IOLAN SCG LM Secure Console Server

perle.com/products/iolan-scglm-console-server.shtml

Out-of-Band IT Infrastructure Management with integrated LTE & Modem

- 18, 34 or 50 Console Management Ports
- Modular design supports RS232/RS422/RS485 RJ45 and USB 3.0 Interfaces
- Integrated LTE and v.92 modem for out of band access
- Dual 10/100/1000 Network Connection with RJ45 Copper and SFP Fiber Ports
- ZTP & <u>PerleVIEW Central Management Software</u> simplifies configuration, administration, monitoring, and troubleshooting.
- <u>Cloud Hosting</u> -- Deploy and manage your network from the cloud
- Advanced routing engine with AAA security and SSH/SSL encryption to meet all data center compliance policies
- Dual AC or Dual Feed 48vDC Power for Fault-tolerant uptime

The **Perle IOLAN SCG LM Console Servers** provide data center managers with the ultimate solution for redundant, secure remote console management of any device with an **RS232 RJ45 or USB console port**. And, the IOLAN G16 RS-Multi Card, with 16 x software-selectable RS232/422/485 RJ45 interfaces enables organizations to connect a variety of serial-based devices to Ethernet. The integrated V.92 modem, and LTE support provides multiple alternate access methods to manage, maintain, and troubleshoot critical network devices, as well as **transmit data from mission-critical equipment over LTE**. With an expandable modular hardware platform, **integrated firewall, two-factor authentication, advanced failover to multiple networks, and Zero Touch Provisioning (ZTP)**, your IT professionals and network operations center (NOC) personnel will have everything they need to easily perform secure remote data center management and out-of-band management of IT assets from anywhere in the world. This cost-effective 1U rack solution also maintains protocol integrity across Ethernet and adds full IPv4/IPv6 routing capabilities with support for RIP, OSPF, and BGP protocols.

Modular Hardware Platform enables Console Management of all IT assets

The **modular IOLAN SCG LM Console Server** provides up to **50 Console Management ports supporting USB, RS232, RS422, and RS485 interfaces** . The modular design of the IOLAN SCG allows the user to swap, upgrade, and scale to any combination of 16-port module cards to support all types of admin ports in one Console Management solution.

IOLAN SCG Interface Options
RS232/422/485 RJ45   USB   USB and RJ45

The Perle IOLAN SCG is the only industry solution that can support up to 50 high-density USB 3.0 ports that are compatible with all manufacturers' USB solutions, including Cisco routers, switches, firewalls, servers (Solaris, Windows, Unix and Linux) PBXs, network storage equipment and security appliances.

The RS232 RJ45 ports are software configurable to use straight thru or rolled cables to connect your Cisco equipment and support DCD pin can be configured for 3rd party devices that need this extra signal. The software-selectable RS232/422/485 RJ45 interfaces simplify configuration and eliminate mechanical tampering associated with DIP switches. This mean the Perle IOLAN SCG supports more serial devices than any other Console Server on the market.

Advanced Network Security, Authentication, and Data Encryption

2 Factor Authentication (2FA) ensures access to equipment and data is limited to authorized users, while remote authentication (RADIUS, TACACS+, & LDAP) management, enables integration with enterprise-grade systems to control access to devices in the field.

The **built-in firewall** offers intuitive policies to protect inside networks from unauthorized access. The firewall also allows inside networks to be separated from each other. If there are network resources that need to be available to an outside user, such as a web or FTP server, these resources can be placed on a separate network behind the firewall in a demilitarized zone (DMZ).

Network data transmissions and access to remote console admin ports on IT equipment are protected through standard **encryption tools** such as Secure Shell (SSH) and Secure Sockets Layer (TLS/SSL). By using encryption technologies, an IOLAN SCG Console Server protects sensitive and confidential data before being sent across a corporate Intranet or public Internet. For compatibility with peer encryption devices, all the major encryption ciphers such as AES, 3DES, RC4, RC2, and CAST128 are fully supported.

With multiple concurrent VPN sessions, OpenVPN, and IPSec VPN, robust authentication and encryption of IP packets is provided at the network layer of the OSI model. This is ideal for multi-vendor interoperation within a network, providing flexibility and the ability to match the right solution for a particular application.

## Multiple Out-of-Band (OOB) access methods

Every IOLAN SCG LM Console Server comes with three secure remote access methods to critical network devices.

1. The **built-in high-speed LTE with HSPA+, UMTS, EDGE and GPRS/GSM fallback networks** to protect your data center and branch office out-of-band management infrastructure against wired LAN failure. It can also be used to transmit serial data or establish a direct serial to serial peer connection, over cellular networks. This is ideal when devices are located where hardwired Ethernet connections are not available but cellular networks, with their affordable data packages, are accessible.
2. The **on-board RJ11 V.92 modem connection** provides a secure and reliable out-of-band connection over the POTS network. This means that should IP network access become unavailable, the IOLAN SCG LM can serve as the necessary alternate access method to troubleshoot and reboot critical network devices.
3. Any dual combination of the **two 10/100/1000Base-T Copper Ports and two 100/1000Base-X SFP Fiber Ports** can be used to meet your unique network access requirements. This design provides users with a flexible, cost-effective solution to transmit data from mission-critical equipment over Copper or Fiber based Ethernet networks. When connecting to a fiber network, the pluggable SFP ports allow for flexible network configurations using <u>SFP Optical Transceivers</u> supplied by Perle, <u>Cisco</u> or other manufacturers of MSA compliant SFPs.

High Availability Access

To simplify management and respond swiftly to issues, network administrators require access to all console ports via a single portal view. Perle's cloud-based centralized management solution puts all your network and IT infrastructure into a single application and provides secure reliable access and visibility during normal operations and critical network failures. Scalable to suit any business requirement, <u>Cloud Centralized Management</u> reduces human error and guarantees repeatability.

The IOLAN SCG LM also has built-in fault-tolerant capabilities to ensure secure and reliable access for managing important mission-critical equipment. <u>Redundant Path technology</u> assures availability to Console Management ports through Active Standby or Dual Network Access modes. Virtual Router Redundancy Protocol (VRRPv3) enables a group of devices to form a single virtual device to provide network redundancy. The dual AC power supply ensures that console management is available even if the primary AC power source fails. And, protection against electrostatic discharges and power surges is provided with robust 15Kv ESD protection circuitry on each console port.
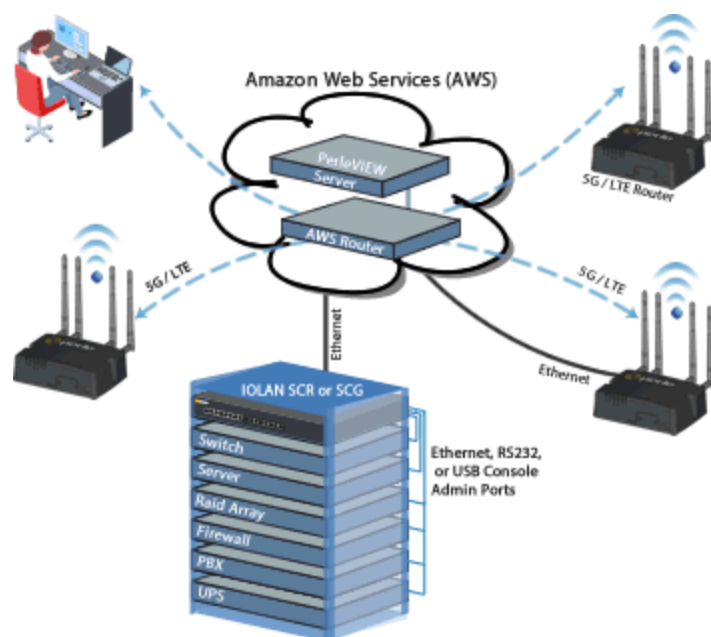
Easy Set-up and Configuration with Front Panel Display and Keyboard

The IOLAN SCG LM is incredibly easy to get up and running on the network. The Front Panel Display and Keyboard allows a user to assign an IP address directly through the display without a direct PC connection. The rest of the unit can then be configured over the network using a variety of configurator options including <u>PerleVIEW</u>, WebManager, CLI, etc.

The Front Panel Display is also a convenient way to monitor and trouble-shoot RS232, USB, and Ethernet port activity.

For large scale roll-outs, the Micro SD Card slot can be used to back-up and restore configuration files as well as load new firmware. Perle is committed to eliminating configuration hassles for all IOLAN's on your IP network.

Flexible and Reliable Serial to Ethernet Connections

An IOLAN SCG Console 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.

TrueSerial® packet technology delivers the most authentic serial connections across Ethernet for serial protocol integrity.

You can also tunnel serial data between devices across an IP network.

Advanced IP Technology

With support for IPv6, the IOLAN SCG 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.

More reasons that make the IOLAN SCG Console Servers the preferred choice:

- Cellular data speeds up to 100Mbps
- Direct serial to serial peer connection over cellular data networks
- Remote equipment console management over cellular data networks
- Primary/Backup host functionality enables automatic connections to alternate hosts should the primary TCP connection go down.
- EasyPort Web – Access equipment serial console ports by using your Java-enabled Internet browser
- Java-free browser access to remote serial console ports via Telnet and SSH.
- Dynamic DNS – Easy console management access from anywhere on the Internet.

Lifetime Warranty

All Perle IOLAN SCG models 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. With the Perle IOLAN SCG deploying and upgrading new services and equipment while minimizing capital expenditures, is easy.

Software Features - IOLAN SCG LM Secure Console Server

Management & Configuration

Zero Touch Provisioning (ZTP): automates the provisioning of both the configuration and firmware files through DHCP/Bootp Options

PerleView Central Management: a web-based server configuration tool that simplifies setup and deployment and gives network managers visibility and control over network configurations at remote sites.

Management & Monitoring: HTTP/HTTPS, CLI/Piping, Telnet, SNMPv1/v2/v3, RESTful API, TACACS+

Multiple firmware versions can be saved on the unit. This allows the customer to change between older and newer firmware versions without the need to download.

Multiple configuration files can be stored on the unit., This allows the customer to easily switch between older and newer configurations during testing or production deployments.

Automatic check for software updates available over FTP, HTTP, HTTPS, SCP, SFTP, and TFTP

LLDP-Link Layer Discovery Protocol, as per IEEE 802.1AB, is a neighbor discovery protocol that is used for network devices to advertise information about themselves to other devices on the network. This protocol runs over the data-link layer, which allows two systems running different network layer protocols to learn about each other via TLVs (Type-Length-Value).

RESTful API uses HTTP requests to access and use IOLAN statistics and configuration data. Any of the CLI commands can be executed through a RESTFul API script that cn be controlled externally from a server.

Connectivity Watchdog can instruct the IOLAN to take different actions (i.e. reboot) if the network connectivity to a pre-define IP address is lost. This is helpful for situations when the IOLAN is deployed on remote locations hard to service if the network connectivity is lost.

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

Dynamic DNS with DYNDNS.org

Installation Wizard

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.

IPSEC VPN client/servers: Microsoft IPSEC VPN Client, Cisco routers with IPSEC VPN feature set, Perle IOLAN SDS, SDG, STS, STG, SCS, SCG, and SCR models

OpenVPN: Clients & Servers

Logging, Reporting & Alerts

Email alert notification

Syslog, Event Type, Report Type, Alerts & Monitoring, Triggers Status Screen Report, Data Usage, Diagnostic, Login Banner

Accessing Console Management Ports (Serial & Ethernet)

Serial Protocols: PPP, PAP/CHAP, SLIP

Connect directly using Telnet / SSH by port and IP address

Use an internet browser to access with HTTP or secure HTTPS

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

Ports can be assigned a specific IP address

Multisession capability enables multiple users to access ports simultaneously

Multihost access enables multiple hosts/servers to share serial ports

Console Management Functions

Sun / Oracle Solaris Break Safe

Local port buffer viewing - 256K bytes per port

External port buffering via NFS, encrypted NFS and Syslog

Event notification

Windows Server / Azure - SAC support GUI access to text-based Special Administrative Console

Terminal Server Functions

Telnet
SSH v1 and v2
Auto session login
LPD, RCP printer
MOTD - Message of the day
Serial to Ethernet functions
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 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.
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
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
Redundancy
Load Balancing
VPN Failover

Virtual Router Redundancy Protocol (VRRPv3) enables a group of devices to form a single virtual device to provide network redundancy

Primary/Backup host functionality enables automatic connections to alternate hosts

Routing / Switching Protocols

The IOLAN can be configured for any of the major routing protocols for an easy integration within the data center Ethernet backbone: RIP/RIPNg, OSPFv3, BGP-4, NAT, IPv4/IPv6, Static Routing, IPv6 Encapsulations (GRE, 6in4), Port Routing, STP, MSTP

IPv6 to IPv4 translation is fully supported for environments where the Ethernet data backbone is run on IPv6 and the port management is run on IPv4

Using NAT for enhanced security, the IOLAN can map a single IP address, across all or several of it's Ethernet ports.

IP Applications

DDNS, DNS Proxy / Spoofing, relay, client, Opt. 82,

NTP & SNTP (versions 1, 2, 3, 4)

DHCP / DHCPv6 server / DHCP Snooping & BOOTP

VLAN & VPN

VLAN, OpenVPN, VPN Failover (16 concurrent VPN tunnels)

IPSec VPN: NAT Traversal, ESP authentication protocol

Firewall Features

Ability to set up firewalls to restrict incoming and outgoing packets

Built in Zone-Based Policy Firewall for local security and traffic filtering.

Access Control Lists (list & ranges & time)

Filter based on MAC Address, IP, Port, Protocol, User

IEEE 802.1x Authentication and Port Security can be enabled for any Ethernet port for increased security port access.

Layer 2 MAC address filtering

Port Forwarding

BGP Communities

Security Features

AAA Security via remote authentication (Radius, TACACS+, & LDAP)

Trusted host filtering (IP filtering), allowing only those hosts that have been configured in the host table access to the router.

Ability to disable services (for example, Telnet, TruePort, Syslog, SNMP, Modbus, HTTP) for additional security

Ability to disable Ping responses

SSH client/server connections (SSH 1 and SSH 2). Supported ciphers are Blowfish, 3DES, AES-CBC, AES-CTR, AES-GMC, CAST, Arcfour and ChaCha20-Poly1305. Ability to individually disable network services that won't be used by the SSH client/server connections.

SSL/TLS client/server data encryption (TLS v1.2)

SSL Peer authentication

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

VPN: OpenVPN & IPSec VPN (NAT Traversal, ESP authentication protocol)

Certificate Support (X.509)

Certificate authority (CA) list

Local database

RIP authentication (via password or MD5)

2 Factor (2F) Authentication over e-mail enhances administration access security

Management Access Control

Demilitarized Zone (DMZ)

Secure HTTP/HTTPS/FTP/Telnet Authentication Proxy

SNMP v3 Authentication and Encryption support

IP Address filtering

Disable unused daemons

Active Directory via LDAP

Protocols

IPv6, IPv4, TCP/IP, Reverse SSH, SSH, SSL, IPSec/IPv4, IPSec/IPv6, IPSec, 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 SCG LM Secure Console Server

Processor	1750 MIPS, 500 MHz core 32 bit ARM processor, with integrated hardware encryption processor
Memory	
RAM MB	1000
Flash MB	4000
Interface Ports	
Integrated Device Management Ports	2 x USB 3.0
Modular Device Management Ports	Create 18, 34, or 50-port SCG Console Servers using any combination of 16-port module cards to support all types of admin ports in one Console Management solution: • IOLAN G16 RS232 Card: Interface Module with 16 x RS232 RJ45 interfaces with software configurable Cisco pinouts • IOLAN G16 USB Card: Interface Module with 16 x USB 3.0 (Type-A) Console Management Ports. • IOLAN G16 RS-Multi Card: Interface Module with 16 x software selectable RS232/422/485 RJ45 interfaces. RS485 Full and Half duplex
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
Data Bits	Configurable for 5,6,7 or 8-bit protocol support 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 Ports	1 x RS232 RJ45 1 x Micro USB with DB9 adapter
Network	2 x 10/100/1000Base-T RJ45 Copper 2 x 100/1000Base-X Fiber SFP Ports Note: Any combination of two network ports can be used. Software selectable Ethernet speed 10/100/1000, Auto Software selectable Half/Full/Auto duplex
Micro SD Card slot	Yes
Ethernet Isolation	1.5Kv Magnetic Isolation
Integrated Modem	Integrated V.92/V.90 modem with RJ11 jack

Integrated Cellular Access

	4G LTE with fallback networks - HSPA+, UMTS, EDGE and GPRS
Antennae (Included)	Two multiband swivel-mount dipole antennae - SMA connectors
Cellular Data Rates	4G LTE (Cat. 3) DL: max. 100 Mbps, UL: max. 50 Mbps HSPA+ DL Cat.24 DL: max. 42 Mbps, UL: max. 5.76 Mbps EDGE Class 12 data rates DL: max. 237 kbps, UL: max. 237 kbps GPRS Class 12 data rates DL: max. 85.6 kbps, UL: max. 85.6 kbps
SIM Card slot (empty)	Accepts Micro SIM (3FF) as per reference standards: ETSI TS 102 221 V9.0.0, Mini-UICC The SIM card must be obtained by the user from their carrier of choice

Front Panel LCD Display and Keyboard Indicators

	Network Link Activity Serial Tx/Rx data per port

LED Indicators

	System Ready Network Link Activity

Environmental Specifications

Heat Output (BTU/HR)	IOLAN SCG18: 64.83 IOLAN SCG34: 87.01 IOLAN SCG50: 109.18
MTBF (Hours)	72,925 Calculation model based on MIL-HDBK-217-FN2 @ 30 °C
Operating Temperature	0°C to 55°C, 32°F to 131°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	IP30
Mounting	1U - 19" rack, front and rear mounting hardware included

Regulatory Approvals

Emissions	FCC 47 Part 15 Subpart B Class A ICES-003 (Canada) EN55011 (CISPR11) EN55032 (CISPR32) EN61000-3-2 Limits for Harmonic Current Emissions EN61000-3-3 Limits of Voltage Fluctuations and Flicker
Immunity	EN55024 EN 61000-4-2 (ESD): Contact: EN 61000-4-3 (RS): EN 61000-4-4 (EFT): EN 61000-4-5 (Surge): EN 61000-4-6 (CS): EN 61000-4-8 (PFMF) EN 61000-4-11
Safety	UL/EN/IEC 62368-1 (previously 60950-1) CAN/CSA C22.2 No. 62368-1
Carrier Specific Approval	**IOLAN SCG LA: Auto-detecting** Verizon Certified AT&T Certified **IOLAN SCG LE: not required**

Cellular Radio	EN 301 908-1 EN 301 908-2 EN 301 511 47 CFR Part 22 47 CFR Part 24 EN 301 908-13	
Cellular Data Technologies Supported	**IOLAN SCG LA:** - Penta Band LTE: 700/700/850/AWS (1700/2100)/1900 MHz; FDD-Band (13,17,5,4,2) - Tri Band UMTS (WCDMA): 850/AWS (1700/2100)/1900 MHz; FDD-Band (5,4,2) - Quad Band GSM/GPRS/EDGE: 850/900/1800/1900 MHz	
	IOLAN SCG LE: - Penta Band LTE: 800/900/1800/2100/2600 MHz; - FDD-Band (20,8,3,7,1); Tri Band UMTS (WCDMA): - 900/1800/2100 MHz; FDD-Band (8,3,1); - Dual Band GSM/GPRS/EDGE: 900/1800 MH	
Other	Reach, RoHS and WEEE Compliant CCATS - G168387 ECCN - 5A992 HTSUS Number: 8517.62.0020 Perle Limited Lifetime warranty	

Power	Dual AC Models	Dual Feed DC Models
Power Supply	USA: IEC320-C13 to NEMA 5-15P line cord UK: IEC320-C13 to BS1363 line cord EU: IEC320-C13 to CEE 7/7 Schuko South Africa: IEC320-C13 to BS546 line cord Australia: IEC320-C13 to AS3112 line cord	Terminal Blocks with screw terminals accommodating 28 - 12 AWG wire sizes.
Nominal Input Voltage	110/230v AC	48v DC
Input Voltage Range	100-240v AC	24- 60v DC
AC Input Frequency	47-63Hz	-

|			
Current Consumption	**@ 100v (Amps)** IOLAN SCG18: 0.19 IOLAN SCG34: 0.25 IOLAN SCG50: 0.31 **@ 240v (Amps)** IOLAN SCG18: 0.08 IOLAN SCG34: 0.11 IOLAN SCG50: 0.13	**@ 48v DC (Amps)** IOLAN SCG18: 0.19 IOLAN SCG34: 0.25 IOLAN SCG50: 0.31	
Typical Power Consumption	19 Watts Note: USB cards can use an additional power of 2.5 Watts per port up to a max of 8 Watts total		
Power Line Protection	Fast transients: 1 KV (EN61000-4-4 Criteria B) Surge: 2KV (EN61000-4-5 common mode), 1KV (EN61000-4-5 differential and common modes)		
Weight and Dimensions	**Dual AC Models**	**Dual Feed DC Models**	
Product Weight	IOLAN SCG18: 3.32 kg / 7.32 lbs IOLAN SCG34: 3.49 kg / 7.70 lbs IOLAN SCG50: 3.66 kg / 8.07 lbs	IOLAN SCG18: 3.23 kg / 7.12 lbs IOLAN SCG34: 3.40 kg / 7.50 lbs IOLAN SCG50: 3.56 kg / 7.85 lbs	
Product Dimensions	1U Rack form factor - 26.4 x 43.4 x 4.4 (cm), 10.38 x 17.1 x 1.75 (in)		
Shipping Weight	IOLAN SCG18: 4.26 kg / 9.39 lbs IOLAN SCG34: 4.43 kg / 9.76 lbs IOLAN SCG50: 4.60 kg / 10.14 lbs	IOLAN SCG18: 4.17 kg / 9.19 lbs IOLAN SCG34: 4.34 kg / 9.57 lbs IOLAN SCG50: 4.50 kg / 9.92 lbs	
Shipping Dimensions	59 x 36 x 9 (cm), 23.22 x 14.17 x 3.54 (in)		

IOLAN G16 RS232 Card RJ45 Serial Connector Pinout - DCE mode (Straight-through)

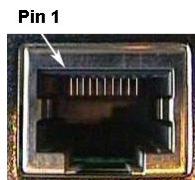| RJ45 Socket	Pinout	Direction	EIA-232
	1	in	CTS
	2	in	DSR
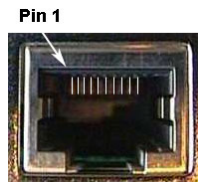
	Direction	EIA-232
3	in	RxD
4		GND
5		not used
6	out	TxD
7	out	DTR
8	out	RTS

<u>Optional Perle adapters for use with straight thru CAT5 cabling</u>

IOLAN G16 RS232 Card RJ45 Serial Connector Pinout - DTE mode (Rolled)
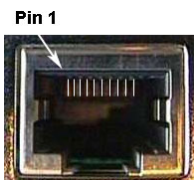
RJ45 Socket

Pinout	Direction	EIA-232
1	out	RTS
2	out	DTR
3	out	TxD
4		GND
5	in	DCD
6	in	RxD
7	in	DSR
8	in	CTS

(A rolled RJ45 cable will automatically perform DTE to DCE crossover)

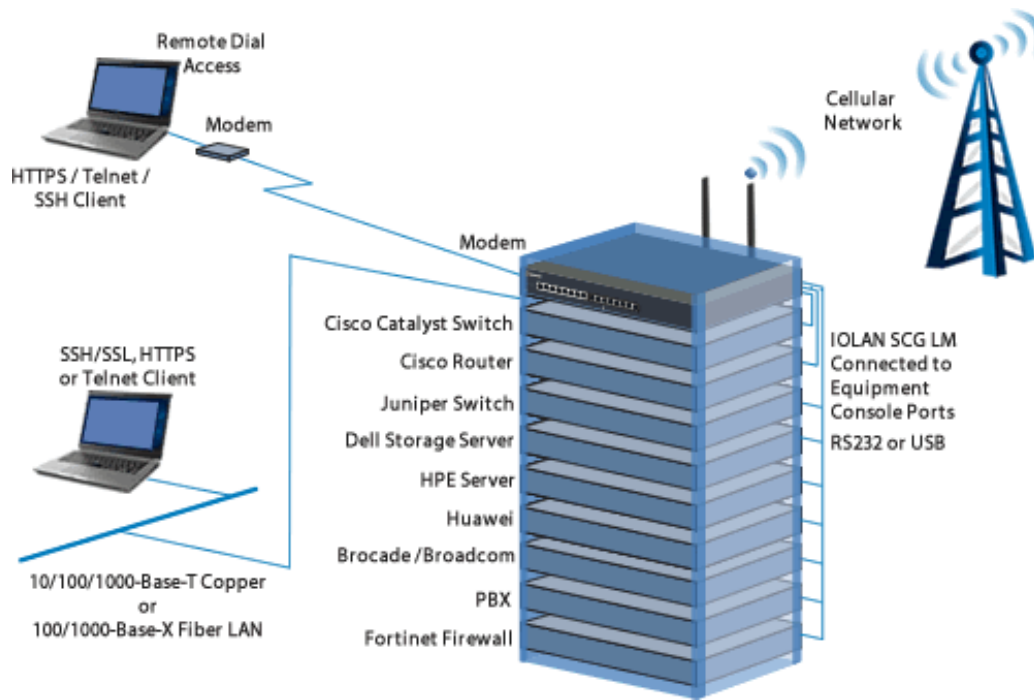## IOLAN G16 RS-Multi Card RJ45 Serial Connector Pinout

RJ45 Socket	Pinout	Direction	EIA-232	EIA-422	EIA-485 Full Duplex	EIA-485 Half Duplex
	1	out	RTS	TxD+	TxD+	DATA+
	2	out	DTR			
	3	out	TxD	TxD-	TxD-	DATA-

4		GND	GND	GND	GND
5		GND	GND	GND	GND
6	in	RxD	RxD+	RxD+	
7	in	DSR			
8	in	CTS	RxD-	RxD-	

Optional Perle adapters for use with straight thru CAT5 cabling

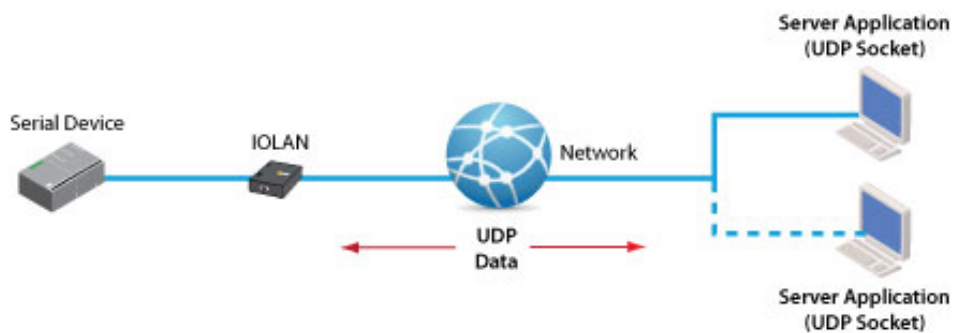## Data Center Console Management

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 thePerle IOLAN **serial-Ethernet** adapter.
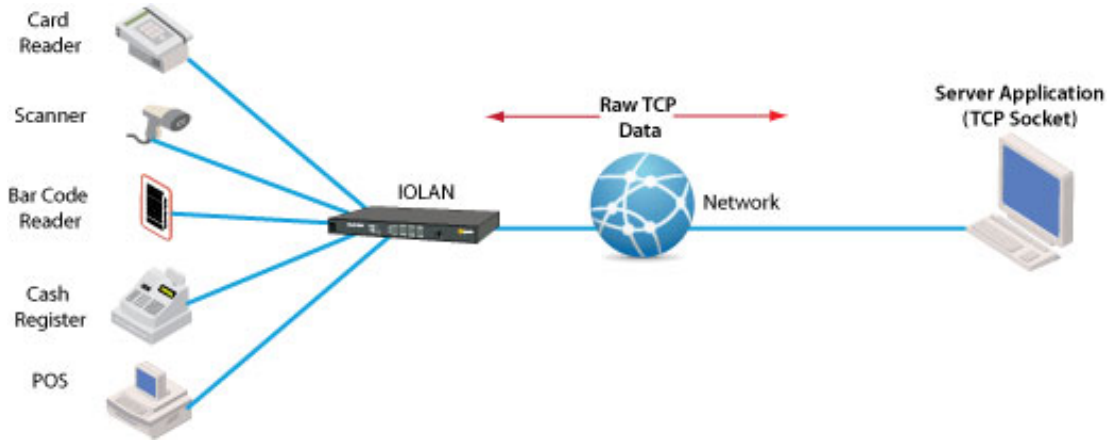
UDP

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.


Console Server

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.

COM/TTY

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.
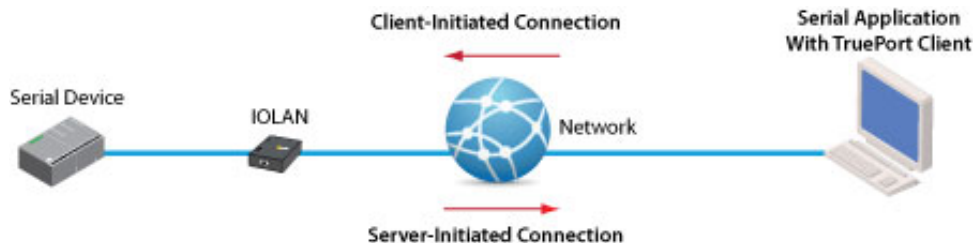
Tunneling

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.