# IOLAN User's Guide V5.0

# Preface

## Audience

This guide is for the networking professional managing your IOLAN. Before using this guide, you should be familiar with the concepts and terminology of Ethernet and local area networking.

## Purpose

This guide provides the information that you need to configure and manage your Perle IOLAN Product. For Web Manager (GUI) users, this guide provides the navigation reference that can be used within web sessions for each feature.

Product installation information can be found in the IOLAN Hardware Installation Guide for your product model on our Perle website at *www.perle.com* and in the Quick Start Guide that came with your product.

## Additional Documentation

| Document | Description |
|----------|-------------|
| IOLAN Hardware Installation Guide | Product specific hardware guide on how to install your IOLAN. |
| IOLAN Quick Start Guide | Product specific Quick Start Guide that came with your IOLAN. |
| IOLAN CLI (Command Reference Guide) Guide V5.0 and greater | Command reference guide using CLI commands to configure the IOLAN (this is an advanced way to configure the IOLAN) |

## Document Conventions

This document contains the following conventions:

Most text is presented in the typeface used in this paragraph. Other typefaces are used to help you identify certain types of information. The other typefaces are:

**Note:** *Means reader take note*: notes contain helpful suggestions.

## Guide Updates

This guide may be updated from time to time and is available at no charge from the download area of Perle's

web site at *https://www.perle.com/downloads/*

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generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions in this Guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.
EN 55022: 1998, Class A, Note

WARNING This is a Class A product. In a domestic environment this product may cause radio interference in which case the user maybe required to take adequate measures.
Caution: the IOLAN product is approved for commercial use only.

# Publishing History

| Date | Revision | Update Details |
|---|---|---|
| July 2018 | A.07.04.2018 | Initial release of the IOLAN SCG series. |
| Feb 2019 | A.02.19.2019 | Increased length of SNMP community and trap fields to 64 characters. |

# About the IOLAN

The IOLAN is an Ethernet communications/terminal server that allows serial devices to be connected directly to your network. The IOLAN attaches to your network using TCP/UDP/IP and allows serial devices such as modems and terminalsto access the LAN. It also allows  LAN devices to access devices or equipment attached to IOLAN serial ports.

The IOLAN can connect to a wide range of devices including:

- Terminals for multi-user UNIX systems
- Data acquisition equipment (manufacturing, laboratory, scanners, etc)
- Retail point-of-sale equipment (bar coding, registers, etc.)
- PC's using terminal emulation
- Configurable serial modems

The performance and flexibility of the IOLAN allows you to use a wide range of high speed devices in complex application environments. The IOLAN products will work in any server environment.

## Hardware Features

See the IOLAN Hardware Installation Guide that came with your model for more information.

## General Features

This section highlights the software components you can expect to find in your IOLAN model.
Basic IOLAN software features are available on all IOLAN models.

- IPv6 support
- Support for TCP/IP and UDP protocols including telnet and raw connections
- Virtual modem emulation
- 'Fixed tty' support for several operating systems using Perle's TruePort utility
- DHCP/BOOTP for automated network-based setup
- Dynamic statistics and line status information for fast problem diagnosis
- Modbus master/slave/gateway support
- An SDK (Software Development Kit) for custom programs and plugin support
- Ability to disable services (for example, Telnet, TruePort SNMP,) for additional security
- Logging via syslog

## Security

Security features will vary depending on your IOLAN model

- Supervisory and serial port password protection
- Ability to set serial port access rights
- Ability to assign users access level rights to control their access
- Idle port timers, which close a connection that has not been active for a specified period of time
- Ability to individually disable network services that won't be used by the IOLAN

# Table Of Contents

# Setting Up the Network

The most important part of setting up the network is assigning an IP address to the IOLAN, whether this is a static IP address or enabling a DHCP/BOOTP-assigned IP address. You should also assign a name to the IOLAN, to make it easier to recognize. This section deals primarily with setting the IP address.

## Methods of Configuring the IOLAN

There are two ways you can access the IOLAN, through the network or through the serial connection. If you are accessing the IOLAN through the network, the IOLAN must already have a known IP address configured; for information see *Configuring an IP Address.*

Some of the IOLAN configuration methods have the capability of configuring an IP address, which is the first required configuration step for a new IOLAN. Once the IOLAN has been assigned an IP address, any of the configuration methods can be used to configure the IOLAN.

## Configuring an IP Address

Following is a list of methods for setting the IOLAN IP address and a short explanation of when you would want to use that method:

- **DeviceManager**—Use this method when you can connect the IOLAN to the network and access the IOLAN from a Windows® PC. The DeviceManager is a Windows®-based application that can be used for IOLAN configuration and management. The DeviceManager can be used to assign an IP address and perform the complete configuration and management of the IOLAN. See *DeviceManager* for more information on using the DeviceManager.
- **WebManager**—Use this method when you have already set the IOLAN with an IP address. This method cannot be used to initially set an IP address on the IOLAN. See *Downloading the Configuration with WebManager* for more information on using the WebManager.
- **Direct Connection**—Use this method when you can connect to the IOLAN from a serial terminal or from a computer running terminal emulation software over a serial port. Using this method, you will need to configure and/or manage the IOLAN using the CLI.
- **DHCP/BOOTP**—Use this method when you have a BOOTP or DHCP server running and you can connect the IOLAN to your network. The IOLAN will automatically obtain an IP address from a local network DHCP/BOOTP server when this service is enabled (it is disabled by default). You can also configure certain IOLAN parameters that will be passed from the DHCP/BOOTP server to the IOLAN when it boots up. Other configurators such as DeviceManager or CLI can be used to set this option, and obtain the initial IP address.
- **ARP-Ping**—Use this method when you can connect the IOLAN to the network and want to assign a temporary IP address to the IOLAN by adding an ARP entry to your PC and then pinging it.
- **IPv6 Network**—When the IOLAN is connected to an IPv6 network, its local link address is determined using stateless auto configuration.

# DeviceManager

The DeviceManager is a Windows®-based application that can be used to connect to the IOLAN to actively manage and configure it or can create new IOLAN configurations off-line. The DeviceManager can be run from Windows 2000®/Windows Vista®/Windows Server 2003®/Windows 2003 R2®/Windows 2008®/Windows 2008 R2®/Windows XP®/Windows 7®/Windows 8®/Windows 8.1®/ Windows Server 2012®/ Windows Server 2012® R2, Windows Server 2016® and Windows 10.

## Device Manager Features

Some DeviceManager features are:

- The ability to download the same configuration file to several IOLANs in one operation.
- The ability to save a configuration file locally in text format, in addition to the binary format.
- The ability to create a configuration file without being connected to the IOLAN.
- The ability to open a session to the IOLAN and download a (saved) configuration file to it.
- The ability to download/upload keys/certificates to/from the IOLAN.
- The ability to download custom files, such as new terminal definitions and custom languages to the IOLAN.

## Installing the DeviceManager to your PC

Before you can use DeviceManager, you need to install it on your Windows operating system from the Perle website at *www.perle.com*. After the DeviceManager application is installed, select the Start icon, then scroll through the Applications and select the Perle Folder, then select the Perle Devicemanager application. When you launch the DeviceManager, it will scan the network for IOLANs. All discovered IOLANs will be displayed on the list along with their name and IP address. When a new IOLAN is discovered on the network, that has not yet been assigned an IP address, it will be displayed with an IP Address of **Not Configured**. If routers on the network have been setup to propagate multi-casts, DeviceManager will also be able to discover IOLANs in other networks. To configure the IP address, select the IOLAN and then select the **Assign IP** button.

## Assigning a Temporary IP Address to a New IOLAN

A new IOLAN will show in the display list as N**ot Configured**. You can temporarily assign an IP address to the IOLAN that is connected to your local network segment, for the purpose of connecting to it and downloading a configuration file (containing a permanent IP address). To temporarily assign an IP address to the IOLAN, do the following:

1. Select the **Refresh** button. The IOLAN will be displayed in the **IP Address** column as **Not Configured**.
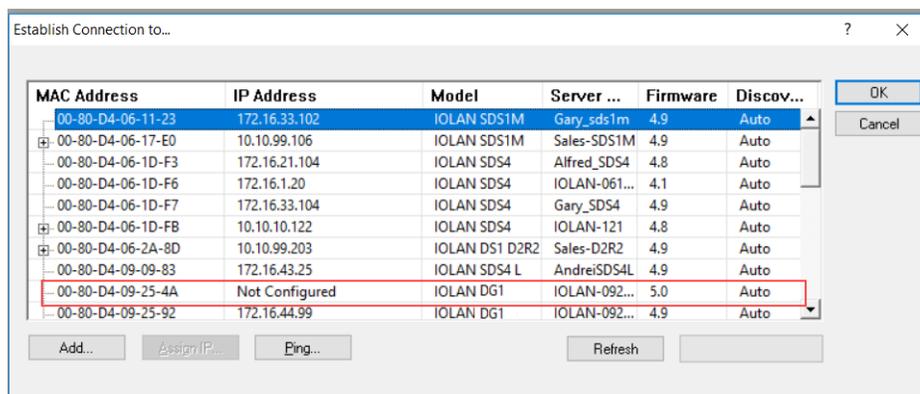


2. Type a valid temporary IP address into the address field or enable the **Have the** IOLAN **automatically get a temporary IP address**. If you enable the temporary IP address, the IOLAN will enable DHCP/BOOTP on your IOLAN and attempt to get an IP address from the DHCP/BOOTP server (this will permanently enable DHCP/BOOTP in your IOLAN's configuration, until you change it). If your network does not have a DHCP/BOOTP server, the IOLAN will temporarily assign an IP address of `192.168.1.124` with a subnet of `255.255.255.0` (this IP address is only assigned for the duration of the DeviceManager/IOLAN connection).
3. Select the **Assign IP** button.
4. After you configure the IP address, select the **Assign IP** button.

## Starting a New Session

To start a new session and connect to the IOLAN using the DeviceManager:
Start the DeviceManager by selecting **Start**, **All Programs**, **Perle**, **DeviceManager**, **DeviceManager**.
When the DeviceManager starts, it searches the network for IOLANs.
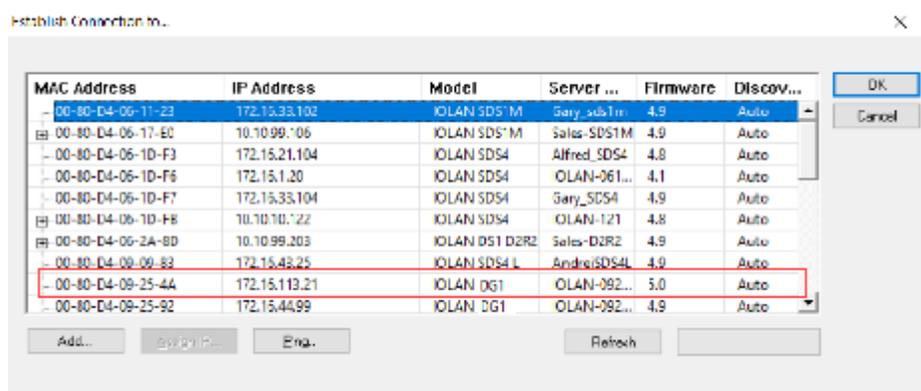
## Logging into the IOLAN with DeviceManager

The refreshed list will now display the assigned IP address for the new IOLAN. To connect to the IOLAN, select the IOLAN entry and select **OK**. If this is the first time you are accessing the IOLAN, type in the factory default admin password, `superuser`, and select **OK**. The DeviceManager will display a window indicating that it is trying to authenticate and connect you to the IOLAN.
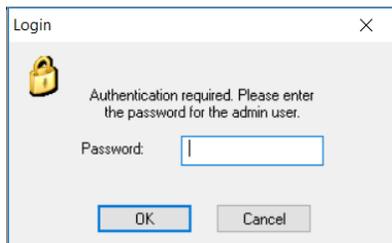
## Adding/Deleting IOLANs Manually

To permanently add the IOLAN to the IOLAN list, select the **Add** button and type in the IPv4 or IPv6 address of the IOLAN. To permanently delete the IOLAN from the IOLAN list, select the IOLAN's IP address and select the **Delete** button.



If the authentication and connection are successful, the IOLAN's **Server Info** window is displayed.
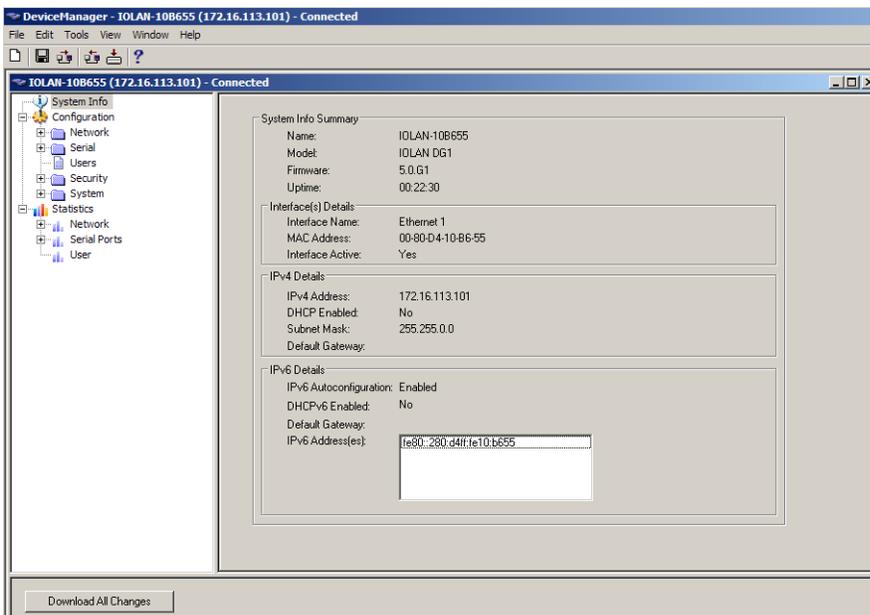


If you cannot connect to the IOLAN, you can highlight the IOLAN and selecting the **Ping** button to verify that the DeviceManager can communicate with the IOLAN's IP Address. If the ping times out, then you might need to set up a Gateway in your IOLAN or verify that your network is communicating correctly. If your IOLAN is not in the local network and you do not have a multi-cast enabled router in your network and therefore the IOLAN is not displayed in the selectable list, but can be pinged from your PC, you can add it to the selectable list by selecting the **Add** button.

**Note:** The DeviceManager does not automatically update the IOLANs configuration. You must download the configuration changes to the IOLAN and then reboot the IOLAN to make the configuration changes take effect.

You are now ready to configure the IOLAN.

## Navigating the DeviceManager

The DeviceManager has a navigation tree that you can use to access the available Configuration and Statistics pages in the display area. When you select an option in the navigation tree, you can often navigate the tabs or buttons in the display area to access the various configuration and statistics options.

Menu/Quick Access Buttons

Display Area

Navigation Screen

Download Button
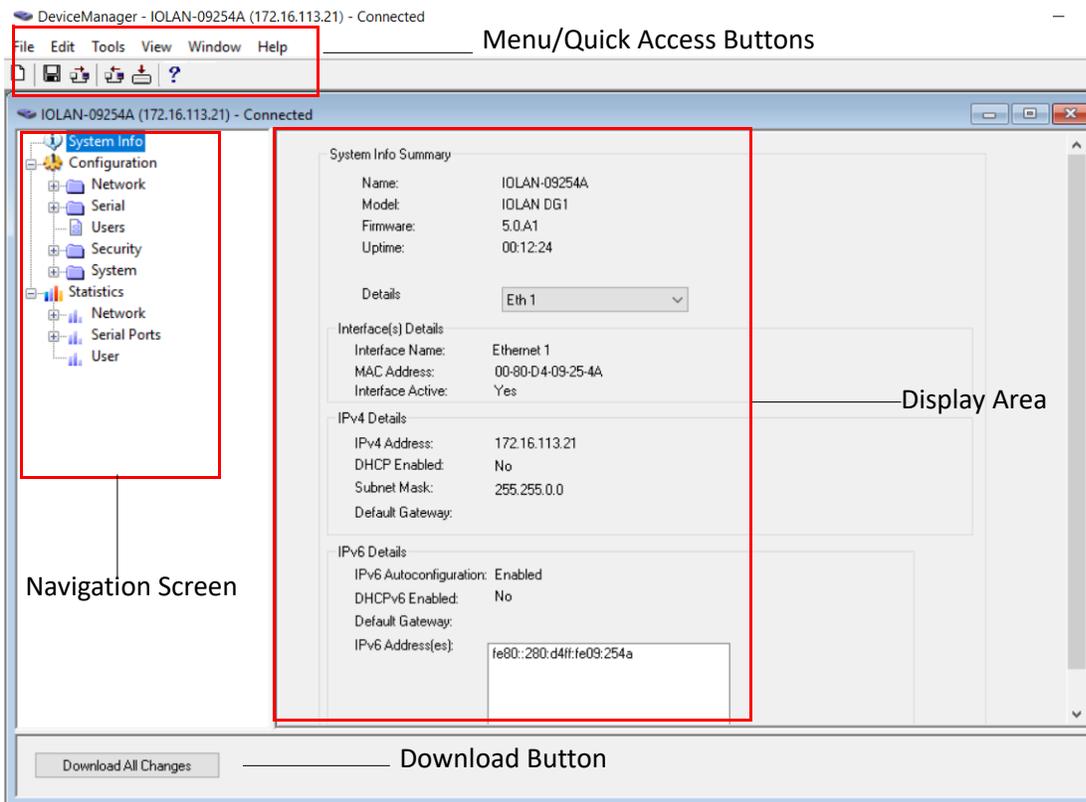
### Navigating the Options

The left-hand navigation tree allows you to quickly and easily navigate the various Configuration and Statistics pages of DeviceManager. Further navigation is available in the form of buttons and tabs in the display area of DeviceManager, depending on where you are in the navigation tree, as shown in the below.

Notice that when you expand a parent node in the tree (e.g., **Serial**), the tree displays the same options that appear as buttons in the display area, as shown below. This gives you the choice of using the navigation tree or buttons to navigate the options.

## *Downloading the Configuration with DeviceManager*
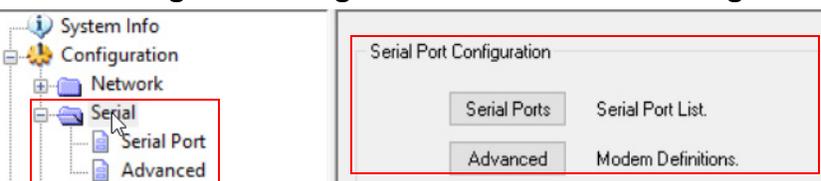


When you have completed all your configuration changes, select the **Download All Changes** button to download the configuration to the IOLAN. You must reboot the IOLAN for your configuration changes to take effect.

### *Creating a New IOLAN Configuration in DeviceManager*

In DeviceManager, when you select **File**, **New**, the New Configuration window is displayed.
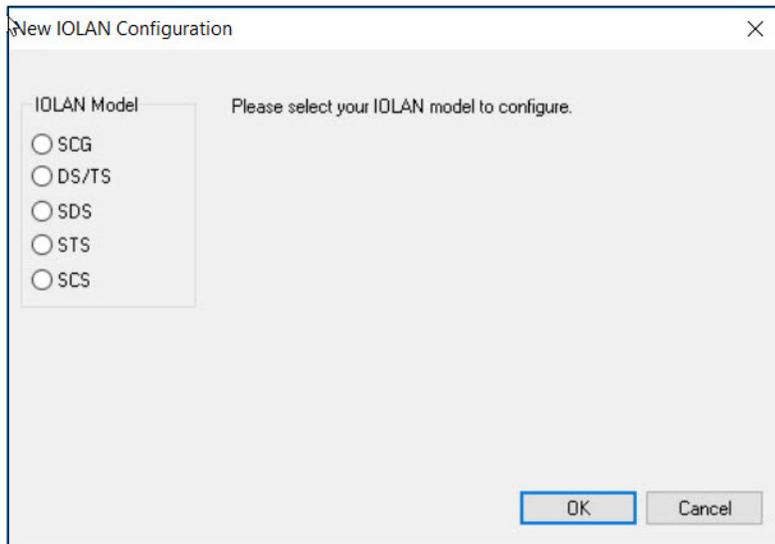


Select the IOLAN model for which you want to create a new configuration file. Any configuration file created in this manner can only be save locally. To download a created configuration file, you must first connect to the IOLAN, import the created configuration file into DeviceManager (this is not available in WebManager), and then download the configuration file to the IOLAN and reboot it.Opening an Existing Configuration File

If you select the **File**, **Open**, a browse window is opened so you can select the configuration file you want to edit. IOLAN configuration files saved in the DeviceManager can be in the IOLAN-native binary format (`.dme`) or as a text file (`.txt`), which can be edited with a text editor. Either configuration version can be imported into the DeviceManager. IOLAN configuration files saved from WebManager can also be opened into DeviceManager.

### *Importing an Existing Configuration File*

If you have a local, saved configuration file that you want to download to the IOLAN, you must first connect to the IOLAN that you want to download the configuration file to. Once you have successfully logged into the IOLAN, in DeviceManager select **Tools**, **Import Configuration from a File** and in WebManager select **Administration, Restore/Backup**. You need to download the file in DeviceManager and in both managers you need to reboot the IOLAN.

# WebManager

### *Using the WebManager*

The Perle WebManager is an embedded Web based application that provides an easy to use browser interface for managing the IOLAN. This interface provides the ability to configure and manage the IOLAN. This is accessible through any standard desktop web browser. You must have preconfigured a valid IP address on the IOLAN before connecting with the WebManager.

### *WebManager Features*

Some Perle WebManager features are:
- The ability to downloading firmware to the IOLAN.
- The ability to reset serial ports.

- The ability to download/upload keys/certificates to/from the IOLAN.
- The ability to download custom files, such as new terminal definitions and custom languages to the IOLAN

## *Logging in to the IOLAN using WebManager*

WebManager can connect to IOLANs that already have an assigned IP address.

To connect to the IOLAN, type the IP address of the IOLAN into the **Address bar** on your browser such as: `http://10.10.234.34`. (Your IOLAN IP address)

You will see the login screen. You will be prompted for the admin Password (the default is `superuser`).

If the authentication and connection are successful, the IOLAN's **Server Info** window is displayed.

You are now ready to configure the IOLAN.

## *Navigating the WebManager*

The WebManager uses a expandable/collapsible buttons with folders and pages for the navigation tree. You can expand the buttons to view the folders and pages to see the available configuration options. When you access a configuration page, you can often navigate the tabs in the configuration area to access all of the configuration options.

When using WebManager, you are required to select the **Apply** button each time you make a change to a configuration window/tab.

Configuration Area
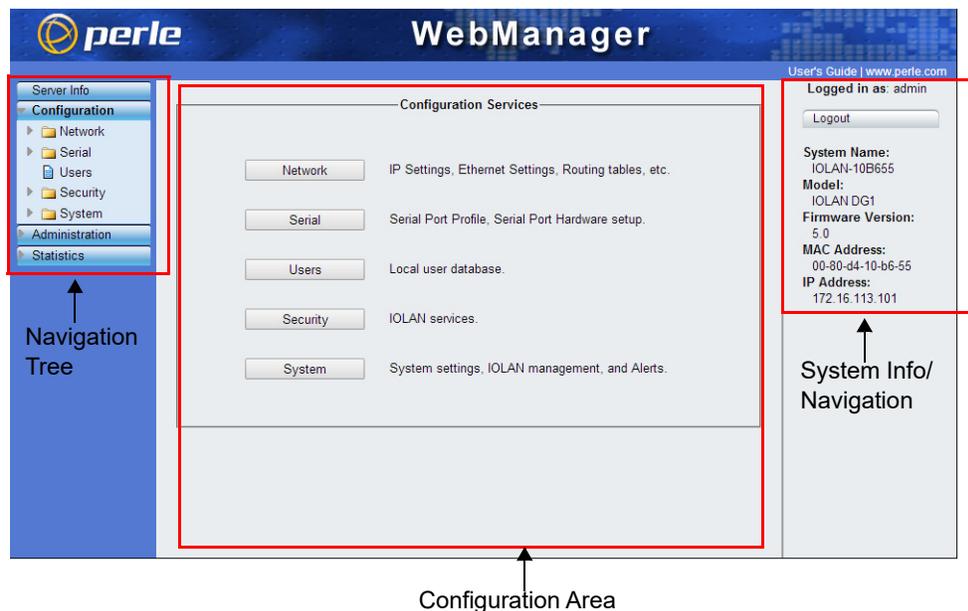
## *Downloading the Configuration with WebManager*

The configuration is automatically downloaded when you select the apply button on each page. Most changes require a reboot of the IOLAN in order to take effect. Some changes such as serial port parameters can be made to take effect by simply resetting the serial port.

# Command Line Interface

The Command Line Interface (CLI) is a command line option for IOLAN configuration/management. See the *IOLAN Command Line Interface Reference Guide V5.0* for a full breakdown of commands. The CLI is accessed by any application that supports a Telnet session to the IOLAN's IP address, such as Putty, Secu-reCRT, or you can connect directly to the admin console port.

After you have successfully logged in, you can start configuring/managing the IOLAN by typing in commands at the prompt. If you are not sure what commands are available, you can type a **?** (question mark) at any time during a command to see your options.

## *Connecting through the Network*

To connect to the IOLAN through the network to configure/manage it using the CLI, do the following:

1. Start a Telnet session to the IOLAN's IP address (IP address must be preconfigured).

2. You will get a **Login:** prompt. You can login as the admin user or as a user with Admin Level rights. If the login is successful, you will get a prompt that displays the IOLAN model and number of ports:

   ```
   Login: admin
   Password:

   for example DG1#
   ```

You will see a prompt that displays the model and number of serial ports on the IOLAN. You are now ready to start configuring/managing your IOLAN using the CLI.

See the *IOLAN Command Line Interface Reference Guide V5.0* and greater for more information about using the CLI.

## *Connecting to the Console Port(s)*

Depending on the model of IOLAN you purchased, connecting to the console port can be done in a variety of ways; using a DIP switch to set the port to Console mode, then connecting with a null modem serial cable, connecting to the IOLAN with the DB9 to RJ45 adapter that was shipped with your product or connecting to the standard Micro-B USB port via a USB cable to the front of the IOLAN. After you have established a connection to the IOLAN, you will get a **Login:** prompt. You can login as the admin user or as a user with Admin Level rights. If you are not sure what commands are available, you can type a ? (question mark) at any time during a command to see your options. See the *IOLAN Hardware Installation Guide* for your model to determine the method of connecting to your specific model.

# DHCP/BOOTP

## *Connecting to the IOLAN Using DHCP/BOOTP*

The IOLAN will automatically request an IP address from the DCHP/BOOTP server when the **Obtain IP address automatically using DHCP/BOOTP** parameter is enabled. By default, DHCP is disabled

## *Using DHCP/BOOTP*

To use DHCP/BOOTP, edit the bootp file with IOLAN configuration parameters. You can use DHCP/BOOTP to perform the following actions on a single or multiple IOLANs on boot up:

- auto-configure with minimal information; for example, only an IP address
- auto-configure with basic setup information (IP address, subnet/prefix bits, etc.)
- download a new version of firmware
- download a full configuration file

DHCP/BOOTP is particularly useful for multiple installations: you can do all the IOLANs' configuration in one DHCP/BOOTP file, rather than configure each IOLAN manually. Another advantage of DHCP/BOOTP is

that you can connect the IOLAN to the network, turn on its power and let autoconfiguration take place. All the configuration is carried out for you during the DHCP/BOOTP process.

## DHCP Parameters

The following parameters can be set in the DHCP/BOOTP bootp file:

- **SW_FILE**—The full path, pre-fixed by hostname/IP address (IPv4 or IPv6), and file name of the firmware update.
- **CONFIG_FILE**—The full path, pre-fixed by hostname/IP address (IPv4 or IPv6), and file name of the configuration file.
- **GUI_ACCESS**—Access to the IOLAN from the HTTP or WebManager. Values are `on` or `off`.
- **SECURITY**—Restricts IOLAN access to devices listed in the IOLANs host table. Values are `yes` or `no`.
- **TFTP_RETRY**—The number of TFTP retries before aborting. This is a numeric value, for example, 5.
- **TFTP_TMOUT**—The time, in seconds, before retrying a TFTP download/upload. This is a numeric value, for example, 3.
- **CUSTOM_LANG**—The full path, pre-fixed by a hostname/IP address (IPv4 or IPv6), and file name of a translated language file. For example,
  `192.101.34.211 /accounting/Iolan_ds_german.txt.`
- **EXTRA_TERM1**—(**EXTRA_TERM2**, **EXTRA_TERM3**) The full path, pre-fixed by a hostname/IP address (IPv4 or IPv6), and file name of a termcap file for a specific terminal type.

Several IOLAN parameters can be configured through a DHCP/BOOTP server during the IOLAN boot up. This is particularly useful for configuring multiple IOLANs.

## Using ARP-Ping

You can use the ARP-Ping (Address Resolution Protocol) method to temporarily assign an IP address and connect to your IOLAN to assign a permanent IP address. To use ARP-Ping to temporarily assign an IP address:

From a local UNIX/Linux host, type the following at the system command shell prompt:

arp -s a.b.c.d aa:bb:cc:dd:ee:ff

On a Windows® 2000 or newer system, type the following at the command prompt:

arp -s a.b.c.d aa-bb-cc-dd-ee-ff

(where `a.b.c.d` is the IPv4 address you want to temporarily assign to the IOLAN, and

`aa:bb:cc:dd:ee:ff` is the Ethernet (MAC) address of IOLAN (found on the back of the unit).

Whether you use UNIX or Windows®, you are now ready to ping to the IOLAN. Here is a UNIX example of the sequence to use:

arp -s 192.168.209.8 00:80:d4:00:33:4e

ping 192.168.209.8

From the ping command issued in step 2, the IOLAN will pickup and use the IP address entered into the ARP table in step 1. You are now ready to configure the IOLAN.

## Connecting to an IPv6 Network

The IOLAN has a factory default link local IPv6 address based upon its MAC Address.
For example:
For an IOLAN with a MAC Address of 00-80-D4-AB-CD-EF, the Link Local Address would be fe80::0280:D4ff:feAB:CDEF.
By default, the IOLAN will listen for IPV6 router advertisements to obtain additional IPV6 addresses. No configuration is required, however, you can manually configure IPV6 addresses and network settings; see *Connecting to an IPv6 Network* for more information on IPv6 configuration options.

# SNMP

The IOLAN supports configuration and management through SNMP. SNMP Management tools (SNMP client/MIB browser software) can be used to set IOLAN configuration parameters and/or view IOLAN statistics.

## *Connecting to the IOLAN Using SNMP*

Before you can connect to the IOLAN through an SNMP Management tool or MIB browser, you need to set the following components through another configuration method.

1. Configure a known IP address on the IOLAN.

2. Configure a read-write user for SNMP version 3 or a community for SNMP version 1 or 2 on the IOLAN.

3. Reboot the IOLAN to make sure the changes take effect.

To connect to the IOLAN through an SNMP Management tool or MIB browser, do the following:

1. From the Perle website, load the MIB, for your model, into your SNMP manager.

**Note:** You need to have the following MIBs installed in your SNMP manager (these are usually part of the standard SNMP client/MIB browser):
- SNMPv2-SMI
- SNMPv2-TC
- IPV6-TC

2. Verify that the read-write user for SNMP version 3 or a community for SNMP version 1 or 2 match the configuration on the IOLAN.

3. Type in the IOLAN's IP address and connect to the IOLAN.

4. You are now ready to start configuring the IOLAN using SNMP.

### *Using the SNMP MIB*

After you have successfully connected to the IOLAN through your SNMP Management tool or MIB browser, expand the MIB folder to see the IOLAN's parameter folders. Below is an example of the configurable parameters under the **ServicesInfo** folder.

```
PERLE-IOLAN-SDS-MIB.iso.org.dod.int
    adminInfo
    serverInfo
    hostsInfo
    userInfo
    portInfo
    modemInfo
    servicesInfo
        serviceStatus
        serviceDHCP
        serviceRouteD
        serviceTelnetD
        serviceSSHD
        serviceHTTPD
        serviceSnmpD
        serviceSPCD
        serviceSNTP
        serviceHTTPSD
        serviceSyslog
        serviceDeviceManagerD
```
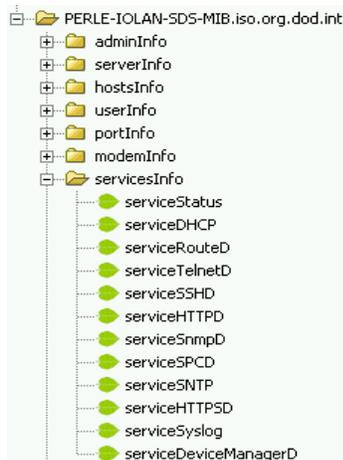
The first variable in each folder is the **Status** variable, for example, **serviceStatus**. When you perform a GET on this variable, one of the following values will be returned:

- **1**—Indicates that the container folder is active with no changes.
- **2**—Indicates that the container folder is active with change(s).

Once you have completed setting the variables in a folder, you will want to submit your changes to the IOLAN. To do this, set the **Status** variable to **4**. If you want to discard the changes, set the **Status** variable to **6**.

- **4**—Indicates that the changes in the container folder are to be submitted to the IOLAN.
- **6**—Indicates that the changes in the container folder are to be discarded.

If you want to save all the changes that have been submitted to the IOLAN, you need to expand the **adminInfo** container folder and SET the **adminFunction** to **1** to write to FLASH. To make the configuration changes take effect, SET the **adminFunction** to **3** to reboot the IOLAN.

To select a serial port profile in the WebManager, connect through the WebManager to the IOLAN you are configuring and select **Serial Port**, in the navigation pane. Highlight the serial port you want to configure and then select **Edit**.

# Network Settings

The Network section is used to configure the parameters that identify the IOLAN within the network and how the IOLAN accesses hosts on the network. Select Network from the navigation tree on the left hand side.

- **IP Settings**—Configure IPv4, IPv6 settings, Default Gateway and Ethernet settings
- **Advanced**—Configure Host table, Routes.

## IPv4 Settings

The parameters in IPv4 settings are used to access the IOLAN and how the IOLAN accesses the network. Select IPV4 from the Network Configuration screen and configure the parameters for your network.

| | |
|---|---|
| **System Name** | The **System Name** is used for informational purposes by such tools as the DeviceManager and is also used in conjunction with the Domain field to construct a fully qualified domain name (FQDN). |
| **Domain** | This field is combined with the **System Name** to construct the fully qualified domain name (FQDN). For example, if the domain is **mycompany.com** and the **Server Name** is set to **accounting**, the FQDN would be **accounting.mycompany.com**. |
| **Interface Name** | Ethernet 1Select either Ethernet 1 |
| **Obtain IP Address automatically using DHCP/BOOTP** | When enabled, the IOLAN will request an IP address from the DHCP/BOOTP server. By default, when this option is enabled, the IOLAN will also attempt to retrieve the DNS server, WINS server, and default gateway from the DHCP/BOOTP server. **Default:** Disabled |
| **Use the following IP Address** | Assign a specific IP address to the IOLAN. **Field Format:** IPv4 address |
| **Ethernet 1** | The IOLAN's unique IPv4 network Interface 1IP address. **Field Format:** IPv4 address |
| **Subnet Mask** | The network subnet mask. For example, 255.255.0.0. |
| **Default Gateway** | Specify the gateway IP address that will provide general access beyond the local network. **Field Format:** IPv4 address |
| **Default Gateway Obtain Automatically** | When DHCP/BOOTP is enabled, you can enable this option to have the IOLAN receive the Default Gateway IP address from the DHCP/BOOTP server. **Default:** Enabled |
| **DNS Server** | Specify the IP address of a DNS host in your network for host name resolution. **Field Format:** IPv4 or IPv6 address |
| **DNS Server Obtain Automatically** | When DHCP/BOOTP is enabled, you can enable this option to have the IOLAN receive the DNS IP address from the DHCP/BOOTP server. **Default:** Enabled |

| | |
|---|---|
| **WINS Server** | Specify the IP address of a WINS (Windows Internet Naming Service) host in your network for host resolution.<br>**Field Format:** IPv4 address |
| **WINS Server Obtain Automatically** | When DHCP/BOOTP is enabled, you can enable this option to have the IOLAN receive the WINS IP address from the DHCP/BOOTP server.<br>**Default:** Enabled |

### IPv6 Settings

Configure IPv6 settings when the IOLAN resides in an IPv6 network.

| | |
|---|---|
| **Ethernet 1** | The IOLAN's unique IPv6 network Interface 1IP address.<br>**Field Format:** IPv6 address |
| **Obtain IPv6 Address(es) using** | When enabled, you can configure the IOLAN to obtain the IPv6 address(es) using IPv6 Autoconfiguration or a DHCPv6 server.<br>**Default:** Enabled |
| **IPv6 Autoconfiguration** | When enabled, the IOLAN will send out a Router Solicitation message. If a Router Advertisement message is received, the IOLAN will configure the IPv6 address(es) and configuration parameters based on the information contained in the advertisement. If no Router Advertisement message is received, the IOLAN will attempt to connect to a DHCPv6 server to obtain IPv6 addresses and other configuration parameters.<br>**Default:** Enabled |
| **DHCPv6** | When enabled, requests IPv6 address(es) and configuration information from the DHCPv6 server.<br>**Default:** Disabled |
| **Custom IPv6 Address List** | Displays the list of custom configured IPv6 addresses. |
| **Default Gateway** | Specify the gateway IP address that will provide general access beyond the local network.<br>**Field Format:** IPv6 address |
| **DNS Server** | Specify the IPv6 address of a DNS host in your network for host name resolution.<br>**Field Format:** IPv6 address |
| **DNS Server Obtain Automatically** | When DHCPv6 is enabled, you can enable this option to have the IOLAN receive the DNS IP address from the DHCPv6 server.<br>**Default:** Enabled |
| **DHCPv6 Settings IPv6 Address(es)** | When enabled, the IOLAN will accept IPv6 address(es) from the DHCPv6 server.<br>**Default:** Disabled |
| **DHCPv6 Settings Network Prefix** | When enabled, the IOLAN will accept the network prefix from the DHCPv6 server.<br>**Default:** Disabled |

### Adding/Editing a Custom IPv6 Address

You can choose one of the following:

**Enter the IPv6 network prefix**:

| | |
|---|---|
| **Create a unique IPv6 address on the network** | When enabled, the IOLAN will derive an IPv6 address from the entered network prefix and the IOLAN's MAC address.<br>**Default:** Enabled |
| **Network Prefix** | Specify the IPv6 network prefix.<br>**Default:** Enabled |
| **Network Subnet Bits** | Specify the number of bits in the Network prefix which will be used to specify the subnet.<br>**Range:** 0-64<br>**Default:** 64 |

**Enter the complete IPv6 address:**

| | |
|---|---|
| **Use the following IPv6 address** | Enable this option when you want to enter a specific IPv6 address.<br>**Default:** Disabled |
| **IPv6 Address** | Specify the complete IPv6 address.<br>**Field Format:** IPv6 address |
| **IPv6 Address IPv6 Prefix Bits** | Specify the network prefix bits for the IPv6 address.<br>**Range:** 0-128<br>**Default:** 64 |

## Advanced Network Settings

The **Advanced** tab configures  MTU size, IPv6 Advertising Router settings, and the Ethernet interface parameters.
Configure the parameters in the **Advanced** tab only if:
- you want to specify the line speed and duplex for your Ethernet interface
- if you want the IOLAN to act as an IPv6 Advertising Router

| | |
|---|---|
| **Register Address in DNS** | When this parameter is set, the IOLAN will provide the DHCP/DHCPv6 server with a fully qualified domain name (FQDN), so that the DHCP/DHCPv6 server can update the network's DNS server with the newly assigned IP address.<br>**Default:** Disabled |
| **Domain Prefix** | (Dual Interface models only) A domain prefix to uniquely identify the interface to the DNS when the IOLAN has more than one Ethernet interface. The FQDN that is sent to the DNS will be one of the following formats, depending on what is configured in the **System Settings** section on the **IPv4 Settings** tab:<br><br>• *<Server Name>.<Domain Prefix>.<Domain Name>*<br>• *<Server Name>.<Domain Prefix>*<br><br>**Field Format:** Maximum 8 alphanumeric characters |
| **Maximum Transmission Unit (MTU)** | The Maximum Transmission Unit (MTU) size of an IP frame that will be sent over the network. **MTU IPv4:** 68-1500 bytes<br>**MTU IPv6:** 68-1500 bytes |

| | |
|---|---|
| **Enable IPv6 Router Advertisement** | When enabled, the IOLAN will periodically send IPV6 Router Advertisement messages and respond to Router Solicitation messages. The Router Advertisement message can be configured to contain any of the following information:<br><br>● **DHCPv6**—Use the DHCPv6 server to obtain additional IPV6 address(es) and configuration parameters.<br><br>● **DHCPv6 Configuration Options**—Use DHCPv6 server to obtain additional configuration parameters.<br><br>● **Network Prefixes**—Advertise the selected custom configured network prefixes.<br><br>**Default:** Disabled |
| **Advertise DHCPv6** | When enabled, the Router Advertisement message indicates to use the DHCPv6 server for obtaining additional IPv6 addresses and configuration parameters.<br><br>**Default:** Disabled |
| **Advertise DHCPv6 Configuration Options** | When enabled, the Router Advertisement message indicates to use the DHCPv6 server to obtain additional configuration parameters.<br>**Default:** Disabled |
| **Advertise the following Network Prefix(es)** | The network prefix of the IPV6 addresses created in the **IPv6 Settings** tab in the **Custom IPv6 Address List** are included in the Router Advertisement message. You can choose to enabled or disable specific network prefixes from being advertised to hosts.<br>**Default**: Enabled |
| **Interface 1 Hardware Speed and Duplex** | Define the Ethernet connection speed.<br><br>**Data Options:**<br><br>• **Auto**—automatically detects the Ethernet interface speed and duplex<br>• **10 Mbps Half Duplex**<br>• **10 Mbps Full Duplex**<br>• **100 Mbps Half Duplex**<br>• **100 Mbps Full Duplex**<br>• **1000 Mbps Full Duplex**<br><br>**Default:** Auto |
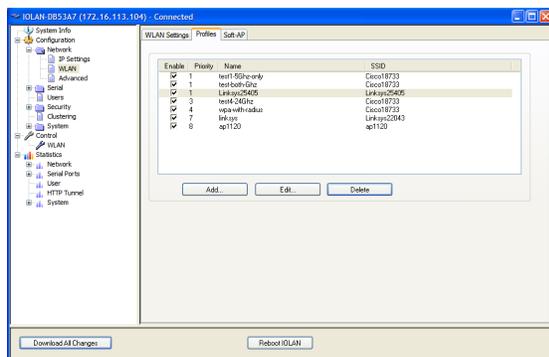
# Host Table

The Host table contains the list of hosts that will be accessed by an IP address or Fully Qualified Domain Name (FQDN) from the IOLAN. This table will contain a symbolic name for the host as well as its IP address or FQDN. When a host entry is required elsewhere in the configuration, the symbolic name will be used. You can configure up to 100 hosts using IPv4 or IPv6 internet addresses.

**Host Name**　　　　　The name of the host. This is used only for the IOLAN configuration.
　　　　　　　　　　　**Field Format:** Up to 14 characters, no spaces.

**IP Address**　　　　　The host's IP address.
　　　　　　　　　　　**Field Format:** IPv4 or IPv6 address

**Fully Qualified**　　　When you have DNS defined in the IOLAN, you can enter a DNS resolvable fully
**Domain Name**　　　　qualified domain name (note: FQDN's are excluded as accessible hosts when **IP Filtering** is enabled).
　　　　　　　　　　　**Field Format:** Maximum 254 alphanumeric characters

# Routes

Entering routes in the routing list enables the identification of gateways to be used for accessing specific hosts or external networks from the IOLAN's local network.

There are three types of routes:

- **Default**—A route that provides general access beyond your local network.
- **Host**—A route defined for accessing a specific host external to your local network.
- **Network**—A route defined for accessing a specific network external to your local network.

You can specify up to 49 routes on the IOLAN. Two types or gateways (method of accessing specific hosts or external networks) can be configured.

- **Host**—Specify a specific host that will provide access to the route destination.
- **Interface**—Specify the IPv6 tunnel, Remote Access (PPP)-defined serial port, or remote Access (SLIP)-defined serial port that will provide access to the route destination.

## Adding/Editing Routes

From the **Route List** tab, if you select the **Add** or **Edit** button, you will be able to add a new or edit an existing route.

**Type**　　　　　　　Specify the type of route you want to configure.

　　　　　　　　　　　**Data Options:**

　　　　　　　　　　　- **Host**—A route defined for accessing a specific host external to your local network.
　　　　　　　　　　　- **Network**—A route defined for accessing a specific network external to your local network.
　　　　　　　　　　　- **Default**—A route which provides general access beyond your local network.

　　　　　　　　　　　**Default:** Default

**IP Address**　　　　　When the route **Type** is defined as **Host**, this field will contain the IP address of the host. If the route **Type** is defined as **Network**, the network portion of the IP address must be specified and the Host port of the address will be set to 0. Example: to access network 10.10.20, the address 10.10.20.0 would be specified in this field.
　　　　　　　　　　　**Format:** IPv4 or IPv6 address

**IPv4 Subnet Mask**    When the route is a **Network** route, you must specify the network's subnet mask.

**IPv6 Prefix Bits**    If the IP address is IPv6, then you must specify the network's prefix bits.
**Range:** 0-128

**Host**    Select this option when a host is being used as the route gateway.
**Default:** Enabled, None

# Serial Ports

Each IOLAN serial port can be connected to a serial device. As you select the different serial port profiles, a short description and a picture representing a typical application of the profile is displayed. Each serial port can then be configured according to a serial port profile that coincides with the serial device attached to that serial port and how the serial device is accessed/used.

When you select the **Serial (Ports)** navigation option, you will see a list with the number of serial ports on your IOLAN. To configure/change a serial port, select the **Edit** button. From the top of the screen select the Profile **Change** button, then select the appropriate profile for the serial port. Select **Apply** to save your changes. The serial port profile configuration options will be displayed.

## Configuring Serial Ports

The Serial section is used to configure the serial ports on your IOLAN. The following configuration windows are available:

- **Serial Ports**—Configures the type of connection that the serial port is being used for. This is accomplished by selecting a connection profile and then configuring the applicable parameters for that profile. See *Serial Profiles* for more information
- **Advanced**—Configures those parameters that are applicable to specific environments. You will find modem and TruePort configuration options, in addition to others, here. See *Serial Settings Advanced Parameters*

## Serial Profiles

Some serial profiles/parameters may not be available on some models of the IOLAN. The following are the serial profiles:

- **Console Management**—The Console Management profile configures a serial port to provide network access to a console or administrative port. This profile sets up a serial port to support a TCP socket that listens for a Telnet  connection from the network.
  See *Console Management General Parameters*.
- **TruePort**—The TruePort profile configures a serial port to connect network servers or workstations running the TruePort software to a serial device as a virtual COM port. This profile is ideal for connecting multiple serial ports to a network system or server.
  See *Trueport General Parameters*.
- **TCP Sockets**—The TCP Sockets profile configures a serial port to allow a serial device to communicate over a TCP network. The TCP connection can be configured to be initiated from the network, a serial device connected to the serial port, or both. This is sometimes referred to as a raw connection or a TCP raw connection. See *TCP Sockets General Parameters*.
- **UDP Sockets**—The UDP Sockets profile configures a serial port to allow communication between the network and serial devices connected to the IOLAN using the UDP protocol. See *UDP Sockets General Parameters*
- **Terminal**—The Terminal profile configures a serial port to allow network access from a terminal connected to the IOLAN's serial port. This profile is used to access predefined hosts on the network from the terminal.
  See *Terminal Profile Parameters*.
- **Serial Tunneling**—The Serial Tunneling profile configures a serial port to establish a virtual link over the network to a serial port on another IOLAN. Both IOLAN serial ports must be configured for Serial Tunneling (typically one serial port is configured as a Tunnel Server and the other serial port as a Tunnel Client). See *Serial Tunneling General Parameters*.
- **Virtual Modem**—The Virtual Modem profile configures a serial port to simulate a modem. When the serial device connected to the IOLAN initiates a modem connection, the IOLAN stats

up a TCP connection to the other IOLAN configured with a virtual Modem serial port or to a host running a TCP application.

- **Modbus Gateway**—The Modbus Gateway profile configures a serial port to act as a Modbus Master Gateway or a Modbus Slave Gateway.
  See *Modbus General Parameters*.
- **Custom Application/Plugin**—The Custom Application/Plugin profile configures a serial port to run a custom application or IOLAN plugin. After you download the custom application files and specify the application name and any parameters you want to pass to it, the IOLAN will execute the application when the serial port is started.
  See *Custom Application General Parameters*.

## *Common Serial Port Profiles*

There are several functions that are common to more than one profile.
These functions are:

- **Hardware**—Configure the physical serial line parameters.
  See *Serial Port Hardware Parameters*
- **Packet Forwarding**—Configure data packet parameters. *Packet Forwarding*

## *Serial Port Hardware Parameters*

The **Hardware** tab configures all the serial port hardware connection information. Your **Hardware** tab might display a subset of the parameters described, depending on the IOLAN model and supported hardware.

| | |
|---|---|
| **Serial Interface** | Specifies the type of serial line that is being used with the IOLAN.<br>**Data Options:** EIA-232, EIA-422, EIA-485, |
| **Speed** | Specifies the baud rate of the serial line; keep in mind that speed is affected by the length of the cable. You can also specify a custom baud rate. When you enter a custom baud rate, the IOLAN will calculate the closest baud rate available to the hardware. The exact baud rate calculated can be viewed in the **Serial Ports** statistics.<br>**Range:** 300-230400, custom supports 300-1843200<br>**Default:** 9600 |
| **Data Bits** | Specifies the number of bits in a transmitted character.<br>**Default:** 8<br>(5 databits is only supported with 2 stop bit). |
| **Parity** | Specifies the type of parity being used for the data communication on the serial port. If you want to force a parity type, you can specify **Mark** for 1 or **Space** for 0.<br>**Data Options:** Even, Odd, Mark, Space, None<br>**Default:** None |
| **Stop Bits** | Specifies the number of stop bits that follow a byte.<br>**Data Options:** 1, 2<br>**Default:** 1 |
| **Flow Control** | Defines whether the data flow is handled by the software (**Soft**), hardware (**Hard**), **Both**, or **None**.<br>**Data Options:** Soft, Hard, Both, None<br>**Default:** None |

| | |
|---|---|
| **Enable RTS-Toggle** | Configure the Toggle RTS Feature if your application needs for RTS to be raised during character transmission. |
| | **Initial delay:** configure the time (in ms) between the time the RTS signal is raised and the start of character transmission. This delay only applies if this port is not running hardware flow control. If hardware flow control is used, the transmission will occur as soon as CTS is raised by the modem. |
| | **Final delay:** configure the time (in ms) between the time of character transmission and when RTS is dropped. |
| | **Initial delay range:** 0-1000 ms |
| | **Final delay range:** 0-1000 ms |
| | **Default:** Off |
| **Enable Inbound Flow Control** | Determines if input flow control is to be used.<br>**Default:** Enabled |
| **Enable Outbound Flow Control** | Determines if output flow control is to be used.<br>**Default:** Enabled |
| **Monitor DSR** | Specifies whether the EIA-232 signal DSR (Data Set Ready) should be monitored. This is used with modems or any device that sends a DSR signal. When it is monitored and the IOLAN detects a DSR signal, the serial port profile is started. If both **Monitor DCD** and **Monitor DSR** are enabled, both signals must be detected before the serial port profile is started.<br>**Default:** Disabled |
| **Monitor DCD** | Specifies whether the EIA-232 signal DCD (Data Carrier Detect) should be monitored. This is used with modems or any other device that sends a DCD signal. When it is monitored and the IOLAN detects a DCD signal, the serial port profile is started. If both **Monitor DCD** and **Monitor DSR** are enabled, both signals must be detected before the serial port profile is started.<br>**Default:** Disabled |
| **Discard Characters Received with Errors** | When enabled, the IOLAN will discard characters received with a parity of framing error.<br>**Default:** Disabled |
| **Enable Echo Suppression** | This parameter applies only to **EIA-485 Half Duplex** mode. All characters will be echoed to the user and transmitted across the serial ports. Some EIA-485 applications require local echo to be enabled in order to monitor the loopback data to determine that line contention has occurred. If your application cannot handle loopback data, echo suppression should be enabled.<br>**Default:** Disabled |
| **Enable Line Termination** | Used with **EIA-422** and **EIA-485** (on IOLAN models that support this option), specifies whether or not the line is terminated; use this option when the serial port is connected to a device at the end of the serial network. Line termination should only be used if the serial port is the end point in a network.<br>**Default:** Disabled |

## *Copying a Serial Port*

Once you configure a serial port, you can copy the serial port settings to other serial ports of the same type by selecting **Copy,** then select the Serial Port(s) to copy to current configuration, select the **Ok** button, then the **Apply button**.

## Resetting a Serial Port

To reset a serial port from the WebManager, select **Administration, Serial Port(s), Reset.**

## Packet Forwarding

The **Packet Forwarding** tab can be used to control/define how and when serial port data packets are sent from the IOLAN to the network.

| | |
|---|---|
| **Minimize Latency** | This option ensures that all application data is immediately forwarded to the serial device and that every character received from the device is immediately sent on the network. Select this option for timing-sensitive applications.<br>**Default:** Enabled |
| **Optimize Network Throughput** | This option provides optimal network usage while ensuring that the application performance is not compromised. Select this option when you want to minimize overall packet count, such as when the connection is over a WAN.<br>**Default:** Disabled |
| **Prevent Message Fragmentation** | This option detects the message, packet, or data blocking characteristics of the serial data and preserves it throughout the communication. Select this option for message-based applications or serial devices that are sensitive to inter-character delays within these messages.<br>**Default:** Disabled |
| **Delay Between Messages** | The minimum time, in milliseconds, between messages that must pass before the data is forwarded by the IOLAN.<br>**Range:** 0-65535<br>**Default:** 250 ms |
| **Custom Packet Forwarding** | This option allows you to define the packet forwarding rules based on the packet definition or the frame definition.<br>**Default:** Disabled |
| **Packet Definition** | When enabled, this group of parameters allows you to set a variety of packet definition options. The first criteria that is met causes the packet to be transmitted. For example, if you set a **Force Transmit Timer** of **1000** ms and a **Packet Size** of **100** bytes, whichever criteria is met first is what will cause the packet to be transmitted.<br>**Default:** Enabled |
| **Packet Size** | The number of bytes that must be received from the serial port before the packet is transmitted to the network. A value of zero (0) ignores this parameter.<br>**Range:** 0-1024 bytes<br>**Default:** 0 |

| Idle Time | The amount of time, in milliseconds, that must elapse between characters before the packet is transmitted to the network. A value of zero (0) ignores this parameter.<br>**Range:** 0-65535 ms<br>**Default:** 0 |
|---|---|
| **End Trigger1 Character** | When enabled, specifies the character that when received will define when the packet is ready for transmission. The actual transmission of the packet is based on the Trigger Forwarding Rule.<br>**Range:** hexadecimal 0-FF<br>**Default:** 0 |
| **End Trigger2 Character** | When enabled, creates a sequence of characters that must be received to specify when the packet is ready for transmission (if the End Trigger1 character is not immediately followed by the End Trigger2 character, the IOLAN waits for another End Trigger1 character to start the End Trigger1/End Trigger2 character sequence). The actual transmission of the packet is based on the Trigger Forwarding Rule.<br>**Range:** hexadecimal 0-FF<br>**Default:** 0 |
| **Frame Definition** | When enabled, this group of parameters allows you to control the frame that is transmitted by defining the start and end of frame character(s). If the internal buffer (1024 bytes) is full before the EOF character(s) are received, the packet will be transmitted and the EOF character(s) search will continue.<br>**Default:** Disabled |
| **SOF1 Character** | When enabled, the Start of Frame character defines the first character of the frame, any character(s) received before the Start of Frame character is ignored.<br>**Range: hexadecimal** 0-FF<br>**Default:** 0 |
| **SOF2 Character** | When enabled, creates a sequence of characters that must be received to create the start of the frame (if the SOF1 character is not immediately followed by the SOF2 character, the IOLAN waits for another SOF1 character to start the SOF1/SOF2 character sequence).<br>**Range:** hexadecimal 0-FF<br>**Default:** 0 |
| **Transmit SOF Character(s)** | When enabled, the SOF1 or SOF1/SOF2 characters will be transmitted with the frame. If not enabled, the SOF1 or SOF1/SOF2 characters will be stripped from the transmission.<br>**Default:** Disabled |
| **EOF1 Character** | Specifies the End of Frame character, which defines when the frame is ready to be transmitted. The actual transmission of the frame is based on the Trigger Forwarding Rule.<br>**Range:** hexadecimal 0-FF<br>**Default:** 0 |

| | |
|---|---|
| **EOF2 Character** | When enabled, creates a sequence of characters that must be received to define the end of the frame (if the EOF1 character is not immediately followed by the EOF2 character, the IOLAN waits for another EOF1 character to start the EOF1/EOF2 character sequence), which defines when the frame is ready to be transmitted. The actual transmission of the frame is based on the Trigger Forwarding Rule.<br>**Range:** hexadecimal 0-FF<br>**Default:** 0 |
| **Trigger Forwarding Rule** | Determines what is included in the Frame (based on the EOF1 or EOF1/EOF2) or Packet (based on Trigger1 or Trigger1/Trigger2). Choose one of the following options:<br>• **Strip-Trigger**—Strips out the EOF1, EOF1/EOF2, Trigger1, or Trigger1/Trigger2, depending on your settings.<br>• **Trigger**—Includes the EOF1, EOF1/EOF2, Trigger1, or Trigger1/Trigger2, depending on your settings.<br>• **Trigger+1**—Includes the EOF1, EOF1/EOF2, Trigger1, or Trigger1/Trigger2, depending on your settings, plus the first byte that follows the trigger.<br>• **Trigger+2**—Includes the EOF1, EOF1/EOF2, Trigger1, or Trigger1/Trigger2, depending on your settings, plus the next two bytes received after the trigger.<br>**Default:** Trigger |

# Console Management Profile

The Console Management profile provides access through the network to a console or administrative port of a server or router attached to the IOLAN's serial port. This profile configures the IOLAN's serial port to set up a TCP socket that will listen for a Telnet connection from the network.

Use the Console Management profile when you are configuring users who need to access a serial console port from the network.
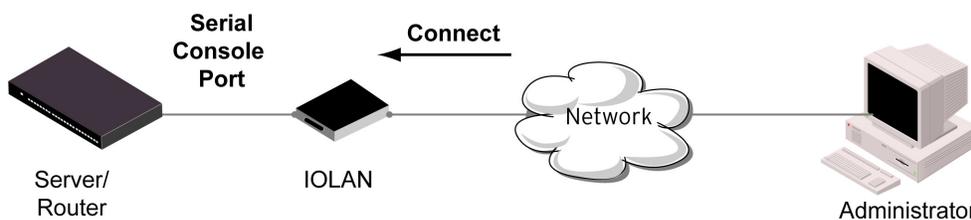


### *Console Management General Parameters*

Select **Serial Port,** highlight the serial port you want to change, select **Edit** to configure how the serial port will be accessed by the user through the network, then **Apply.**

**Protocol** Specify the connection method that users will use to communicate with a serial device connected to the IOLAN through the network.
**Data Options:** Telnet
**Default:** Telnet

**Listen for connections on TCP Port** The port number that the IOLAN will listen on for incoming TCP connections.

**Note:** if more then one serial port has the same TCP port number assignment, this would create a hunt group scenario, However, all operating parameters for each serial port configuration need to be the same.
**Default:** 10001, depending on the serial port number

**Enable IP Aliasing** Enables/disables the ability to access a serial device connected to the serial port by an IP address (or host name that can be resolved to the Internet Address in a DNS network) instead of the IOLAN's IP address and port number.
**Default:** Disabled

**IP address** Users can access serial devices connected to the IOLAN through the network by the specified Internet Address (or host name that can be resolved to the Internet Address in a DNS network).
**Field Format:** IPv4 or IPv6 Address

## *Console Management Advanced Parameters*

The **Console Management Advanced** tab configures serial port options that may be required by certain applications.

**Authenticate User**  Enables/disables login/password authentication for users connecting from the network.
**Default:** Disabled

**Enable TCP Keepalive**  Enables a per-connection TCP keep-alive feature. After the configured number of seconds, the connection will send a gratuitous ACK to the network peer, thus either ensuring the connection stays active OR causing a dropped connection condition to be recognized.

This parameter needs to be used in conjunction with **Monitor Connection Status Interval** parameter found in the **Serial**, **Advanced**, **Advanced Settings** tab. The interval specifies the inactivity period before "testing" the connection. It should be noted that if a network connection is accidentally dropped, it can take as long as the specified interval before anyone can reconnect to the serial port.
**Default:** Disabled

**Enable Message of the Day (MOTD)**  Enables/disables the display of the message of the day.
**Default:** Disabled

**Session Timeout**  Use this timer to forcibly close the session/connection when the **Session Timeout** expires.
**Default:** 0 seconds so the port will never timeout
**Range:** 0-4294967 seconds (about 49 days)

**Idle Timer**  Use this timer to close a connection because of inactivity. When the **Idle Timeout** expires, the IOLAN will end the connection.
**Range:** 0-4294967 seconds (about 49 days)
**Default:** 0 seconds so the port will never timeout

**Break Handling**  Specifies how a break is interpreted.
**Data Range:**

- **None**—The IOLAN ignores the break key completely and it is not passed through to the host.
- **Local**—The IOLAN deals with the break locally. If the user is in a session, the break key has the same effect as a hot key.
- **Remote**—When the break key is pressed, the IOLAN translates this into a telnet break signal which it sends to the host machine.
- **Break Interrupt**—On some systems such as SunOS, XENIX, and AIX, a break received from the peripheral is not passed to the client properly. If the client wishes to make the break act like an interrupt key (for example, when the stty options `-ignbrk` and `brkintr` are set).

**Default:** None

| | |
|---|---|
| **Session Strings** | Controls the sending of ASCII strings to serial devices at session start and session termination as follows; |

- **Send at Start** - If configured, this string will be sent to the serial device on power-up of the IOLAN, or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised.
- **Range:** 0-127 alpha-numeric characters. Non printable ascii characters must be entered in this format <027>. The decimal numbers within the brackets must be 3 digits long (example 003 not 3).
- **Send at End** - If configured, this string will be sent to the serial device when the TCP session on the LAN is terminated. If multi-host is configured, this string will only be send in listen mode to the serial device when all multi-host connections are terminated.
- **Range:** 0-127 alpha-numeric characters. Non printable ascii characters must be entered in this format <027>. The decimal numbers within the brackets must be 3 digits long (example 003 not 3).
- **Delay after Send**—If configured, a delay time is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated.

**Range: 0-65535 ms**
**Default: 10 ms**

| | |
|---|---|
| **Dial In** | If the console port is remote and will be dialing in via modem or ISDN TA, enable this parameter.<br>**Default:** Disabled |
| **Dial out** | If you want the modem to dial a number when the serial port is started, enable this parameter.<br>**Default:** Disabled |
| **Dial Timeout** | The number of seconds the IOLAN will wait to establish a connection to a remote modem.<br>**Range:** 1-99<br>**Default:** 45 seconds |
| **Dial Retry** | The number of times the IOLAN will attempt to re-establish a connection with a remote modem.<br>**Range:** 0-99<br>**Default:** 2 |
| **Modem** | The name of the predefined modem that is used on this port. If you are using a IOLAN with a built in modem port then select iolan_modem.<br>See *Adding/Editing a Modem* |
| **Phone** | The phone number to use when **Dial Out** is enabled. |

# Trueport Profile

Trueport is a COM Port redirector that is supplied with the IOLAN. TruePort can be installed as a client on a Workstation or Server and supports a variety of operating systems. It, in conjunction with the IOLAN, emulates a local serial port (COM port), to the application, to provide con-

nectivity to a remote serial device over the network. The TruePort profile operates in conjunction with the TruePort software.

Trueport an be run in two modes (these modes will be set on the client software when it is configured):

- **TruePort Full mode**—This mode allows complete device control and operates as if the device was directly connected to the Workstation/Server's local serial port. It provides a complete COM port interface between the attached serial device and the network. All serial controls, baud rate control, etc., are sent to the IOLAN and replicated on its associated serial port.
- **TruePort Lite mode**—This mode provides a simple raw data interface between the application and the remote serial port. Although the port will still operate as a COM port, control signals are ignored. In this mode, the serial communications parameters must be must be configured on the Trueport Profile.

    See the *TruePort User's Guide* for more details about the TruePort client software
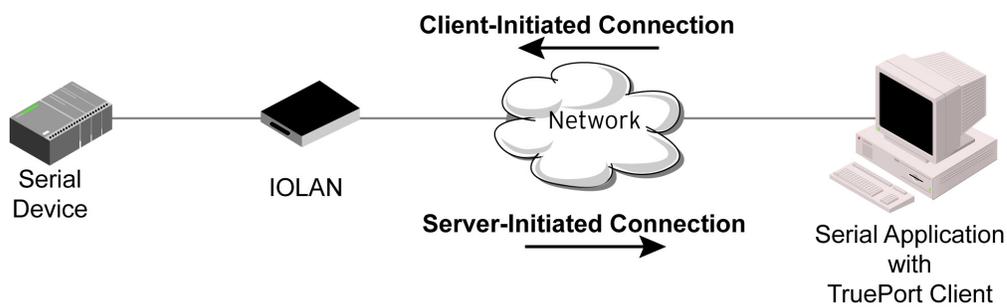


## *Trueport General Parameters*

The **TruePort General** tab determines how the TruePort connection is initiated and then sets up the appropriate connection parameters.

| | |
|---|---|
| **Connect to Remote System (Server-Initiated Connection)** | When enabled, the IOLAN initiates communication to the TruePort client. **Default:** Enabled |
| **Host Name** | The configured host that the IOLAN will connect to (must be running TruePort). **Default**: None |
| **TCP Port** | The TCP Port that the IOLAN will use to communicate through to the TruePort client. 10001 for serial port 1, then increments by one for each serial port |
| **Connect to Multiple Hosts** | When enabled, the IOLAN will establish a connection to multiple clients (Hosts). When using the multiple hosts feature, all TruePort clients must be running in Lite mode. **Default:** Disabled |
| **Send Name On Connect** | When enabled, the port name will be sent to the host upon session initiation. This will be done before any other data is sent or received to/from the host. **Default:** Disabled |
| **Define Additional Hosts Button** | Select this button to define the hosts that this serial port will connect to. This button is also used to define the Primary/Backup host functionality. See *Host Table* for more information. |

| | |
|---|---|
| **Listen for Connection (Client-Initiated Connection)** | When enabled, the IOLAN will wait for connections to be initiated by the TruePort Client.<br>**Default:** Disabled |
| **TCP Port** | The TCP Port that the IOLAN will use to communicate through to the TruePort client.<br>**Default:** 10001 for serial port 1 |
| **Allow Multiple Hosts to connect** | When this option is enabled, multiple hosts can connect to a serial device that is connected to this serial port. Note: These multiple clients (Hosts) need to be running TruePort in Lite mode.<br>**Default:** Disabled |

## *Adding/Editing Additional TruePort Hosts*

You can define a list of hosts that the serial device will communicate to through TruePort Lite or a primary/backup host.

| | |
|---|---|
| **Define Additional hosts to connect to** | When this option is enabled, you can define up to 49 hosts that the serial device connected to this serial port will attempt communicate to. With this mode of operation, the IOLAN will connect to multiple hosts simultaneously.<br>**Default:** Enabled<br>See *Host Table* for more information. |
| **Define a primary host and a backup host to connection** | When this option is enabled, you need to define a primary host that the serial device connected to this serial port will communicate to and a backup host, in the event that the IOLAN loses communication to the primary host. The IOLAN will first establish a connection to the primary host. Should the connection to the primary host be lost (or never established), the IOLAN will establish a connection the backup host. Once connected to the backup, the IOLAN will attempt to re-establish a connection to the Primary host, once this is successfully done, it gracefully shuts down the backup connection.<br>**Default:** Disabled |
| **Primary Host** | Specify a preconfigured host that the serial device will communicate to through the IOLAN.<br>**Default:** None |
| **TCP Port** | Specify the TCP port that the IOLAN will use to communicate to the **Primary Host**.<br>**Default:** 0 |
| **Backup Host** | Specify a preconfigured host that the serial device will communicate to through the IOLAN if the IOLAN cannot communicate with the **Primary Host**.<br>**Default:** None |
| **TCP Port** | Specify the TCP port that the IOLAN will use to communicate to the **Backup Host**.<br>**Default:** 10000 |

## *Adding/Editing a Multi-host Entry*

When you select the **Add** or **Edit** button, the Host Entry window appears. The hosts in the multi-host list must already be defined. If you add a host that was defined with its fully qualified domain name (FQDN), it must be resolvable by your configured DNS server.

**Host**                          Specify the preconfigured host that will be in the multi-host list.
                                  **Default:** None

**TCP Port**                      Specify the TCP port that the IOLAN will use to communicate to the **Primary Host**.
                                  **Default:** 1000 + serial port number -1

## *Trueport Advanced Parameters*

The **TruePort Advanced** tab determines how the TruePort connection is initiated and then sets up the appropriate connection parameters.

**Signals high when**             This option has the following impact based on the state of the TruePort
**not under TruePort**            connection:
**client control**
- **TruePort Lite Mode**—When enabled, the EIA-232 signals remain active before, during, and after the TruePort connection is established. When disabled, the EIA-232 signals remain inactive during and after the Trueport connection is established.
- **TruePort Full Mode**—When enabled, the EIA-232 signals remain active before and after the TruePort connection and the TruePort client will control the state of the signals during the established TruePort connection. When disabled, the EIA-232 signals remain inactive before and after the TruePort connection and the TruePort client will control the state of the signals during the established TruePort connection.

                                  **Default:** Enabled

**Enable Message the**            Enables/disables the display of the message of the day.
**Day (MOTD)**                    **Default:** Disabled

**Enable TCP Keepalive**          Enables a per-connection TCP keep-alive feature. After the configured number of seconds, the connection will send a gratuitous ACK to the network peer, thus either ensuring the connection stays active OR causing a dropped connection condition to be recognized.

                                  This parameter needs to be used in conjunction with **Monitor Connection Status Interval** parameter found in the **Serial**, **Advanced**, **Advanced Settings** tab. The interval specifies the inactivity period before "testing" the connection.

                                  Note: If a network connection is accidentally dropped, it can take as long as the specified interval before anyone can reconnect to the serial port.
                                  **Default:** Disabled

| | |
|---|---|
| **Enable Data Logging (Trueport Lite Mode)** | When enabled, serial data will be buffered if the TCP connection is lost. When Logging the TCP connection is re-established, the buffered serial data will be sent to its destination. If using the Trueport profile, data logging is only supported in Lite Mode. If the data buffer is filled, incoming serial data will overwrite the oldest data. |
| | The minimum data buffer size is 1 KB. The maximum data buffer size is 2000 KB for DS1/TS2/STS8D |
| | **Values:** 1-2000 KB (DS1/TS2/STS8D) - Default 4 KB |
| | **Default:** Disabled |
| | **Note:** A kill line or a reboot of the IOLAN causes all buffered data to be lost |
| | Some profile features are not compatible with the data logging feature. See the *Data Logging Feature*. To change the default data logging buffer size see *Serial Settings Advanced Parameters*. |
| **Idle Timeout** | Use this timer to close a connection because of inactivity. When the **Idle Timeout** expires, the IOLAN will end the connection. **Range:** 0-4294967 seconds (about 49 days) **Default:** 0 seconds so the port will never timeout |
| **Session Timeout** | Use this timer to forcibly close the session/connection when the **Session Timeout** expires. **Default:** 0 seconds so the port will never timeout **Range:** 0-4294967 seconds (about 49 days) |
| **Session Strings** | Controls the sending of ASCII strings to serial device at session start as follows; |
| | • **Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN, or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised. |
| | • **Range:** 0-127 alpha-numeric characters |
| | • **Range:** hexadecimal 0-FF |
| | • **Delay after Send** - If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated. |
| | **Range:** 0-65535 ms |
| | **Default:** 10 ms |
| **Dial in** | If the device is remote and will be dialing in via modem or ISDN TA, enable this parameter. **Default:** Disabled |
| **Dial out** | If you want the modem to dial a number when the serial port is started, enable this parameter. **Default:** Disabled |

| Dial Timeout | The number of seconds the IOLAN will wait to establish a connection to a remote modem.<br>**Range:** 1-99<br>**Default:** 45 seconds |
|---|---|
| Dial Retry | The number of times the IOLAN will attempt to re-establish a connection with a remote modem.<br>**Range:** 0-99<br>**Default:** 2 |
| Modem | The name of the predefined modem that is used on this port. If you are using a IOLAN SCG with a built in modem then select iolan_modem.<br>See *Adding/Editing a Modem* |
| Phone | The phone number to use when **Dial Out** is enabled. |

# TCP Sockets Profile

The TCP Socket profile allows for a serial device to communicate over a TCP network. The TCP connection can be initiated from a host on the network and/or a serial device. This is typically used with an application on a Workstation or Server that communicates to a device using a specific TCP socket. This is often referred to as a RAW connection.

The TCP Sockets profile permits a raw connection to be established in either direction, meaning that the connection can be initiated by either the Workstation/Server or the IOLAN.
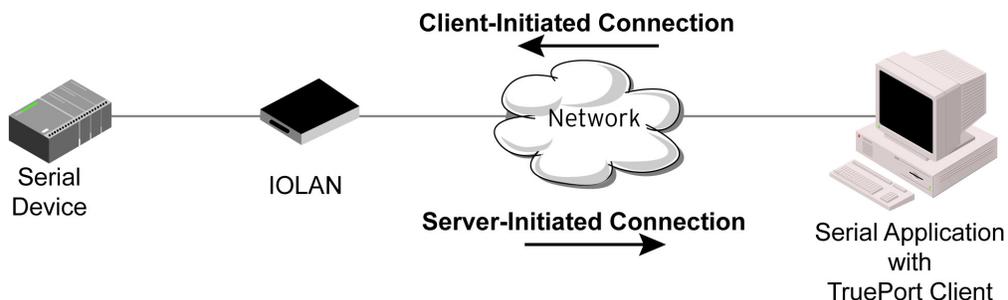


## TCP Sockets General Parameters

| Listen for Connection | When enabled, the IOLAN listens for a connection to be established by the Workstation/Server on the network.<br>**Default:** Enabled |
|---|---|
| TCP Port | The TCP port that the IOLAN will use to listen for incoming connections.<br>**Default:** 10000 plus the serial port number, so serial port 5 would have a default of 10005 |

| | |
|---|---|
| **Allow Multiple Hosts to Connect** | When this option is enabled, multiple hosts can connect to the serial device that is connected to this serial port.<br>**Default:** Disabled |
| **Enable IP Aliasing** | Enables/disables the ability to access a serial device connected to the serial port by an IP address (or host name that can be resolved to the Internet Address in a DNS network) instead of the IOLAN's IP address and port number.<br>**Default:** Disabled |
| **IP Address** | Users can access serial devices connected to the IOLAN through the network by the specified Internet Address (or host name that can be resolved to the Internet Address in a DNS network).<br>**Field Format:** IPv4 or IPv6 Address |
| **Connect To** | When enabled, the IOLAN initiates communication to the Workstation/Server.<br>**Default:** Disabled |
| **Host Name** | The name (resolvable via DNS) or IP address of the configured host the IOLAN will connect to. |
| **TCP Port** | The TCP Port that the IOLAN will use to communicate to the client.<br>**Default:** 0 |
| **Connect to Multiple Hosts** | When enabled, allows a serial device connected to this serial port to communicate to multiple hosts.<br>**Default:** Disabled |
| **Define Additional Hosts Button** | Select this button to define the hosts that this serial port will connect to. This button is also used to define the Primary/Backup host functionality. |
| **Initiate Connection Automatically** | If the serial port hardware parameters have been setup to monitor DSR or DCD, the host session will be started once the signals are detected. If no hardware signals are being monitored, the IOLAN will initiate the session immediately after being powered up.<br>**Default:** Enabled |
| **When any data is received** | Initiates a connection to the specified host when any data is received on the serial port.<br>**Default:** Disabled |
| **When <hexadecimal value> is received** | Initiates a connection to the specified host only when the specified character is received on the serial port.<br>**Default:** Disabled |
| **Send Name On Connect** | When enabled, the port name will be sent to the host upon session initiation. This will be done before any other data is sent or received to/from the host<br>**Default:** Disabled |

| **Permit Connections in Both Directions** | When this option is enabled, the connection can be initiated by either the IOLAN or a host.<br>**Default:** Disabled |
|---|---|

## *Adding/Editing Additional Hosts*

You can define a list of hosts that the serial device will communicate to or a primary/backup host.

| **Define additional hosts to connect to** | When this option is enabled, you can define up to 49 hosts that the serial device connected to this serial port will attempt communicate to. With this mode of operation, the IOLAN will connect to multiple hosts simultaneously.<br>**Default:** Enabled |
|---|---|
| **Define a primary host and a backup host to connect to** | When this option is enabled, you need to define a primary host that the serial device connected to this serial port will communicate to and a backup host, in the event that the IOLAN loses communication to the primary host. The IOLAN will first establish a connection to the primary host. Should the connection to the primary host be lost (or never established), the IOLAN will establish a connection the backup host. Once connected to the backup, the IOLAN will attempt to re-establish a connection to the Primary host, once this is successfully done, it gracefully shuts down the backup connection.<br>**Default:** Disabled |
| **Primary Host** | Specify a pre-configured host that the serial device will communicate to through the IOLAN.<br>**Default:** None |
| **TCP Port** | Specify the TCP port that the IOLAN will use to communicate to the **Primary Host**.<br>**Default:** 0 |
| **Backup Host** | Specify a preconfigured host that the serial device will communicate to through the IOLAN if the IOLAN cannot communicate with the **Primary Host**.<br>**Default:** None |
| **TCP Port** | Specify the TCP port that the IOLAN will use to communicate to the **Backup Host**.<br>**Default:** 10000 |

## *Adding/Editing a Multi-host Entry*

When you select the **Add** or **Edit** button, the Host Entry window appears. The hosts in the multi-host list must already be defined (see Host Table to learn how to create a host). If you add a host that was defined with its fully qualified domain name (FQDN), it must be resolvable by your configured DNS server. Configure the following parameters:

| **Host** | Specify the preconfigured host that will be in the multi-host list.<br>**Default:** None |
|---|---|
| **TCP Port** | Specify the TCP port that the IOLAN will use to communicate to the **Host**.<br>**Default:** 0 |

## *TCP Sockets Advanced Parameters*

**Authenticate User**  Enables/disables login/password authentication for users connecting from the network.
**Default:** Disabled

**Enable TCP Keepalive**  Enables a per-connection TCP keep-alive feature. After the configured number of seconds, the connection will send a gratuitous ACK to the network peer, thus either ensuring the connection stays active OR causing a dropped connection condition to be recognized.

This parameter needs to be used in conjunction with **Monitor Connection Status Interval** parameter found in the **Serial**, **Advanced**, **Advanced Settings** tab. The interval specifies the inactivity period before "testing" the connection.
**Default:** Disabled

**Enable Message of the Day (MOTD)**  Enables/disables the display of the message of the day.
**Default:** Disabled

**Enable Data Logging**  When enabled, serial data will be buffered if the TCP connection is lost. When Logging the TCP connection is re-established, the buffered serial data will be sent to its destination. If using the Trueport profile, data logging is only supported in Lite Mode.

The minimum data buffer size for all models is 1 KB. The maximum data buffer size is 2000 KB for DS1/TS2/STS8D, all other models are 4000 KB.

If the data buffer is filled, incoming serial data will overwrite the oldest data.

**Values:** 1-2000 KB (DS1/TS2/STS8D) - Default 4 KB

**Values:** 1-4000 KB (all other models) - Default 256 KB

**Default:** Disabled

**Note:** A kill line or a reboot of the IOLAN causes all buffered data to be lost Some profile features are not compatible with the data logging feature. See *Data Logging Feature*

**Idle Timeout**  Use this timer to close a connection because of inactivity. When the **Idle Timeout** expires, the IOLAN will end the connection.
**Range:** 0-4294967 seconds (about 49 days)
**Default: 0** seconds so the port will never timeout

**Session Timeout**  Use this timer to forcibly close the session/connection when the **Session Timeout** expires.
**Default:** 0 seconds so the port will never timeout
**Range:** 0-4294967 seconds (about 49 days)

| Session Strings | Controls the sending of ASCII strings to serial devices at session start and session termination as follows; |
|---|---|
| | • **Send at Start** - If configured, this string will be sent to the serial device on power-up of the IOLAN, or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised. |
| | • **Range:** 0-127 alpha-numeric characters. Non printable ascii characters must be entered in this format <027>. The decimal numbers within the brackets must be 3 digits long (example 003 not 3). |
| | • **Send at End** - If configured, this string will be sent to the serial device when the TCP session on the LAN is terminated. If multi-host is configured, this string will only be send in listen mode to the serial device when all multi-host connections are terminated. |
| | • **Range:** 0-127 alpha-numeric characters. Non printable ascii characters must be entered in this format <027>. The decimal numbers within the brackets must be 3 digits long (example 003 not 3). |
| | • **Delay after Send**—If configured, a delay time is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated. |
| | **Range:** 0-65535 ms |
| | **Default:** 10 ms |
| Dial in | If the device is remote and will be dialing in via modem or ISDN TA, enable this parameter. **Default:** Disabled |
| Dial out | If you want the modem to dial a number when the serial port is started, enable this parameter. **Default:** Disabled |
| Dial Timeout | The number of seconds the IOLAN will wait to establish a connection to a remote modem. **Range:** 1-99 **Default:** 45 seconds |
| Dial Retry | The number of times the IOLAN will attempt to re-establish a connection with a remote modem. **Range:** 0-99 **Default:** 2 |
| Modem | The name of the predefined modem that is used on this port. If you are using a IOLAN SCG with a built in modem then select iolan_modem. See *Adding/Editing a Modem* |
| Phone | The phone number to use when **Dial Out** is enabled. |

# UDP Sockets Profile

The UDP profile configures a serial port to send or receive data to/from the LAN using the UDP protocol.

When you configure UDP, you are setting up a range of IP addresses and the port numbers that you will use to send UDP data to or receive UDP data from.

When you configure UDP for **LAN to Serial**, the following options are available:

To send to a single IP address, leave the **End IP Address** field at its default value (`0.0.0.0`).

The IP address can be auto learned if both start/end IP address are left blank/default.

If the **Start IP Address** field is set to `255.255.255.255` and the **End IP Address** is left at its default value (`0.0.0.0`), the IOLAN will accept UDP packets from any source address.
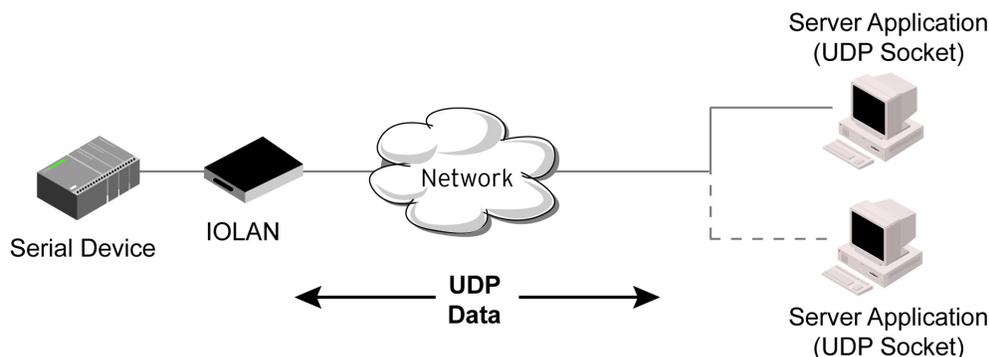
Four individual entries are provided to allow you greater flexibility to specify how data will be forwarded to/from the serial device. All four entries support the same configuration parameters. You can configure one or more of the entries as needed.

The first thing you need to configure for an entry is the "**Direction**" of the data flow. The following options are available;

- **Disabled** - UDP service not enabled.
- **LAN to Serial** - This setting will allow UDP data to be received from one or more hosts on the LAN and forwarded to the serial device attached to this serial port.
- **Serial to LAN** - This setting will allow data originating from the serial device attached to this serial port to be sent to one or more hosts on the LAN using UDP datagrams.
- **Both** - Allows for data to flow from the serial device to the LAN and from the LAN to the serial device.

The role of each of the configurable parameters in an entry depends on the "**Direction**" selected.

When the direction is "**LAN to Serial**" the role of the additional parameters is as follow;

- **Start IP Address** - This is the IP address of the host from which the UDP data will originate. If the data will originate from a number of hosts, this becomes the starting IP address of a range.
- **End IP Address** - If you wish to receive data only from the single host defined by "Start IP address", leave this entry as is (0.0.0.0). If you wish to accept data from a number of hosts, this address will represent the upper end of a range starting from "Start IP address". Only data originating from this range will be forwarded to the serial port.
- **UDP port** - This is the UPD port from which the data will originate. There are three options for this parameter.
- **Auto Learn** - The first UDP message received will be used to define which UDP port we are going to accept UDP data from. Once learned, only data from this UDP port will be accepted. The data must also originate from a host which is in the IP range defined for this entry.
- **Any Port** - Any UDP port will be accepted as long as the data originates from a host in the IP range defined for this entry.
- **Port** - Only data originating from the UDP port configured here as well as originating from a host in the IP range defined for this entry will be accepted.

When the direction is "**Serial to LAN**" the role of the additional parameters is as follow;

- **Start IP Address** - This is the IP address of the host to which the serial data will be sent using UDP datagrams. If the serial data is to be sent to more than one host, this becomes the starting IP address of a range.
- **End IP Address** - If you wish to send serial data to a single host, leave this entry as is (0.0.0.0). If you wish to send the serial data to a number of hosts, this address will represent the upper end of a range starting from "Start IP Address".
- **UDP port** - This is the UPD port to which the serial data will be forwarded. For a direction of "Serial to LAN", you must specify the port to be used.

When the direction is "**Both**" the role of the additional parameters is as follow;
- **Start IP Address** - This is the IP address of the host to which the serial data will be sent using UDP datagrams. It is also the IP address of the host from which UDP data coming from the LAN will be accepted from. If the data is to be sent to or received from more than one host, this becomes the starting IP address of a range.
- **End IP Address** - If you wish to send serial data to a single host and only receive data from the single UDP host, leave this entry as is (0.0.0.0). If the data is to be sent to or received from more than one host, this address will represent the upper end of a range starting from "Start IP Address". Only data originating from this range will be forwarded to the serial port.
- **UDP Port** - This is the UPD port to which the serial data will be forwarded as well as the UPD port from which data originating on the LAN will be accepted from. For a direction of "Both", there are two valid option for the UDP Port as follows;
- **Auto Learn** - The first UDP message received will be used to define which port we are going to accept UDP data from. Once learned, only data from this UDP port will be accepted and serial data being forwarded to the LAN will be sent to this UDP port. Until the port is learned, data from the serial port intended to be sent to the LAN will be discarded.
- **Port** - Serial data being forwarded to the LAN from the serial device will sent to this UDP port. Only data originating from the UDP port configured here (as well as originating from a host in the IP range defined for this entry) will be forwarded to the serial device.

  Special values for "**Start IP address**"
- **0.0.0.0** - This is the "auto learn IP address" value which is valid only in conjunction with the "LAN to Serial" setting. The first UDP packet received for this serial port will set the IP address from which we will accept future UDP packets to be forwarded to the serial port. For this setting, leave the "End IP Address" as 0.0.0.0.
- **255.255.255.255** - This selection is only valid in conjunction with the "LAN to Serial" setting. It will accept all UDP packets received for this serial port regardless of the originating IP address. For this setting, leave the "End IP Address" as 0.0.0.0.
- **Subnet directed broadcast** - You can use the "Start IP Address" field to enter a subnet directed broadcast address. This is done by specifying the subnet address with the host portion filled with 1s. For example, if you are on the subnet 172.16.x.x with a subnet mask of 255.255.254.0 than you would specify an IP address of 172.16.1.255 (all ones for host portion). For this setting, leave the "End IP Address" as 0.0.0.0. For any "LAN to Serial" ranges you have defined for this serial port, you must ensure that IP address of this IOLAN is not included in the range. If your IP address is within the range, you will receive the data you send via the subnet directed broadcasts as data coming in from the LAN.

An example UDP configuration is described based on the following window.
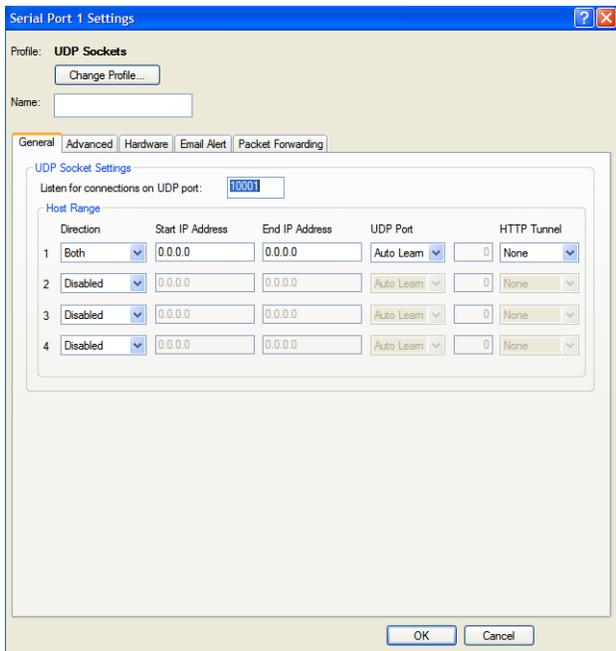


The UDP configuration window, taken from the DeviceManager, is configured to:

**UDP Entry 1**

All UDP data received from hosts that have an IP address that falls within the range of `172.16.1.25` to `172.16.1.50` and source UDP **Port** of `33010` will be sent to the serial device. The IOLAN will not send any data received on its serial port to the host range defined by this entry.

**UDP Entry 2**

All hosts that have an IP Address that falls within the range of `172.16.1.75` to `172.16.1.80` and who listen to UDP **Port** `33009` will receive UDP data from the serial device. No UDP data originating from the hosts defined by this entry will be forwarded to the serial device.

**UDP Entry 3**

All hosts that have an IP address that falls within the range of `172.16.1.1` to `172.16.1.20` and listen to **Port** `33001` will be sent the data from the serial device in UDP format. The serial device will only receive UDP data from the hosts in that range with a source UDP **Port** of `33001`. The IOLAN will listen for data on the port value configured in the **Listen for connections on UDP port** parameter. (10001 in above example)

**UDP Entry 4**

This entry is disabled since **Direction** is set to **Disabled**.

## *UDP Sockets General Parameters*

| | |
|---|---|
| **Listen for connections on UDP Port** | The IOLAN will listen for UDP packets on the specified port. <br> **Default:** 1000+<*port-number*> (for example, 10001 for serial port 1) |

| | |
|---|---|
| **Direction** | The direction in which information is received or relayed: |
| | • **Disabled**—UDP service not enabled. |
| | • **LAN to Serial**—This setting will allow UDP data to be received from one or more hosts on the LAN and forwarded to the serial device attached to this serial port. |
| | • **Serial to LAN**—This setting will allow data originating from the serial device attached to this serial port to be sent to one or more hosts on the LAN using UDP datagrams. |
| | • **Both**—Allows for data to flow from the serial device to the LAN and from the LAN to the serial device. |
| | **Default:** Both for UDP 1 and Disabled for all other UDP ranges |
| **Start IP address** | The first host IP address in the range of IP addresses (for IPv4 or IPv6) that the IOLAN will listen for messages from and/or send messages to. **Field Format:** IPv4 or IPv6 address |
| **End IP address** | The last host IP address in the range of IP addresses (for IPv4, not supported for IPv6) that the IOLAN will listen for messages from and/or send messages to. **Field Format:** IPv4 address |
| **UDP Port** | Determines how the IOLAN's UDP port that will send/receive UDP messages is defined: |
| | • **Auto Learn**—The IOLAN will only listen to the first port that it receives a UDP packet from. Applicable when **Direction** is set to **LAN to Serial** or **Both**. |
| | • **Any Port**—The IOLAN will receive messages from any port sending UDP packets. Applicable when **Direction** is set to **LAN to Serial**. |
| | • **Port**—The port that the IOLAN will use to relay messages to servers/hosts. This option works with any **Direction** except **Disabled**. The IOLAN will listen for UDP packets on the port configured by the **Listen for connections on UDP port** parameter. |
| | **Default:** Auto Learn |
| **Port** | The UDP port to use. **Default:** 0 (zero) |

## *UDP Sockets Advanced Parameters*

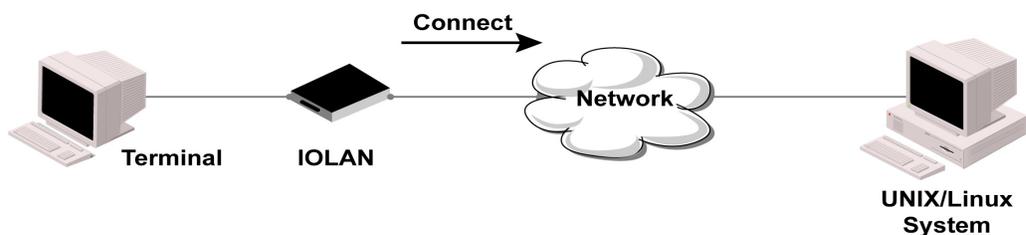| | |
|---|---|
| **Session Strings** | Controls the sending of ASCII strings to serial devices at session start as follows; |
| | • **Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised. |
| | • **Range:** 0-127 alpha-numeric characters |
| | • **Range:** hex 0-FF |
| | • **Delay after Send**—If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated or terminated. |
| | • **Default:** 10 ms |

# Terminal Profile

The Terminal profile allows network access from a terminal connected to the IOLAN's serial port. This profile is used to access pre-defined hosts on the network from the terminal.

This profile can be configured for users:

- who must be authenticated by the IOLAN first and then a connection to a host can be established.
- who are connecting through the serial port directly to a host.

## Terminal Profile Parameters

**Terminal Type**  Specifies the type of terminal connected to the line.

**Data Options:**

- **Dumb**
- **WYSE60**
- **VT100**
- **ANSI**
- **TVI925**
- **IBM3151TE**
- **VT320** (specifically supporting VT320-7)
- **HP700** (specifically supporting HP700/44)
- **Term1, Term2, Term3** (user-defined terminals)

**Default:** Dumb

**Require Login**  When users access the IOLAN through the serial port, they must be authenticated, using either the local user database or an external authentication server.
**Default:** Enabled

**User Service Settings Button**  After a user has been successfully authenticated, the IOLAN will connect to the specified host using the specified protocol according to:

- the **User Service** parameter for locally configured users

See *User Services Parameters*

**Connect to remote system**  When the serial port is started, the IOLAN will initiate a connection to the specified host using the specified protocol. With this option, user authentication will not be performed by the IOLAN.
**Default:** Disabled

**Protocol**  Specify the protocol that will be used to connect to the specified host.
**Data Options:** Telnet
**Default:** Telnet

| | |
|---|---|
| **Settings Button** | Select this button to define the settings for the protocol that will be used to connect the user to the specified host. |
| **Host Name** | The name (resolvable via DNS) or IP address of the configured host the IOLAN will connect to. |
| **TCP Port** | The TCP Port that the IOLAN will use to connect to the host.<br>**Default:** Telnet-23 |
| **Automatically** | If the serial port hardware parameters have been setup to monitor DSR or DCD, the host session will be started once the signals are detected. If no hardware signals are being monitored, the IOLAN will initiate the session immediately after being powered up.<br>**Default:** Enabled |
| **When any data is received** | Initiates a connection to the specified host when any data is received on the serial port.<br>**Default:** Disabled |
| **When <hexadecimal value> is received** | Initiates a connection to the specified host only when the specified character is received on the serial port.<br>**Default:** Disabled |

## *Terminal Profile Advanced Parameters*

| | |
|---|---|
| **Enable Message of the Day (MOTD)** | Enables/disables the display of the message of the day.<br>**Default:** Disabled |
| **Reset Terminal on disconnect** | When enabled, resets the terminal definition connected to the serial port when a user logs out.<br>**Default:** Disabled |
| **Allow Port Locking** | When enabled, the user can lock his terminal with a password using the **Hotkey Prefix** (default Ctrl-a) **^a l** (lowercase L). The IOLAN prompts the user for a password and a confirmation.<br>**Default:** Disabled |
| **Hotkey Prefix** | The prefix that a user types to lock a serial port or redraw the Menu.<br>**Data Range:**<br>• **^a l**—(Lowercase L) Locks the serial port until the user unlocks it. The user is prompted for a password (any password, excluding spaces) and locks the serial port. Next, the user must retype the password to unlock the serial port.<br>• **^r**—When you switch from a session back to the Menu, the screen may not be redrawn correctly. If this happens, use this command to redraw it properly. This is always **Ctrl R**, regardless of the **Hotkey Prefix**.<br>You can use the **Hotkey Prefix** key to lock a serial port only when the **Allow Port Locking** parameter is enabled.<br>**Default:** hexadecimal 01 (Ctrl-a, ^a) |

| | |
|---|---|
| **Idle Timeout** | Use this timer to close a connection because of inactivity. When the **Idle Timeout** expires, the IOLAN will end the connection.<br>**Range:** 0-4294967 seconds (about 49 days)<br>**Default:** 0 seconds so the port will never timeout |
| **Session Timeout** | Use this timer to forcibly close the session/connection when the **Session Timeout** expires.<br>**Default:** 0 seconds so the port will never timeout<br>**Range:** 0-4294967 seconds (about 49 days) |
| **Session Strings** | Controls the sending of ASCII strings to serial device at session start as follows;<br><br>**Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN, or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised.<br>**Range:** 0-127 alpha-numeric characters<br>**Range:** hexadecimal 0-FF<br><br>**Delay after Send** - If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated.<br>**Range:** 0-65535 ms<br>**Default:** 10 ms |
| **Dial Timeout** | The number of seconds the IOLAN will wait to establish a connection to a remote modem.<br>**Range:** 1-99<br>**Default:** 45 seconds |
| **Dial Retry** | The number of times the IOLAN will attempt to re-establish a connection with a remote modem.<br>**Range:** 0-99<br>**Default:** 2 |
| **Dial In** | If the device is remote and will be dialing in via modem or ISDN TA, enable this parameter.<br>**Default:** Disabled |
| **Dial Out** | If you want the modem to dial a number when the serial port is started, enable this parameter.<br>**Default:** Disabled |
| **Modem** | The name of the predefined modem that is used on this line. If you are using a IOLAN SCG with a built in modem then select iolan_modem.<br>See *Adding/Editing a Modem* |
| **Phone** | The phone number to use when **Dial Out** is enabled. |

# User Service Settings

## Login Settings

These settings apply to users who are accessing the network from a terminal connected to the IOLAN's serial port. The Telnet settings take effect when the connection method is defined in the user's profile.

**Limit Connection to User**
Makes the serial port dedicated to the specified user. The user won't need to enter their login name - just their password.

**Initial Mode**
Specifies the initial interface a user navigates when logging into the serial port.
**Data Options:** Command Line
**Default:** Command Line

**Terminal Pages**
The number of video pages the terminal supports.
**Range:** 1-7
**Default:** 5 pages

## *Telnet Settings*

The Telnet settings apply when the **User Service** is set to **Telnet** or the Terminal profile specifies a **Telnet** connection to a host.

**Terminal Type**
Type of terminal attached to this serial port; for example, ANSI or WYSE60.

**Local Echo**
Toggles between local echo of entered characters and suppressing local echo. Local echo is used for normal processing, while suppressing the echo is convenient for entering text that should not be displayed on the screen, such as passwords. This parameter can be used only when **Enable Line Mode** is enabled.
**Default:** Disabled

**Enable Line Mode**
When enabled, keyboard input is not sent to the remote host until **Enter** is pressed, otherwise input is sent every time a key is pressed.
**Default:** Disabled

**Map CR to CRLF**
When enabled, maps carriage returns (CR) to carriage return line feed (CRLF).
**Default:** Disabled

**Interrupt**
Defines the interrupt character. Typing the interrupt character interrupts the current process. This value is in hexadecimal.
**Default:** 3 (ASCII value **^C**)

**Quit**
Defines the quit character. Typing the quit character closes and exits the current telnet session. This value is in hexadecimal.
**Default:** 1c (ASCII value **FS**)

**EOF**
Defines the end-of-file character. When **Enable Line Mode** is enabled, entering the EOF character as the first character on a line sends the character to the remote host. This value is in hexadecimal.
**Default:** 4 (ASCII value **^D**)

**Erase**
Defines the erase character. When **Line Mode** is **Off**, typing the erase character erases one character. This value is in hexadecimal.
**Default:** 8 (ASCII value **^H**)

| Echo | Defines the echo character. When **Line Mode** is **On**, typing the echo character echoes the text locally and sends only completed lines to the host. This value is in hexadecimal.<br>**Default:** 5 (ASCII value **^E**) |
|---|---|
| Escape | Defines the escape character. Returns you to the command line mode. This value is in hexadecimal.<br>**Default:** 1d (ASCII value **GS**) |

# Serial Tunneling Profile

The Serial Tunneling profile allows two IOLANs to be connected back-to-back over the network to establish a virtual link between two serial ports based on RFC 2217.

The serial device that initiates the connection is the **Tunnel Client** and the destination is the **Tunnel Server**, although once the serial communication tunnel has been successfully established, communication can go both ways.



A more detailed implementation of the Serial Tunneling profile is as follows:
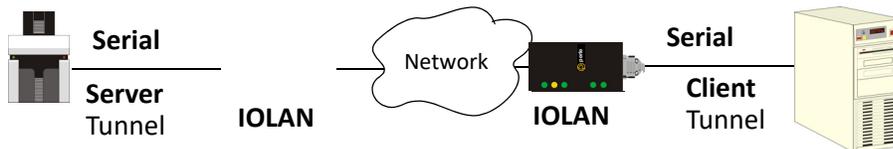


The **Server Tunnel** will also support Telnet Com Port Control protocol as detailed in RFC 2217.
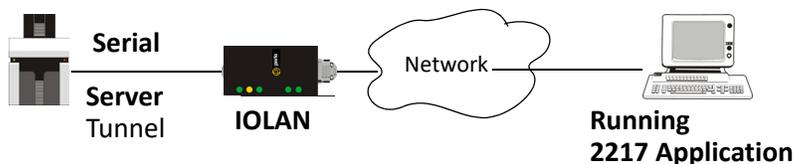


The IOLAN serial port signals will also follow the signals on the other serial port. If one serial port receives DSR then it will raise DTR on the other serial port. If one serial port receives CTS then it will raise RTS on the other serial port. The CD signal is ignored.

## *Serial Tunneling General Parameters*

| Act as Tunnel Server | The IOLAN will listen for an incoming connection request on the specified **Internet Address** on the specified **TCP Port**.<br>**Default:** Enabled |
|---|---|

| **Listen for connection** | The TCP port that the IOLAN will listen for incoming connection on. |
| **on TCP Port** | **Default:** 10000+serial port number; so serial port 5 is 10005. |

| **Act as Tunnel Client** | The IOLAN will initiate the connection the Tunnel Server. |
| | **Default:** Disabled |

| **Establish connection** | A preconfigured host name that is associated with the IP address of the Tunnel |
| **to Host Name** | Server. |

| **Establish connection** | The TCP port that the IOLAN will use to connect to the Tunnel Server. |
| **to TCP Port** | **Default:** 10000+serial port number; so serial port 1 is 10001. |

**Enable TCP Keepalive** Enables a per-connection TCP keep-alive feature. After the configured number of seconds, the connection will send a gratuitous ACK to the network peer, thus either ensuring the connection stays active OR causing a dropped connection condition to be recognized.

This parameter needs to be used in conjunction with **Monitor Connection Status Interval** parameter found in the **Serial**, **Advanced**, **Advanced Settings** tab. The interval specifies the inactivity period before "testing" the connection. **Default:** Disabled
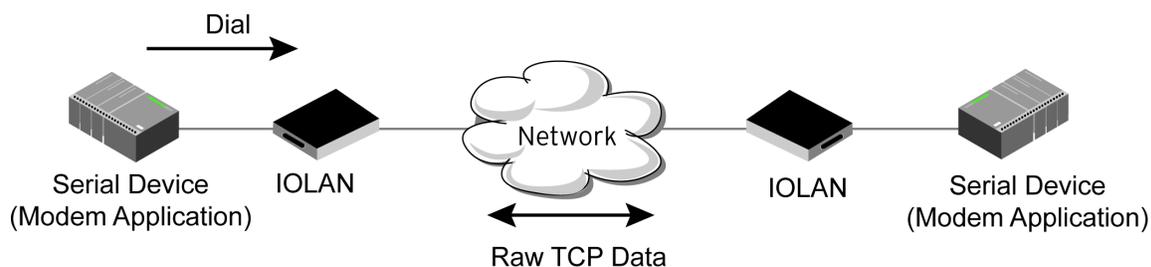
## *Serial Tunneling Advanced Parameters*

**Break Length** When the IOLAN receives a command from its peer to issue a break signal, this parameters defines the length of time the break condition will be asserted on the serial port
**Default:** 1000ms (1 second)

**Delay After Break** This parameter defines the delay between the termination of a a break condition and the time data will be sent out the serial port.
**Default:** 0ms (no delay).

**Session Strings** Controls the sending of ASCII strings to serial devices at session start and session termination as follows;

- **Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised.
- **Range:** 0-127 alpha-numeric characters
- **Range:** hexadecimal 0-FF
- **Send at End**—If configured, this string will be sent to the serial device when the TCP session on the LAN is terminated. If multi-host is configured, this string will only be send in listen mode to the serial device when all multi-host connections are terminated.
- **Range:** 0-127 alpha-numeric characters
- **Range:** hexadecimal 0-FF
- **Delay after Send**—If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated or terminated.
  **Default:** 10 ms

# Virtual Modem Profile

**Virtual Modem** (Vmodem) is a feature of the IOLAN that provides a modem interface to a serial device. It will respond to AT commands and provide signals in the same way that a serially attached modem would. This feature is typically used when you are replacing dial-up modems with the IOLAN in order to provide Ethernet network connectivity.

The serial port will behave in exactly the same fashion as it would if it were connected to a modem. Using AT commands, it can configure the modem and the issue a dial-out request (ATTD). The IOLAN will then translate the dial request into a TCP connection and data will be begin to flow in both directions. The connection can be terminated by "hanging" up the phone line.You can also manually start a connection by typing `ATD<ip_address>,<port_number>` and end the

connection by typing `+++ATH`. The *ip_address* can be in IPv4 or IPv6 formats and is the IP address of the receiver. For example, `ATD123.34.23.43,10001` or you can use `ATD12303402304310001`, without any punctuation (although you do need to add zeros where there are not three digits presents, so that the IP address is 12 digits long).



## *Virtual Modem General Parameters*

| | |
|---|---|
| **Listen on TCP Port** | The IOLAN TCP port that the IOLAN will listen on.<br>**Default:** 10000 + serial port number (for example, serial port 12 defaults to 10012) |
| **Connect Automatically At Startup** | When enabled, automatically establishes the virtual modem connection when the serial port becomes active.<br>**Default:** Enabled |
| **Host Name** | The preconfigured target host name. |
| **TCP Port** | The port number the target host is listening on for messages.<br>**Default:** 0 (zero) |
| **Connect Manually Via AT Command** | When enabled, the virtual modem requires an AT command before it establishes a connection. Specify this option when your modem application sends a phone number or other AT command to a modem. The serial device can supply an IP address directly or it can provide a phone number that will be translated into an IP address by the IOLAN using the mapping table.<br>**Default:** Disabled |

| Phone Number to Host Mapping Button | When your modem application provides a phone number in an AT command string, you can map that phone number to the destination host. |
|---|---|
| Send Connection Status As | When enabled, the connection success/failure indication strings are sent to the connected device, otherwise these indications are suppressed. This option also determines the format of the connection status results that are generated by the virtual modem.<br>**Default:** Enabled |
| Verbose Strings | When enabled, the connection status is sent by text strings to the connected device.<br>**Default:** Disabled |
| Success String | String that is sent to the serial device when a connection succeeds.<br>**Default:** CONNECT <*speed*>, for example, `CONNECT 9600` |
| Failure String | String that is sent to the serial device when a connection fails.<br>**Default:** NO CARRIER |
| Numeric Codes | When enabled, the connection status is sent to the connected device using the following numeric codes:<br>• **0** OK<br>• **1** CONNECTED<br>• **2** RING<br>• *3* NO CARRIER<br>• **4** ERROR<br>• **6** INTERFACE DOWN<br>• **7** CONNECTION REFUSED<br>• **8** NO LISTENER<br>**Default:** Enabled |

## *Virtual Modem Advanced Parameters*

| Echo characters in command mode | When enabled, echoes back characters that are typed in (equivalent to ATE0/ATE1 commands).<br>**Default:** Disabled |
|---|---|
| DTR Signal Always On | Specify this option to make the DTR signal always act as a DTR signal.<br>**Default:** Enabled |
| DTR Signal Acts as DCD | Specify this option to make the DTR signal always act as a DCD signal.<br>**Default:** Disabled |
| DTR Signal Acts as RI | Specify this option to make the DTR signal always act as a RI signal.<br>**Default:** Disabled |
| RTS Signal Always On | Specify this option to make the RTS signal always act as a RTS signal.<br>**Default:** Enabled |

| | |
|---|---|
| **RTS Signal Acts as DCD** | Specify this option to make the RTS signal always act as a DCD signal.<br>**Default:** Disabled |
| **RTS Signal Acts as RI** | Specify this option to make the RTS signal always act as a RI signal.<br>**Default:** Disabled |
| **DCD Signal Always On** | When you configure the DTR or RTS signal pin to act as a DCD signal, enable this option to make the DCD signal always stay on.<br>**Default:** Enabled |
| **DCD Signal On when host connection established** | When you configure the DTR or RTS signal pin to act as a DCD signal, enable this option to make the DCD signal active only during active communication.<br>**Default:** Disabled |
| **Additional modem initialization** | You can specify additional virtual modem commands that will affect how virtual modem starts. The following commands are supported: ATQn, ATVn, ATEn, +++ATH, ATA, ATI0, ATI3, ATS0, AT&Z1, AT&Sn, AT&Rn, AT&Cn, AT&F, ATS2, ATS12, ATO (ATD with no phone number), and ATDS1. |
| **Enable Message of the Day (MOTD)** | When enabled, displays the Message of the Day (MOTD) when a successful virtual modem connection is made.<br>**Default:** Disabled |
| **Enable TCP Keepalive** | Enables a per-connection TCP keepalive feature. After the configured number of seconds, the connection will send a gratuitous ACK to the network peer, thus either ensuring the connection stays active OR causing a dropped connection condition to be recognized.<br><br>This parameter needs to be used in conjunction with **Monitor Connection Status Interval** parameter found in the **Serial**, **Advanced**, **Advanced Settings** tab. The interval specifies the inactivity period before "testing" the connection.<br>**Default:** Disabled |
| **AT Command Response Delay** | The amount of time, in milliseconds, before an AT response is sent to the requesting device.<br>**Default:** 250 ms |
| **Session Strings** | Controls the sending of ASCII strings to serial devices at session start as follows;<br>• **Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised.<br>• **Range:** 0-127 alpha-numeric characters<br>• **Range:** hex 0-FF<br>• **Delay after Send**—If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated or terminated.<br>**Default:** 10 ms |

## Phone Number to Host Mapping

If your modem application dials using a phone number, you can add an entry in the Phone Number to Host Mapping window that can be accessed by all serial ports configured as Virtual Modem. You need to

enter the phone number sent by your modem application and the IOLAN IP address and TCP Port that will be receiving the "call". The IOLAN supports up to 48 entries.

### *Virtual Modem Phone Number Entry*

Create an entry in the Phone Number to Host Mapping window.

**Phone Number**      Specify the phone number your modem application sends to the modem. Note: The IOLAN does not validate the phone number, so it must be entered in the exact way the application will send it. For example, if you enter 555-1212 in this table and the application sends 5551212, the IOLAN will not match the two numbers. Spaces will be ignored.

**Host IP Address**      Specify the IP address of the IOLAN that is receiving the virtual modem connection.
**Field Format:** IPv4 or IPv6 address

**Host Name**      Specify the host name (from the host table) of the IOLAN that is receiving the virtual modem connection.
See *Host Table* or more information.

**TCP Port**      Specify the TCP Port on the IOLAN that is set to receive the virtual modem connection.
**Default:** 0

# Modbus Gateway Profile

The Modbus Gateway profile configures a serial port to act as a Modbus Master Gateway or a Modbus Slave Gateway.

### *Modbus General Parameters*
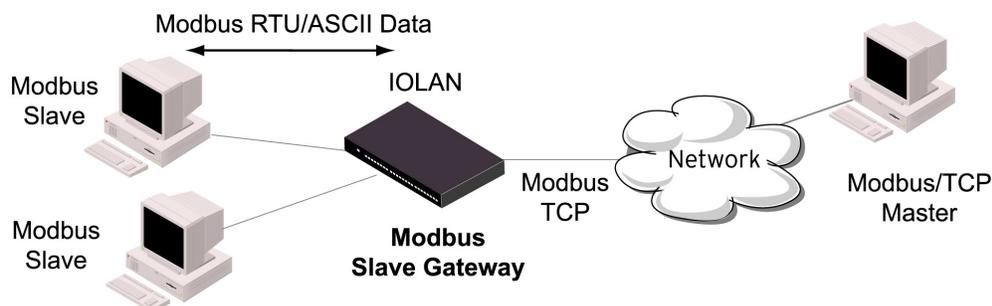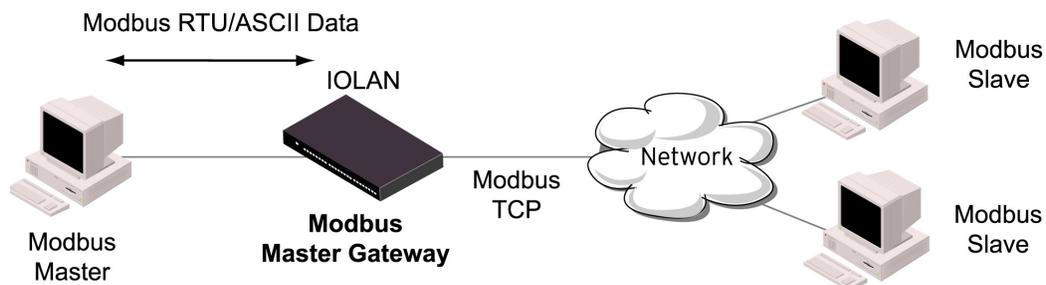
| | |
|---|---|
| **Modbus** | Specify how the Modbus Gateway is defined on the serial port.<br>Data Options:<br>• **Modbus Master**—Typically, the Modbus Master is connected to the Serial Port and is communicating to Modbus Slaves on the network.<br>• **Modbus Slave**—Typically, the Modbus Master is accessing the IOLAN through the network to communicated to Modbus Slaves connected to the IOLAN's Serial Ports.<br>**Default:** Modbus Master Gateway |
| **Destination Slave IP Mappings Button** | Select this button to launch the Destination Slave IP Settings window, where you can configure the TCP/Ethernet Modbus Slaves that the Modbus Master on the Serial Port will communicate with. |
| **Advanced Slave Settings Button** | Select this button to configure global Modbus Slave settings. |
| **UID Range** | You can specify a range of UIDs (1-247), in addition to individual UIDs.<br>**Field Format:** Comma delimited; for example, 2-35, 50, 100-103 |
| **IP Address** | Set the IP address to be used for this serial port when using IP Aliasing feature. |
| **Modbus/RTU** | Select this option when the Modbus/RTU protocol is being used for communication between the Modbus Master and Slave.<br>**Default:** Enabled |
| **Modbus/ASCII** | Select this option when Modbus/ASCII protocol is being used for communication between the Modbus Master and Slave.<br>**Default:** Disabled |
| **Append CR/LF** | When **Modbus/ASCII** is selected, adds a CR/LF to the end of the transmission; most Modbus devices require this option.<br>**Default:** Enabled |

## *Modbus Advanced Parameters*

| | |
|---|---|
| **Idle Timeout** | Use this timer to close a connection because of inactivity. When the **Idle Timeout** expires, the IOLAN will end the connection.<br>**Range:** 0-4294967 seconds (about 49 days)<br>**Default:** 0 (zero), which does not timeout, so the connection is permanently open. |
| **Enable Modbus Exceptions** | When enabled, an exception message is generated and sent to the initiating Modbus device when any of the following conditions are encountered: there is an invalid UID, the UID is not configured in the Gateway, there is no free network connection, there is an invalid message, or the target device is not answering the connection attempt.<br>**Default:** Enabled |

**Character Timeout**  Used in conjunction with the Modbus RTU protocol, specifies how long to wait, in milliseconds, after a character to determine the end of frame.
**Range:** 10-10000
**Default:** 30 ms

**Message Timeout**  Time to wait, in milliseconds, for a response message from a Modbus TCP or serial slave (depending if the Modbus Gateway is a Master Gateway or Slave Gateway, respectively) before sending a Modbus exception.
**Range:** 10-10000
**Default:** 1000 ms

**Session Strings**  Controls the sending of ASCII strings to serial devices at session start as follows;
- **Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised.
- **Range:** 0-127 alpha-numeric characters
- **Range:** hex 0-FF
- **Delay after Send**—If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated or terminated.
**Default:** 10 ms

## Adding/Editing Modbus Slave IP Parameters

**UID Start**  When **Destination** is set to **Host** and you have sequential Modbus Slave IP addresses (for example, 10.10.10.1, 10.10.10.2, 10.10.10.3, etc.), you can specify a UID range (not supported with IPv6 addresses) and the IOLAN will automatically increment the last digit of the configured IP address. Therefore, you can specify a UID range of 1-100, and the IOLAN will route Master Modbus messages to all Modbus Slaves with IP addresses of 10.10.10.1 - 10.10.10.100.
**Range:** 1-247
**Default:** 0 (zero)

**UID End**  When **Destination** is set to **Host** and you have sequential Modbus Slave IP addresses (for example, 10.10.10.1, 10.10.10.2, 10.10.10.3, etc.), you can specify a UID range (not supported with IPv6 addresses) and the IOLAN will automatically increment the last digit of the configured IP address. Therefore, you can specify a UID range of 1-100, and the IOLAN will route Master Modbus messages to all Modbus Slaves with IP addresses of 10.10.10.1 - 10.10.10.100.
**Range:** 1-247
**Default:** 0 (zero)

| Type | Specify the configuration of the Modbus Slaves on the network.<br>**Data Options:**<br>• **Host**—The IP address is used for the first UID specified in the range. The last octet in the IPv4 address is then incremented for subsequent UID's in that range.<br>• **Gateway**—The Modbus Master Gateway will use the same IP address when connecting to all the remote Modbus slaves in the specified UID range.<br>**Default:** Host |
|---|---|
| Start IP Address | The IP address of the TCP/Ethernet Modbus Slave.<br>**Field Format:** IPv4 or IPv6 address |
| End IP Address | Displays the ending IP address of the TCP/Ethernet Modbus Slaves, based on the Start IP address and the UID range (not supported for IPv6 addresses).<br>**Field Format:** IPv4 address |
| Protocol | Specify the protocol that is used between the Modbus Master and Modbus Slave(s).<br>**Data Options:** TCP or UDP<br>**Default:** TCP |
| UDP/TCP Port | The destination port of the remote Modbus TCP Slave that the IOLAN will connect to.<br>**Range:** 0-65535<br>**Default:** 502 |

## *Modbus Slave Advanced Parameters*

| TCP/UDP Port | The network port number that the Slave Gateway will listen on for both TCP and UDP messages.<br>**Default:** 502 |
|---|---|
| Next Request Delay | A delay, in milliseconds, to allow serial slave(s) to re-enable receivers before issuing next Modbus Master request.<br>**Range:** 0-1000<br>**Default:** 50 ms |
| Enable Serial Modbus Broadcasts | When enabled, a UID of 0 (zero) indicates that the message will be broadcast to all Modbus Slaves.<br>**Default:** Disabled |
| Request Queuing | When enabled, allows multiple, simultaneous messages to be queued and processed in order of reception.<br>**Default:** Enabled |
| Embedded | When this option is selected, the address of the slave Modbus device is embedded in the message header.<br>**Default:** Enabled |

| | |
|---|---|
| **Remapped** | Used for single device/port operation. Older Modbus devices may not include a UID in their transmission header. When this option is selected, you can specify the UID that will be inserted into the message header for the Modbus slave device. This feature supersedes the Broadcast feature.<br>**Default:** Disabled |
| **Remap UID** | Specify the UID that will be inserted into the message header for the Slave Modbus serial device.<br>**Range:** 1-247<br>**Default:** 1 |
| **Enable IP Aliasing** | The ability to access a serial device connected to the serial port by an IP address (or host name that can be resolved to the Internet Address in a DNS network) instead of the IOLAN's IP address and port number.<br>**Default:** Disabled<br>**Remap:** UID |

# Custom Application Profile

The **Custom App/Plugin** profile is used in conjunction with custom applications created for the IOLAN by using the Perle SDK. See the *SDK Programmer's Guide* (the SDK and guide are accessible via a request form located on the Perle website at for information about the functions that are supported.

You must download the program and any ancillary files to the IOLAN and set the serial port to the **Custom App/Plugin** profile to actually run a custom application. You must also specify the program executable and any parameters you want to pass to the program in the **Command Line** field. The custom application is automatically run when the serial port is started.

## *Custom Application General Parameters*

| | |
|---|---|
| **Command Line** | The name of the SDK program executable that has been already been downloaded to the IOLAN, plus any parameters you want to pass to the program.Use the `shell` CLI command as described in the *SDK Programmer's Guide* to manage the files that you have downloaded to the IOLAN. For example, using sample outraw program, you would type:<br><br>`outraw 192.168.2.1:10001 Acct:10001`<br><br>if you were starting the application on a serial port.<br><br>**Field Format:** Maximum of 80 characters |

### *Custom Application Advanced Parameters*

**Session Strings**     Controls the sending of ASCII strings to serial device at session start as follows;

- **Send at Start**—If configured, this string will be sent to the serial device on power-up of the IOLAN, or when a kill line command is issued on this serial port. If the "monitor DSR" or "monitor DCD" options are set, the string will also be sent when the monitored signal is raised.

    **Range:** 0-127 alpha-numeric characters

    **Range:** hexadecimal 0-FF

- **Delay after Send** - If configured, will inset a delay after the string is sent to the device. This delay can be used to provide the serial device with time to process the string before the session is initiated.

    **Range is 0-65535 ms**

    **Default:** 10 ms

# Serial Settings Advanced Parameters

Advanced serial port settings apply to all serial ports.

**Process Break Signals**  Enables/disables  the Telnet break signal, and the out-of-band break signals for TruePort.
**Default**: Disabled

**Flush Data Before Closing Serial Port**  When enabled, deletes any pending outbound data when a port is closed.
**Default:** Disabled

**Deny Multiple Network Connections**  Allows only one network connection at a time per a serial port. Application accessing a serial port device across a network with get a connection (socket) refused until:

- All data from previous connections on that serial port has drained
- There are no other connections
- Up to a 1 second interconnection poll timer has expired

Enabling this feature automatically enables a TCP keep-alive mechanism which is used to detect when a session has abnormally terminated. The keep-alive is sent after 3 minutes of network connection idle time.

Applications using this feature need to be aware that there can be some considerable delay between a network disconnection and the port being available for the next connection attempt, allowing any data sent on prior connections to be transmitted out of the serial port. Application network retry logic needs to accommodate this feature.
**Default:** Disabled

| | |
|---|---|
| **Enable Data Logging** | When enabled, serial data will be buffered if the TCP connection is lost. When Logging the TCP connection is re-established, the buffered serial data will be sent to its destination. If using the Trueport profile, data logging is only supported in Lite Mode. |
| | The minimum data buffer size for is 1 KB. The maximum data buffer size is 4000 KB. |
| | If the data buffer is filled, incoming serial data will overwrite the oldest data. |
| | **Values:** 1-4000 KB  - Default 256 KB |
| | **Default:** Disabled |
| | **Note:** A kill line or a reboot of the IOLAN causes all buffered data to be lost |
| **Pre V4.3G Data Logging Mode** | Enable the logging feature previous to V4.3G software. |
| | **Default:** Disabled |
| **Serial Port Menu String** | When a user connects to the IOLAN through the network, the string used to access the Easy Port Access menu without disconnecting the network connection. |
| | **Data Options:** You can specify control (unprintable) codes by putting the decimal value in angle brackets < > (for example, **ESC-b** is **<027>b**). |
| | **Default:** ~menu |
| **Session Escape String** | When a user connects to the IOLAN through the network, the string is used to access the Reverse Session Menu. |
| | **Data Options:** You can specify control (unprintable) codes by putting the decimal value in angle brackets < > (for example, **ESC-b** is **<027>b**). |
| | **Default:** <026>s (Ctrl-z s) |
| **Monitor Connection Interval Status** | Specify how often, in seconds, the IOLAN will send a TCP keep-alive to services that support TCP keep-alive. |
| | **Default:** 180 seconds |
| **Retry Attempts** | The number of TCP keep-alive retries before the connection is closed. |
| | **Options:** 1-32767 |

# Modem Parameters

If your IOLAN contains an internal modem, a permanent modem string called **iolan_modem** exists permanently in your configuration.
You will need to configure a modem if you want to connect an external modem to one of your serial ports.
When you select the **Modems** tab, you will see any modems that have been configured and the **Add** button to add a new entry to the modem table.

### Adding/Editing a Modem
You can add new modems or edit existing modems through the display window:

| | |
|---|---|
| **Name** | The name of the modem. |
| | **Restrictions:** Do not use spaces. |
| **Initialization String** | The initialization string of the modem; see your modem's documentation. |

# Trueport Baud Rate Parameters

The TruePort utility acts as a COM port redirector that allows applications to talk to serial devices across a network as though the serial devices were directly attached to the server.

Since some older applications may not support the higher baud rates that the IOLAN is capable of achieving, the baud rate can be mapped to a different value on the IOLAN. Through TruePort, you can map the baud rate of the host COM port to a higher baud rate for the serial line that connects the serial device and the IOLAN. See the *Trueport Profile* for more information about TruePort.

**Actual Baud Rate**     The actual baud rate that runs between the IOLAN and the connected serial device.
**Range:** 300-230400, you can also specify a custom baud rate.

# Setting Up Users

You can configure up to nine users in the IOLAN's local user database for all and 2-port modelsdesktop models, in addition to the admin user. A user can even represent a device, like a barcode reader or a card swipe device, that you want to be authenticated. When you have a user who is accessing a device connected to a serial port from the network or who is accessing the network from a device connected to a serial port through the IOLAN or simply to manage the IOLAN; you can create a user account and configure the user's access privileges. Notice that if there is a Default user; the Default user's parameters are inherited by users logging into the IOLAN.

You can configure up to 4 users in the IOLAN's local user's database, in addition to the admin user. When users are connecting to the IOLAN via serial ports, the user database can be used to:

- Have the user authenticated prior to establishing a connection to a network host.
- Establish a different connection type to the host specific to each user.
- Create a profile different from the Default user profile.

When users are connecting to the IOLAN from a network connection, the user database can be used to:

- Authenticate users prior to providing access to a serially attached console port (such as a Unix server or router).

## Adding/Editing Users

**User Name**          The name of the user.
                       **Restrictions:** Do not use spaces.

**Password**           The password the user will need to enter to login to the IOLAN.

**Confirm Password**   Enter the user's password again to verify it is entered correctly.

| | |
|---|---|
| **Level** | The access that a user is allowed. |
| | **Data Options:** |

- **Admin**—The admin level user has total access to the IOLAN. You can create more than one admin user account but we recommend that you only have one. They can monitor and configure the IOLAN. Users configured with this level can access the unit either via serial Terminal Profile connection or via a network originated Telnetconnection to the IOLAN.
- **Normal**—The Normal level user has limited access to the IOLAN. Limited CLI commands and Menu access are available with the ability to configure the user's own configuration settings. Users configured with this level can access the unit either via serial Terminal Profile connection or via a network originated Telnet connection to the IOLAN.
- **Restricted**—The Restricted level user can only access predefined sessions or access the Easy Port Access menu. Users configured with this level will be restricted to pre-defined sessions or limited CLI commands when connecting through the serial port via the Terminal Profile. The CLI commands are limited to those used for initiating a session. If connection to the IOLAN is done with Telnet  from the network, the user will be presented with the Easy Port Access menu.
- **Menu**—The menu level user will only be able to access predefined sessions when connecting through a serial port with the Terminal Profile. Menu users do not have access to CLI commands.

When the admin user logs into the IOLAN, the prompt ends with a **#**, whereas all other users' prompts ends with a **$** or **£**, depending on the character set.

**Default:** Normal

| | |
|---|---|
| **Note:** | A technique for giving a serially attach user (dial-in or terminal attached), the same menus as one that is network connected is to do the following: |
| | 1. **Define the serial port with a Terminal Profile using telnet protocol with a direct connection to Host IP address 127.0.0.0 (local loop back).** |
| | 2. **When the user connects to that serial port a Telnet session will be established to the IOLAN and the user will appear to have connected from the network.** |

## *User Services Parameters*

The **Services** tab configures the connection parameters for a user. Any connection parameters configured in this window will override the serial port connection parameters.

When a **Terminal** profile is set for the serial port and **Require Login** has been selected, user's accessing the IOLAN through the serial port will be authenticated. Once authentication is successful, the **Service** speci-fied here is started. For example, if the **Service Telnet** is specified, the IOLAN will start a Telnet connection to the specified **Host IP/TCP Port** after the user is successfully authenticated (logs in successfully).
Within the **Terminal** profile, there are a number of settings that apply to possible
**Services**. Once it is known which user is connected, and which service is to be used, then the settings from both the **Terminal** profile and the user are used. User parameters take precedence over serial port parameters.

**Service**                Used in conjunction with the **Terminal Profile**. After the user has successfully been authenticated, the specified service is started.
**Data Options:** DSPrompt,  TCP Clear**Default:** DSPrompt

**Host IP**           For outbound User Services such as Telnet or TCP Clear this is the target host name or IP address. If no IP address or host name is specified, the Host IP value in the Default User configuration will be used.
**Default:** 0.0.0.0

**TCP Port**         When the **User Service** is **Telnet**, **or TCP Clear**this is the target port number. The default value will change based on the type of **Service** selected; the most common known port numbers are used as the default values.

## *User Service Advanced Parameters*

The **Advanced** tab is used to configure those parameters that control the user session; this includes session length, language, the hotkey used for switching between sessions, access to clustered ports, etc.

**Idle Timeout**     The amount of time, in seconds, before the IOLAN closes a connection due to inactivity. The default value is **0** (zero), meaning that the **Idle Timer** will not expire (the connection is open permanently). The **User Idle Timeout** will override all other **Serial Port Idle Timeout** parameters.
**Range:** 0-4294967
**Default:** 0

**Session Timeout**   The amount of time, in seconds, before the IOLAN forcibly closes a user's session (connection). The default value is **0** (zero), meaning that the session timer will not expire (the session is open permanently, or until the user logs out). The **User Session Timeout** will override all other **Serial Port Session Timeout** parameters.
**Range:** 0-4294967
**Default:** 0

**Language**        You can specify whether a user will use **English** or **Custom Language** as the language that appears in the CLI. The IOLAN supports one custom language that must be downloaded to the IOLAN.
**Default:** English

| Hotkey Prefix | The prefix that a user types to control the current session. |
|---|---|

**Data Options:**

- **^a** *number*—To switch from one session to another, press **^a** (Ctrl-a) and then the required session number. For example, **^a 2** would switch you to session 2. Pressing **^a 0** will return you to the IOLAN Menu.
- **^a n**—Display the next session. The current session will remain active. The lowest numbered active session will be displayed.
- **^a p**—Display the previous session. The current session will remain active. The highest numbered active session will be displayed.
- **^a m**—To exit a session and return to the IOLAN. You will be returned to the menu. The session will be left running.
- **^a l**—(Lowercase L) Locks the serial port until the user unlocks it. The user is prompted for a password (any password, excluding spaces) and the serial port is locked. The user must retype the password to unlock the serial port.
- **^r**—When you switch from a session back to the Menu, the screen may not be redrawn correctly. If this happens, use this command to redraw it properly. This is always **Ctrl R**, regardless of the **Hotkey Prefix**.

The **User Hotkey Prefix** value overrides the **Serial Port Hotkey Prefix** value. You can use the **Hotkey Prefix** keys to lock a serial port only when the serial port's **Allow Port Locking** parameter is enabled.

**Default:** Hex 01 (Ctrl-a or ^a)

# User Sessions

The **Sessions** tab is used to configure specific connections for users who are accessing the network through the IOLAN's serial port.

Users who have successfully logged into the IOLAN (**User Service** set to **DSprompt**) can start up to four login sessions on network hosts. These users start sessions through the Menu option **Sessions**. Multiple sessions can be run simultaneously to the same host or to different hosts. Users can switch between different sessions and also between sessions and the IOLAN using **Hotkey** commands (see *Hotkey Prefix*) for a list of commands.

Users with **Admin** or **Normal** privileges can define new sessions and use them to connect to Network hosts; they can even configure them to start automatically on login to the IOLAN. **Restricted** and **Menu** users can only start sessions predefined for them in their user configuration.

## *User Sessions Parameters*

**Predefined Outbound** You can configure up to four (4) sessions that the user can select from to connect
**Sessions 1, 2, 3, 4** to a specific host after that user has successfully logged into the IOLAN (used only
on serial ports configured for the **Terminal** profile).

> **Data Options:**
> - **None**—No connection is configured for this session.
> - **Telnet**—For information on the Telnet connection window, see
>   *Telnet Settings*.

**Connect** Specify whether or not the session(s) will start automatically when the user logs
**Automatically** into the IOLAN.
**Default:** Disabled

**Host** The host that the user will connect to in this predefined session.
**Default:** None

**TCP Port** The TCP port that the IOLAN will use to connect to the host in this predefined
session.
**Default:** Telnet-23

## *Serial Port Access*

The **Serial Port Access** tab controls the user's read/write access on any given IOLAN serial port. This
pertains to users that are connecting from the network to a serial over a Console Management type ses-
sion. This can be useful when you have multiple users connecting to the same serial device and you wish
to control the viewing and/or the write to and from the device.

**Serial Port Access** Specifies the user access rights to each IOLAN serial port device. There can be
multiple users connected to a particular serial device and these settings determine
the rights of this user for any of the listed serial ports.

> **Data Options:**
> - **Read/Write**—The user has read and write access to the serial port.
> - **Read In**—The User will see data going to the serial port, from all network-con-
>   nected users that have write privileges to this serial port.
> - **Read Out**—The user will have access to all data originating from the serial
>   device.
>
> Users can read data going in both directions by selecting both the **Read In** and
> **Read Out** options.
> **Default:** Read/Write

# Authentication

Users can be authentication by the IOLAN.

Authentication is different from authorization, which can restrict a user's access to the network (although this can be done through the concept of creating sessions for a user. Authentication ensures that the user is defined within the authentication database—with the exception of using the **Guest** authentication option under **Local Authentication**, which can accept any user ID as long as the user knows the configured password.

## *Security Overview*

The Security group includes the following configuration options:

- **Services**—This configuration window is used to enable/disabled client and daemon services that run in the IOLAN. See *Enable/Disable Services* for more information.

# Network Services

Services and Daemons are based on your IOLAN model. Network services can be enabled and disabled.

## *Enable/Disable Services*

| | |
|---|---|
| **Telnet Server** | Telnet daemon process in the IOLAN listening on TCP port 23.<br>**Default:** Enabled |
| **TruePort Full Mode** | The TruePort daemon process in the IOLAN that supports TruePort Full Mode on UDP port 668. You can still communicate with the IOLAN in Lite Mode when this service is disabled.<br>**Default:** Enabled |
| **Syslog Client** | Syslog client process in the IOLAN.<br>**Default:** Enabled |
| **Modbus** | Modbus daemon process in the IOLAN listening on port 502.<br>**Default:** Enabled |
| **SNMP** | SNMP daemon process in the IOLAN listening on UDP port 161 and sending traps on UDP port 162.<br>**Default:** Enabled |
| **DeviceManager** | DeviceManager daemon process in the IOLAN. If you disable this service, you will not be able to connect to the IOLAN with the DeviceManager application. The DeviceManager listens on port 33812 and sends on port 33813.<br>**Default:** Enabled |
| **WebManager (HTTP)** | WebManager daemon process in the IOLAN listening on port 80.<br>**Default:** Enabled |

**Note:** TCP ports 2601, 2602 and 2603 are used internally by the IOLAN.

# Alerts

This chapter describes the alerts that can be configured for the IOLAN and the advanced options (SNMP, time, custom applications/plugins, and other miscellaneous configuration options) that you will want to look at to see if they are required for your implementation.

# Syslog

The IOLAN can be configured to send system log messages to a syslog daemon running on a remote host if the **Syslog** service is activated. You can configure a primary and secondary host for the syslog information and specify the level for which you want syslog information sent.

> **Note:** You must ensure that the **Syslog Client** service in the **Security**, **Services** window is enabled (by default it is enabled) for these settings to work.

## Syslog Parameters

| | |
|---|---|
| **Primary Host** | The first preconfigured host that the IOLAN will attempt to send system log messages to; messages will be displayed on the host's monitor.<br>**Default:** None |
| **Secondary Host** | If configured, the IOLAN will attempt to send system log messages to this syslog host as well as the primary syslog host defined. Messages will be displayed on the host's monitor.<br>**Default:** None |
| **Level** | Choose the event level that triggers a syslog entry.<br>**Data Options:** Emergency, Alert, Critical, Error, Warning, Notice, Info, Debug<br>**Default:** Emergency |

# Management

If you are using SNMP to manage/configure the IOLAN, or to view statistics or traps, you must set up a User in SNMP version 3 or a Community in SNMP version 1,2 to allow your SNMP manager to connect to the IOLAN; this can be done in the DeviceManager, WebManager and CLI. You must then load the perle-sds.MIB (found on the Perle website at www.perle.com)file into your SNMP manager before you connect to the IOLAN.

> **Note:** Ensure that the **SNMP** service found in the **Security**, **Services** page is enabled (by default it is enabled).

## SNMP Parameters

| | |
|---|---|
| **Contact** | The name and contact information of the person who manages this SMNP node. |
| **Location** | The physical location of the SNMP node. |
| **Community** | The name of the group that devices and management stations running SNMP belong to. Community only applies to SNMP v1 and v2c. Up to 64 characters. |

| Internet Address | The IP address of the SNMP manager that will send requests to the IOLAN. If the address is `0.0.0.0`, any SNMP manager with the **Community** name can access the IOLAN. If you specify a network address, for example `172.16.0.0`, any SNMP manager within the local network with the **Community** name can access the IOLAN.<br>**Field Format:** IPv4 or IPv6 address |
|---|---|
| Permissions | Permits the IOLAN to respond to SNMP requests.<br>**Data Options:**<br><br>• **None**—There is no response to requests from SNMP.<br>• **Readonly**—Responds only to Read requests from SNMP.<br>• **Readwrite**—Responds to both Read and Write requests from SNMP.<br><br>**Default:** None |
| V3 Read-write User | This user can view and edit SNMP variables. |
| V3 Read-Write Security Level | Select the security level for the Read-Writer user. This must match the configuration set up in the SNMP manager.<br>**Data Options:**<br><br>• **None**—No security is used.<br>• **Auth**—User authentication is used.<br>• **Auth/Priv**—User authentication and privacy (encryption) settings are used.<br><br>**Default:** None |
| V3 Read-Write Auth Algorithm | Specify the authentication algorithm that will be used for the read-write user.<br>**Data Options:** MD5, SHA<br>**Default:** MD5 |
| V3 Read-Write Auth Password | Type in the read-write user's authentication password. |
| V3 Read-Write Confirm Password | Retype the user's authentication password. |
| V3 Read-Write Privacy Algorithm | Specify the read-write user's privacy algorithm (encryption).<br>**Data Options:** DES, AES<br>**Default:** DES |
| V3 Read-Write Privacy Password | Type in the read-write user's privacy password. |
| V3 Read-Write Confirm Password | Retype the privacy password. |
| V3 Read-Only User | This user can only read SNMP variables. |

| | |
|---|---|
| **V3 Read-Only Security Level** | Select the security level for the Read-Only user. This must match the configuration set up in the SNMP manager. |
| | **Data Options:** |
| | • **None**—No security is used. |
| | • **Auth**—User authentication is used. |
| | • **Auth/Priv**—User authentication and privacy (encryption) settings are used. |
| | **Default:** None |
| **V3 Read-Only Auth Algorithm** | Specify the authentication algorithm that will be used for the read-only user. |
| | **Data Options:** MD5, SHA |
| | **Default:** MD5 |
| **V3 Read-Only Auth Password** | Type in the read-only user's authentication password. |
| **V3 Read-Only Confirm Password** | Retype the user's authentication password. |
| **V3 Read-Only Privacy Algorithm** | Specify the read-only user's privacy algorithm (encryption). |
| | **Data Options:** DES, AES |
| | **Default:** DES |
| **V3 Read-Only Privacy Password** | Type in the read-only user's privacy password. |
| **V3 Read-Only Confirm Password** | Retype the privacy password. |

## *SNMP Trap Parameters*

| | |
|---|---|
| **Trap checkbox** | Check this box to enable the entry of the trap information. |
| **IP Address** | The IP address of the SNMP manager(s) that will receive messages from the IOLAN. |
| | **Field Format:** IPv4 or IPv6 address |
| **Trap Version** | Select the version of trap you want the IOLAN to send. Valid options are v1, v2c or v3. |
| | **Default:** v1 |
| **Trap Type** | Select between Trap and Inform. Inform requires the host receiving the trap to acknowledge the receipt of the trap. |
| **Community** | The name of the group that devices and management stations running SNMP belong to. Community only applies to SNMP v1 and v2c. Up to 64 characters. |
| **Timeout** | This is only used for Inform traps. Select the number of seconds to wait for the acknowledgment of the trap. |
| | **Default:** 1 second |
| **Retries** | |

| | |
|---|---|
| **V3 Trap User** | This field identifies the system sending the traps to the host receiving the traps. Same user name is used for all traps sent by this system. |
| **V3 Trap Security Level** | Select the security level for the V3 traps. This must match the configuration set up in the SNMP manager.<br>**Data Options:**<br>• **None**—No security is used.<br>• **Auth**—Trap authentication is used.<br>• **Auth/Priv**—Trap authentication and privacy (encryption) settings are used.<br>**Default:** None |
| **V3 Trap Auth Algorithm** | Specify the authentication algorithm that will be used for the read-only user.<br>**Data Options:** MD5, SHA<br>**Default:** MD5 |
| **V3 Trap Auth Password** | Type in the password associated with traps sent from this host. |
| **V3 Trap Confirm Password** | Re-enter the password associated with traps sent from this host. |
| **V3 Trap Privacy Algorithm** | Specify the privacy algorithm (encryption) which will be used with traps.<br>**Data Options:** DES, AES<br>**Default:** DES |
| **V3 Trap Privacy Password** | Type in the password associated with the encryption method being used for traps. |
| **V3 Trap Confirm Password** | Re-type the password associated with the encryption method being used for traps. |
| **V3 EngineID** | This is the current engine ID. The Engine ID is a string which uniquely identifies this SNMP agent. |
| **V3 Use Default EngineID** | When this field is selected, the firmware will use the default Engine ID. The default Engine ID is the MAC address of the Ethernet interface to ensure that the Engine ID is unique to this agent. |
| **V3 Create EngineID Using String** | The string entered in this field will be combined with the defined string in hex of 800007AE04 to form the Engine ID. Ensure each string is unique for each IOLAN on your network. |

# Custom App/Plugin

You can create custom applications for the IOLAN by using the Perle SDK. See the *SDK Programmer's Guide* (the SDK and guide are accessible via a request form located on the Perle website at **www.perle.com/supportfiles/SDK_Request.shtml**) for information about the functions that are supported. You must download the program and any ancillary files to the IOLAN and set the **Serial Port Profile** to **Custom App/Plugin** to run a custom application. You must also specify the program executable in the **Command Line** parameter.

A custom application or plugin can be run on the serial port. In this situation, the application will start once the serial port is activated and operate solely on the context of that serial port and any network communications related to that serial port. You could run a different custom application on each serial port. The serial port custom application or plugin is configured by specifying the **Custom App/Plugin** profile for the serial port.

The system level custom application or plugin will begin execution immediately following the system startup. It runs on the context of the whole system and can access network communications as well as any or all serial ports.

### *Custom App Parameters*

**Command Line**  The name of the application that has been already been downloaded to the IOLAN, plus any parameters you want to pass to the program. For example, using sample `outraw` program (this is sample program supplied with the SDK), you would type:

`outraw -s 0 192.168.2.1:10001 Acct:10001`

if you were starting the application on the Server (notice the `-s 0` parameter specifies serial port 1 to this particular application).

**Field Format:** Maximum of 80 characters

# Advanced Options

Review the configuration options in the Advanced page to determine if any of them apply to your implementation.

**Login Settings**

**Use System Name in Prompts**  Displays the **System Name** field value instead of default product name. When enabled, the **Server Name** is displayed in the IOLAN login prompt, CLI prompt, and WebManager login screen.

**Default:** Disabled

**Display Login Banner**  This parameter concerns the banner information (product name/software version). This banner information is presented to a user with a login prompt. For security reasons, you can turn off the display of this information.

**Default:** Disabled

**Use Custom Login Prompt**  When set, and a custom language file is in use, the login prompt and password prompt will use the string defined in the language file as the login prompt and password prompt instead of the default prompt,

`login:`
`password:`
**Default:** Disabled

**Bypass Login Password**  When set, authorized users who do not have a password set, with the exception of the admin user, WILL NOT be prompted for a password at login with **Local Authentication**.

**Default:** Disabled

| Use a Generic WebManager Login Screen | When set, and the user connects to the IOLAN using WebManager, the WebManager login screen that is displayed is generic — the Perle banner, IOLAN model name, and firmware version are not displayed to the user. |
| | **Default:** Disabled |
| Password Retry Limit | The number of attempts a user is allowed to enter a password for a serial port connection from the network, before the connection is terminated and the user has to attempt to login again. For users logging into the serial port, if this limit is exceeded, the serial port is disabled for 5 minutes. A user with Admin level rights can restart the serial port, bypassing the timeout, by issuing a kill on the disabled serial port. |
| | **Default:** 3 |

# Bootup Files

You must have a SFTP/TFTP server running on any host that you are downloading files from. When you specify the file path, the path must be relative to the default path set in your SFTP/TFTP server software.

## *Bootup File Parameters*

| Firmware Host | The host name or IP address of the server that contains the firmware file. If you use a host name, it must exist in the IOLAN's host table or be resolved by DNS. |
| | **Field Format:** Resolvable host name, IPv4 address, IPv6 address |
| Firmware File | The path and file name, relative to the default path of your TFTP server software, of the update software for the IOLAN that will be loaded when the IOLAN is rebooted. |
| Configuration Host | The host name or IP address of the server that contains the configuration file. If you use a host name, it must exist in the IOLAN's host table or be resolved by DNS. |
| | **Field Format:** Resolvable host name, IPv4 address, IPv6 address |
| Configuration File | The path and file name, relative to the default path of your TFTP server software, of the configuration file for the IOLAN that will be loaded when the IOLAN is rebooted. |

# Message of the Day (MOTD)

The message of the day is displayed when users log into the IOLAN through a telnet, or through WebManager.

There are two ways to retrieve the message of the day to be displayed to users when they log into the IOLAN:

- The message of the day file is retrieved from a SFTP/TFTP server every time a user logs into the IOLAN. You must have a SFTP/TFTP server running on any host that you are uploading or downloading files to/from when using SFTP/TFTP. When you specify the file path, the path must be relative to the default path set in your SFTP/TFTP server software.
- The message of the day file is downloaded to the IOLAN and retrieved locally every time a user logs into the IOLAN. You can download an MOTD file to the IOLAN in the DeviceManager by selecting **Tools**, **Advanced**, **Custom Files** and then selecting the **Download Other File** option and

browse to the MOTD file. In WebManager, select **Administration**, **Custom Files** and select the **Other File** option and browse to the MOTD file. After the MOTD is downloaded to the IOLAN, you must specify the MOTD file name in the **Filename** field to access it as the message of the day (no **SFTP/FTP Host** parameter is required when the file is internal).

## *MOTD Parameters*

**TFTP Host**
The host that the IOLAN will be getting the Message of the Day file from.
**Field Format:** Resolvable host name, IPv4 address, IPv6 address.

**Filename**
The path and file name, relative to the default path of your TFTP server software, of the file that contains a string that is displayed when a user connects to the IOLAN. The IOLAN will look for the file internally (it must already be downloaded), if only the file is specified (no TFPT host) or the file cannot be found on the specified TFPT host.

**Display MOTD in WebManager**
When enabled, displays the Message of the Day to users who are logging into WebManager
**Default:** Disabled

# TFTP

You must have a TFTP server running on any host that you are uploading or downloading files to/from.

> **Note:** TFTP file transfers send via UDP packets. When the packet delivery is interrupted for any reason and a timeout occurs, that packet is resent if the retry count allows it. Therefore, if a very large file is being transferred and is interrupted, the entire file is not resent, just the part of the file that was not received.

## *TFTP Parameters*

**Retry**
The number of times the IOLAN will retry to transmit a TPFT packet to/from a host when no response is received. A value of **0** (zero) means that the IOLAN will not attempt a retry should TFTP fail.
**Range:** 0-5
**Default:** 5

**Timeout**
The time, in seconds, that the IOLAN will wait for a successful transmit or receipt of TFTP packets before retrying a TFTP transfer.
**Range:** 3-10
**Default:** 3 seconds

**FTP Host**
Select the host entry from the IOLANs host table which corresponds to the FTP server.

# Administration

This chapter addresses the functions that the admin user or a user with Admin Level privileges might do. This chapter uses the DeviceManager as the configuration method described in most administrative functions. As a general rule, administrative functions are accessed from the menu bar in the DeviceManager and under the **Administration** option in the WebManager's navigation tree.

## *Saving Configuration Files*

When you connect to the IOLAN using either DeviceManager or WebManager, the IOLAN's active configuration file is loaded into the configurator. To save a backup of the configuration file locally, do the following:

In DeviceManager:

1. From the menu bar, select **File**, **Save As**.

2. In the Save As dialog box, specify a name and format for the file. Notice that you can save the file as either a `.dme` or a `.txt` file. Either file format can be imported into the DeviceManager and downloaded to the IOLAN in the future. The `.dme` is a binary file and the `.txt` file is a text file that can be viewed in any text editor.

3. Select **Save**.

4. In WebManager:

5. In the navigation tree, select the **Administration** option.

6. In the configuration area, select the **Backup/Restore** button.

7. Select the tab corresponding to the transfer method you wish to use. The options are;

   - Web - Uses HTTP to transfer the data
   - TFTP - Uses Trivial File Transfer Protocol to transfer the data

1. In the Backup group box, select the format (**Binary** or **Text**) in which you want to save the file. Either file format can be imported into the DeviceManager and downloaded to the IOLAN in the future.

2. Select the **Backup Configuration** button.

## *Downloading Configuration Files*

You can download a configuration file to the IOLAN by doing the following:

In DeviceManager:

1. Connect to the IOLAN to retrieve the current configuration file.

2. Open the configuration file you want to download to the IOLAN by selecting **File**, **Import Configuration from a File** and then browsing to the configuration file. This will replace the retrieved configuration file.

3. Select **Tools**, **Download Configuration to** IOLAN or select the **Download All Changes** button.

4. Reboot the IOLAN.

5. In WebManager:

6. In the navigation tree, select the **Administration** option.

7. In the configuration area, select the **Backup/Restore** button.

8. Select the tab corresponding to the transfer method you wish to use. The options are;

   - Web - Uses HTTP to transfer the data
   - TFTP - Uses Trivial File Transfer Protocol to transfer the data
   - SFTP - Uses Secure File Transfer Protocol to transfer the data.

9. In the Restore group box, browse to the configuration file that you want to download to the IOLAN.

10. Select the **Restore Configuration** button.

**11.** Reboot the IOLAN.

Note: For both TFTP or SFTP, you must have a host on your network which will act as the TFTP or SFTP Server. HTTP does not require any other host.

## Downloading Configuration Files to Multiple IOLANs

You can download a configuration file to multiple IOLANs at the same time by doing the following in DeviceManager. DeviceManager is the only configurator that does this function:

**1.** Select **Tools**, **Download Configuration to Multiple** IOLAN**s**.

**2.** Specify the IOLANs that you want to download the configuration to, then enter the following information for each IOLAN that you want to configure with the same configuration file.

| | |
|---|---|
| **IP Address** | Enter the IP address of the IOLAN that you want to download the configuration to.<br>**Field Format:** IPv4 or IPv6 address |
| **Server Name** | The name of the IOLAN. The IOLAN name that you put in this field is passed into the configuration before it is downloaded to the IOLAN and cannot be left blank. |
| **Password** | Enter the admin user password for the IOLAN. |
| **Reboot Server** | Determines whether or not the IOLAN is rebooted after it has received the new configuration. The new configuration definitions will not go into effect until the IOLAN is rebooted. |

**3.** Select **Add** to add the IOLAN to the download list. You can also select on the IOLAN entry and edit any information and then select **Update** to make the edits permanent.

**4.** Select the **Download>** button to start the download process. A status window will display with the configuration download status.

## Uploading Configuration Files

When you upload a configuration to the DeviceManager, you are uploading the IOLAN's working configuration file. In most other configurators (the exception being SNMP), you are always seeing the working configuration file.

In DeviceManager, select **Tools, Upload Configuration from** IOLAN. The working configuration file will automatically be loaded into the DeviceManager.

## Specifying a Custom Factory Default Configuration

When you receive the IOLAN, it comes with a factory default configuration that the IOLAN can be reset to at any time. Administrators might find it useful to customize the factory default configuration file, so that if the IOLAN gets reset to its factory defaults, it will be reset to defaults that the Administrator specified. There are two ways you can set the custom factory default configuration:

- **Download a file to the** IOLAN—You can download a custom factory default file to the IOLAN using any of the configuration methods. In DeviceManager, you must connect to the IOLAN and then select **Tools, Advanced, Custom Files, Custom Factory Default Configuration** and then specify the file. In WebManager, you must connect to the IOLAN and then select **Administration, Reset, Factory Defaults, Set Current Configuration as Factory Default**.
- **Download the current configuration to the** IOLAN—You can specify the configuration that you are working with/on as the custom factory default configuration using any of the configuration methods (you must be connected to the IOLAN). In DeviceManager, select **Tools**,

**Advanced**, **Set Factory Default to** IOLAN. In WebManager, select **Administration**, **Reset**, **Factory Defaults**, **Get and Set Factory Default Configuration File**.

## Using the IOLAN reset button (only applies to certain models)

This inset reset button allows you to reset the IOLAN, reset the IOLAN to its Perle or custom factory default configuration or reset the IOLAN to the Perle factory default settings. The Power/Ready LED color and the resetting of the IOLAN default configuration vary depending on how long you press and hold the RESET button, as shown in the table below.

| When you press and hold the RESET button for... | LED color | IOLAN System Status |
|---|---|---|
| Less than 3 seconds | Blinking amber | Reboots. All configuration and files will remain the same. |
| Between 3 and 10 seconds | Blinking amber, then turns solid amber when you release the RESET button | Reboots and resets the configuration to the factory default (either the Perle or custom default configuration). All configuration, user IDs, passwords and security certificates are deleted. |
| Over 10 seconds | Blinking amber, then turns solid amber when you release the RESET button | Reboots and resets the configuration to the Perle factory default configuration. All configuration, user IDs, passwords and security certificates are deleted, even if a custom default configuration has been defined. |

## Downloading IOLAN Firmware

To upgrade the IOLAN firmware (software):

- In DeviceManager, select **Tools**, **Advanced**, **Download Firmware to** IOLAN. You can browse to the firmware location. Once the firmware download is complete, you will be prompted to reboot the IOLAN. You can choose to reboot the IOLAN at another time by selecting **Tools**, **Reset**, **Reboot** IOLAN.
- In WebManager, under the **Administration** option, select **Update Firmware**. Either browse to the firmware file and then select the **Upload** button or configure the TFTP or SFTP server and select the **Upload** button. Note: If you use the TFTP or SFTP option, the specified TFTP or SFTP server must be on the same subnet as the IOLAN.

Upgrading the firmware does not affect the IOLAN's configuration file or downloaded custom files.

## Rebooting the IOLAN

When you download any file (configuration, keys, certificates, firmware, etc.) to the IOLAN, you must reboot the IOLAN for it to take effect by selecting **Tools**, **Reset**, **Reboot Server** in DeviceManager and **Administration, Reboot Unit** in WebManager.

## Resetting Serial Port Statistics

You can reset the IOLAN's serial port/s statistics back to zero.

## Resetting the IOLAN to Factory Defaults using the WebManager

You can reset the IOLAN to its factory default configuration by selecting **Administration**, **Reset**, **Factory Defaults** in WebManager. The IOLAN will automatically reboot itself with the Perle factory default or custom factory default configuration.

## Language Support

Two language files, in addition to English, are supplied on the Perle website, French and German. You can use any of these language files to create a translation into a language of your choice. You can download the language file (whether the language is supplied or translated) into the IOLAN and select the **Language** option of **Custom Language** or **Customlang** (custom language), making the CLI field labels display in the desired language.

You can view the CLI in one other language only (as well as English). If you download another language file, this new language will replace the first language you downloaded.

You can revert to English at any time; the English language is stored permanently in the IOLAN and is not overwritten by your new language. Each user logged into the IOLAN can operate in either English or the downloaded language.

## Loading a Supplied Language

This section describes how to download a language file using the CLI, since it is the least intuitive method. French and German language files can be downloaded from the Perle website.

To load one of the supplied languages into the IOLAN, so the CLI fields appear in another language, do the following:

1. Copy the language file to a host machine on the network; place it in the main file system or on the main hard drive.

2. Either use the TFTP/SFTP defaults in the IOLAN or, configure as necessary, TFTP/SFTP in the IOLAN.

3. In the CLI of the IOLAN, enter the host IP address and file name; for example,

4. Netload customlang 172.16.4.1 /temp/Iolan_ds_French.txt

5. Snetload customlang 172.16.4.1 /temp/Iolan_ds_French.txt

6. The IOLAN will download the language file via TFTP or SFTP.

7. In DeviceManager select **Tools**, **Advanced**, **Custom Files** and then select **Download Custom Language File** and browse to the language file. In WebManager select **Administration**, **Custom Files** and then specify the **Custom Language File** option and browse to the language file.

8. To set an individual user to the new language, go to the **Users** menu and, in the **Language** field select **Customlang**. In the CLI (only) you can set individual users or all users to the new language; see the `set user *` command.

9. The user will see the change of language when he/she logs out (**Main Menu**, **Sessions Menu**, **Logout**) and logs back into the IOLAN. If, as Admin user, you change your language setting to **Customlang**, you will see the text menus display in the new language when you save and exit the **Change User** form. Users with **Level Normal** can also change their display language.

> **Note:** If you download a new software version, you can continue to use your language unchanged; however, we recommend translating the new strings, which will be added to the end of the language file. A **Reset to Factory Defaults** will reload the **Customlang** as English.
>
> On successful download, the **Customlang** in the IOLAN will be overwritten by the new language.

## Translation Guidance

To help you with your translation, of supplied ASCII text language files we offer the following guidance:

- The IOLAN will support languages other than English (and the supplied German and French languages). The English language file, `english.txt`, displays the character length of each line at the beginning of the line. If a translated line goes over that character length, it will be displayed truncated in the CLI.

- Translate line for line, do not omit lines if you do not know the translation; leave the original untranslated text in place. Also, you must maintain the same sequential order of lines. It is a good practice to translate the file using a text editor that displays line numbers, so you can periodically verify that the line sequence has not changed from the original file (by comparing it to the original file).
- Keep all translations in quotes, otherwise the line will not display properly.
- Each line must end with a carriage return.
- If a line contains only numbers, for example 38400, leave that line in place, unchanged (unless you are using a different alphabet).

## Updating Language Files

Updated language files can be found on the Perle website at www.perle.com.

**Note:**    The upgrade of your software (firmware) will not change the display of the language in the CLI.

If you are already using one of the supplied languages, French or German, you probably want to update the language file in the IOLAN. Until you update the IOLAN with the new language file, new text strings will appear in English.

If you are already using a language translated from an earlier version, you probably want to amend your translation. When a language file is updated, we will try to maintain the following convention:

- New text strings will be added to the bottom of the file (not inserted into the body of the existing file).
- Existing text strings, if altered, will be altered in sequence; that is, in their current position in the file.
- The existing sequence of lines will be unchanged.
- Until you have the changes translated, new text strings will appear in the CLI in English.

## Downloading Terminal Definitions

All terminal types can be used on the IOLAN. Some terminal types which are not already defined in the IOLAN, however, are unable to use Full Screen mode (menus) and may not be able to page through sessions properly. When installed, the IOLAN has several defined terminal types—Dumb, WYSE60, VT100, ANSI, TVI925, IBM3151, VT320-7, and HP700/44.

If you are not using, or cannot emulate, any of these terminal types, you can add up to three additional terminal definitions to the IOLAN. The terminal definitions can be downloaded from a TCP/IP host.

To download terminal definitions, follow these steps:

1. Decide which TCP/IP host you are going to use. It must be a machine with enabled.

2. Configure SFTP/TFTP in the IOLAN as necessary.

3. Select **Tools**, **Advanced**, **Custom Files** from the menu bar in DeviceManager and **Administration**, **Custom Files** in WebManager.

4. From the **File Type** drop-down, select **Download Terminal Definition**. Select the terminal definition option **1**, **2**, or **3** and then browse to the terminal definition file that is being downloaded to the IOLAN.

5. In the **Terminal** profile, select the **Terminal Type Term*x*** that you custom defined.

## Creating Terminal Definition Files

To create new terminal definition files, you need to copy and edit the information from the terminfo database.

1. On a UNIX host, change directory to **/usr/lib/terminfo/***x* (where **x** is the first letter of the required terminal type). For a Wyse60, for example, you would enter the command **cd /usr/lib/terminfo/w**.

2. The termcap files are compiled, so use the command **infocmp** *termfile* to read the required file (for example: **infocmp wy60**).

3. Check the file for the attribute **xmc#***n* (where *n* is greater than or equal to 1). This attribute will corrupt menu and form displays making the terminal type unsuitable for using Menu mode.

4. If the terminal definition is suitable, change to a directory of your choice.

5. Rename and copy the file to the directory specified at step 4. using the command **infocmp termfile > term***n* where *n* is greater than or equal to 1; (for example, **infocmp wy50 > term1**). Make sure the file has global read and execute permission for its entire path.

6. Edit the file to include the following capabilities in this format:

```
term=
acsc=
bold=
civis=
clear=
cnorm=
cup=
rev=
rmacs=
rmso=
smacs=
smso=
page=
circ=
```

For example:

```
term=AT386 | at386| 386AT |386at |at/386 console
acsc=jYk?lZm@qDtCu4x3
bold=\E[1m
civis=
clear=\E[2J\E[H
cnorm=
cup=\E[%i%p1%02d;%p2%02dH
rev=\E4A
rmacs=\E[10m
rmso=\E[m
smacs=\E[12m
smso=\E[7m
page=
circ=n
```

## *Resetting Configuration Parameters*

You can reset the IOLAN to its factory default settings (this will reset it to the Perle factory default or custom factory default settings, depending on what has been configured) through any of the following methods:

You can push in the reset button on the IOLAN hardware for three to ten seconds (pushing it in and then quickly releasing will just reboot the IOLAN). See the IOLAN Hardware Installation Guide to determine the location of the reset button.

- DeviceManager, select **Tools**, **Reset**, **Reset to Factory Defaults**
- CLI, at the command line type, `reset factory`
- WebManager, select **Administration**, **Reset**, **Factory Default**, and then select the **Reset to Factory Defaults** button
- Menu, select **Network Configuration**, **Reset to Factory Defaults**
- SNMP, in the **adminInfo** folder, `set` the **adminFunction** variable to **2**

## *Lost admin Password*

If the admin user password is lost, there are only two possible ways to recover it:

- reset the IOLAN to the factory defaults
- have another user that has **Admin** level rights, if one is already configured, reset the admin password.

- ### *SD Flash* *(applies to some models)*
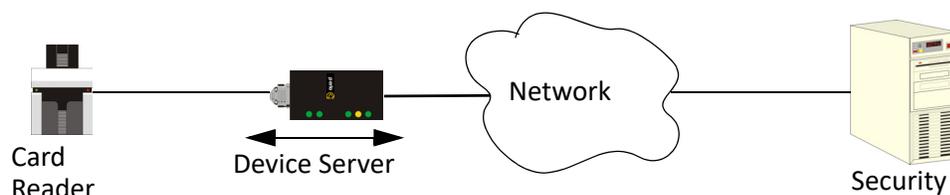
# Applications

This chapter provides examples of how to integrate the IOLAN within different network environments or applications. Each scenario provides an example of a typical setup and describes the configuration steps to achieve the IOLAN functionality feature.

## *Machine To Machine Connections*

If you are using the IOLAN to connect two hosts, allowing data to flow freely between them, you just need to configure the **Server** and the **Line** (no **User** required). In the following example, the serial device is a security Card Reader that needs to transmit and receive information to/from a host on the network that maintains the Card Reader's application every time an employee uses an access card to attempt to gain entry to the company.



After configuring the **Server** parameters (**Server Name**, **IP Address**, **Ethernet** and **Serial** interfaces, etc.), the **Line Service** is set to **Sil Raw**, which creates an automatic, continuous connection between the Card Reader and its associated application on the Security host (though the IOLAN), by specifying the Security host name (which must already be configured in the IOLAN's Host Table) and TCP/IP port number. Therefore, the Card Reader can make a request to the Security host card reader application for employee verification, also logging access time, employee name, etc., and the Security host application can send back a code that does or does not unlock the door.

## *Creating User Sessions*

Sessions are defined for users who are coming in through a serial device and are connecting to a host on the LAN.

Users who have successfully logged into the IOLAN (**User Service** set to **DSprompt**) can start up to four login sessions on LAN hosts. These users start sessions through the Menu option **Sessions**.

Multiple sessions can be run simultaneously on the same host or on different hosts. Users can switch between different sessions and also between sessions and the IOLAN using hotkey commands.

Users with **Admin** or **Normal** privileges can define new sessions and connect through them, even configure them to start automatically on login to the IOLAN. **Restricted** and **Menu** users can only start sessions predefined for them by the Admin user.

Users can be configured to have access to a specific port and access modes for this port, such as **Read/Write** (RW), **Read Input** (RI), **Read Output** and **Read Both** (RI & RO).

## *Configuring Modbus*

This sections provides a brief overview of the steps required to configure the IOLAN for your Modbus environment.

### Configuring a Master Gateway

To configure a Master Gateway (Modbus Master connected to the serial side of the IOLAN), do the following:

1. Set the serial port that is connected to the serial Modbus Master to the **Modbus Gateway** profile.

2. In the **Modbus Gateway** profile on the **General** tab, set the **Mode** to **Modbus Master**.

3. Still on the **General** tab, select the **Destination Slave IP Mappings** button to map the Modbus Slave's IP addresses and their UIDs that the serial Modbus Master will attempt to communicate with.

4. For specialized configuration options, select the **Advanced** tab and configure as required.

### Configuring a Slave Gateway
To configure a Slave Gateway (Modbus Master resides on the TCP/Ethernet network), do the following:
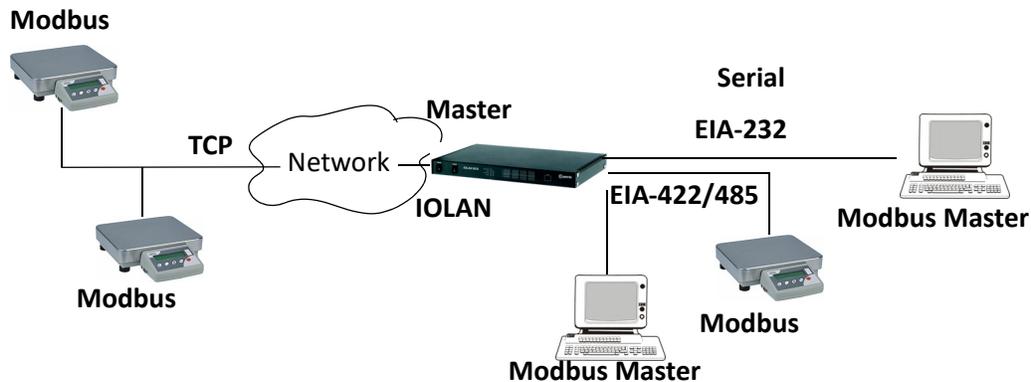
1. Set the serial port that is connected to the serial Modbus Slave(s) to the **Modbus Gateway** profile.

2. In the **Modbus Gateway** profile on the **General** tab, set the **Mode** to **Modbus Slave**.

3. Still on the **General** tab, specify the Modbus Slave UIDs that the TCP Modbus Master will attempt to communicate with.

4. Still on the **General** tab, select the **Advanced Slave Settings** button to configure global Slave Gateway settings.

5. For specialized configuration options, select the **Advanced** tab and configure as required.

### Modbus Gateway Settings
The scenarios in this section are used to illustrate how the IOLAN's Modbus Gateway settings are incorporated into a Modbus device environment. Depending on how your Modbus Master or Slave devices are distributed, the IOLAN can act as both a Slave and Master Gateway(s) on a multiport IOLAN or as either a Slave or Master Gateway on a single port IOLAN.
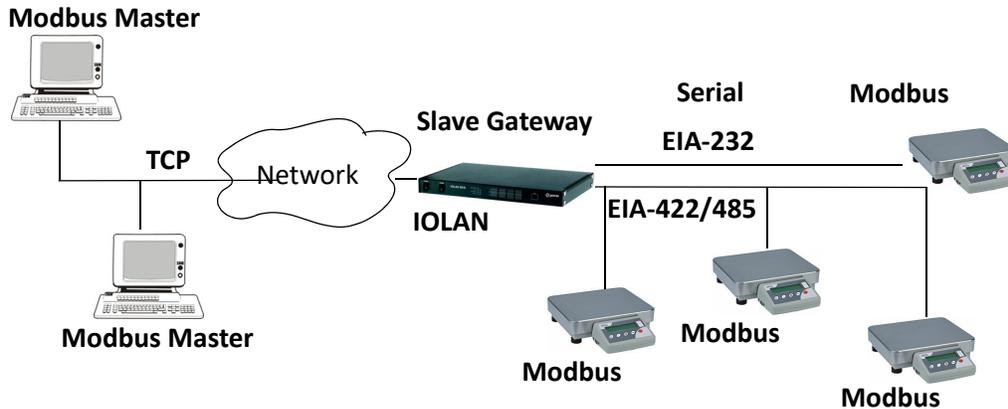
### Modbus Master Gateway
The IOLAN acts as a Master Gateway when the Modbus Master is connected to a serial port on the IOLAN. Each Modbus Master can communicate to UIDs 1-247.



### Modbus Slave Gateway
The IOLAN acts as a Slave Gateway when the Modbus Master resides on the TCP/Ethernet network and the Modbus Slaves are connected to the serial ports on the IOLAN. Note: The IOLAN provides a single gateway to the network-attached Modbus Masters. This means that all Modbus Slaves attached to the IOLAN's serial ports must have a unique UID. Multiple Masters on the network can communicate with these Modbus Slaves. Note: If a transaction is in progress to a Modbus Slave, other requests to that same device will be queued until that transaction is complete.

## Modbus Serial Port Settings
Modbus Master Settings
When the Modbus Masters is attached to the IOLAN's serial port, configure that serial port to the **Modbus Gateway** profile acting as a Modbus Master. You must configure the Modbus TCP Slaves on the TCP/Ethernet side so the IOLAN can properly route messages, using the Modbus Slave's UIDs, to the appropriate TCP-attached devices.
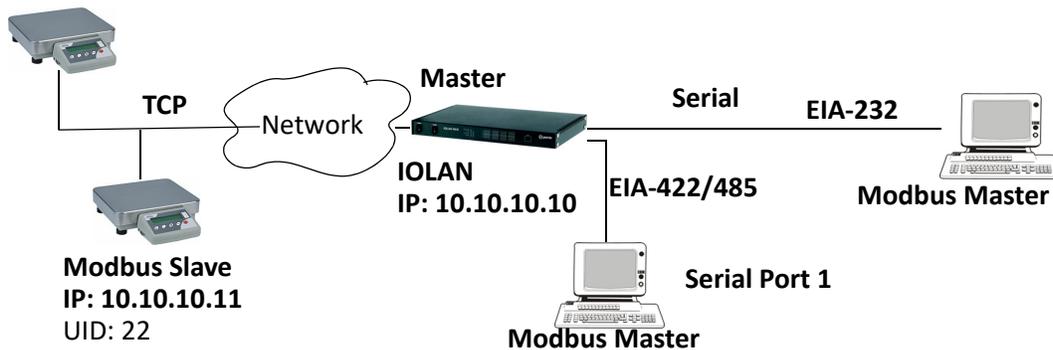


To configure the Modbus Master on serial port 1, do the following:
   1. Select the **Modbus Gateway** profile for serial port 1.
   2. On the **General** tab, enable the **Modbus Master** parameter.
   3. Select the **Destination Slave IP Mappings** button and select the **Add** button in the **Destination Slave IP Mappings** window.
   4. Configure the **Destination Slave IP Mappings** window as follows
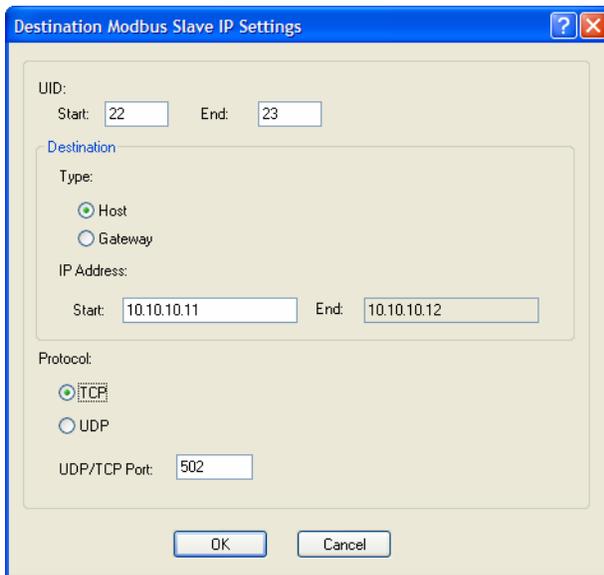
The IOLAN will send a request and expect a response from the Modbus Slave with an IP Address of 10.10.10.11 on Port 502 with UID 22 and from the Modbus Slave with and IP Address of 10.10.10.12 on Port 502 with UID 23 (remember when **Type** is set to **Host**, the IOLAN increments the last octet of the IP address for each UID specified in the range).

### Modbus Slave Settings

When you have Modbus Slaves on the serial side of the IOLAN, configure the serial port to the **Modbus Gateway** profile acting as a Modbus Slave. There is only one Slave Gateway in the IOLAN, so all Modbus serial Slaves must be configured uniquely for that one Slave Gateway; all serial Modbus Slaves must have unique UIDs, even if they reside on different serial ports, because they all must be configured to communicate through the one Slave Gateway.
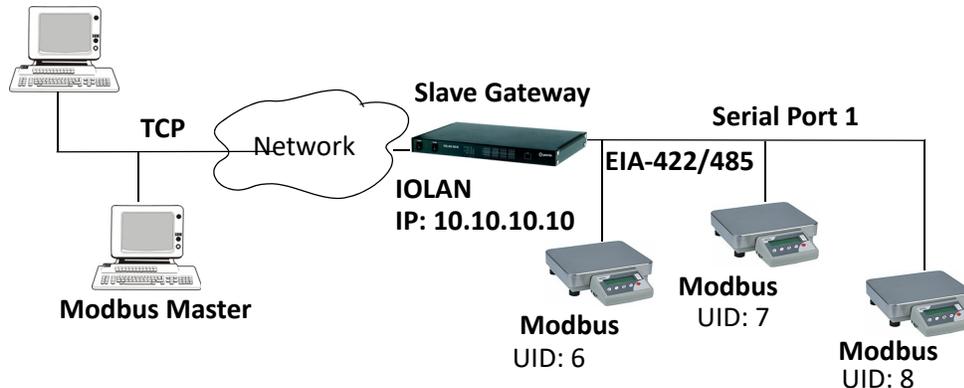


To configure the Modbus Gateway on serial port 1, do the following:

1. Select the **Modbus Gateway** profile for serial port 1.

2. On the **General** tab, enable the **Modbus Slave** parameter.

3. On the **General** tab, specify the **UID Range** as `6-8` as shown below:

Select the **Advanced Slave Settings** button to verify that the default settings are acceptable.

# Virtual Modem Initialization Commands

You can initialize the modem connection using any of the following commands:

| Command | Description | Options |
|---------|-------------|---------|
| **ATQn** | Quiet mode. Determines if result codes will be sent to the connected terminal. Basic results codes are OK, CONNECT, RING, NO CARRIER, and ERROR.<br><br>Setting quiet mode also suppresses the "RING" message for incoming calls. | n=0, result codes will be sent. (default)<br>n=1, no result codes will be sent. |
| **ATVn** | Verbose mode. Determines if result codes are displayed as text or numeric values. | n=0, display as numeric values.<br>n=1, display as text. (default) |
| **ATEn** | Echo mode. Determines whether characters sent from the serial device will be echoed back by the IOLAN when VModem is in "command" mode. Any AT commands not supported will return an "ok" if n=1. | n=0, disable echo.<br>n=1, enable echo. (default) |
| **+++ATH** | Hang up. This command instructs the IOLAN to terminate the current session and go into "command" mode. | |
| **ATA** | Answer call. Instructs the VModem to accept connection requests. VModem will give the terminal up to 3 minutes to answer the call. If the ATA is not received within 3 minutes, all pending sync messages will be discarded. | |
| **ATI0** | Return the modem manufacturer name. | |
| **ATI3** | Return the modem model name. | |
| **ATS0** | Sets the value of the S0 register. The S0 register controls the "auto answer" behavior.<br><br>In "manual" mode, the IOLAN will not accept incoming sessions until an ATA is issued by the serial device. In "auto answer" mode, the IOLAN will automatically accept an incoming connection request. | Register=0, sets "manual answer" mode<br>Register=1-255, "auto answer" mode (default) |
| **AT&Z1** | Set command allows the user to store an IP address and port number or phone number to use when making a connection. The user will issue an ATDS1 to cause the IOLAN to initiate the connection. | |

| Command | Description | Options |
|---------|-------------|---------|
| AT&Sn | Sets the behavior of IOLAN's DTR signal. (DSR from a DCE perspective) | n=0, DTR signal always high. (default)<br>n=2, DTR signal acts as DCD.<br>n=3, DTR signal acts as RI. |
| AT&Rn | Sets the behavior of IOLAN's RTS signal. (CTS from a DCE perspective)<br>If line is configured for hardware flow control, the RTS is used for this purpose and the setting of this command is ignored. | n=0, RTS always high. (default).<br>n=3, RTS signal acts as DCD.<br>n=4, RTS signal acts as RI. |
| AT&Cn | Sets the behaviour of the DCD signal. | n=0, DCD always on.<br>n=1, DCD follows state of connection (off when no connection, on when TCP connection exists). (default) |
| AT&F | Sets the modem back to the factory defaults. This is a hard-coded default configuration which does not look at any user configuration. | |
| ATS2 | Sets the value of the S2 register. The S2 register controls which character is used to enter "command" mode. (this is the potential replacement for the +++ (default) in front of the ATH command).<br>This register will hold the hexadecimal value of the "escape" character. Any value > 27 will disable the ability to escape into "command" mode. | |
| ATS12 | Sets the value of the S12 register. The S12 register controls the minimum length of idle time which must elapse between the receipt of the escape character and the A (first character of the ATH sequence). Units are 1/50th of a second. The default is 50 = 1 second. | |
| ATO | (ATD with no phone number) Establishes a connection using the IP and port specified in the telephone number field. | |
| ATDS1 | Establishes a connection using the IP and port (or phone number) specified in the **Phone Number** field (stored by the AT&Z1 command). | |

# TruePort

This chapter provides information on TruePort and the Decoder utilities.

Trueport is a com port redirector utility for the IOLAN. It can be run in two modes:

- **TruePort Full mode**—This mode allows complete device control and operates exactly like a directly connected serial port. It provides a complete COM port interface between the attached serial device and the network.
- **TruePort Lite mode**—This mode provides a simple raw data interface between the device and the network. Although the port will still operate as a COM port, control signals are ignored. In this mode, the serial communications parameters must be configured on the IOLAN.

You use TruePort when you want to connect extra terminals to a server using the IOLAN rather than a multi-port serial card. When run on UNIX, TruePort allows you to print directly from a terminal to an attached printer (transparent printing). You can also remap the slow baud rate of your UNIX server to a faster baud rate, as shown below.
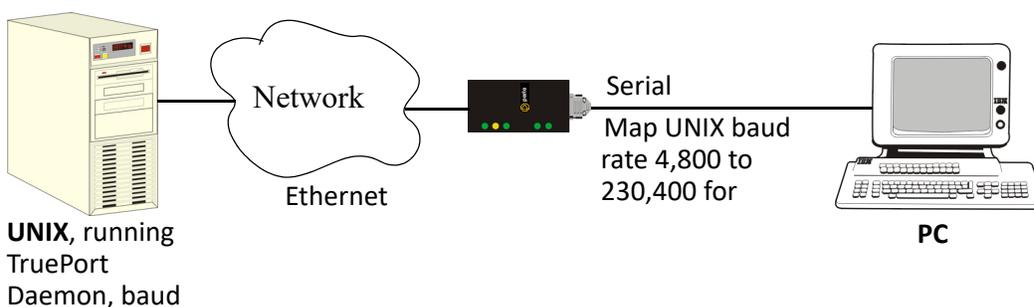


Currently, TruePort is supported on Linux, Windows®, SCO®, Solaris®, and others. For a complete list of the supported operating systems, see the Perle website.

## *Decoder*

If you are using **Port Buffering NFS Encryption**, you need to run the Decoder utility to view the port buffering logs. See the Readme file to install the Decoder utility on any of the following 32-bit platforms.

- Windows® 2000 and greater platform

**Note:** The Windows/DOS platform restricts the converted readable file to an 8.3 filename limitation.

- DOS
- Solaris x86
- Solaris Sparc 32-bit/64-bit
- Linux x86 v2.4.x

# Modbus Remapping Feature

This appendix provides additional information about the Modbus Remapping feature.

## Modbus Remapping Feature

The Modbus remapping feature allows a TCP Modbus Master to poll a Modbus slave device and have the IOLAN translate the UID to a different UID for the slave device. The Master UID has to be unique on the IOLAN. The Slave UID must be unique on each serial port. The translate rules are controlled by a file downloaded to the IOLAN.

The following procedure will allow you to use the Modbus remapping feature:
Create a configuration file
- The file must be called "modbus. remap"
- One translate rule per line
- The fields on a line are separated by a comma

Line format for one UID is:
- port,master_uid,slave_uid
- port: is the IOLAN port number that the slave is connected to
- master_uid: is the UID that the TCP Modbus Master uses
- slave_uid: is the UID that the Modbus slave uses

Line format for UID ranges is:
- port,master_start-master_end,slave_start-slave_end
- port: is the IOLAN port number that the slave is connected to
- master_start: is the first master UID in the range
- master_end: is the last master UID in the range
- slave_start: is the first slave UID in the range
- slave_end: is the last slave UID in the range

## Configuring the Modbus UID Remapping Feature

1. On the serial port Modbus Gateway, configure Modbus slave. Configuration parameters such as "UID range" and UID Address Mode will be ignored in this mode of operation
2. Download the "modbus_remap" file that you created to the IOLAN using:
3. Device Manager: use "tools-advanced-custom files" dialog "download other file"
4. Web Manager: use "administration-custom files" page "other file"
- CLI: use the command "netload customapp-file" command
- See all network problems at a glance and take appropriate action

# Data Logging Feature

This appendix provides additional information about the Data Logging Feature

## *Trueport Profile*

The following features are not compatible when using the Data Logging feature.

- Allow Multiple Hosts to connect
- Connect to Multiple Hosts
- Monitor DSR or DCD
- Signals high when not under Trueport client control
- Message of the day
- Session timeout

## *TCP Socket Profile*

The following features are not compatible when using the Data Logging feature.

- Allow Multiple Hosts to connect
- Connect to Multiple Hosts
- Monitor DSR or DCD
- Permit connections in both directions
- Authenticate user
- Message of the day
- Session timeout