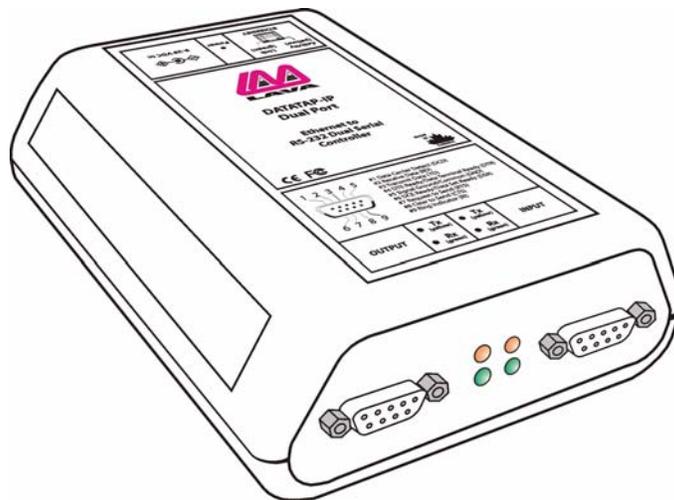




DataTap-IP Configuration Guide



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DataTap-IP Configuration Guide

This document describes the configuration features of the DataTap-IP. It covers:

1. Hardware connection
2. On-line connection
3. Device network settings
4. Com port configuration
5. Ethernet side settings
6. Access restriction settings
7. Password configuration
8. Hardware status LEDs

1. Hardware connection

Hardware setup

1. Connect the power supply to the DataTap-IP and to AC power. The power (red) LED will light to indicate that the unit is receiving power.
2. Connect an Ethernet cross-over cable to the Ethernet RJ-45 jack of the DataTap-IP. Attach the other end of the crossover network cable to a host PC directly. Network status is indicated by two LEDs as described in "Hardware status LEDs" on page 16.
3. Open a web browser to the IP address of the DataTap-IP and configure the device as described in the following pages of this manual.
4. After configuring the DataTap-IP, attach it to your network and connect a POS station to its Input serial port and a printer to its Output serial port. Serial port activity is indicated by two status LEDs as described in "Hardware status LEDs" on page 16.

Cabling

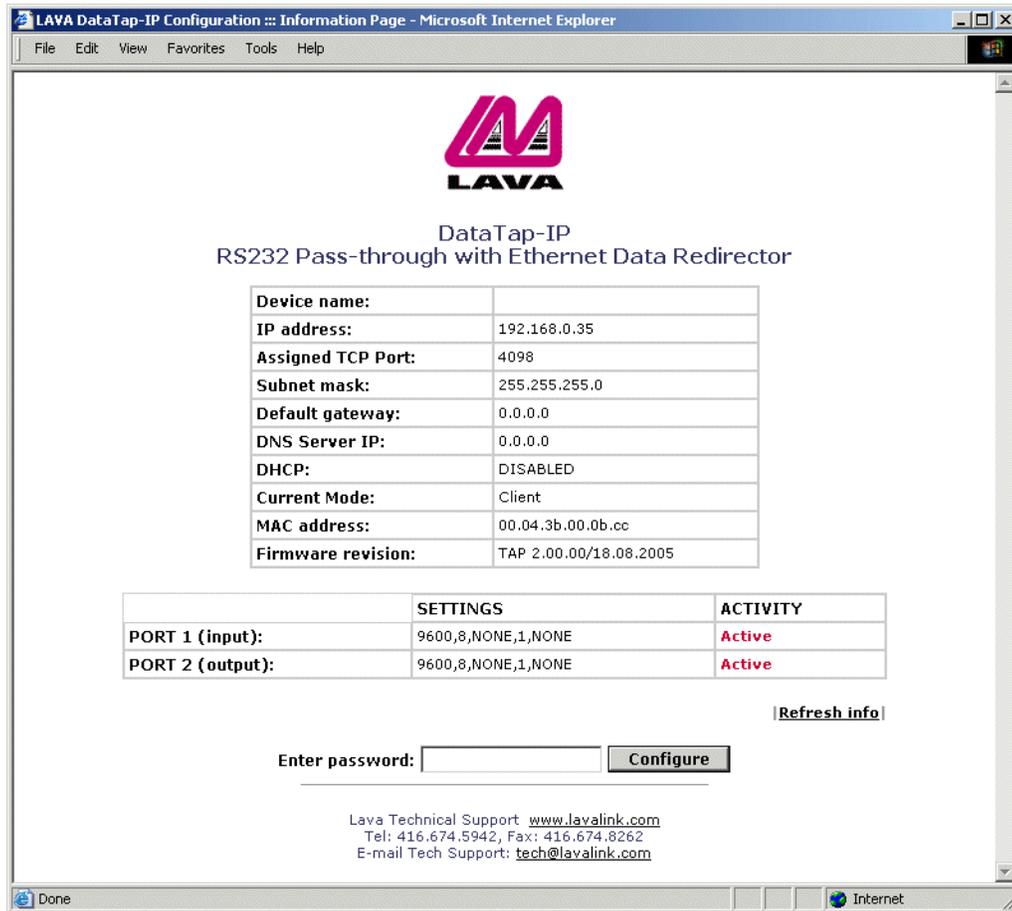
The DataTap-IP looks exactly like the COM port of a PC from the point of view of the payment terminal, and should be hooked up in precisely the same fashion.

2. On-line connection

Configuration of the DataTap-IP begins by entering the IP address of the DataTap-IP (factory default is 192.168.0.35) into a web browser's location bar (Microsoft Internet Explorer recommended).

An embedded web server in the DataTap-IP will present the entry screen to the DataTap-IP configuration options, and shows the current settings for the device being addressed:

Opening Screen



Log into the DataTap-IP by entering the password into the "Enter password:" text entry box and click on the "Configure" button (hitting the Enter key on your keyboard will not work). By default, the DataTap-IP ships with no password. To configure the DataTap-IP when no password is set, **do not enter any characters into the password box**; simply click on the "Configure" button.

NOTE: As a security feature, after five consecutive failed attempts at supplying a password, the DataTap-IP will refuse further password attempts. To unlock the DataTap-IP, it must be powered down and re-powered.

Once the password has been accepted, the DataTap-IP will present an Administrator Menu similar to the following:

Administrator Menu

LAVA DataTap-IP Configuration :: Administrator Menu - Microsoft Internet Explorer

File Edit View Favorites Tools Help

 | [log_out](#) |

DataTap-IP
Administrator Menu

1. Device Network Settings	TO SET: Device name, IP address, TCP Port assignment, Subnet mask, Default gateway, DNS Server IP, HTTP port, DHCP, Restore factory defaults, Reboot device with current settings.
2. Com Port Configuration	TO CHANGE: Input and Output Com Port settings, Control Signal pass-through settings.
3. Ethernet Side Settings	TO SET: Client/Server Mode, Target IP Address and TCP Port (Client mode), Access Restrictions (Server Mode), Remove Printer Control (ESC) Codes Option.
4. Passwords	TO SETUP: Administrator password.

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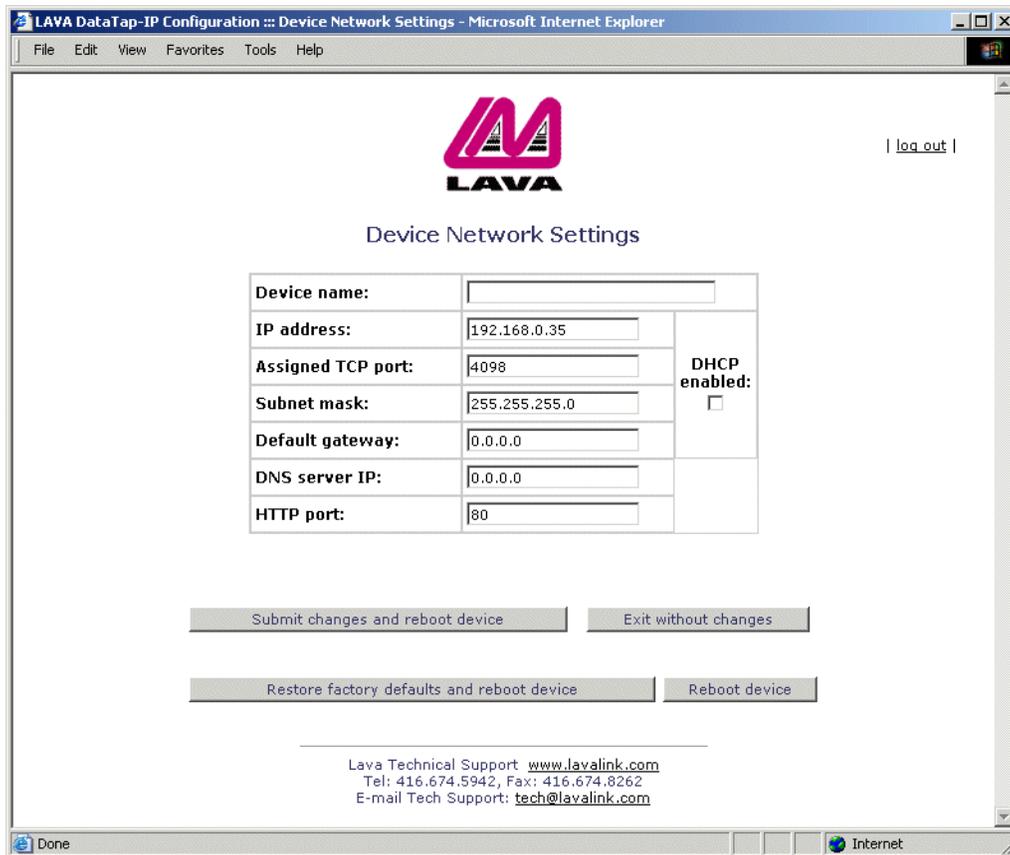
Done Internet

From the Administrator Menu you can open screens to view and modify network configuration settings, port configuration settings, Ethernet configuration settings, and password administration for the DataTap-IP.

3. Device network settings

The Device Network Settings screen allows configuration of the network parameters for the DataTap-IP:

Device Network Settings



The following network settings can be configured:

Device name

Use this field to supply a "friendly" name for the DataTap-IP device being configured. The friendly name is optional, and can be chosen to provide a conveniently-remembered name for the unit. By default this field is blank.

IP address

The IP address for the DataTap-IP will identify the device on the LAN on which it is located. Any conventional IP address can be used. The DataTap-IP ships with its default IP address as 192.168.0.35; ensure that this IP address is available on the LAN onto which the DataTap-IP is being installed.

NOTE: When DHCP is enabled, any IP address value entered here will be overridden.

Subnet mask

A subnet mask can be configured for the DataTap-IP in this dialog box; by default the DataTap-IP has a subnet mask of 255.255.255.0.

Default gateway

Configure the IP address of the default gateway that the DataTap-IP will use when communicating with devices outside its network segment. The default gateway is configurable as a 12 digit numeric (IP) address; by default this field is blank.

DNS server IP

If an external DNS server is being used to convert DNS names to IP addresses, the name of the DNS server is entered here. By default this field is blank.

DHCP enabled

If installing the DataTap-IP onto a network where IP addresses are to be assigned by a DHCP server, the “DHCP enabled” checkbox must be set. The DataTap-IP will act as a DHCP client and obtain its IP address from the DHCP server/s on its LAN. By default this function is disabled.

NOTE: When DHCP is enabled, any IP address value manually configured for the DataTap-IP will be overridden.

NOTE: If no DHCP server is running when DHCP is enabled, connection to the DataTap-IP will be lost.

HTTP port

Configure the TCP port number used by web browsers when connecting by HTTP to the DataTap-IP. By default this port number is set to 80.

Implementing changes:

After making changes to the network settings, four options exist:

Submit changes and reboot device

This option will register the changes you have entered into the dialog box and reboot the DataTap-IP, implementing the changes on reboot.

Restore factory defaults and reboot device

This option will restore factory defaults and reboot the DataTap-IP, implementing the changes on reboot.

Exit without changes

This option will discard changes entered into the dialog box and return you to the “Administrator Menu” screen.

Reboot device

This option will reboot the device with the settings currently implemented, and discard changes entered into the dialog box and not submitted.

Note on subnet configuration with the DataTap-IP. If the DataTap-IP is on a different subnet from a client station that is attempting to access it, the DataTap-IP will be visible in an instance of the *Ether-Link Manager™* running on the client station, and its ports can be activated on that client station, but applications running on the client station will not be able to open a serial port on the DataTap-IP.

For example, if the IP address of the DataTap-IP is 192.168.0.35 and the IP address of the client station is 192.168.1.1, the two devices are on different subnets (as indicated by the difference between the “0” and the “1” in the third portion of the two IP addresses).

Two solutions exist:

- change the subnet of either the DataTap-IP or the client station so that they are both on the same subnet or,
- change the subnet mask of the DataTap-IP to encompass both subnets. By default, the DataTap-IP has its subnet mask set to 255.255.255.0. This setting excludes all but the fourth portion of the IP address when assessing IP addresses. In the example above, a subnet mask of 255.255.0.0 will include the DataTap-IP in both subnets.

4. Com port configuration

If you choose the “Com Port Configuration” option from the Administrator’s Menu, a screen like the following will appear (four-port DataTap-IP devices will have Com ports configurable as pairs):

Com Port Configuration

The screenshot shows a web browser window titled "LAVA DataTap-IP Configuration :: Serial Port Settings - Microsoft Internet Explorer". The page features the LAVA logo and a "Com Port Configuration" heading. It is divided into two main sections: "Input Com Port Settings" and "Output Com Port Settings".

Input Com Port Settings:

Baud rate:	9600
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None

Reset Port

Output Com Port Settings:

Baud rate:	9600
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None

match input port settings
(user defined output port settings ignored when checked)

Pass control signals between Input and Output Com ports

<input checked="" type="checkbox"/> DTR	<input type="checkbox"/> RTS
---	------------------------------

Submit Exit without changes

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This screen provides access to conventional Com port settings for both input and output ports, control signal configuration between the two serial ports, and port reset.

Baud rate (Input Com Port and Output Com Port)

This parameter can be set from 110 to 115200 bps. The default baud rate is 9600 baud.

Data bits (Input Com Port and Output Com Port)

This parameter can be set from 5 to 8. The default data bits setting is 8 bits.

Parity (Input Com Port and Output Com Port)

This parameter can be set even, odd, none, mark, or space. The default parity setting is no parity (“none”).

Stop bits (Input Com Port and Output Com Port)

This parameter can be set 1, 1.5, or 2. The default stop bits setting is 1 bit.

Flow control (Input Com Port and Output Com Port)

This parameter can be set XON/XOFF, hardware, or none. The default flow control setting is no flow control (“none”).

NOTE: When setting the DataTap-IP to pass RTS control signal parameters, flow control should be set to “none” (See “Pass control signals between Input and Output Com ports” on page 7.)

Reset port (Input Com Port only)

This button will reset the connection between the Input Com port and the DataTap-IP.

NOTE: If a TCP connection is open when the port is reset, that TCP connection is closed and must be reset. If the DataTap-IP is configured as an Ethernet client, TCP re-connection will be automatic; if the DataTap-IP is configured as an Ethernet server, the client device must re-establish the connection.

Match input port settings

This checkbox will cause the Output Com port settings to match those used on the Input Com port, over-riding any manually configured settings for the Output Com port.

Pass control signals between Input and Output Com ports

The port redirection capability of the DataTap-IP transmits TX and RX data between its Output and Input Com ports. In some circumstances additional control line information will need to be sent between the two ports, as for example when a printer attached to the Output Com port needs to send a “paper out” indication to a station attached to the Input Com port. In these situations, DTR and RTS line information can be transmitted as well. By default DTR is enabled as a control line and RTS is disabled.

The “Pass control signals” settings allow the DataTap-IP to pass control information across the serial port redirection link.

TRANSFERRING CONTROL SIGNAL PARAMETERS		
	DTR	RTS
<input type="checkbox"/>	The DTR line is always set high on both Input and Output serial ports.	If hardware flow control is not enabled on the Input serial port, then the state of the RTS line is always set high on both Input and Output serial ports. If hardware flow control is enabled on the Input serial port, then the state of the RTS line is determined by the state of the flow control at any time.
<input checked="" type="checkbox"/>	The state of the DTR line on Input and Output serial ports is matched to the state of the DTR line of the device attached to Output and Input serial ports respectively.	If hardware flow control is not enabled on the Input serial port, then the state of the RTS line is matched to the state of the RTS line of the device attached to the Output and Input serial ports respectively. If hardware flow control is enabled on the Input serial port, then the state of the RTS line is determined by the state of the flow control at any time.
NOTE: The terms “set high” and “set low” are potentially confusing. This manual adopts the convention that “set high” means that a control line will have a voltage of minus 12 VDC and that the modem control register for that line is set to a logical “1”.		

As the table above indicates, settings using the RTS line will be affected by hardware flow control being enabled; when the RTS line is needed for device control, hardware flow control should be disabled.

After making changes to the Com port settings, two options exist:

Submit

This option will register the changes you have entered into the dialog box and reboot the DataTap-IP, implementing the changes on reboot.

NOTE: If a TCP connection is open when changes are submitted, that TCP connection is closed and must be reset. If the DataTap-IP is configured as an Ethernet client, TCP re-connection will be automatic; if the DataTap-IP is configured as an Ethernet server, the client device must re-establish the connection.

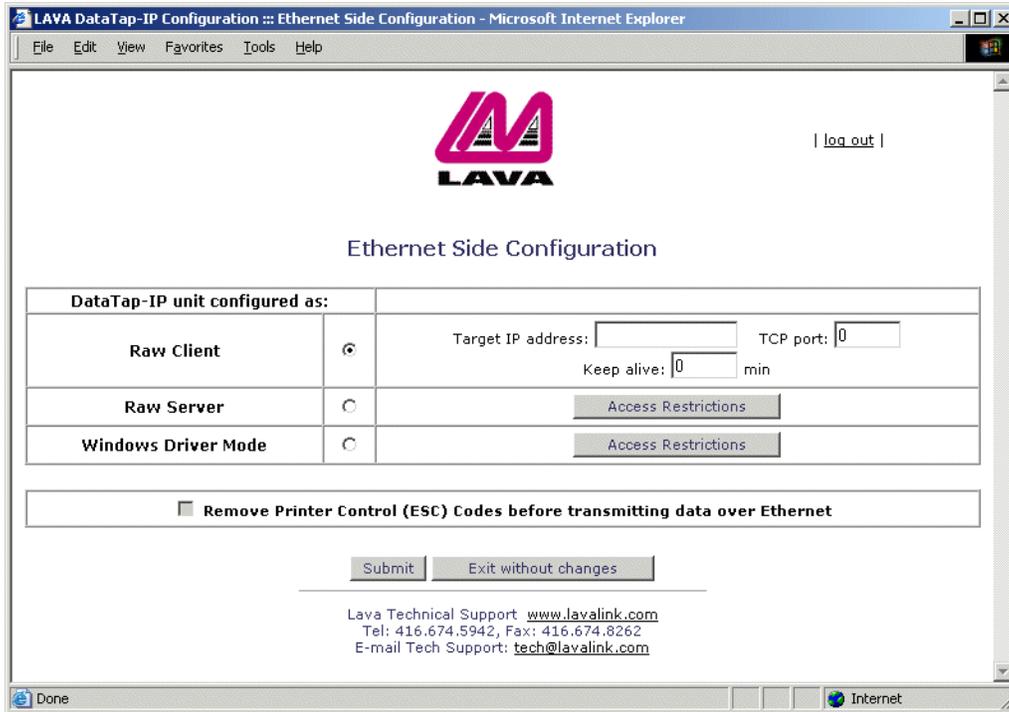
Exit without changes

This option will discard changes entered into the dialog box and return you to the “Administrator Menu” screen.

5. Ethernet side settings

The "Ethernet Side Configuration" dialog allows the DataTap-IP to be configured to send data over IP.

Ethernet Side Configuration



The screenshot shows a web browser window titled "LAVA DataTap-IP Configuration :: Ethernet Side Configuration - Microsoft Internet Explorer". The page features the LAVA logo and a "log out" link. The main heading is "Ethernet Side Configuration". Below this is a table for configuring the DataTap-IP unit. The table has three rows: "Raw Client", "Raw Server", and "Windows Driver Mode". The "Raw Client" row is selected with a radio button. It includes fields for "Target IP address", "TCP port", and "Keep alive" (in minutes). The "Raw Server" and "Windows Driver Mode" rows each have an "Access Restrictions" button. Below the table is a checkbox for "Remove Printer Control (ESC) Codes before transmitting data over Ethernet". At the bottom are "Submit" and "Exit without changes" buttons. Contact information for LAVA Technical Support is provided at the very bottom.

DataTap-IP unit configured as:	
Raw Client	<input checked="" type="radio"/> Target IP address: <input type="text"/> TCP port: <input type="text"/> Keep alive: <input type="text"/> min
Raw Server	<input type="radio"/> <input type="button" value="Access Restrictions"/>
Windows Driver Mode	<input type="radio"/> <input type="button" value="Access Restrictions"/>

Remove Printer Control (ESC) Codes before transmitting data over Ethernet

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Mode configuration

Raw Client mode. When "Raw Client" Mode is selected, data received on the Input serial port will be passed through to the Output port, and also sent over Ethernet to a configured Target IP Address and TCP Port.

Raw Server mode. When "Raw Server" Mode is selected, the Ethernet side of the DataTap-IP will act as a server, accepting connections from clients with authorized IP addresses. If no client connects, the DataTap-IP will simply pass all data from the Input serial port to the Output serial port without passing anything to Ethernet.

Windows Driver mode. In Driver Mode a PC that has the DataTap-IP driver installed connects to the unit over Ethernet and controls its operation.

Remove Printer Control (ESC) Codes

Selecting this option will cause printer control codes (ESCape codes) to be removed from the data stream being sent over the Ethernet side of the DataTap-IP.

6. Access restriction settings

If you choose the "Access Restrictions" option from the Ethernet Side Configuration menu, a screen like the following will appear:

Access Restrictions

Access Restrictions (Server Mode Only)

IP Range restrictions:

From: <input type="text"/>	To: <input type="text"/>
<input type="radio"/> Allow access	<input checked="" type="radio"/> Block access

From: <input type="text"/>	To: <input type="text"/>
<input type="radio"/> Allow access	<input checked="" type="radio"/> Block access

From: <input type="text"/>	To: <input type="text"/>
<input type="radio"/> Allow access	<input checked="" type="radio"/> Block access

From: <input type="text"/>	To: <input type="text"/>
<input type="radio"/> Allow access	<input checked="" type="radio"/> Block access

From: <input type="text"/>	To: <input type="text"/>
<input type="radio"/> Allow access	<input checked="" type="radio"/> Block access

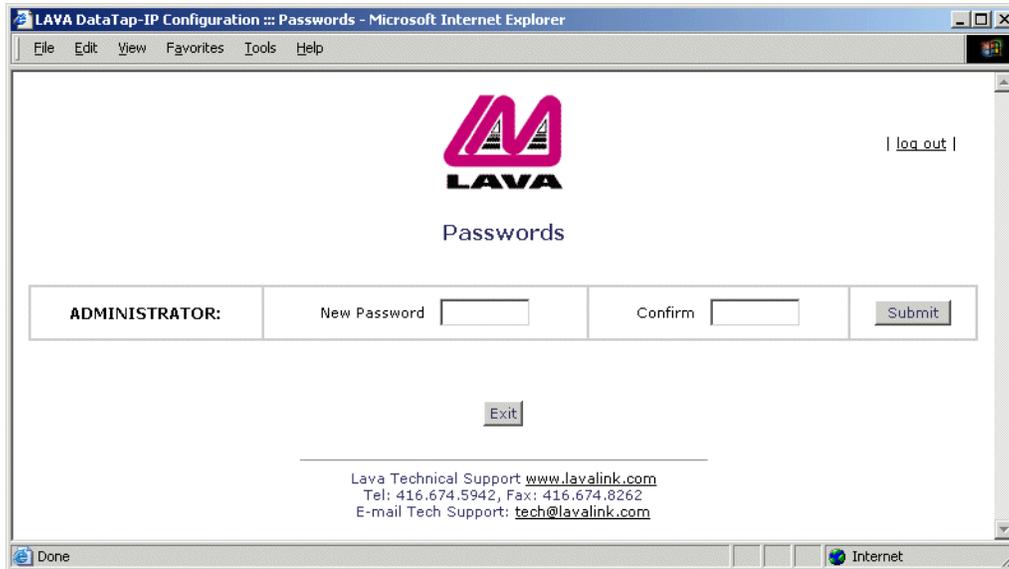
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E-mail Tech Support: tech@lavalink.com

This dialog box allows access to the DataTap-IP to be restricted or permitted according to the IP address of the client system. Five separate ranges can be configured to each either allow or block access, and the logic sum of these range restrictions is the access allowed to the port.

7. Password configuration

If you choose the “Passwords” option from the Administrator’s Menu, a screen like the following will appear:

Administrator Password Configuration



The screenshot shows a web browser window titled "LAVA DataTap-IP Configuration :: Passwords - Microsoft Internet Explorer". The browser's menu bar includes "File", "Edit", "View", "Favorites", "Tools", and "Help". The main content area features the LAVA logo (a stylized 'M' with 'LAVA' text below it) and a "log out" link in the top right. The title "Passwords" is centered below the logo. A form is displayed with the following elements:

ADMINISTRATOR:	New Password <input type="text"/>	Confirm <input type="text"/>	<input type="button" value="Submit"/>
----------------	-----------------------------------	------------------------------	---------------------------------------

Below the form is an "Exit" button. At the bottom of the page, contact information is provided:

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The browser's status bar at the bottom shows "Done" on the left and "Internet" on the right.

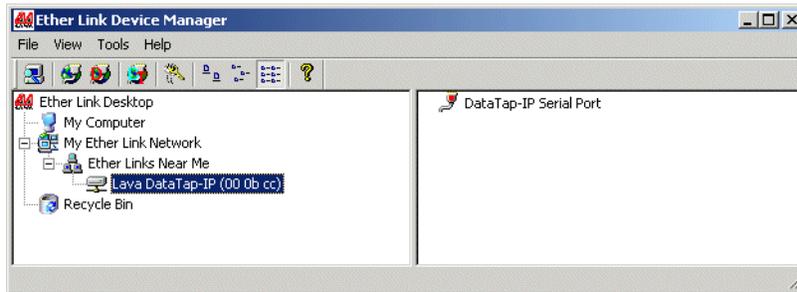
This dialog box allows a new password to be set for the DataTap-IP. Enter the new password, confirm it by retyping it in the second entry box, and then click the “Submit” button. To configure the DataTap-IP when no password is set, **do not enter any characters into the password box**; simply click on the “Configure” button.

NOTE: As a security feature, after five consecutive failed attempts at supplying a password on the main entry screen, the DataTap-IP will refuse further password attempts. To unlock the DataTap-IP, it must be powered down and re-powered.

8. Windows® Interfaces: LAVA Ether-Link Manager and Windows® Device Manager

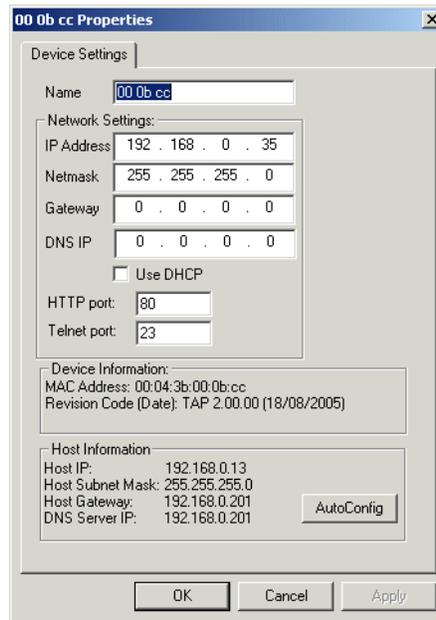
The DataTap-IP can be configured and managed through a Windows-based interface if the client station has the DataTap-IP driver installed, and has the LAVA *Ether-Link Manager* application installed under Windows. The LAVA *Ether-Link Manager* presents a dual-pane screen with a Windows Device Manager-like interface. In the left pane, LAVA Ether-Link devices, including the DataTap-IP, are shown. In the right pane, individual ports on LAVA Ether-Link Devices appear.

LAVA Ether-Link Manager



To set a DataTap-IP's network settings using the *Ether Link Manager*, right-click on the DataTap-IP shown in the Ether-Link tree and select "Properties". If the DataTap-IP is accessible on the network, a dialog will open that allows you to give it a new name, IP address, subnet mask, gateway address, http port, and Telnet port. If your network assigns IP addresses using a DHCP server, DHCP detection can also be enabled. These settings are described in "Device network settings" on page 4.

Device Network Settings



Changes made using the *Ether Link Manager* will be updated to both the local PC and to the DataTap-IP.

NOTE: Changing the network settings of an Ether Link device may make that device unavailable to other stations that have activated a connection to that device using older network settings.

NOTE: If no DHCP server is running when DHCP is enabled, connection to the DataTap-IP will be lost.

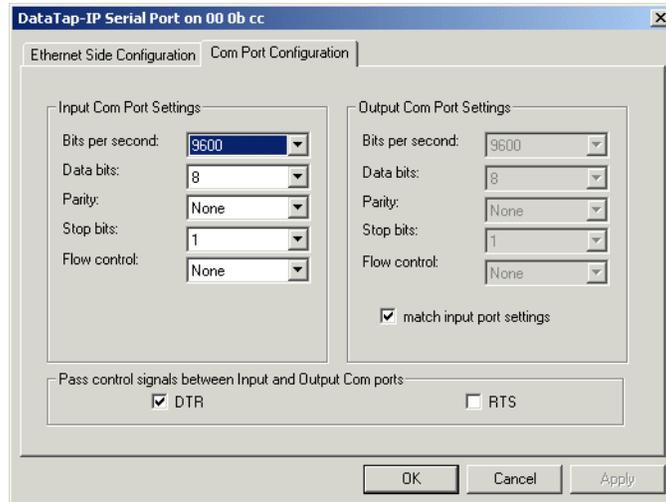
Once the Network Settings of the DataTap-IP have been configured, the unit's ports may be configured as desired.

Right clicking on the DataTap-IP serial port where it is displayed in the right panel of the *Ether Link Manager*, and selecting "Properties" will display two configuration pages.

Com Port Configuration

The Com Port Configuration page allows the user to configure the Input and Output serial ports of the DataTap-IP. Input port parameters such as port speed, parity, flow control should be configured to match those of the serial port that the DataTap-IP input port is connected to. These settings are described in "Com port configuration" on page 6.

Com Port Configuration



By default, the configuration settings of the Output port are matched to those of the Input port.

Ethernet Side Configuration

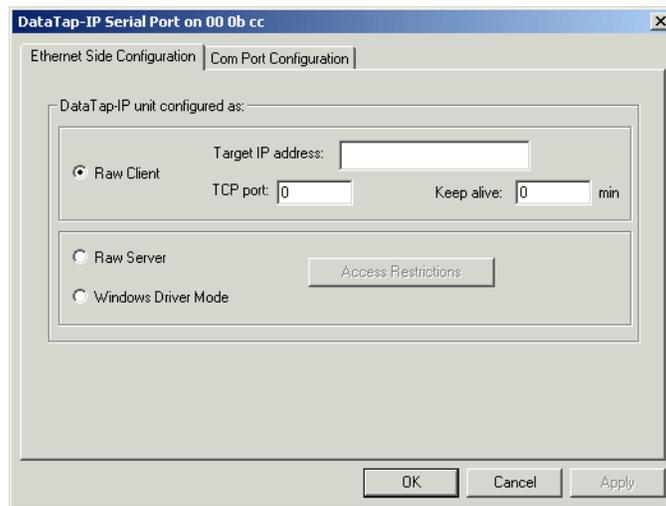
The DataTap-IP Ethernet port can be configured to operate in one of three modes:

Raw Client. When "Raw Client" Mode is selected, data received on the Input serial port will be passed through to the Output port, and also sent over Ethernet to a configured Target IP Address and TCP Port.

Raw Server. When "Raw Server" Mode is selected, the Ethernet side of the DataTap-IP will act as a server, accepting connections from clients with authorized IP addresses. If no client connects, the DataTap-IP will simply pass all data from the Input serial port to the Output serial port without passing anything to Ethernet.

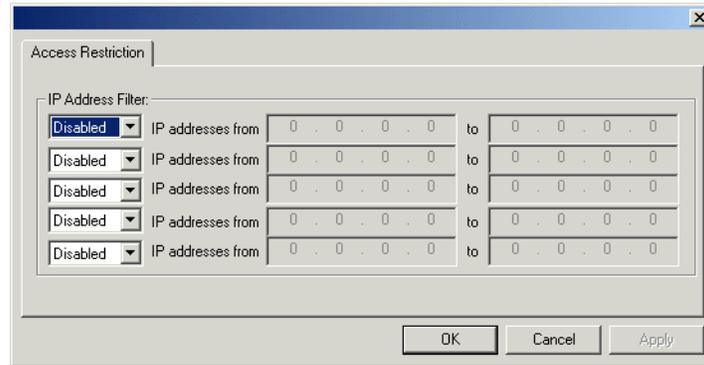
Driver. In "Driver Mode" a PC that has the DataTap-IP driver installed connects to the unit over Ethernet and controls its operation.

Ethernet Side Configuration



In Raw Server and Windows Driver modes, access restrictions can be configured for security:

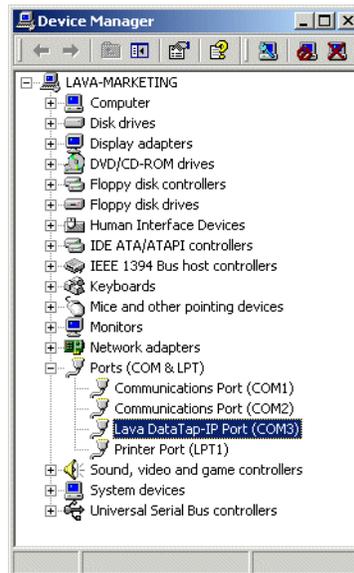
Access Restrictions



These settings are described in “Access restriction settings” on page 9.

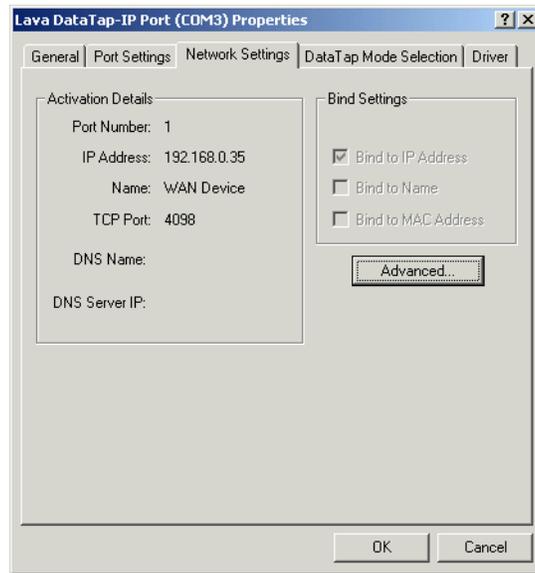
When the Windows driver for the DataTap-IP is installed, the DataTap-IP ports appear in Windows Device Manager, as they are fully operational native COM ports:

Windows® Device Manager



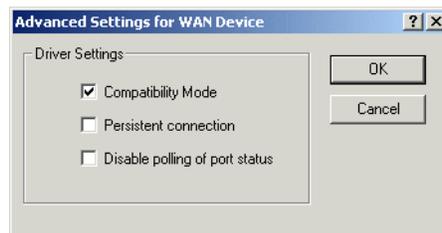
Further configuration options are available through Windows® Device Manager. By right-clicking on the DataTap-IP entry under “Ports (COM & LPT)” and selecting “Properties,” the “Lava DataTap-IP Port Properties” dialog appears. The “Network Settings” tab allows the serial port bindings to be displayed:

Serial Port Bindings



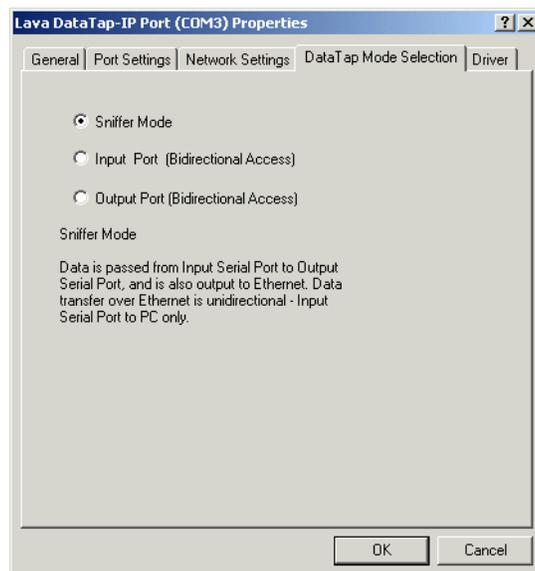
The “Advanced” button allows the driver to be configured for Compatibility Mode, Persistent Connection, and disabling polling of port status.

Advanced Device Settings



The “DataTap-IP Mode Selection” tab displays the port mode selection dialog:

Serial Port Mode Selection



DataTap-IP Port Modes

Sniffer mode. A DataTap-IP port that has been activated on your PC will be installed by default in "Sniffer" mode. In this mode data received from the network can be accessed by simply opening the Com Port number that Windows has assigned to the DataTap-IP using any communications application. All data passed between the DataTap-IP unit's Input and Output ports will be received by the controlling Windows PC as if it were coming from a local Com Port. However, any data sent by the PC to that Com Port will be ignored by the DataTap-IP and not passed through to the devices connected to the Input and Output serial ports.

Bidirectional port modes. In some instances, it may be desirable for the controlling PC to be able to communicate with the device that is connected to one of the serial ports of the DataTap-IP. In these situations, the serial port mode of the DataTap-IP may be changed to "bidirectional" on the Input or the Output port.

Note: Changing the port mode of the DataTap-IP to "bidirectional" will immediately disable the passing of data from the Input Port to the Output Port. In "bidirectional" mode, the selected serial port on the DataTap-IP becomes a remote Com Port to the controlling PC. Once the controlling PC releases the port (closes the TCP/IP connection), the DataTap-IP automatically reverts to its default "Sniffer" mode.

9. Hardware status LEDs

Hardware Status LEDs	
Power	
<i>RED - Power connection status</i>	
ON	Power is being received by the DataTap-IP
OFF	Power is not being received by the DataTap-IP
Ethernet	
<i>Green - LAN connection status</i>	
ON	DataTap-IP is connected to LAN
OFF	DataTap-IP is not connected to the LAN, or the DataTap-IP is in the process of being reset
<i>Amber - Data communications activity status</i>	
ON-OFF-ON (Flickering)	Packets are being seen by the DataTap-IP
STEADY	No data activity is being seen by the DataTap-IP
Serial DB-9	
<i>Green - Transmit status</i>	
ON	Data is being transmitted on the serial port
OFF	Data is not being transmitted on the serial port
<i>Yellow - Receive status</i>	
ON	Data is being received on the serial port
OFF	Data is not being received on the serial port