1 Overview

To communicate with the DL-V3 receiver by sending commands and obtaining logs, a connection to some form of data communications equipment is required. Your PC/laptop can also communicate with the receiver using the Ethernet interface. This application note gives the step-by-step process for connecting the DL-V3 to the Ethernet using NovAtel’s CDU or Telnet. PC/laptop Ethernet port connections are also described.

For more information, please refer to the DL-V3 User available from our website at http://www.novatel.com/support/docupdates.htm.

2 Required Hardware

The following hardware is required to setup an XPORT AV within a DL-V3 unit:

- user supplied PC/laptop with an available Straight Ethernet, serial and/or USB port
- DL-V3 receiver, power cable and serial communication cables
- one (1) RS-232 null modem cable
- two (2) CAT5 Straight Ethernet cables or one (1) CAT5 cross-over Straight Ethernet cable
- optional USB-to-serial adaptor
- user supplied network Ethernet hub or wired router

3 DL-V3 Initial Ethernet Setup

When initially powering up your DL-V3 receiver, you must configure the device into Ethernet mode. To do this, connect the DL-V3 by using a serial or USB cable into your PC/laptop and use either NovAtel’s CDU or a Telnet program, like HyperTerminal. Steps for both of these tools are described in the following two sections.

3.1 How to connect with NovAtel’s CDU

1. Ensure you have the CDU software installed. Download the most recent version available from our Web site at http://www.novatel.com/support/fwswupdates.htm#pc.
2. In the console command window, enter the following:
   APPCONTROL BLUETOOTH 1
   SAVECONFIG (optional)

   The Ethernet status LED, labeled , at the front of the DL-V3 will emit an amber light when Ethernet is successfully enabled.

3.2 How to Connect with Telnet using the HyperTerminal Program

1. Click on the following to access Windows HyperTerminal in Windows XP:
   START → PROGRAMS → ACCESSORIES → COMMUNICATIONS → HYPERTERMINAL

   If HyperTerminal has not been initialized previously, the following window appears:

   Figure 2 - Windows HyperTerminal Default Telnet

   Select YES to make HyperTerminal your default Telnet program (optional).

2. Select your current country and area code (or city code) you are currently in and then select OK.
3. Select OK in the Phone and Modem Options window.

The initial setup of HyperTerminal is complete. When HyperTerminal is reinitialized, you are directed to the following screen:
4. Enter a desired name in the *Connection Description* window and then select *OK*.

![Figure 6 - Connection Description](image)

5. Select the computer’s assigned comport which is currently connected to your receiver in the *Connect using:* field and then select *OK*.

![Figure 7 - Connection to com port setting](image)

6. Set the *Bits per second:* field to an optimal rate of 9600 bps.

7. Select the *Flow Control* field to *None*.

![Figure 8 - Com Port Properties](image)
The following screen appears:

![HyperTerminal Main Window](image)

Figure 9 - HyperTerminal Main Window

8. Select ![Command Input Icon](image) to input commands into HyperTerminal.

![HyperTerminal Main Window with Command Input](image)

Figure 10 - HyperTerminal Main Window
9. Click on the **Settings** tab and then **ASCII Setup**.

![HyperTerminal Properties](image)

**Figure 11 - HyperTerminal Properties**

10. Select the top two options under **ASCII Sending**, and then select **OK**.

![ASCII Setup](image)

**Figure 12 - ASCII Setup**

You can now input commands into HyperTerminal.

11. Enter the following command into HyperTerminal to enable Ethernet mode:

```
APPCONTROL BLUETOOTH 1
SAVECONFIG (optional)
```

The Ethernet status LED, labeled ![LED](image), emits an orange light when Ethernet mode is successfully enabled.
4  PC/laptop to DL-V3 Ethernet Port connection

This section contains the configuration methods and the hardware you require to set them up.

4.1 Configuration with a CAT5 RJ45 Straight Ethernet Cable

1. Connect the first Straight Ethernet cable on a laptop into a free Ethernet port.
2. Connect the other free end of the Straight Ethernet cable into a free port on an Ethernet hub or wired router.
3. Connect the second Straight Ethernet cable from the back of the DL-V3’s Ethernet port to another free port on an Ethernet hub or wired router.
4. Connect the power cable to the DL-V3 and power the unit ON.

<table>
<thead>
<tr>
<th>Table 1: CAT5 RJ45 Straight Cable Configuration Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reference</strong></td>
</tr>
<tr>
<td>----------------</td>
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<tr>
<td>1</td>
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<td>2</td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
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</tbody>
</table>
4.2 Configuration via CAT5 Cross-over Ethernet cable

1. Connect the CAT5 Cross-over Ethernet cable to a laptop with a free Ethernet port.
2. Connect the other free end of the CAT5 Cross-over cable to the DL-V3’s Ethernet port at the back.
3. Connect the power cable to the DL-V3 and power the unit up.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>user supplied PC/laptop computer</td>
</tr>
<tr>
<td>2</td>
<td>DL-V3 receiver (powered)</td>
</tr>
<tr>
<td>3</td>
<td>user supplied CAT5 Cross-over Ethernet cable</td>
</tr>
</tbody>
</table>

4.3 Windows XP Network Settings

*Full administrative access is required to proceed in the following steps.

You are required to setup an alternate TCP/IP configuration (static IP address) when connecting your laptop to the DL-V3 via Ethernet.

1. Click on the following:
   - Start -> Control Panel -> Network Connections
2. Right click on the Local Area Connections and then select Properties.
3. Select *Internet Protocol (TCP/IP)* and then click *Properties*.

Figure 17: Local Area Connection Properties

The following window appears:

Figure 18: Internet Protocol Properties

4. Click *Use the following IP address* option.

Figure 19: Select Static IP Address Configuration
5. Enter the following information:
   IP address: 192.168.1.XXX
   where XXX is a number between 1 – 255, excluding 223
   Subnet mask: 255.255.255.0

6. Select OK. You are now back at the Local Area Properties dialog box.

7. Select OK.

8. Click Close to ensure that the IP address has been successfully updated.

At this point, your PC or laptop may request a reboot.
4.4 Lantronix Setup using Lantronix web Manager

1. Open any web browser and enter the following IP Address: \textit{http://192.168.1.223} in the status bar on the PC/laptop connected via Ethernet to your DL-V3.

You are prompted to enter a username and password.

2. Enter the following:
   - User name: admin
   - Password: PASS (case sensitive)
Once authenticated, you are redirected to the Lantronix Web Manager Webpage as shown below.

![Lantronix Web Manager](image)

Figure 24: Lantronix Web Manager

You will need to consult with your IT or IS department, or network administrator to find out if your network requires that the DL-V3 Lantronix Ethernet module be set to as a Static IP address or Dynamic Host Configuration Protocol (DHCP) device.

### 4.5 DHCP Setup

1. Click the *Network* link on the left navigation bar to display the Network menu. The sub-menus displayed allow for the configuration of the general network settings, protocol stack, DNS, SNMP, FTP, TFTP, IP address filter, and the query port.

2. Click on the following from the navigation menu:
   
   **Network -> Configuration.**

   The Network Configuration dialog box opens.

![Lantronix Network Configuration DHCP](image)

Figure 25: Lantronix Network Configuration DHCP
3. Select DHCP Client and Ethernet Auto.
4. Click Submit. This may take a minute but returns a screen with the statement telling you that the Lantronix system requires a reboot for the configuration to be changed to DHCP.
5. Reboot. After the reboot (or power cycle of the DL-V3), the Ethernet settings are DHCP.
6. Connect the DL-V3 to an available Ethernet port using a CAT5 Straight Ethernet cable.
7. Your network administrator can tell you what the DHCP assigned TCP/IP address is.

You can then telnet (via HyperTerminal or equivalent Telnet program) to the TCP/IP address (see Section 0 for instructions).

### 4.6 Static IP Setup

1. Click on the following from the navigation menu:
   Network -> Configuration.

   The Network Configuration dialog box opens.

   ![Network Configuration](image)

   **Figure 26: Lantronix Network Configuration STATIC IP**

2. Set both the BOOTP and DHCP to OFF.
3. Enter the XPort AR’s static IP address that is assigned your DL-V3 by your network administrator.
4. Click on Submit. This make take a minute but returns a screen with the statement telling you that the Lantronix system requires a reboot for the configuration to be changed to the STATIC IP address.
5. Reboot. After the reboot (or power cycle of the DL-V3), the Ethernet settings are set to the STATIC IP address.
6. Connect the DL-V3 to an available Ethernet port using a CAT5 Straight Ethernet cable.

   You can then Telnet (via HyperTerminal or equivalent Telnet program) to the TCP/IP address (see Section 0 for instructions).
4.7 Line 1 Setup

The steps to configure Line 1 are the following:

1. Click on the following from the navigation menu:
   Line 1 -> Configuration

   The Line 1 Configuration window displays.

2. Set the following configuration:
   - Baud rate: 115200 bps
   - Flow Control: Hardware

3. Click Submit.
4. Reboot the system. On the left hand orange panel, select Systems and click Reboot.

![Lantronix Web Manager](image)

Web Manager

- **System**
  - **Reboot Device**
  - **Restore Factory Defaults**
  - **Upload New Firmware**
  - **Name**
    - Short Name: 
    - Long Name: 

![Figure 29: Lantronix Web Manager](image)

5. Select OK when prompted to do so.

![Figure 30: Reboot Confirmation](image)

You will see the following statement:

**Rebooting device...**

This page should automatically redirect your browser to the **Main Status** page in 30 seconds.

If you are not redirected to the Main Status page, click **Main Status** to go back to the home page. Upon successful completion, your Line 1 properties are changed and confirmed in the main status page.
5 Communicating via HyperTerminal

1. Click on the following to access HyperTerminal in Windows XP:
   Start -> Programs -> Accessories -> Communications -> HyperTerminal

   If you have not previously initialized HyperTerminal, see Section 3.2.

2. Enter a desired name in the Connection Description window and then select OK.
3. Select TCP/IP (Winsock) in the Connect using: field and then select OK.

4. Enter the information displayed in Figure 34, below, to communicate with the DL-V3 via HyperTerminal and then click OK.

5. Select to enable input commands into HyperTerminal. See Section 3.2 for further information.

You will now be able to send commands to the DL-V3 using HyperTerminal. An example command is shown in the figure below.
6 Appendix A:

6.1 T568A Wiring Schematic

![T568A Pin Out Diagram](image)

Figure 36: T568A Pin Out Diagram

6.2 CAT5 Cross-over Ethernet Cable Wiring Schematic

![CAT5 Cross-over Ethernet Cable Pin Out Diagram](image)

Figure 37: CAT5 Cross-over Ethernet Cable Pin Out Diagram
7 Final Points

7.1 Customer Service Contact Information

If you require any further information regarding the topics covered within this application, please contact:

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