# IOLAN SDG L Serial Device Servers

**perle.com**/products/iolan-sdg-lte-device-server.shtml

## Serial over 4G LTE and other WAN Cellular Networks

- High-Speed 4G LTE with fallback networks - HSPA+, UMTS, EDGE and GPRS/GSM
- 1, 2 or 4 software selectable RS232/422/485 serial port interfaces
- Gigabit Ethernet ( 10/100/1000 Base-T )
- Advanced security features for data encryption, user authentication and event management

The **IOLAN SDG L Serial Device Server** provides High-Speed **serial data transmission over 4G LTE cellular networks**. The IoT and M2M drives the desire to connect serial base ( RS232, RS422 and RS485 ) devices like PLC's, meters, sensors, modems, POS, printers and industrial equipment to remote serial based COM port, UDP or TCP socket based applications. However, these devices are often located where hardwired Ethernet connections are not available. With the proliferation of cellular networks, and affordable data packages around the world, the means to transmit that data just got easier.

Delivering high performance in a compact size, the IOLAN SDG L offers support for a broad range of 4G LTE cellular data networks, extensive security, flexibility and IPv6 technology making it ideal for applications that require remote serial console management, data capture or monitoring.

## Why IOLAN SDG L Device Servers are the preferred choice:

- High performance 4G LTE with fallback networks - HSPA+, UMTS, EDGE and GPRS
- Cellular data speeds up to 100Mbps
- High-Speed Gigabit Ethernet 1000base-T interface including support for 100base-TX and 10base-T
- Direct serial to serial peer connection over cellular data networks
- Remote equipment console management over cellular data networks.
- Redundant dual power inputs ( barrel and terminal block )
- TrueSerial® packet technology delivers authentic serial connections for 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
- IPv6 support 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 unresponsive networking gear

## Secure Serial over Cellular Connectivity

The **IOLAN SDG L Device Server** enables administrators to securely access remote serial console ports on equipment such as PBX, servers, routers, network storage equipment and security appliances via a cellular data network. Sensitive data such as credit card holder information 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, the IOLAN SDG L can protect sensitive and confidential data from a serial device such as a credit card reader 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 Device Server Plug-ins

By choosing 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 IPv6 the **IOLAN Serial 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 LTE and cellular technology.

## Flexible and Reliable Serial Connections

An **IOLAN SDG L Device Server** is ideal for wirelessly 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 a cellular network.

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

All IOLAN SDG L 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 Serial 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.

## Software Features - IOLAN SDG L Serial Device Servers

### Topology Support

Serial to 4G LTE cellular data networks with fallback networks - HSPA+, UMTS, EDGE and GPRS/GSM

Serial to 10/100/1000-Base-T Ethernet

### 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 on 2 and 4 port models

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

PCI DSS Compliance: TLS v1.2, TLS v1.1, TLS v1.0, SSL v3.0, SSL v2.0

SSL Server and SSL client mode capability

SSL Peer authentication

IPSec VPN : NAT Traversal, ESP authentication protocol

SSH ciphers: AES-CTR, AES-GCM and ChaCha20-poly1305

SSL encryption: AES-GCM, key exchange ECDH-ECDSA, HMAC SHA256, SHA384

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

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| | MOTD - Message of the day |

## Serial machine to Ethernet

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|---|---|
| | 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

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| | Sun / Oracle Solaris Break Safe |
| | Local port buffer viewing - 256K bytes per port |
| | External port buffering via NFS, encrypted NFS and Syslog |
| | Event notification |

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| | 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**

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| 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 )**

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| | 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**

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| | 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 |

# Hardware Specifications - IOLAN SDG L Serial Device Servers

| | IOLAN SDG LA | IOLAN SDG LE |
|---|---|---|
| **Processor** | **600Mhz ARM Processor** | |
| **Memory** | | |
| **RAM MB** | **512M** | |
| **Flash MB** | **4G** | |
| **Interface Ports** | | |
| **Number of Serial Ports** | **1, 2 and 4 (RJ45)** | |
| Serial Port Interface(s) | **Software selectable EIA-232/422/485** | |
| **Sun / Solaris** | **Sun / Oracle 'Solaris' Safe - no "break signal" sent during power cycle causing costly server re-boots or downtime** | |
| **Serial Port Speeds** | **300bps to 230Kbps with customizable baud rate support** | |
| **Data Bits** | **Configurable for 5,6,7 or 8-bit protocol support<br>Use TruePort to transparently pass 9-bit serial data** | |
| **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 (RJ45)** | |
| **Ethernet Network** | **Autosensing 1000-base-T / 100-base TX / 10-base T Auto-MDIX** | |
| | **Software selectable Ethernet speed 10/100/1000** | |
| | **Software selectable Half/Full/Auto duplex** | |
| **Ethernet Isolation** | **1.5Kv Magnetic Isolation** | |
| **Antennae (Included)** | **Two multiband swivel-mount dipole antennae - SMA connectors** | |

| Cellular Data Rates | 4G LTE (Cat. 3)<br>DL: max. 100 Mbps, UL: max. 50 Mbps HSPA+ DL Cat.24<br>DL: max. 42 Mbps, UL: max. 5.76 Mbps EDGE Class 12 data rates<br>DL: max. 237 kbps, UL: max. 237 kbps GPRS Class 12 data rates<br>DL: max. 85.6 kbps, UL: max. 85.6 kbps |
|---|---|
| SIM Card slot (empty) | Accepts Micro SIM (3FF) as per reference standards:<br>ETSI TS 102 221 V9.0.0, Mini-UICC *The SIM card must be obtained by the user from their carrier of choice* |
| **Power** | |
| **Back of product** | |



| Power Supply Provided | 120 V / 230V AC to 12vDC Wall Power Adaptor included. (Barrel connector, commercial-grade temperature – 0 to 60C) |
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| 2x Power Supply Selection | Use external power 9-30v DC on standard 5.5mm x 9.5mm x 2.1mm barrel socket or 2-pin terminal block |
| Nominal Input Voltage | 12/24v DC |
| Input Voltage Range | 9-30v DC |
| Typical Power Consumption @ 24v DC (Watts) | 1 port: 3.2<br>2 port: 3.5<br>4 port: 4.2 |
| **Indicators** | |
| | Power/Ready |
| | Network Link |
| | Network Link activity |
| | Serial: Transmit and Receive data per port |
| | Wireless Link |
| LEDs | Wireless Strength |
| **Environmental Specifications** | |
| Heat Output (BTU/HR) | 1 port: 10.9<br>2 port: 11.9<br>4 port: 14.3 |

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| **MTBF (Hours)*** | **1 port: 201,211**<br>**2 port: 162,461**<br>**4 port: 144,606**<br>***Calculation model based on MIL-HDBK-217-FN2 @ 30 °C** |
| **Operating Temperature** | **-40° C to 75° C (-40 F to 167° F)** |
| **Storage Temperature** | **-40 C to 85 C (-40 F to 185 F)** |
| **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** |

**Product Weight and Dimensions**

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| **Weight** | **0.4 kg**<br>**(0.88 lbs)** |
| **Dimensions** | **110 x 111 x 24 mm**<br>**(4.3 x 4.4 x 0.9 in)** |

**Packaging**

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| **Shipping Dimensions** | **26 x 17 x 7 cm**<br>**(10.2 x 6.7 x 2.8 in)** |
| **Shipping Weight** | **0.71 kg**<br>**(1.57 lbs)** |

**Regulatory Approvals**

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|---|---|
| | **FCC Part 15, Subpart B, Class B** |
| | **CFR47:2003, Chapter 1, Part 15 Subpart B,(USA) Class B** |
| | **ICES-003, Issue 4, February 2004 (Canada)** |
| | **EN55022:1998 + A1:2000 + A2:2003 Class B** |
| | **EN61000-3-2 : 1995, Limits for Harmonic Current Emissions** |
| **Emissions** | **EN61000-3-3 : 1995, Limits of Voltage Fluctuations and Flicker** |
| **Immunity** | **EN55024:1998 + A1:2001 + A2:2003** |
| | **EN61000-4-2: Electrostatic Discharge** |
| | **EN61000-4-3: RF Electromagnetic Field Modulated** |

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| | 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 |
| | **UL/EN/IEC 62368-1**<br>**CAN/CSA C22.2 No. 62368-1** |
| | **IEC 60950-1 : 2005 (2nd Edition) + A1 : 2009 and**<br>**EN 60950-1 : 2006 + A11 : 2009** |
| **Safety** | **CAN/CSA-C22.2 No. 60950-1-03 and ANSI/UL 60950-1,**<br>**First Edition April 1st 2003 (Recognized Component)** |

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| **Wireless Regulatory Domain** | • FCC/ICES<br>• PTCRB<br><br>*Users are responsible for verifying approval for use in their individual countries.* | • ETSI<br>• RT&T<br>• GCF<br><br>*Users are responsible for verifying approval for use in their individual countries.* |
| **Carrier Specific Approval** | Auto-detecting;<br>• <u>Verizon Certified</u><br>• <u>AT&T Certified</u> | *Not required* |
| **Cellular Radio** | **EN 301 908-1**<br>**EN 301 908-2**<br>**EN 301 511**<br>**47 CFR Part 22**<br>**47 CFR Part 24**<br>**EN 301 908-13** | |
| **Radio Immunity** | **EN301 489-1**<br>**EN 301 489-7**<br>**EN301 489-24** | |
| **Cellular Data Technologies Supported** | Penta Band LTE: 700/700/850/AWS (1700/2100)/1900 MHz;<br>FDD-Band (13,17,5,4,2) Tri Band UMTS (WCDMA): 850/AWS (1700/2100)/1900 MHz;<br>FDD-Band (5,4,2) Quad Band GSM/GPRS/EDGE: 850/900/1800/1900 MHz | Penta Band LTE: 800/900/1800/2100/2600 MHz;<br>FDD-Band (20,8,3,7,1); Tri Band UMTS (WCDMA): 900/1800/2100 MHz;<br>FDD-Band (8,3,1); Dual Band GSM/GPRS/EDGE: 900/1800 MH |

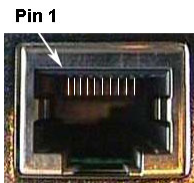| | Reach, RoHS and WEEE Compliant |
| --- | --- |
| | CCATS - G052929 |
| | ECCN - 5A992A |
| | HTSUS Number: 8517.62.0020 |
| **Other** | Perle Limited Lifetime Warranty |

**IOLAN RJ45 Serial Connector Pinout**

| | Pinout | Direction | EIA-232 | EIA-422 | EIA-485 Full Duplex | EIA-485 Half Duplex |
| --- | --- | --- | --- | --- | --- | --- |
| | 1 | in | DCD | | | |
| | 2 | out | RTS | TxD+ | TxD+ | TxD+/RxD+ |
| | 3 | in | DSR | | | |
| | 4 | out | TxD | TxD- | TxD- | TxD-/RxD- |
| **RJ45 Socket** | 5 | in | RxD | RxD+ | RxD+ | |
| | 6 | | GND | GND | GND | GND |
| | 7 | in | CTS | RxD- | RxD- | |
| | 8 | out | DTR | | | |

**Optional Perle adapters for use with straight thru CAT5 cabling**

**TCP**

## Using RAW TCP Sockets over a Cellular Data Network

A raw TCP socket connection can be initiated from the serial 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 SDS L.
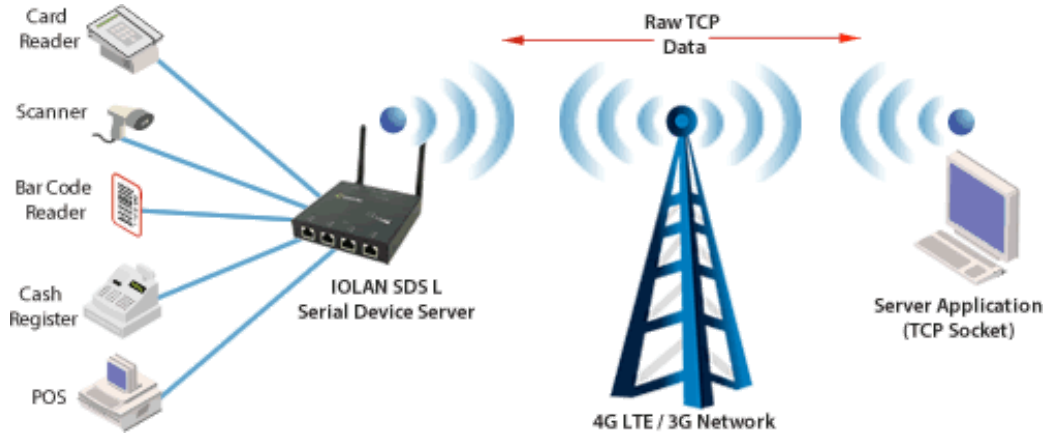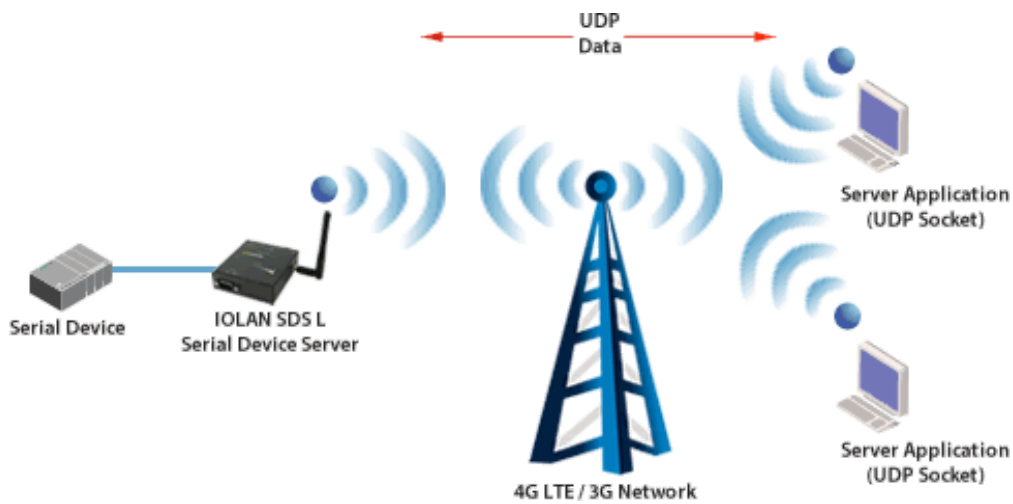


## UDP

### Using Raw UDP Sockets over a Cellular Data Network

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.
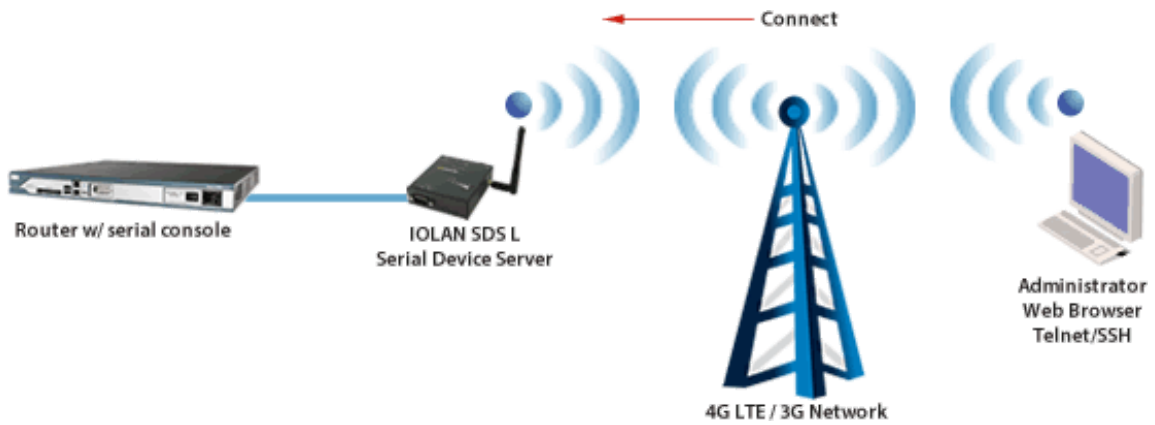


## Console Server

## Console Management over a Cellular Data Network

For access to remote console ports on routers, switches, etc, Perle IOLAN's enable administrators secure access to these RS232 ports via in-band Reverse Telnet / SSH over wireless LANs
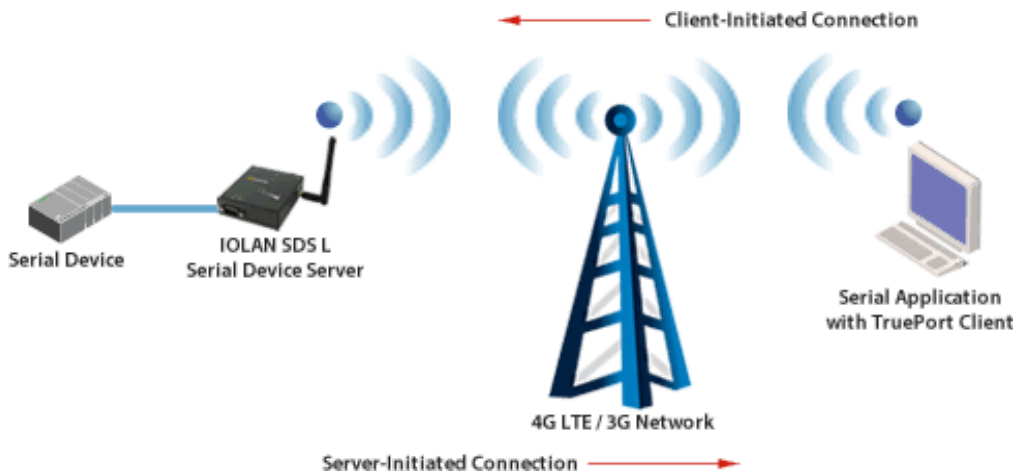


## COM/TTY

### Connect Serial-based Applications over cellular data network 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.
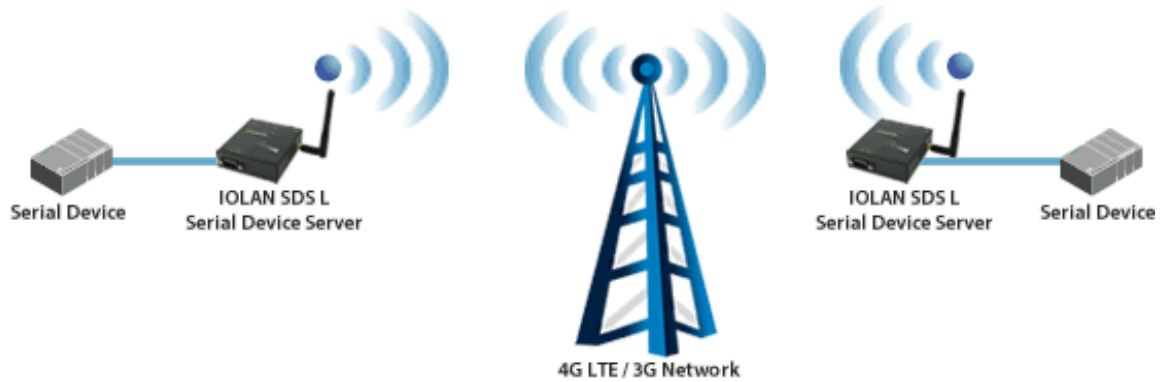


## Serial Tunneling over a Cellular Data Network

**Serial Tunneling between two Serial Devices over a cellular data network - Peer to Peer**

Serial Tunneling enables you to establish a link across a cellular netowrk 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).