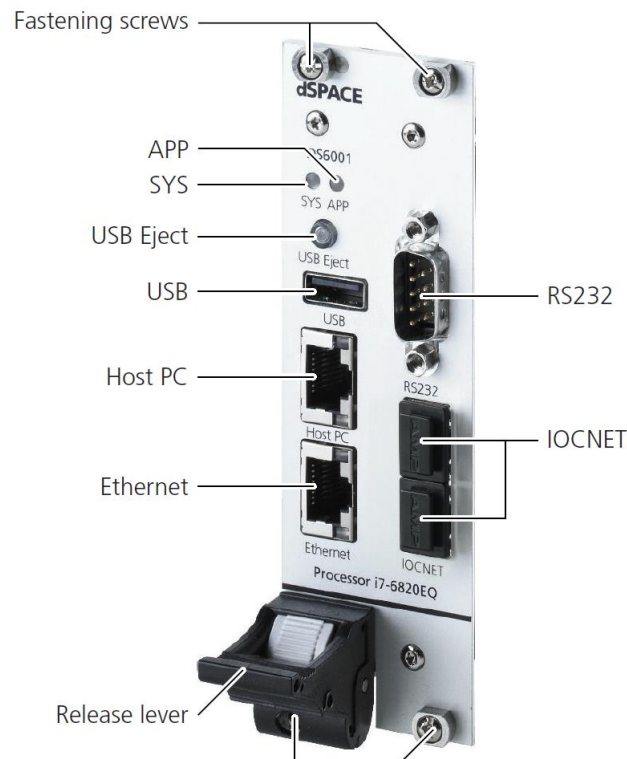


Figure 1. dSPACE DS6001 processor board front connection

Case 2: Two Ethernet port, one for VehicleSim only

You have one dedicated Ethernet port on the host computer for CarSim/TruckSim/BikeSim and another network port connect to LAN and both ports setup in the different subnet.

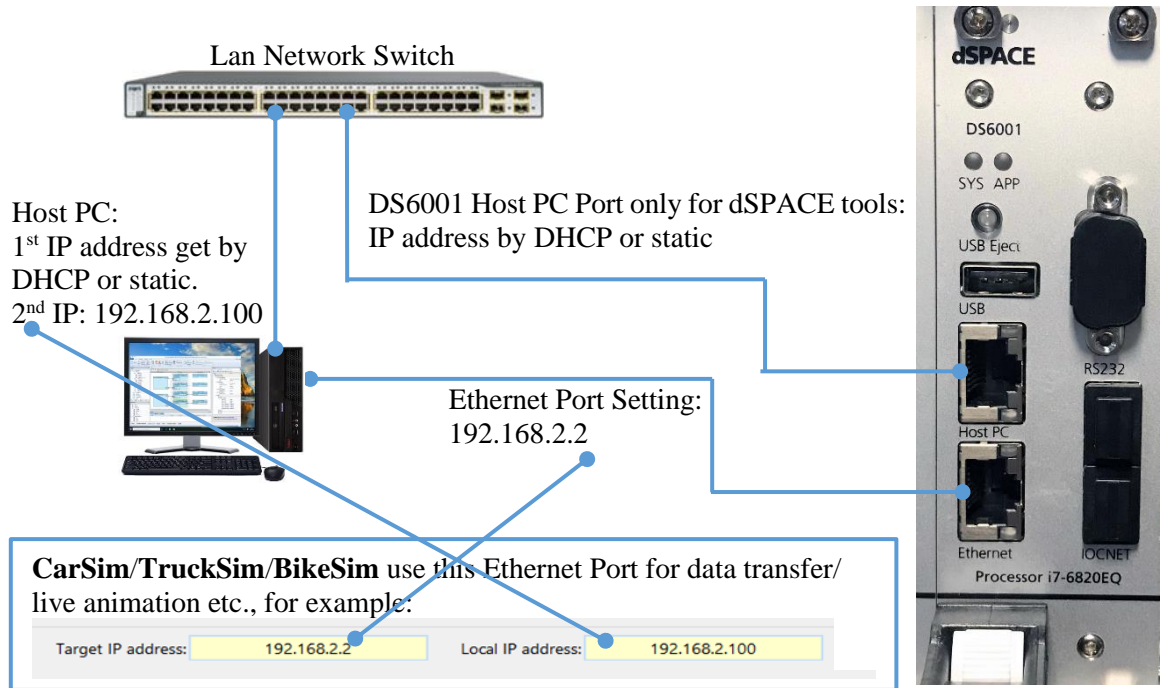


Figure 3 Two Ethernet ports on the Windows PC. One Dedicated Ethernet port for CarSim/TruckSim/BikeSim and another port for others

Pros: For CarSim/TruckSim/BikeSim it runs less in data holdups and collisions. Simple network setup.

Cons: You must have an ethernet port on the Windows host computer for RT application. Firewall on the Windows computer must pay attention.

Case 3: Two Ethernet ports, one port for RT with different subnet

You have one dedicated Ethernet port for the RT and another network port connect to LAN and both ports setup in different subnet.

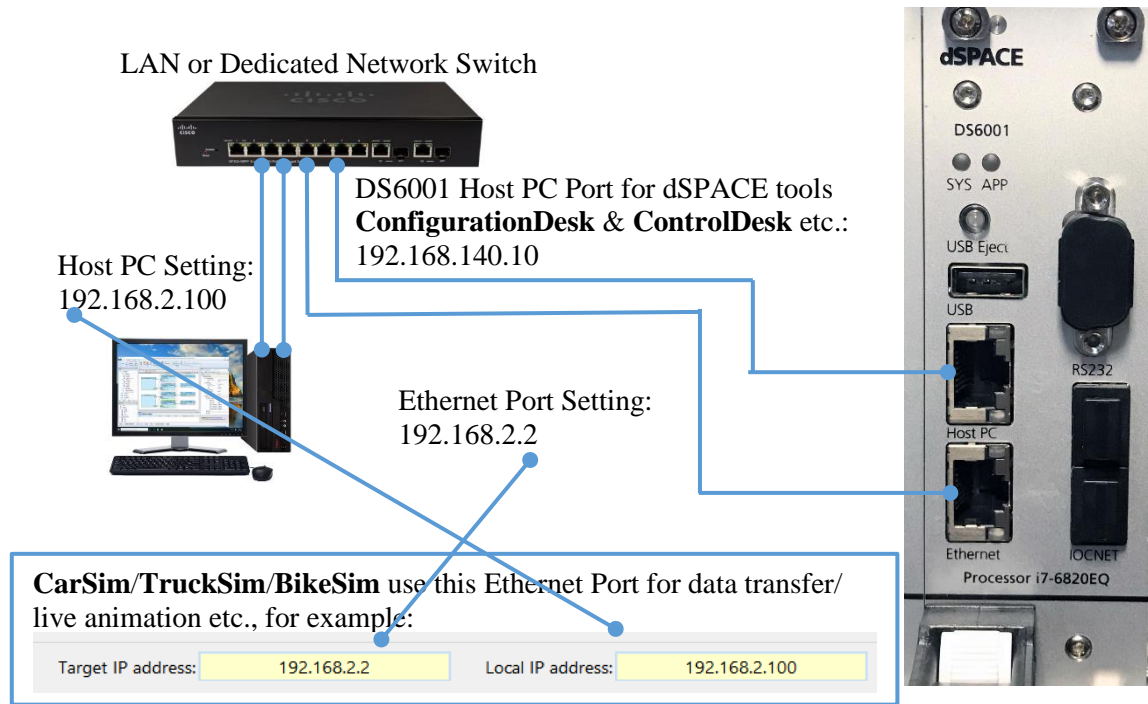


Figure 4 Two Ethernet ports on the Windows PC. One Dedicated Ethernet port for RT and another port for others

Network IP address settings in Windows 10:

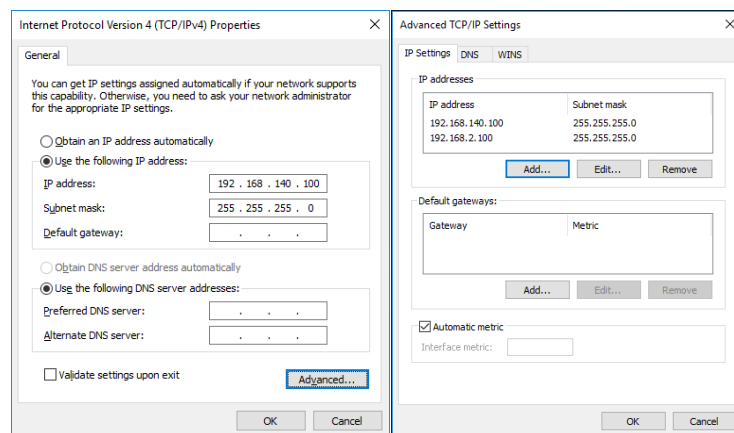


Figure 5 First IP address set to 192.168.140.100; Add additional IP address as 192.168.2.100

Pros: For RT application it takes less in data holdups and collisions.

Cons: You must have an ethernet port on the Windows host computer for RT application. Firewall on the Windows computer must pay attention.

Case 4: One Ethernet port on the Host PC

You have only one Ethernet port on the Windows PC and it is linked to LAN.

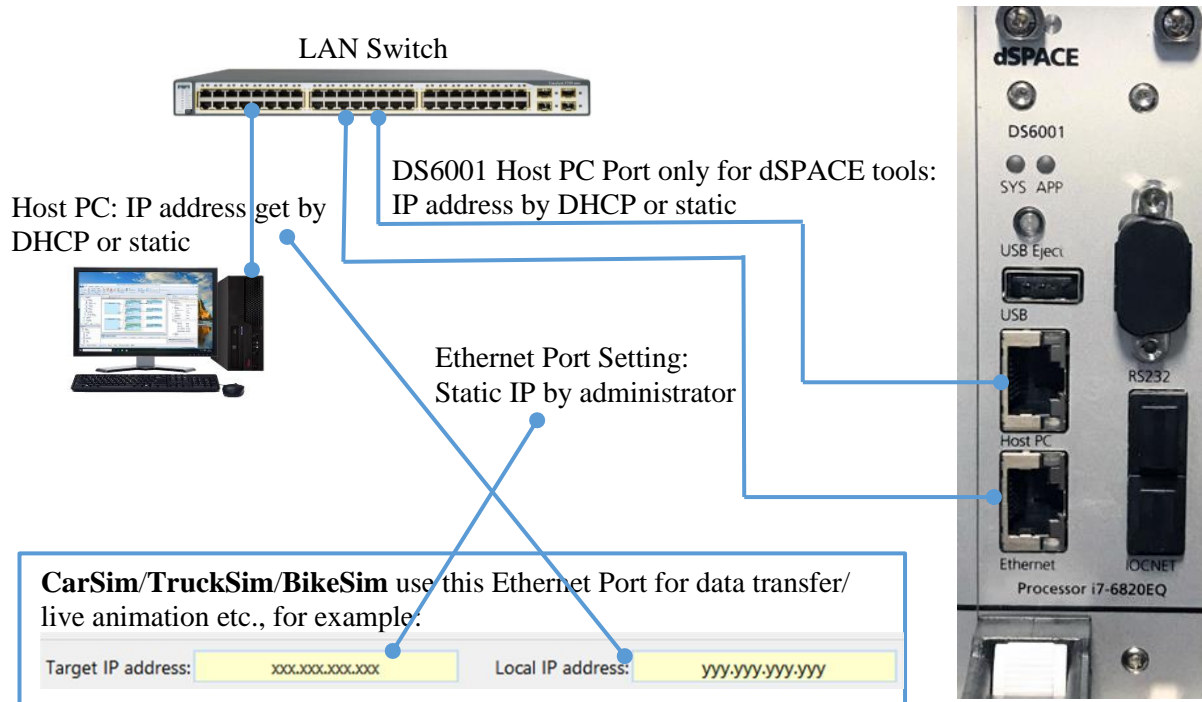


Figure 6 One Ethernet port on Windows PC

Pros: You only need one ethernet port on the Windows host computer. Firewall on the Windows uses general LAN's policy.

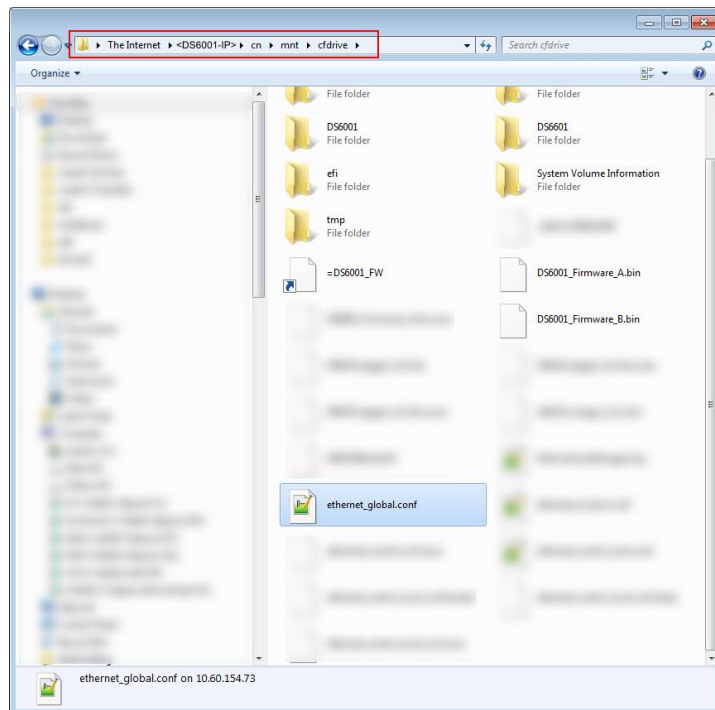
Cons: All network traffic goes through one ethernet port and it results in data holdups and collisions. You need at least a static IP address in the LAN's subnet. This can setup only by your network administrator.

Default IPv4 Address Setting for QNX RTOS

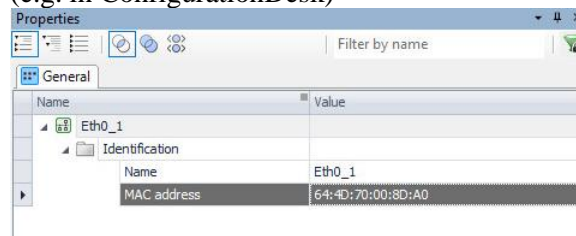
To set a default IPv4 address for the DS6001 running you will need to contact Mechanical Simulation support to obtain the file: ethernet_global.conf.

Follow steps 1-4 from dSPACE documentation excerpted here:

1. Place the “ethernet_global.conf” file via ftp into the folder “/cn/mnt/cfdrive” folder (see picture below).
 - To do so, type the string “ftp://<DS6001-IP>/cn/mnt/cfdrive” into the address field of the Windows Explorer. Replace the placeholder “<DS6001-IP>” with the IP address of your DS6001-System!



2. Add an entry to the “Custom Configuration” via web interface (see picture below).
 - Section
 - The sections have to obey the name scheme [DEFAULT_IP_<N>], where N is in [0-31].
 - “Name”-Key
 - The interface is addressed via the “Name” key. The name can take either the MAC-Address value, the interfaces default name or the user specified interface name. You can retrieve these values via platform management (e.g. in ConfigurationDesk)



- “Ipv4Address”-Key
 - The IPv4 address is specified in the following manner: <ipv4-address>/<subnet-mask>

Network Configuration	IOCNET Configuration	Ethernet Switch Configuration	Fan Monitoring	Custom Configuration
Custom Configuration	Options: <div style="border: 1px solid black; padding: 5px; min-height: 100px;"> [DEFAULT_IP_0] Name=Eth0_1 Ipv4Address=192.168.2.1/24 </div>			<div style="color: red; font-size: small;">Contact dSPACE before adding or changing any custom options.</div> <div style="text-align: center; margin-top: 10px;"> <input type="button" value="Change"/> </div>

3. Reboot your DS6001-System.
4. The interface can be pinged under the specified address.

Default IPv4 Address Setting for Linux RTOS

From dSPACE Release 2020B the default RTOS is Linux. To setup the static IPv4 address you need:

1. dSPACE RLS \geq 2020B and above.
2. For RLS 2020B the firmware version is 5.0.1p1 (Firmware Archives 3.2.3, release on March 22, 2021) or newer. You can get this firmware update from dSPACE support website.

Assigning a default ipv4 address to the onboard interface of the DS6001 is slightly different from the QNX way. The main differences are:

- No configuration file needs to be copied
- The value of the “Ipv4Adress” key changed
 - QNX: Ipv4Address=192.168.2.1/24
 - Linux: Ipv4Address=192.168.2.1 **netmask 24**

For example:

```
[DEFAULT_IP_0]  
Name=Eth0_1  
Ipv4Address=192.168.2.1 netmask 24
```

Network Configuration	IOCNET Configuration	Ethernet Board Configuration	Fan Monitoring	User Storage	Custom Configuration
Custom Configuration	Options:	<pre>[DEFAULT_IP_0] Name=Eth0_1 Ipv4Address=192.168.2.1 netmask 24</pre>			<p>Contact dSPACE before adding or changing any custom options.</p> <p>Change</p>