# IOLAN SDST Extended Temperature Device Servers

- 1, 2 or 4 software selectable RS232/422/485 serial port interfaces
- -40F to +165F (-40C to +74C) extended temperature support
- 10/100 or 10/100/1000 Ethernet
- Advanced security features for data encryption, user authentication and event management

The **IOLAN SDST Device Servers** address the need for connecting remote serial devices that operate in extreme temperatures to an enterprise IP network. The IOLAN SDST will operate in industrial grade temperatures the parameters of which are **-40F to +165F (-40C to +74C)**. Serial based equipment found with **traffic management, oil and gas pipelines, weather tracking and other remote applications** must function in temperatures that cannot be supported by commercial based serial device servers. Boasting this extended temperature feature along with a rugged steel casing, the IOLAN SDST enables administrators to securely access remote serial console ports on equipment subjected to harsh environments and severe temperatures such as security cameras, alarms, traffic controllers, sensors and tracking devices through an IP network.

## Why IOLAN SDST Device Servers are the preferred choice:

- Powerful processors for the best throughput and performance on the market
- Operation in environments requiring extended ambient operating temperatures on -40C to +74C (-40F to +165F).
- TrueSerial® packet technology delivers the most authentic serial connections across Ethernet for serial protocol integrity
- Indicators for network and serial interfaces for easy troubleshooting
- Plug & Play installation utility eliminates configuration hassles for all IOLAN's on your IP network
- TruePort – Perle's com/tty redirector for serial based applications operates on Windows, Vista, Linux, Solaris, SCO and Unix
- FIPS 140-2 – Cryptographic modules meet US Government NIST compliancy
- Power over serial cable eliminates costs of a separate power installation
- Next Generation IP support ( IPv6 ) for investment protection and network compatibility
- Compact and protective solid steel enclosure for tabletop, wall mount or DIN rail mounting
- Java-free browser access to remote serial console ports via Telnet and SSH
- Ping watchdog probes enable customers to power cycle equipment with attached Perle RPS power switches in the event of an unresponsive networking gear

## Secure Serial to Ethernet Connectivity

The **IOLAN SDST Device Server** enables administrators to securely access remote serial console ports on equipment such as PBX, servers, routers, network storage equipment and security appliances through an IP

network. Sensitive data is protected through standard encryption tools such as Secure Shell (SSH) and Secure Sockets Layer (SSL). Access by authorized users is assured via authentication schemes such as RADIUS, TACACS+, LDAP, Kerberos, NIS and RSA Security's SecurID tokens.

By using encryption technologies, an IOLAN can protect sensitive and confidential data from a serial device before being sent across a corporate Intranet or public Internet. For compatibility with peer encryption devices, all of the major encryption ciphers such as AES, 3DES, RC4, RC2 and CAST128 are fully supported.

Recognized as the most secure method for communicating to remote private networks over the Internet, the IPSec standard provides robust authentication and encryption of IP packets at the network layer of the OSI model. As a standard it is ideal for multi-vendor interoperation within a network providing flexibility and the ability to match the right solution for a particular application.

## IOLAN Plug-ins

By choosig a Perle IOLAN Device Server you can rest assured that virtually any device with a serial COM port will operate in conjunction with your desired application exactly as it did when you had it directly connected. In the unlikely event that the Perle IOLAN Device Server does not enable this out of the box, *Perle will make it work*.

**Perle IOLAN Device Servers** utilize customer installable "Device Plug-ins" to successfully network devices where other solutions have failed. Request a free engineering consultation now.

## Advanced IP Technology

With support for Next Generation IP (IPv6) the **IOLAN Serial to Ethernet Device Server** range provides organizations with investment protection to meet this rapidly growing standard.

Demand for IPv6, which is compatible with IPv4 addressing schemes, is driven by the need for more IP address. With the implementation and rollout of advanced cellular networks, a robust method is needed to handle the huge influx of new IP addressable devices on the Internet. In fact, the US Department of Defense has mandated that all equipment purchased be IPv6 compatible. In addition, all major Operating Systems such as Windows, Linux, Unix and Solaris, as well as routers, have built-in support for IPv6.

It is therefore important for end users and integrators to select networking equipment that incorporates the IPv6 standard. The IOLAN line with support for IPv6 already built in, is the best choice in serial to Ethernet technology.

## Flexible and Reliable Serial to Ethernet Connections

An **IOLAN SDST Device Server** is ideal for connecting serial based COM port, UDP or TCP socket based applications to remote devices. Perle's TruePort re-director provides fixed TTY or COM ports to serial based applications enabling communication with remote devices connected to Perle IOLAN's either in encrypted or clear text modes. You can also tunnel serial data between devices across an IP network.

Perle's Device Management software provides better centralized control of multiple units resulting in maximum uptime for your remote equipment.

All IOLAN SDST models have added protection against electrostatic discharges and power surges with robust 15Kv ESD protection circuitry enabling organizations to utilize this solution in the field with confidence.

## Lifetime Warranty

All **Perle IOLAN SDST Serial to Ethernet Device Servers** are backed by the best service and support in the industry including Perle's unique lifetime warranty. Since 1976 Perle has been providing its customers with networking products that have the highest levels of performance, flexibility and quality.

### Serial Port Access

Connect directly using Telnet / SSH by port and IP address

Connect with EasyPort menu by Telnet / SSH

Use an internet browser to access with HTTP or secure HTTPS via EasyPort Web menu

Java-free browser access to remote serial console ports via Telnet and SSH

Ports can be assigned a specific IP address ( aliasing )

Multisession capability enables multiple users to access ports simultaneously *

Multihost access enables multiple hosts/servers to share serial ports

### Accessibility

In-band ( Ethernet ) and out-of-band ( dial-up modem ) support

Dynamic DNS enables users to find a console server from anywhere on the Internet

Domain name control through DHCP option 81

IPV6 and IPV4 addressing support

### Availability

Primary/Backup host functionality enables automatic connections to alternate host(s)

### Security

SSH v1 and v2

SSL V3.0/TLS V1.0, SSL V2.0

SSL Server and SSL client mode capability

SSL Peer authentication

IPSec VPN : NAT Traversal, ESP authentication protocol

Encryption: AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFOUR(RC4), ARCTWO(RC2)

Hashing Algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, and MD5-96

Key exchange: RSA, EDH-RSA, EDH-DSS, ADH

X.509 Certificate verification: RSA, DSA

Certificate authority (CA) list

Local database

RADIUS Authentication, Authorization and Accounting

TACACS+ Authentication, Authorization and Accounting

LDAP, NIS, Kerberos Authentication

RSA SecureID-agent or via RADIUS Authentication

SNMP v3 Authentication and Encryption support

IP Address filtering

Disable unused daemons

Active Directory via LDAP

## Terminal Server

Telnet

SSH v1 and v2

Rlogin

Auto session login

LPD, RCP printer

MOTD - Message of the day

## Serial machine to Ethernet

Tunnel raw serial data across Ethernet - clear or encrypted

Raw serial data over TCP/IP

Raw serial data over UDP

Serial data control of packetized data

Share serial ports with multiple hosts/servers

Virtual modem simulates a modem connection - assign IP address by AT phone number

Virtual modem data can be sent over the Ethernet link with or without SSL encryption

TruePort com/tty redirector for serial based applications on Windows, Linux, Solaris, SCO, HP UX, NCR UNIX and AIX. For a complete list of all the latest drivers click here

TrueSerial packet technology provides the most authentic serial connections across Ethernet ensuring serial protocol integrity

RFC 2217 standard for transport of serial data and RS232 control signals

Customizable or fixed serial baud rates

Plug-ins allow customer or Perle provided plug-ins for special applications

Software Development Kit ( SDK ) available

Serial encapsulation of industrial protocols such as ModBus, DNP3 and IEC-870-5-101

ModBus TCP gateway enables serial Modbus ASCII/RTU device connection to ModBus TCP

Data logging will store serial data received when no active TCP session and forward to network peer once session re-established - 32K bytes circular per port

## Console Management

Sun / Oracle Solaris Break Safe

Local port buffer viewing - 256K bytes per port

External port buffering via NFS, encrypted NFS and Syslog

Event notification

Manage AC power of external equipment using Perle RPS power management products

Clustering - central console server enables access ports across multiple console servers

Windows Server 2003/2008 EMS - SAC support GUI access to text-based Special Administrative Console

Ping watchdog probes enable customers to power cycle equipment with attached Perle RPS power switches in the event of an unresponsive networking gear

## Remote Access

| Dial, direct serial | PPP, PAP/CHAP, SLIP |
| --- | --- |
| | HTTP tunneling enables firewall-safe access to remote serial devices across the internet |
| Automatic DNS Update | Utilize DHCP Opt 81 to set IOLAN domain name for easy name management and with Dynamic DNS support , users on the Internet can access the device server by name without |

having to know its IP address. See Automatic DNS update support for details

| IPSEC VPN client/servers | Microsoft L2TP/IPSEC VPN client ( native to Windows XP) |
| --- | --- |
| | Microsoft IPSEC VPN Client ( native to Windows Vista ) |
| | Cisco routers with IPSEC VPN feature set |
| | Perle IOLAN SDS/STS and SCS models |

## OA&M ( Operations, Administration and Management )

SNMP V3 - read and write, Perle MIB

Syslog

Perle Device Manager - Windows based utility for large scale deployments

Configurable default configuration

Installation Wizard

Set a Personalized Factory Default for your IOLANs

## Protocols

IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, IPSec/IPv4, IPSec/IPv6, L2TP/IPSec, CIDR, RIPV2/MD5, ARP, RARP, UDP, UDP Multicast, ICMP, BOOTP, DHCP, TFTP, SFTP, SNTP, Telnet, raw, reverse Telnet, LPD, RCP, DNS, Dynamic DNS, WINS, HTTP, HTTPS, SMTP, SNMPV3, PPP, PAP/CHAP, SLIP, CSLIP, RFC2217, MSCHAP

\* Available on 2 and 4 port models

### Hardware Specifications - IOLAN SDST - 1, 2 and 4 port Extended Temperature Device Servers

| | IOLAN SDS1 T | IOLAN SDS2 T | IOLAN SDS4 T | IOLAN SDS1T G | IOLAN SDS2T G | IOLAN SDS4T G |
| --- | --- | --- | --- | --- | --- | --- |
| Processor | MPC852T, 66 Mhz, 87 MIPS | | | 600 MHz ARM processor | | |
| **Memory** | | | | | | |
| RAM MB | 32 | | | 512 | | |
| Flash MB | 8 | | | 4000 | | |
| **Interface Ports** | | | | | | |
| Number of Serial Ports | 1 | 2 | 4 | 1 | 2 | 4 |

| | | | | |
|---|---|---|---|---|
| Serial Port Interface | Software selectable EIA232/422/485 on DB9M | Software selectable EIA-232/422/485 on RJ45 | Software selectable EIA232/422/485 on DB9M | Software selectable EIA-232/422/485 on RJ45 |
| Sun / Solaris | Sun / Oracle 'Solaris' Safe - no "break signal" sent during power cycle causing costly server re-boots or downtime | | | |
| Serial Port Speeds | 50bps to 230Kbps with customizable baud rate support | | 300bps to 230Kbps with customizable baud rate support | |
| Data Bits | 5,6,7,8, 9-bit protocol support | | | |
| Parity | Odd, Even, Mark, Space, None | | | |
| Flow Control | Hardware, Software, Both, None | | | |
| Serial Port Protection | 15Kv Electrostatic Discharge Protection ( ESD ) | | | |
| Local Console Port | RS232 on Serial Port | | | |
| Network | 10-base T / 100-base TX Ethernet RJ45 | | Autosensing 1000-base-T / 100-base TX / 10-base T Auto-MDIX | |
| | Software selectable Ethernet speed 10/100 Auto | | Software selectable Ethernet speed 10/100/1000 Auto | |
| | Software selectable Half/Full/Auto duplex | | | |
| Ethernet Isolation | 1.5Kv Magnetic Isolation | | | |
| **Power** | | | | |
| Power Supply Options | Supplied with Barrell Connector 610mm (24 in) | | | |
| | Power via External power 9-30v DC, 4.8 Watts uses standard 5.5mm x 9.5mm x 2.1mm barrel socket, Power IN over serial cable | | | |
| Nominal Input Voltage | 12v DC / 24v DC | | | |
| Input Voltage Range | 9-30v DC | | | |

| Power IOLAN over serial | 9-30v DC | | | | | |
|---|---|---|---|---|---|---|
| Power External Device via Serial Port | +5v DC regulated, 1W max | | | | | |
| Typical Power Consumption '@ 12v DC ( Watts ) | 1.7 | 2.1 | 2.4 | 1.9 | 2 | 2 |
| | Does not include power for devices connected to serial port | | | | | |

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**Indicators**

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| LEDs | Power/Ready |
|---|---|
| | Network Link |
| | Network Link activity |
| | Serial: Transmit and Receive data per port |

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**Environmental Specifications**

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| Heat Output ( BTU/HR ) | 5.8 | 7.2 | 8.2 | 6.8 | 8.9 | 16.38 |
|---|---|---|---|---|---|---|
| MTBF ( Hours ) | 555,099 | 347,364 | 118,466 | 303,984 | 268,101 | 168,394 |
| | Calculation model based on MIL-HDBK-217-FN2 @ 30 °C | | | | | |
| Operating Temperature | -40C to 74C, -40F to 165F | | | | | |
| Storage Temperature | -40C to 85C, -40F to 185F | | | | | |
| Humidity | 5 to 95% (non condensing) for both storage and operation. | | | | | |
| Case | SECC Zinc plated sheet metal (1 mm) | | | | | |
| Ingress Protection Rating | IP40 | | | | | |
| Mounting | Wall or Panel mounting, DIN Rail mounting kit optional | | | | | |

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**Product Weight and Dimensions**

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| Weight | 0.23 Kg (0.5 lbs) | | 0.35 Kg (.77 lbs) | |
|---|---|---|---|---|
| Dimensions | 90 x 64 x 22 (mm), 3.6 x 2.5 x 0.87 (in) case dimensions not including mounting tabs, | 112 x 82 x 28 (mm), 4.4 x 3.2 x 1.1 (in) case dimensions not including mounting tabs, | 90 x 64 x 22 (mm), 3.6 x 2.5 x 0.87 (in) case dimensions not including mounting tabs, | 112 x 82 x 28 (mm), 4.4 x 3.2 x 1.1 (in) case dimensions not including mounting tabs, |
| | 90 x 89 x 24 (mm), 3.6 x 3.5 x 0.87 (in) includes mounting tabs. | 112 x 105 x 28 (mm), 4.4 x 4.2 x 1.1 (in) case dimensions not including mounting tabs, | 90 x 89 x 24 (mm), 3.6 x 3.5 x 0.87 (in) includes mounting tabs. | 112 x 105 x 28 (mm), 4.4 x 4.2 x 1.1 (in) case dimensions not including mounting tabs, |

**Packaging**

| Shipping Dimensions | 260 x 170 x 70 (mm), 10.2 x 6.7 x 2.8 (in) | | | |
|---|---|---|---|---|
| Shipping weight | 0.42 KG (.92 lbs) | 0.54 KG (1.2 lbs) | 0.42 KG (.92 lbs) | 0.54 KG (1.2 lbs) |

**Regulatory Approvals**

| Emissions | CFR47:2003, Chapter 1, Part 15 Subpart B, (USA) Class A | CFR47 FCC Part 15 Subpart B:2015 |
|---|---|---|
| | ICES-003, Issue 4, February 2004 (Canada) | ICES-003:2016 Issue 6:2016 |
| | CISPR 32:2015/EN 55032:2015 (Class A) | |
| | | CISPR 16-2-3:2010/A2:2014 |
| | EN61000-3-2 : 2010, Limits for Harmonic Current Emissions | EN61000-3-2:2014, Limited for Harmonic Current Emissions |
| | EN61000-3-3 : 2010, Limits of Voltage Fluctuations and Flicker | EN61000-3-3:2013, Limits of Voltage Fluctuations and Flicker |
| Immunity | CISPR 24:2010/EN 55024:2010 | |
| | EN61000-4-2: Electrostatic Discharge | |
| | EN61000-4-3: RF Electromagnetic Field Modulated | |

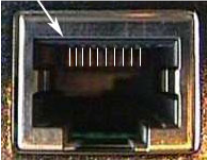| | | |
|---|---|---|
| EN61000-4-4: Fast Transients | | |
| EN61000-4-5: Surge | | |
| EN61000-4-6: RF Continuous Conducted | | |
| EN61000-4-8: Power-Frequency Magnetic Field | | |
| | | EN61000-4-11: Voltage Dips and Voltage Interruptions |
| Safety | IEC 60950-1 (ed 2); am1 am2 and EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013 | IEC 62368-1 and EN 62368-1:2014 |
| | CAN/CSA-C22.2 No. 60950-1-03 and ANSI/UL 60950-1, Second Edition | CAN/CSA-C22.2 No. 62368-1-14 and UL 62368-1 |
| Other | Reach, RoHS and WEEE Compliant<br>Directive 2011/65/EU restriction of the use of certain hazardous substances in electrical and electronic equipment and meets the following standard:: EN 50581:2012 | |
| | CCATS - G168387 | |
| | ECCN - 5A992 | |
| | HTSUS Number: 8471.80.1000 | |
| | Perle Limited Lifetime Warranty | |

**Serial Connector Pinout**

| IOLAN DTE | IOLAN DB9M Socket | Direction | RS232 | RS485 Full Duplex | RS485 Half Duplex | RS422 |
|---|---|---|---|---|---|---|
| DB9 Socket | 1 | ← | DCD | - | - | - |
| | 2 | ← | RxD | RxD+ | - | RxD+ |
| | 3 | → | TxD | TxD+ | DATA+ | TxD+ |
| | 4 | → | DTR | - | - | - |
| | 5 | — | GND | GND | GND | GND |
| | 6 | ← | DSR | RxD- | - | RxD- |

| | | Direction | RS232 | RS485 Full Duplex | RS485 Half Duplex | RS422 |
|---|---|---|---|---|---|---|
| | 7 | —— | RTS | - | - | - |
| | 8 | ← | CTS | - | - | - |
| | 9 | —— | - | TxD- | DATA- | TxD- |

| IOLAN DTE | IOLAN RJ45 Socket | Direction | RS232 | RS485 Full Duplex | RS485 Half Duplex | RS422 |
|---|---|---|---|---|---|---|
| **Pin 1** <br> RJ45 Socket | 1 | → | Power In | Power In | Power In | Power In |
| | 2 | → | DCD | - | - | - |
| | 3 | ← | RTS | TxD+ | DATA+ | DATA+ TxD+ |
| | 4 | → | DSR | - | - | - |
| | 5 | ← | TxD | TxD- | DATA- | TxD- |
| | 6 | → | RxD | RxD+ | - | RxD+ |
| | 7 | —— | GND | GND | GND | GND |
| | 8 | → | CTS | RxD- | - | RxD- |
| | 9 | ← | DTR | - | - | - |
| | 10 | ← | Power Out | Power Out | Power Out | Power Out |

Optional Perle adapters for use with straight thru CAT5 cabling

**TCP**

### Using RAW TCP Sockets

A raw TCP socket connection which can be initiated from the serial-Ethernet device or from the remote host/server. This can either be on a point to point or shared basis where a serial device can be shared amongst multiple devices. TCP sessions can be initiated either from the TCP server application or from the Perle IOLAN **serial-Ethernet** adapter.
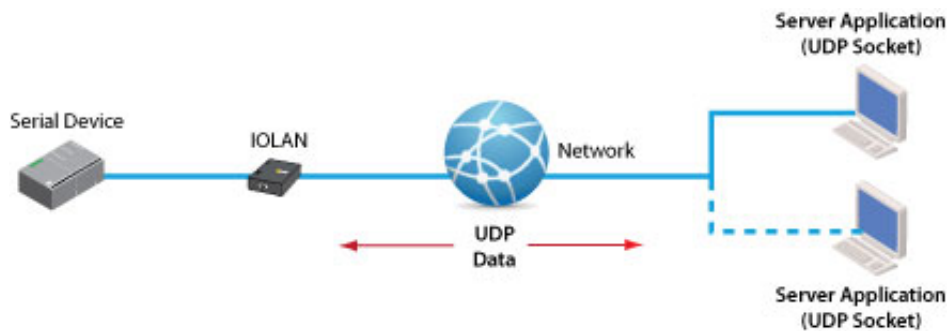
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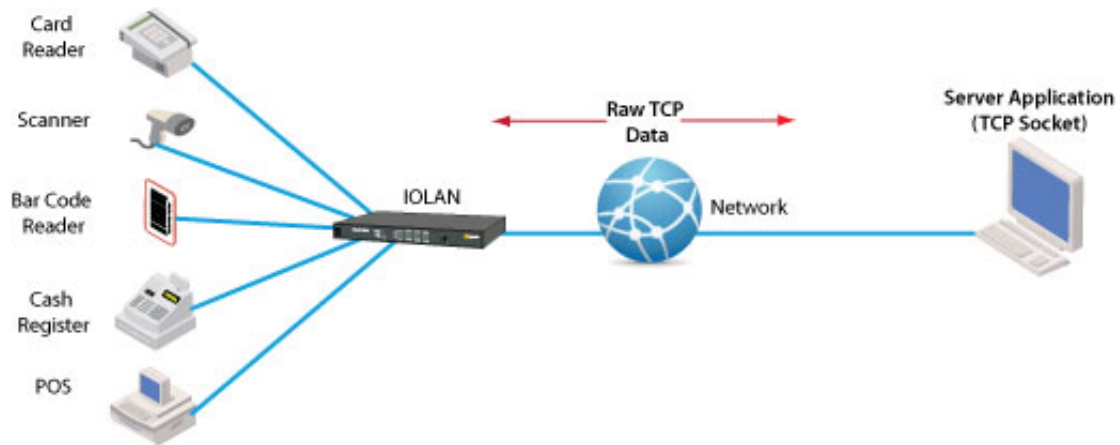
## UDP

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### Using Raw UDP Sockets

For use with UDP based applications, Perle IOLANs can convert serial equipment data for transport across UDP packets either on a point to point basis or shared across multiple devices.
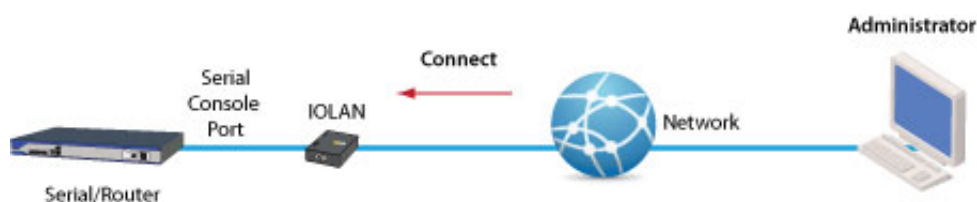


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## Console Server

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### Console Management

For access to remote console ports on routers, switches,etc, Perle IOLAN's enable administrators secure access to these RS232 ports via inband Reverse Telnet / SSH or out of band with dial-up modems. Perle IOLAN models with integrated modems are available.
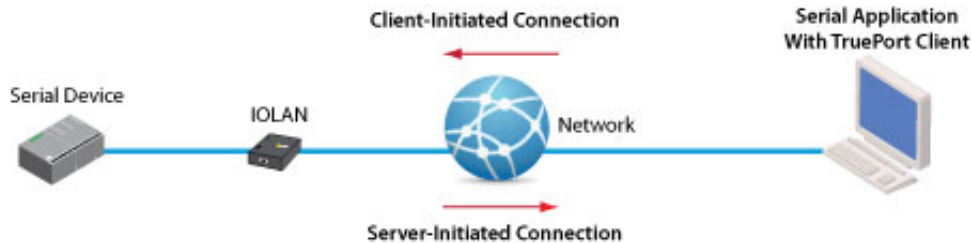
## Connect Serial-based Applications with a COM/TTY Port Driver

Serial ports can be connected to network servers or workstations running Perle's TruePort software operating as a virtual COM port. Sessions can be initiated either from the Perle IOLAN or from TruePort.



## Tunneling

## Serial Tunneling between two Serial Devices

Serial Tunneling enables you to establish a link across Ethernet 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).



## Virtual Modem

## Virtual Modem

Enables the serial-Ethernet adapter to simulate a modem connection. When connected to the IOLAN and initiates a modem connection, the IOLAN starts up a TCP connection to another IOLAN serial-Ethernet adapter configured with a Virtual Modem serial port or to a host running a TCP application.