Enabling Intelligent Device Management through the Power of the Internet

Summer 2006

Network anything. Network everything.™
Advanced Business Intelligence through M2M and the Power of the Internet

The network and the Internet are the lifeblood of business. Today’s competitive marketplace requires lightning-fast response – and networking provides that vital measure of speed and intelligence to your business. M2M (machine-to-machine) networking takes communication to a whole new level. Utilizing advances in “Device Networking” technology, companies can connect almost any peripheral device to a network or the Internet to interactively access, evaluate and utilize data from equipment in real time. Users can monitor, diagnose and control devices and their performance from virtually anywhere, at any time. The result is maximized efficiency, better service, reduced overhead and dramatically streamlined operations. By adding networking capability, products immediately become future-ready, increasing both functionality and shelf life.
In addition to improving service levels and reducing costs, remote device management provides the information necessary to facilitate better decisions, and makes physical location irrelevant. Advanced device networking solutions also help prevent downtime with predictive maintenance, automated alerts and self-healing technology.

By 2010, it's estimated that only 5% of networked devices will be computers* – the rest will be machines communicating with one another and people through their own built-in computers or Device Servers™. This M2M market offers truly unlimited business opportunity. Device Server technology offers you the ability to bring increased efficiency, responsiveness and capacity to your business, products and services.

**What is a Device Server?**

A Device Server™ is an instrument that can network-enable virtually any piece of electronic equipment with serial capability so it can be accessed and managed remotely over the Net. Lantronix pioneered this field and is the industry leader in Device Server technology. Our device networking products include a built-in web server, robust TCP/IP stack, and full OS. We offer external units ready to plug into existing equipment, as well as board-level and embedded modules for design-in.

**Lantronix Device Servers:**

- **Reduce maintenance costs** by enabling businesses to troubleshoot and resolve problems remotely without a service call.
- **Differentiate your products** or service from the competition.
- **Open up new opportunities** and revenue streams from your existing customer base while improving customer service.
- **Offer your customers new potential** for downstream business models by providing a network-enabled infrastructure.
- **Manage** thousands of devices from a single location and achieve compatibility between different types of equipment.
- **Provide better management** and faster decision making with real-time access to information.
- **Increase flexibility** and system performance.
- **Leverage existing** Ethernet wiring and corporate IP networks.
- **Save time and money** by facilitating remote system and device upgrades.
- **Enable management** of a product's application from a web browser.
- **Make training faster and easier** with remote capability.
- **Make predictive failure possible** with real-time monitoring and notification.

Diversity of Device Server Applications in M2M .............. 3

Wireless Networking Solutions .......................... 5

Embedded Ethernet Modules .............................. 7-10

Board-Level Ethernet Solutions .......................... 11

External Device Servers ................................. 13-16

Lantronix Software Solutions ............................. 17

Remote IT Access and Modem Replacement .............. 18

Your Partner Throughout the Design Cycle .............. 19

ISO, RoHS and Technical Support ....................... 21

Glossary ................................................. 22

*Source: Forrester Research
The Diverse Landscape of M2M and Device Networking

Lantronix Device Servers can be used in any industry for virtually any M2M networking scenario imaginable. With literally millions of Device Servers installed worldwide, our products are employed in major market sectors including security, building automation, medical, retail/POS, transportation, IT/telecommunications, professional A/V and more. The most important question for manufacturers has become, “How can we add networking capabilities to our products most efficiently? Should we invest in-house engineering resources to build networking capabilities, or buy ready-made solutions from an outside expert?”

Lantronix answers this buy-versus-build question with complete hardware and software device networking solutions. Our proven products dramatically shorten the development time needed to implement network connectivity, significantly speed time to market, provide competitive advantages with new features, and greatly reduce engineering and marketing risks.

OEM design engineers benefit from accelerated time to market – the complex networking integration is virtually done. And they don’t even have to think about Lantronix products, because they’re the most reliable on the market. Best of all, OEMs can focus on building their products, not designing networking capability.

Equipment manufacturers and systems integrators can also add valuable functionality with quantifiable benefits. Device Servers provide the ability to monitor equipment any time, anywhere. By integrating Lantronix solutions, manufacturers provide better, more responsive service and more reliable products – both of which result in greater customer satisfaction.

End users see benefits in a wide range of applications. Gone is the downtime suffered while waiting for a technician to troubleshoot peripheral devices. Now, troubleshooting can be achieved over the network. Imagine diagnosing and remedying a problem in a building’s security system or a customer’s equipment from hundreds of miles away. Or perhaps a hand-held medical device that’s able to wirelessly transmit its results directly to the nurses’ station in real time. Think of the increased level of care that could be provided, or the potential lives that could be saved, through faster, more accurate reporting of test results. Or the ability to control, monitor and troubleshoot your factory automation equipment right from the comfort of your office, even if it’s in a remote location. The possibilities are endless!
The Market Leader in Device Networking

Lantronix is the recognized leader in device networking technology. Our innovative products are used in creative solutions by companies in numerous major marketplaces.
Wireless Solutions for M2M
Device Networking

There are many advantages to wirelessly network-enabling your equipment. Wireless provides a whole new level of flexibility and mobility. Lantronix has a complete line of Wireless Device Servers for every application. End users can network difficult-to-reach or inaccessible equipment, and save time and money by avoiding long cable runs. OEMs can quickly and easily widen their product offering and increase value by including wireless connectivity.

Network Existing Equipment in Minutes
WiBox – External Wireless Device Server

WiBox™ is a cost-effective way to add wireless mobility to your equipment! Small enough to fit almost anywhere, WiBox networks virtually any device with a serial port in a matter of minutes so it can be managed remotely over the Net. Location becomes irrelevant, and the time and money saved on difficult cable runs can be significant.

WiBox features 802.11 b/g to serial communication, two DB9 serial ports, RS-232, RS-422 and RS-485 support, and 128-bit WEP and WPA encryption.

→ Ethernet or wireless communication.
→ Ethernet-to-wireless bridging.
→ Broad 9-30 VDC input power range.
→ Wide temperature range.
→ Compatible with standard 802.11 b/g access points.
→ 128-bit WEP and WPA - PSK, TKIP.
→ 256-bit AES end-to-end encryption.

WiBox™ is a MidMarket Products of the Year.

Ready-to-Go Wireless in a Tiny Form Factor
WiPort – Embedded Wireless Device Server Module

The matchbook-sized WiPort™ gives OEMs the ability to add 802.11 b/g wireless networking to any electronic device with a serial interface. WiPort also includes Ethernet connectivity, making it essentially two network-enabling devices in one for added flexibility.

Its compact package includes our powerful DSTni™ controller, 802.11 b/g radio, dual high-speed serial ports, a fully developed TCP/IP network stack and OS.

WiPort is certified by the Federal Communications Commission, so you do not need to pursue separate certification when incorporating our 802.11 b/g wireless capability. This greatly accelerates and simplifies the process while reducing the associated costs of bringing your product to market.

→ Compact design conserves board space and allows easy installation.
→ Serial speeds up to 921K baud.
→ RS-232 and RS-485 support.
→ WiPort can support CAN Bus, SPI Bus and I2C Bus.
→ Ethernet-to-wireless bridging.
→ Two serial ports.
→ Modbus version available.
→ 128-bit WEP and WPA - PSK, TKIP.
→ 256-bit AES end-to-end encryption.
The Highest Levels of Wireless Security

WEP and WPA

WEP and WPA provide encryption and authentication for wireless networks. Wired Equivalent Privacy (WEP) is the most common but is also known to be vulnerable to key recovery attacks. WiFi Protected Access (WPA) is designed for use with an authentication server, which distributes different keys to each user. A major improvement over WEP is given by the Temporal Key Integrity Protocol (TKIP) which dynamically changes keys as the system is used. When combined with its much larger initialization vector, WPA defeats the well-known key recovery attacks on WEP.

AES (Rijndael) Encryption

Lantronix wireless products include a NIST (National Institute of Standards and Technology)-certified implementation of Advanced Encryption Standards (AES) as specified by FIPS-197. AES is based on the Rijndael algorithm, and specifies three approved key lengths, 128-bit, 192-bit and 256-bit. The Lantronix implementation of AES provides high-security data protection between end devices and backend host systems.

True End-to-End Security

Lantronix offers true end-to-end wireless data protection. Our optional Secure Com Port Redirector™ (SCPR) software uses standard TCP/IP protocols and AES algorithms to map “virtual COM ports” to Lantronix Device Servers, encrypting and decrypting the data at both ends of the communication. This capability enables COM port-based software applications to communicate securely over the Net to remote serial devices, giving you the confidence of the highest level of security. Additionally, Lantronix offers our Encryption Library Suite to help device manufacturers easily embed AES into their applications. For more information on SCPR, see Page 17.

Upgrade to Wireless

WiMicro – Board Level Wireless Device Server

The WiMicro™ is a quick and easy 802.11 b/g wireless drop-in solution for Lantronix OEM customers who already use our Micro or Micro100 Embedded Ethernet Device Servers.

Usually requiring minimal or zero modification to the existing design, the WiMicro board allows a Lantronix WiPort Embedded 802.11 b/g Wireless Device Server to plug directly into the existing interface using the same mounting holes as the Micro/Micro100. The LEDs and antenna are positioned in the same locations as the Micro/Micro100 LEDs and Ethernet RJ45 connector.

→ 128-bit WEP and WPA - PSK, TKIP.
→ 256-bit AES end-to-end encryption.
→ Pin-compatible with Micro and Micro100.
→ Maximum flexibility offering wired/wireless solutions.

Tight glycemic control (TGC™), the normalization of blood glucose levels with intensive insulin therapy, has been shown to reduce mortality and morbidity among critically ill diabetic patients. But for this treatment to be effective, it’s necessary to test a patient’s blood glucose levels 11 to 12 times per day – unrealistic in the busy hospital setting.

LifeScan, a Johnson & Johnson company and a leading maker of blood glucose monitoring systems, needed the ability to wirelessly upload the data collected from its OneTouch® Flexx Blood Glucose Testing System to a centralized system from anywhere in the hospital.

By equipping its OneTouch DataLink® system with Lantronix wireless networking technology, Lifescan was able to supply instant access to point-of-care glucose information – enabling TGC to be optimized.

Without having to return to the nursing station to download results, nurses are more mobile with more time for patients and other duties. Improved care and shorter hospital stays translates into quicker patient recovery, and money saved for hospitals, insurance carriers and patients alike.
Lantronix has long recognized that engineers need a simple, cost-effective and reliable way to seamlessly embed network connectivity into their products. Our expertise in device networking and the development of a stable real-time operating system (RTOS) and TCP/IP stack enables manufacturers to add full Ethernet and/or wireless connectivity to their devices with minimal effort, programming or development time.

Lantronix compact, cost-effective embedded device networking products deliver a complete feature set, including encryption, serial support options, management flexibility, 10/100 Base-T Ethernet or wireless connectivity, and the ability to customize. They satisfy the need to quickly and easily integrate networking into new product designs right at the board level. Lantronix Embedded Device Servers enable OEMs to keep pace with the expanding possibilities of network technology by easily adding Ethernet and/or wireless connectivity at a fraction of the time and cost that would be required to develop an in-house solution.

**Embedded Ethernet Device Servers for M2M Networking**

---

**Integrated Network Processing Module**

**XPort – Compact Embedded Device Server**

Respecting your need to conserve valuable board space, the XPort® provides the most compact integrated solution available to network-enable virtually any product with a serial interface.

The XPort has everything OEMs need to bring products to market with lightning speed, all contained in a single RJ45 package. The need for in-house networking expertise is eliminated, so engineering resources are free to focus on your device application.

- 10Base-T/100Base-TX auto-sensing Ethernet connectivity.
- Embedded HTTP-compliant web server.
- Programmable e-mail alerts.
- Extensive networking protocol support including TCP/IP.
- Optional 256-bit AES Rijndael encryption for secure communications.
- Optional RS-485 support.
- 512K Flash memory for custom web pages.
- Modbus version available.

**Integrated Network Processing Module**

**WiPort NR – Embedded Device Server Offers Smooth Transition to Wireless**

With the same form factor and pinout of the 802.11 b/g wireless WiPort™, the WiPort NR is a flexible solution enabling wired/wireless layout compatibility on a single PCB design and a seamless migration path from Ethernet connectivity to wireless networking.

- Pin-compatible with WiPort.
- Two serial inputs.
- 2MB of Flash memory.
- 11 GPIO pins.
- PoE-capable with external circuitry.
- EMC/EMI-compliant
- 256-bit AES Rijndael encryption for secure communications.
- Interface to CAN, SPI and I2C Bus available.
- Extensive networking protocol support including TCP/IP.
Lantronix Customer Profile: ISONAS

A leading developer of panel-free IP door readers and controllers, ISONAS Security Systems recognized the need for a true wireless IP door reader that could connect directly to a standard wireless access point. In addition to providing the benefit of centralized control, this solution would minimize costs and simplify installation.

Incorporating the WiPort Embedded Device Server into their award-winning* ClearNet IP Reader-Controllers™ created a highly compatible, secure wireless solution that eliminated the costs of cabling and the expense and maintenance of a traditional security control panel. WiPort provides the secure communications between the IP door reader and the network, enabling network administrators to directly monitor and control an almost unlimited number of door readers across the enterprise.

Selected as a New Product of the Year finalist by Access Control and Security Systems Magazine, the ISONAS innovative wireless solution continues to receive industry accolades.

* “Best New Access Control Product” at the ISC West show in 2005

Lantronix Custom Solutions

Lantronix offers tailored solutions for customers with unique needs. Some of the potential applications include:

→ Special handling of serial or network data for specific devices.
→ Tunneling applications that package data optimally.
→ Protocol translation applications.
→ Web server applications for monitoring and controlling devices.
→ Custom board configuration.
→ Firmware to include proprietary protocols.

For more information on custom solutions, contact your Lantronix representative.
Connecting the Edge to the Enterprise
The First Flexible, Programmable Device Computing Platform for Building Intelligent, Highly Secure and Network-ready Devices

As more devices are added to the network, it is increasingly necessary that they are equipped with a certain level of intelligence so they can operate more autonomously. And as more equipment is networked, the need to access, collect and process the data from that equipment throughout the corporation increases. To make this “edge-to-enterprise” network a reality, M2M devices need to operate with the same standards as traditional networking equipment found in the IT data center such as servers, routers and switches.

XPort® Architect™ (AR) is the first Device Server solution that goes beyond simple network connectivity to deliver an enterprise-grade, programmable device computing and networking platform.

Featuring Evolution OS™, our powerful real-time embedded Networking Operating System, XPort AR features an extensible, open standards-based software platform for managing devices and delivering information over the enterprise network.

→ Fully programmable device computing platform – Cisco®-like CLI, XML, RSS.
→ “Data center-grade” security, including SSL and SSH.
→ True IEEE 802.3af-compliant pass-through Power over Ethernet (PoE) using both Ethernet pairs.

XPort AR is essentially an “IP computer” built into the device, giving it the ability to gather, process and communicate information and then take the appropriate preprogrammed actions. More than just a networking coprocessor, it offers:

→ 120Mhz DSTni™ processor.
→ Up to three serial ports and 13 configurable GPIO pins.
→ 230 Kbps serial data rate.
→ 1.25 MB of SRAM/4MB Flash.
→ 10/100 Base-T/TX Ethernet connection.
→ Embedded web server and network protocol stack.
→ I2C, SPI, USB and CAN Bus interfaces available.

Open Standards; Extensible Technologies
As IT managers are increasingly being asked to integrate M2M edge-networked devices at a corporate level, it is important that the tools, technology and architecture on those edge devices meet current data center equipment standards. It is also important that they are easy to integrate and built on extensible and open software technologies. Evolution OS includes:

Cisco®-like CLI with syntax that is very similar to that used by data center equipment such as routers and hubs.

XML-based Architecture and Device Control for web services, data transfer and rich content management that encapsulates data into a text-based format.

RSS for streaming and managing on-line content to configure XPort AR to automatically send back real-time device information over the network to a database.
**Enterprise-grade Security**

Without the need to disable any features or functionality, Evolution’s hardened OS gives XPort AR the highest level of security possible. This “data center-grade” protection ensures that each device on the M2M network carries the same level of security as traditional IT networking equipment in the corporate data center.

With built-in SSH and SSL, XPort AR features robust defenses to hostile Internet attacks, such as denial of service (DoS) and port mapping that can be used to take down the network or other devices on the network. Additionally, SSH includes robust key management algorithms that verify and validate the data and source. XPort AR supports a variety of popular cipher technologies including AES, 3DES and RC4 and hashing algorithms such as SHA-1 and MD5. SSL ensures secure web-based communications.

**XPort and XPort AR**

**Family of Applications**

XPort is an extremely fast solution for Serial-to-Ethernet data tunneling. The XPort AR embedded processor adds advanced computing and Machine2Mainstream™ communication capabilities.
**Board-Level Ethernet Device Servers**

Lantronix compact Board-level Device Servers are designed to be integrated onto the circuit boards of electronic devices like factory machinery, security systems and medical equipment. These highly-configurable solutions incorporate fast and reliable networking technology for a very cost-effective alternative to dedicated computer systems and excessive cabling. Since they are easy to snap in and snap out, they provide a high level of post-manufacturing and in-field flexibility. And best of all, they can be easily adapted into your existing design.

**Micro Embedded Device Servers**

The Micro and Micro100 are board-level products for OEM users who want to embed proven mainstream Ethernet connectivity into their products quickly and economically. The Micro100 offers the same small footprint, features and proven performance as the Micro, with 10/100Base-T to support today’s faster connection speeds.

Measuring only 1.6” x 1.9”, these products can easily fit into almost any device that would benefit from integrated network connectivity. Serial connectivity is accomplished via a TTL (transistor-to-transistor) connector, and for Ethernet access, an RJ45 connector is integrated.

> Flexible, well-developed IP protocol stack.
> Two serial ports.
> TTL serial interface.
> 5 VDC regulated input power.
> Configurable Ethernet option for the OEM.
> Custom protocol support.
> Internal web server, serial, Telnet and SNMP management support.
> RoHS-compliant.

**UDS1100-B Embedded Device Server**

The UDS1100-B can network-enable nearly any electronic device at the board level, allowing it to be remotely monitored, managed and controlled over the Internet or shared network.

> Flexible and well-supported IP protocol stack.
> DB25 port for RS-232, RS-422 or RS-485 serial connections.
> Flash ROM for easy software updates.
> Ethernet RJ45 10/100Base-T connector.
> IAP models supporting industrial protocols are available.
> Power through serial or barrel connector.
> 2MB of Flash memory.
> RoHS-compliant.

**Board-Level Products**

<table>
<thead>
<tr>
<th>Micro / Micro100</th>
<th>UDS1100-B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serial Interface / # Ports</strong></td>
<td>TTL (2)</td>
</tr>
<tr>
<td><strong>Network Interface</strong></td>
<td>10Base-T</td>
</tr>
<tr>
<td><strong>RJ45 Connector</strong></td>
<td>⬤</td>
</tr>
<tr>
<td><strong>NIST-certified 256-bit AES encryption</strong></td>
<td>⬤</td>
</tr>
<tr>
<td><strong>Data Rate (bps)</strong></td>
<td>300-115K</td>
</tr>
<tr>
<td><strong>Flash Memory</strong></td>
<td>512Kb</td>
</tr>
<tr>
<td><strong>Required Input Power (VDC)</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Maximum Current Requirements (Watts)</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Dimensions (L x W x H)</strong></td>
<td>49 x 40 mm 1.93 x 1.57 in</td>
</tr>
</tbody>
</table>

*Denotes available with certain models or as an option.

**NIST-certified implementation of Advanced Encryption Standards as specified by FIPS-197.**

All units ship with: Com Port Redirector software, Lantronix DeviceInstaller GUI, Serial login, SNMP, Telnet login, Internet HTTP server. IAP and Modbus versions are available.
**Single-Chip Device Networking Solutions**

**DSTni Chips**
For design engineers who need ultimate flexibility, Lantronix innovative DSTni™ chips provide powerful system-on-chip (SOC) solutions, and a wide range of on-chip peripherals to support the most popular embedded networking technologies.

DSTni chips offer component-level network enabling capability and are ideal for any high production environment that requires a high-performance Turbo i86 microprocessor. Featuring 10/100 Base-T network interface, the DSTni chip can be used as the primary processor in an embedded communication system, or in more complex applications it can function as a network co-processor. Communication channels include Ethernet MAC (media access control), CAN (controller area network), Profibus DP (LX only), SPI, and dual or quad serial ports to handle the most demanding embedded applications.

DSTni-EX gives engineers an even more powerful option for designing Ethernet networking capability into their products. Starting with three times the power of the LX, this single-chip solution offers two 10/100 Ethernet channels – one with a built-in physical layer (PHY) – quad serial ports and USB.

**Single Chip Solutions**

<table>
<thead>
<tr>
<th>Feature</th>
<th>DSTni-LX</th>
<th>DSTni-EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asynchronous Serial Ports</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Integrated Ethernet MAC</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Maximum Serial Data Rate</td>
<td>230Kbps</td>
<td>921Kbps</td>
</tr>
<tr>
<td>Memory</td>
<td>256Kb SRAM</td>
<td>256Kb SRAM</td>
</tr>
<tr>
<td>Physical Layer (PHY)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Input Power Requirements</td>
<td>2.5 VDC supply voltage for core, 3.3 VDC for I/O</td>
<td>1.8 VDC supply voltage for core, 3.3 VDC for I/O</td>
</tr>
<tr>
<td>Profibus</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Pin Configuration/Packaging</td>
<td>160 LPQFP</td>
<td>184 BGA</td>
</tr>
<tr>
<td>Network Interface</td>
<td>10/100Base-T</td>
<td>10/100Base-T</td>
</tr>
<tr>
<td>2 CAN V2.0b controllers, 1 Mbps, 16-bit interface to CAN channels</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Maximum Clock Speed</td>
<td>48Mhz</td>
<td>115Mhz</td>
</tr>
<tr>
<td>USB Controller v1.1</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>SPI Controller</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Available for high-volume orders only. Contract Lantronix for details.

---

**Lantronix Customer Profile: i-STAT**

As a recognized leader worldwide in point-of-care blood analysis products, i-STAT manufactures one of the first fully automated hand-held blood analyzers. Used in more than 2,000 hospitals, it performs a complete panel of the most commonly ordered blood tests in a simple procedure at the patient’s bedside.

Traditionally, hospitals relied on dedicated RS-232 cabling to connect IR links from each nursing station to the Data Management System to electronically transmit patient test records from the hand-held analyzer. This dedicated cabling was expensive and hindered by distance limitations.

Using a Lantronix board-level Device Server, i-STAT designed a more efficient method which connected the hand-held blood analyzer’s docking station directly to the hospital’s Ethernet network. The Lantronix board offered a convenient, easy-to-integrate solution capable of converting a serial interface to Ethernet. This eliminated the cabling distance limitations and enabled nurses to transmit patient test results more efficiently to anywhere on the hospital network. With the board’s dual-port capability, i-STAT was able to use one port for the docking station and the other as an accessory port to enable other serial devices to connect to the network.
More than likely, your existing non-networked equipment is functioning fine, but your business could benefit greatly by connecting that equipment to the network. Should you spend thousands or even millions of dollars to replace aging but perfectly capable equipment? Is it worth undergoing the headaches of implementation or possible recertification? In most cases, probably not. That’s where Lantronix External Device Servers come in.

Whether it’s new or an existing piece of equipment, a Lantronix external device networking product can put virtually any device with serial connectivity on the network in a matter of minutes. They can take an isolated device like a bedside analyzer or industrial refrigeration unit and turn it into a fully functioning component of your network. Previously non-networked devices will enjoy increased lifespan, maximizing ROI and allowing them to integrate with newer networked systems. Advanced device networking solutions enable you to upgrade your communication and functionality while preserving your investment in your present equipment. And the costs of separate wiring and modem setups are eliminated.

Our External Device Servers are available in a variety of configurations to fit your needs. You can choose wired or wireless connectivity, advanced encryption for maximum security, servers designed for commercial or industrial applications, and numerous other options. A whole new world of machine-to-machine system communication is possible through External Device Servers from Lantronix.

### External Ethernet Device Servers

<table>
<thead>
<tr>
<th>Model</th>
<th>Serial Interface</th>
<th>Connector / # Ports</th>
<th>Network Interface</th>
<th>NIST-certified 256-bit AES Encryption*</th>
<th>Data Rate (bps)</th>
<th>Flash Memory</th>
<th>Required Input Power (VDC)</th>
<th>Max. Current Req. (Watts)</th>
<th>Dimensions (L x W x H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDS4100</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male, (4) DB9, male, DCE / (1) DB9, male, DTE / (2) 10/100Base-T AES</td>
<td>300-230K</td>
<td>8Mb</td>
<td>4-9.30 (barrel)</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UDS100</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, female, DCE / (1) DB9, male, DTE / (2) 10/100Base-T AES</td>
<td>300-230K</td>
<td>2Mb</td>
<td>9-30</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UDS200</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, female, DCE / (1) DB9, female, DCE / (1) 10/100Base-T AES</td>
<td>300-230K</td>
<td>1Mb</td>
<td>9-30</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SecureBox SDS1100</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DCE / (1) 802.11 b/g, 10/100Base-T AES</td>
<td>300-115K</td>
<td>1Mb</td>
<td>9-30</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SecureBox SDS2100</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DTE / (1) 10/100Base-T AES</td>
<td>300-920K</td>
<td>2Mb Std 4Mb Optional</td>
<td>9-30</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WiBox</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DTE / (1) 802.11 b/g, 10/100Base-T AES</td>
<td>300-230K</td>
<td>1Mb</td>
<td>9-30</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UBox</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DTE / (1) 802.11 b/g, 10/100Base-T AES</td>
<td>300-230K</td>
<td>2Mb Std 4Mb Optional</td>
<td>9-30</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSS100</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DTE / (1) 802.11 b/g, 10/100Base-T AES</td>
<td>300-230K</td>
<td>1Mb</td>
<td>9-30</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSS4</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DTE / (1) 802.11 b/g, 10/100Base-T AES</td>
<td>300-115K</td>
<td>2Mb Std 4Mb Optional</td>
<td>9-30</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CoBox-FL</td>
<td>RS-232, RS-422, RS-485</td>
<td>DB9, male (2) DB9, male, DTE / (1) 802.11 b/g, 10/100Base-T AES</td>
<td>300-230K</td>
<td>1Mb</td>
<td>9-30</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*AES encryption will be included in future models. Contact us for more information.

**NIST-certified implementation of Advanced Encryption Standards as specified by FIPS-197.

With the exception of UBox, all units ship with: Configuration utility software, Serial login, SNMP, Telnet login, Internet HTTP server.
**Advanced Data Security**
Protecting data (such as business transactions, customer information, medical records and financial information) is a critical challenge in today's electronic world. With Lantronix products, you can be sure that the data on your networked devices is secure.

**The First “IT-Ready” Device Server – EDS4100**
The EDS4100 is the first external Device Server to deliver an enterprise-grade, programmable device computing and networking platform for integrating ‘edge’ equipment into the enterprise network.

Featuring Lantronix Evolution OS™, our powerful real-time networking operating system, EDS4100 delivers an unprecedented level of intelligence and security to networked equipment.

With this powerful product, just about any piece of equipment with a serial port can become a fully secure member of the corporate network that can be accessed and managed remotely from virtually anywhere.

- Robust “data center-grade” security, including SSL/SSH, AES, 3DES, ARC4 encryption.
- Supports fully programmable device computing platform based on corporate IT standards – supports Cisco-like CLI, XML and RSS.
- True IEEE 802.3af-compliant Power over Ethernet (PoE).
- RoHS-compliant.

**SecureBox – Serial-to-Ethernet Device Server**
For connectivity when data integrity and protection are of paramount concern, our customers turn to SecureBox™ SDS Device Servers, which incorporate AES (Advanced Encryption Standards). Security is a major issue for communications on government networks. However, data security isn’t only a government concern. In today’s business world, security and privacy are critical, especially in the financial and medical sectors. With the introduction of SecureBox, Lantronix was the first Device Server company to offer a National Institute of Standards and Technology (NIST)-certified implementation of AES as specified by Federal Information Processing Standards (FIPS) 197.

With AES, SecureBox supports Lantronix Secure Com Port Redirector™ software. This tool enables it to communicate with networked devices by redirecting local PC COM port communications to the COM port of a remote networked device for complete end-to-end data encryption. The single-port SDS1100 and dual-port SDS2100 both offer Ethernet 10Base-T/100Base-TX communication.
**COMMERCIAL DEVICE SERVERS**

Lantronix Commercial Device Servers are designed to network-enable your existing business equipment (such as point-of-sale devices, A/V equipment or medical instruments) simply and cost-effectively, without the need for special software or disrupting the way you work. Using a method called serial tunneling, they encapsulate serial data into packets and transport it over Ethernet. Using two Device Servers or Lantronix COM Port Redirector software, virtual serial connections can be extended across a facility or around the world so you can manage your equipment from virtually anywhere over Ethernet or the Internet.

**UDS1100 – VALUE AND PERFORMANCE**

With the UDS1100, virtually any piece of equipment with a serial port can be added to an Ethernet network in a matter of minutes! This single-port device server is a quick, simple and inexpensive way to bring the advantages of remote management to equipment not currently connected to a network.

In Modem Emulation mode, the UDS is used to replace dial-up modems. The unit accepts modem AT commands on the serial port. It then establishes a network connection to the end device, leveraging network connections and bandwidth to eliminate dedicated modems and phone lines.

→ 2 MB of Flash.
→ Software-selectable between RS-232, RS-422 RS-485.
→ 230.4K serial port speed.
→ 15,000 Kv protection (galvanic ESD protection).
→ Wide range of protocols supported; ARP, UDP, TCP, ICMP, Telnet, TFTP, AutoIP, DHCP, HTTP, SNMP, TCP, UDP and Telnet.
→ RoHS-compliant.

**CoBox-FL – FIBEROPTIC CONNECTIVITY**

The CoBox-FL enables electronic devices to connect to an Ethernet network over a fiber optic medium. It provides both ST Multi-mode Fiber (10Base-FL) and RJ45 (10Base-T) Ethernet interfaces. RS-232 and RS-485 serial connections are accomplished via DB9 and DB25 serial ports.

**MSS – FEATURE RICH COMMERCIAL DEVICE SERVER**

The robust MSS100 and MSS4 offer a feature-rich, multi-tasking operating system and a 32-bit processor for demanding, memory-intensive applications.

→ 10Base-T/100Base-TX fast Ethernet interface.
→ Host list for multi-host or sequential-host connectivity.
→ Lantronix Software Development Kit for customization.
→ 230 Kbps serial interface.
→ RoHS-compliant (MS100).

**UBox – USB-TO-ETHERNET DEVICE SERVER**

UBox™ puts USB peripheral devices on Ethernet networks, removing distance limitations. USB devices can be individually dedicated or shared over the network maximizing your hardware investment.

With UBox, users can network devices such as storage subsystems, security ID devices, card readers, barcode scanners, multifunction printers and even PDAs easily and without distance limitations.

→ 10/100 Fast Ethernet.
→ Ethernet-enabled USB host controller.
→ 4 USB Full-speed ports (12Mbps).
→ Supports DHCP, UDP, Static IP or Zeroconfig IP addressing.
**INDUSTRIAL DEVICE SERVERS**

Lantronix offers a full range of industrial-strength External Device Servers designed for use with manufacturing or assembly equipment such as programmable logic controllers (PLCs), motion controllers, barcode scanners, and power monitoring equipment at manufacturing sites, automated distribution centers and refinery plants.

**XPress Family – Industrial Device Servers**

Our XPress-DR industrial Device Servers are equipped with isolated serial and Ethernet ports, ruggedized casings, and screw terminal connectors for serial and power. They support industrial protocols such as Modbus TCP, Modbus ASCII, Modbus RTU and DF1, and are FM-approved for hazardous locations Class 1, Div 2.

**XPress-DR+**

With two serial ports and two 10/100 Ethernet switch ports, the XPress-DR+™ enables Ethernet cascading from one network drop. The onboard Ethernet switch expands network connectivity by allowing multiple devices to connect to a single network backbone connection. This unique feature can save hundreds of dollars on cable runs and simplifies adding or moving a network device.

→ Modbus TCP, Modbus ASCII/RTU and DF1 Multi-Master protocol support.
→ 15KV ESD serial port protection.
→ 2.5KV Ethernet isolation.
→ Wide -40° to 70°C operating range.
→ 9-30VDC and 9-24VAC power input range.
→ RS-232, RS-422 or RS-485 screw terminal connection with a configurable interface.

**City of Palo Alto**

The City of Palo Alto Utilities needed a solution to effectively enhance its existing Advanced Metering program using the city's fiber network. The challenge was that the city had two different meter-reading systems: a dial-up modem system for reading electric meters and a manual system for gas and water. The City's goal was to pilot test a means to obtain timely building metered data while eliminating the need for dial-up communication in selected sites.

The City determined a networked iMETER™ from Automated Energy would enable them to retrofit existing Interval Data Recording (IDR) meters to communicate over the Internet and eliminate additional dial-up lines, freeing up valuable phone lines and avoiding the risk of missed data.

To provide the network connectivity, Automated Energy turned to Lantronix UDS Device Servers as quick, simple and cost-effective modem replacements. With this solution, The City was able to successfully pilot a robust and reliable channel of data communications that can potentially eliminate meter reporting issues commonly due to communications errors and problems with phone lines. The solution proved the ability to eliminate the cost of dedicated phone lines and costs related to managing those lines. By preserving the existing meter and network infrastructure and simplifying service, this method proved to be easily adaptable to new market requirements.
Lantronix Software Solutions for M2M Networking

Secure End-to-End Communications For Wired and Wireless Applications

With the proliferation of information in today’s electronic world, businesses and individuals are more concerned than ever about protecting data from unwanted intrusion as it is transferred over a network or the Internet. Lantronix addresses this concern with robust software applications that provide true end-to-end encryption and the highest level of data security available for networked devices.

Encryption Library Suite – Security for OEM Software Applications

The need for bulletproof security creates additional burden on software developers to learn and develop applications to communicate with various devices over a network, and then design a means to protect the data to ensure secure communications.

The Lantronix Encryption Library Suite provides everything software developers need to quickly add encrypted network connectivity for secure end-to-end communications into their software applications. This capability lets developers concentrate on their core competency, be more efficient and create higher-quality software applications.

When linked to the device’s software application, the DLLs (Dynamic Link Library) encrypt data at the application before it travels over the network to a Secure Device Server which then decrypts the data and sends it over a serial connection to the device. Examples include patient monitoring equipment transmitting critical test results to a laboratory system or a kiosk sending sensitive financial data to a central database.

The Encryption Library Suite includes the DLLs instructions and sample applications. It is compatible with SecureBox, WiBox, XPort and WiPort.

→ Rijndael AES 128/256-bit encryption/decryption.
→ Two-Fish 128-bit encryption/decryption.
→ Cipher Block Chaining (CBC) mode.
→ Cipher Feedback 128-bit (CFB128) mode.
→ Windows sockets.
→ Binding for Visual Basic, C and Java.
→ UDP/TCP sockets support.
→ Client or Server mode.
→ Example applications for C and VB.

Secure Com Port Redirector™ – Extending Communications with Encrypted Virtual Com Ports

SCPR is a Windows® application which creates a secure network path between the computer and serial-based devices that are traditionally controlled via a COM port.

Using standard TCP/IP protocols and advanced encryption algorithms, SCPR maps “virtual COM ports” to Lantronix Device Servers and encrypts the data at both ends of the communication. This capability allows COM-based software applications to communicate securely over a network or the Internet to remote serial devices. Those devices can then be managed from virtually anywhere without the threat of compromising data security. Sensitive information can be transmitted to and from remote equipment over the network or the Internet with the added confidence of the highest level of security. By enhancing communication from centralized applications to remote devices without the need to modify the application or device, SCPR breathes new life into legacy equipment.

To take advantage of SCPR, Device Servers must support the Rijndael AES encryption. Currently, WiBox, SecureBox, XPort, WiPort and Micro100 support AES.

SCPR can also be used to create secure COM port-based connections between PCs over Ethernet. With SCPR installed at each machine, PCs that were formerly “hard-wired” by serial cabling (for security purposes or to accommodate applications that only understood serial data) can instead communicate over an Ethernet network or the Internet.
Secure Remote IT Access and Modem Replacement

One, Two and Four-port Secure Console Servers
With Secure Console Servers™, system administrators can solve local and remote IT incidents quickly, reducing downtime and saving money. Their compact form factors make them ideal for a variety of applications and save valuable space in your data center.

Secure Console Servers leverage your existing IP network or a modem connection to provide remote access to IT and telecom equipment. Connecting IT equipment (hubs, switches, routers, servers, UPS systems, PBX systems, storage networking equipment and telecom switches) via the serial port enables administrators to manage the equipment from virtually anywhere in the world.

Secure Modem Replacement
Lantronix low-port density Console Servers can be used to replace expensive and insecure modem connections to networked equipment. They ensure the integrity of customer data and equipment by incorporating robust security protocols. Authentication limits access to authorized users only, via login and password (typically determined by username), modem dialback, PAP/CHAP, Radius, Kerberos or SecureID. Stored user profiles help restrict access to equipment and services as necessary, while Secure Shell safeguards login passwords and in-transit data through encryption.

- Secure Shell (SSH) authentication.
- Sun Solaris “break safe.”
- In-band management offers convenient access over IP networks.
- Type I/II PCMCIA interface supports wireless adapters, storage cards, analog and cellular modems (SCS200/400).
- Event logging and e-mail notification.
- Direct access to equipment with configurable menus.
- Easy setup and configuration.

FREE Software, Utilities and Tools

Com Port Redirector™
With this unique and easy-to-manage product, you can extend the functionality of COM port-based Windows applications. It enables existing PC applications to communicate with networked devices by redirecting local PC COM port communications to the COM port of a remote networked device.

DeviceInstaller™
This Windows-based GUI application simplifies the installation and configuration of CoBox and UDS Device Servers.

- Load the appropriate firmware into the Device Server.
- Assign IP and other network-specific addresses to the unit.
- Load custom web pages.

Download these FREE utilities at www.lantronix.com
Leading Device Networking Solutions—Whatever Your Need

No matter your need or where you are in the design cycle—whether you are adding network connectivity to existing equipment or building it into your products at the board level—Lantronix has a product to fit your needs. Our solutions include embedded board-level Device Servers, external modules, commercial, industrial and wireless device servers, integrated circuits (IC chips), and a powerful suite of complementary software.

OEMs can add networking capability to their products, often without any hardware or software changes to their existing device designs. Systems integrators can network-enable any device with a serial port in a matter of minutes. End-users can also network-enable their existing serial devices without the expense of major system overhauls or upgrading equipment.

Your Partner Through the Entire Product Lifecycle

New and Existing Equipment

- External Device Servers
  - Web-enable your products.
  - Speed time to market.
  - Connect existing equipment to Ethernet and the Web.

New Product Development

- Board-Level Device Servers
  - Easy to add/remove.
  - Easily adaptable to your existing design.

- Embedded Modules
  - Integrated - built into your design.

- Single-Chip Solutions
  - Small and economical.

Design Integration

Networking Solutions for Your Needs
As recognized experts in connecting equipment to networks and the Internet, Lantronix provides proven benefits for your quest to improve business communications.

→**Partner with a Recognized Leader in Quality** – At Lantronix, we take our commitment to quality, reliability and environmentally-sound manufacturing processes very seriously. We are ISO 9001 and ISO 14001-registered and we have proactively implemented strategies to meet the RoHS and WEEE directives.

→**Accelerate Time-to-Market** – A Lantronix Device Server is so easy to integrate that it can add network connectivity in a few minutes using an external Device Server and in a few weeks using an embedded unit.

→**Reduce Design Risk** – Lantronix products are already engineered, tested and EMC-compliant, eliminating the R&D and investment risk inherent in trying to network-enable an edge device.

→**Gain a Competitive Edge** – Putting a device on the network gives it functionality with a quantifiable benefit. Through remote diagnostic capability, service costs will drop while responsiveness will increase, simultaneously improving both revenue and customer satisfaction.

→**Leverage Legacy Equipment** – Existing non-networked or legacy devices can increase their lifespan, improving ROI and allowing them to integrate with newer networked systems.

→**Save Time and Money** – By providing a complete networking solution, Lantronix ensures that OEMs and systems integrators do not have to spend time and resources developing it themselves.

→**Make Networked Devices More Profitable** – Smart devices can provide new revenue streams and competitive advantages by enabling companies to offer new value-added services.

→**Enjoy the Industry’s Best Technical Support** – Lantronix has a highly trained and experienced technical support team dedicated to helping you succeed using our products.

---

**The Experience Behind our Software and Hardware**

More than 15 years of networking experience and an expert team of engineers set Lantronix apart. As a Lantronix customer, you enjoy the benefit of this experience and expertise in the quality of our products, our robust TCP/IP stack, bulletproof security and diverse applications.

In addition to the standard features you’d expect in an off-the-shelf TCP/IP stack, Lantronix offers PPP, HTTP, CGI, SNMP and FTP/TFTP for a more robust, fully integrated stack to support your most demanding applications. With many years of development, our hardened TCP/IP stack is also very resilient against attack. This means Lantronix Device Servers ignore “quality-of-service” attacks and are not at risk to break when under such attacks. They cannot be used to hijack other devices or bring down the network.

And it doesn’t stop there. Lantronix also offers the additional security of Advanced Encryption Standards (Rijndael AES), SSH and SSL to completely protect the data transmitted to and from the equipment attached to the Device Server. Quite simply, Lantronix experience means security and peace of mind.

Finally, with Evolution OS built into our advanced device networking products, Lantronix offers a robust software application layer which includes useful tools such as XML, RSS, SMTP email, web manager, Cisco CLI, file system and more.
Industry-Leading Quality

At Lantronix, we believe that our quality differentiates us as much from our competition as our innovative products. Reflecting our unwavering commitment to quality, reliability and environmentally-sound manufacturing processes, we are ISO 9001:2000 and ISO 14001-registered.

ISO 9001:2000 is a business process tool that helps companies manage their processes in a controlled manner, resulting in the production of high-quality products. ISO 14001 is a management system that helps companies develop and execute a policy that ultimately reduces harmful effects on the environment. A European Community Directive (2002/95/EC) requires that all products sold into Europe by July 2006 meet ISO 14001 standards. Both standards are established by ISO (International Organization for Standardization), the world’s largest developer of standards.

Lantronix is committed to building the highest-quality products with environmentally friendly standards. For information on our “green roadmap” and plans for meeting RoHS and WEEE environmental directives, please visit www.lantronix.com/about/rohs.html.

When you choose Lantronix, you get the peace of mind that comes from partnering with a highly experienced technical innovator with a commitment to the highest quality, environmental and business principles.

Unmatched Technical Support

At Lantronix, we offer a level of worldwide customer and technical support unmatched by any in the industry. You’ll not find a more experienced, knowledgeable or courteous staff anywhere. Engineers and technical professionals comprise nearly half of our workforce, so you can rest assured that your representative will not only be knowledgeable about Lantronix products, but also about how they can help in your specific application.

For access to our online knowledge base and FAQs, visit www.lantronix.com/support.

Lantronix technical support offers:

→ Free phone support with minimal hold time:

**North America**

→ 6 a.m. – 5:00 p.m. PST, Monday through Friday
(800) 422-7044

**Europe, Middle East, Africa**

→ +33 (0)1 39 30 41 72

→ Virtual on-site support via Live Assist.
→ Online chat.
→ Web-based video configuration tutorials.
→ Online knowledge base and FAQs.
→ Extended services:

→ Extended warranty
→ 24x7 telephone technical support
→ Advanced replacement

Just give us a call or visit www.lantronix.com and find out why we’re so proud of our support team and the services we provide.
AES (Advanced Encryption Standard) Algorithm for data encryption at 128 to 256-bit. Rijndael is the name for the algorithm behind AES that can encrypt and decrypt information.

Break-Safe Products Products that will not inadvertently send a reset signal to a console port even when power is lost.

FIPS (Federal Information Processing Standards) Secretary of Commerce-approved standards and guidelines developed by NIST for federal computer systems.

HTTP (HyperText Transfer Protocol Secure) A protocol used to transfer information on the Web using public-key cryptography. See SSL.

In-Band Uses the existing network for communications and management information.

NEBS (Network Equipment Building Systems) Product reliability standard for telecommunications equipment.

NIS (Network Information System) Developed by Sun Microsystems to distribute user and host names among computers on a network.

HIST (National Institute of Standards and Technology) A non-regulatory federal agency created to develop and promote measurement, standards and technology to enhance productivity and facilitate trade.

Out-of-Band Uses a separate connection method other than the primary network, such as a dial-up or backup network for managing equipment.

PBX Systems (Private Branch Exchange) A private telephone network used within an enterprise.

RADIUS (Remote Authentication Dial-In User Service) An authentication and accounting protocol that communicates with a central server.

Secure Shell (SSH v1 and v2) A secure transport protocol based on public-key cryptography.

SNMP (Simple Network Management Protocol) A protocol that system administrators use to monitor networks and connected devices.

SSL (Secure Sockets Layer) A protocol that provides encryption services between a web server and a web browser, using public-key cryptography.

UPS Systems (Uninterruptible Power Supply) A power supply that includes a battery to maintain power in the event of a power outage. Typically keeps a computer running for several minutes after a power outage, so data that is in RAM can be saved and the computer shuts down gracefully.

Baud Unit of signaling speed in signal elements transmitted per second. A synchronous with bits per second (bps), if each signal element represents exactly one bit.

CAN (Controller Area Network) A serial bus network of microcontrollers that connects devices, sensors and actuators in a system or sub-system for real-time control applications. Unlike Ethernet, which will stop transmission upon collision detection, CAN allows uninterrupted transmission when a collision is detected.

COM Port A connector for a communications interface, usually a serial port.

DB9, DB25 Ports Connector used to connect serial and parallel cables to a data bus, with 9 or 25 wires within the connector. Each line is connected to a pin on the connector, but in many cases, not all pins are assigned a function.

Ethernet The most popular LAN technology in use today. IEEE standard 802.3 defines the rules for configuring an Ethernet network. It is a 10 Mbps, CSMA/CD-based network that runs over thin coax, thick coax, twisted pair or fiber optic cable.

Fast Ethernet (100Base-TX) Ethernet running on unshielded twisted pair (UTP) cable. A 100Base-TX Ethernet is 10 times faster than 10Base-T.

Modbus (ASCII, RTU, TCP) Modbus protocol is an industry-wide serial communications standard supported by many PLC and industrial control manufacturers.

Modern Emulation Mode In Modern Emulation mode, the Device Server is used to replace dial-up modems. The unit accepts modem AT commands on the serial port, and then establishes a network connection to the end device, leveraging wireless mobility and bandwidth to eliminate dedicated modems and phone lines.

PCMCIA Card Essentially a computer device packaged in a small card about the size of a credit card. In general, you can exchange PC Cards on the fly without rebooting your computer.

ProfitBus DP (Proces Field Bus) is an international, vendor-independent, open field bus standard, typically used in industrial applications to exchange information between automation systems and distributed field devices.

RAAS An eight-wire connector used to connect computers onto local-area networks (LAN), especially Ethernet. RAAS connectors look similar to telephone jacks, but they are somewhat wider.

RS-232, RS-422, RS-485 RS or Recommended Standard-232 is a standard for computer data communications introduced in 1960 by the Electronic Industry Association (EIA). The majority of all personal computers use this form of data communications. Designed to replace the RS-232 standard with higher data transfer rates, RS-422/485 is an industrial building data communications standard. RS-422 supports multiple connections and supports RS-2-32C. RS-485 is the current EIA standard for multi-port communications.

Serial Communication Data transmission that occurs between peripherals, computers, processors or other devices where the data is sent in a serial fashion. For serial communications to work efficiently, the receiver and sender must be using compatible baud rates or transfer speeds. Serial data transfer occurs one bit at a time.

Serial Interface/Port A port that can be used for serial communication, in which only one bit is transmitted at a time. A general-purpose interface that can be used for almost any type of electronic device.

Serial Tunneling A technique by which a Device Server encapsulates serial data into packets and transports it over a network.

SNMP (Simple Network Management Protocol) Allows a TCP/IP host running an SNMP application to query other nodes for network-related statistics and error conditions.

SPI (serial peripheral interface) A full-duplex synchronous serial interface for connecting low or medium-bandwidth external devices using four wires. SPI devices communicate using a master-slave relationship over two data lines and two control lines.

ST Multi-mode Fiber (100Base-FX) 10 Mbps baseband Ethernet over two optical fibers. Can include an optional asynchronous hub.

TCP/IP Transmission Control Protocol (TCP)/Internet Protocol (IP). Suites of protocols developed by the U.S. DoD in the 1970s to support the construction of worldwide internetworks. TCP and IP are the two best-known protocols in the suite.

Telnet Standard terminal emulation protocol in the TCP/IP protocol stack. Telnet is used for remote terminal connection, enabling users to log in to remote systems and use resources as if they were connected to a local area system.

WEP (Wired Equivalent Privacy) A security protocol for wireless local area networks (WLANs) defined in the 802.11 b/g standard.

WPA (Wi-Fi Protected Access) A standard designed to improve upon the security features of WEP. WPA is superseded by IEEE’s 802.11 i standard upon its completion.
Make the Intelligent Choice for M2M Networking

The value of Lantronix solutions is proven in millions of network-enabled devices that add intelligence to businesses worldwide. Discover for yourself the benefits of a Lantronix partnership: an unparalleled level of network capability unrestricted by geography, increased efficiency and flexibility, and more competitive and profitable business operations.

Visit www.lantronix.com or call our sales support team at (800) 526-8764 to discuss your application or schedule a demonstration at your facility. You’ll be amazed at how quickly and easily you can add networking intelligence to your business with Lantronix.

But don’t just take our word for it. Put us to the test.

© 2006 Lantronix, Inc. Lantronix and XPort are registered trademarks, and Evolution OS, Machine2Mainstream, XPort AR, WiPort, WiBox, SecureBox, WiMicro, DSTni, UBox, xp, SwitchPort+, DeviceInstaller, Device Server, Com Port Redirector, Secure Com Port Redirector and Secure Console Server are trademarks of Lantronix, Inc. All other trademarks are the property of their respective owners. Specifications subject to change without notice. All rights reserved.