LAVA™

CONNECT SIMPLY

IP-ENABLE
LEGACY DEVICES

LAVA Ether-Serial Links™ leverage the power of Ethernet for legacy systems

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IP-Enabling Legacy Serial Devices

LAVA Ether-Serial Links™ are serial device servers – devices that use the power of Ethernet to transport serial communications transparently across networks. By allowing non Ethernet-enabled devices to attach to this common medium, they allow serial data to travel over LANs, WANs, or the Internet without distance limitations.

Ether-Serial Links™ can also extend the life of legacy serial equipment. For example, they can optimize hardware architectures by reducing network cabling, they can remotely poll data, or they can provide a means of monitoring and controlling serial devices regardless of location. Ideal for POS or non-hardened industrial applications, **LAVA Ether-Serial Links™** can streamline a business' serial communications regardless of industry or vertical.

"The tech industry continually promotes the latest and greatest upgrades, but doing so puts end-users into a winless situation. They are forced to chase advances in technology, instead of making the smartest use of existing network architectures," says Roman Wynnyckyj, President and Chief Design Engineer.

Intelligent Design

Long-time experts in serial connectivity, LAVA has been manufacturing serial ports for over 20 years. When setting out to create its own remote serial interface, LAVA set itself apart by creating not just a networked serial I/O port on a PC, but a port that was 100% transparent to pre-exisitng hardware and software.

"Moving an I/O device off the local bus and placing it in a remote location to communicate over TCP/IP has been successfully achieved by others," says Lewis Fedyna, Senior Applications Engineer. "The key difference with LAVA Ether-serial technology, however, is moving the device off the local bus so that it appears to the system that it is still natively attached."

Doing so allows existing software and hardware to work together uninterrupted. "We achieved what we set out to do," continues Mr. Fedyna. "Our goal was to develop a universal connectivity link designed to work with existing architectures, equipment, and serial devices."

With **LAVA Ether-Serial Links™,** serial ports appear as standard COM ports. A PC paired with an Ether-Serial Link acts as one entity and can now have its serial ports placed at up to 255 different locations around the world, to be accessed, monitored, and controlled, from anywhere.

"The Victoria Airport Authority in British Columbia, Canada saves about $150,000 per year by IP-enabling its legacy industrial printers with **LAVA Ether-Serial Links™**," according to James Bogusz, president of Reboot Consulting, the firm responsible for the Authority's Ether-Serial Link deployment. "Now, airport workers in many departments share a printer on a local area network. The VAA did not have to purchase network-based printers that they didn't really need."

PC/Poll Systems, headquartered in Dubuque, IA, successfully deploys **LAVA Ether-Serial Links™** for merchants to link electronic cash registers to a single PC for easier remote and local polling, without tying up stores' telephone lines, as shown in Figure A. "Merchants favour using networked serial connections over ripping out their entire system of ECRs and rolling out new equipment," asserts Amber Frankes, Project Manager.

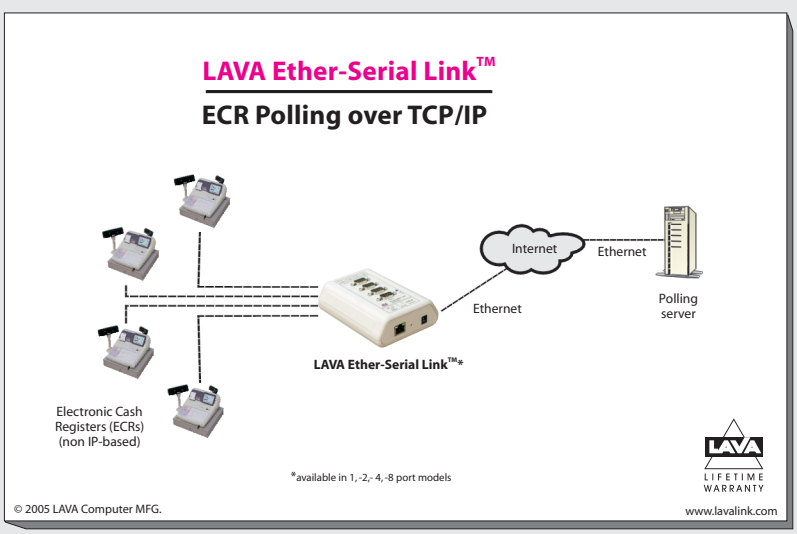

Figure A.

In another innovative application, **LAVA Ether-Serial Links™** forge an Ethernet-based connection to generators powering windmills operating in 30 isolated areas. The Ether-Serial Links allow each generator to be monitored over IP from a central location. Sites are checked five times daily rather than once every three weeks, reducing the number of in-person technician visits and leading to considerable savings of employee time and salaries, along with reduced liability.

Evolving LAVA's Ether-Serial Technology

Ether-Serial Links do more than extend the reach of serial ports, however. "Whenever we contact one of our resellers, system integrators, or distributors, we learn our customers are using our serial device server in ways that go beyond traditional applications," says Peter Lovering, Regional Sales Manager. "Deploying our products has taught us how best to customize our basic Ether-Serial Link to fill specific needs in the marketplace."

Tapping into Surveillance

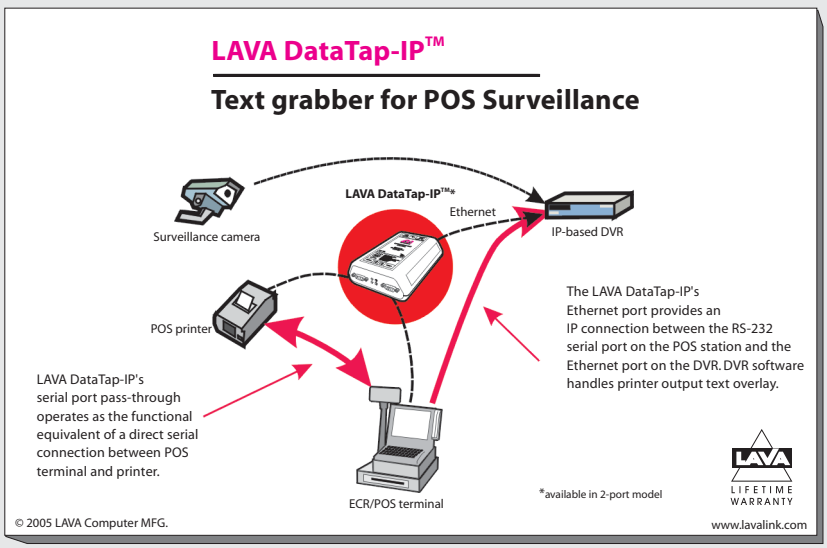

Figure B.

For example, many merchants wanted to combine the output of video surveillance cameras with a database of POS transactions, but were frustrated by the cost of sophisticated systems, or by the limits of RS-232 serial cabling. In response, LAVA developed the DataTap-IP: an alternative hardware system that is simple to connect, costs a fraction of an all-inclusive surveillance system, and gives end-users a clear picture of whether employees are voiding receipts, pocketing money from the till, or giving customers "sweetheart deals."

Serving as a link between a POS station and a serial printer, the **LAVA DataTap-IP™** simultaneously taps into that data stream and routes it over Ethernet. This design permits transaction data for the serial printer to be routed to a networked digital video recorder for overlay onto images captured by any surveillance camera, as shown in Figure B.

"Marrying POS data with digital video surveillance opens a whole new level of service and opportunities for resellers," asserts John Pretto, Chief Technology Officer of SmartConnect, a Las Vegas, NV-based provider of video-centric business intelligence. "Retailers, as well as hospitality players, are eager to capitalize on using transaction data as a security tool."

LAVA DataTap-IP

SmartConnect recently concluded a successful test of its Digital Vision system, a solution built around the **LAVA DataTap-IP™** and deployed at multiple locations of a popular sandwich franchise. Digital Vision is also currently implemented at several casinos where it is used to monitor cash-counting functions at chip sale kiosks.

Telecommunications

Applications for Ethernet-enabled serial ports extend far beyond the retail and hospitality sphere. On the telecommunications front, **LAVA Ether-Serial Links™** IP-enable SMDR ports on PBXes, as shown in Figure C (*next page*).

In this use, an attorney billing clients by the hour can determine what calls were made, from which extension, the duration of the call, and billing code assigned to each call by using an **Ether-Serial Link™** to collect PBX call records over a WAN. Invoicing clients becomes more accurate and efficient.

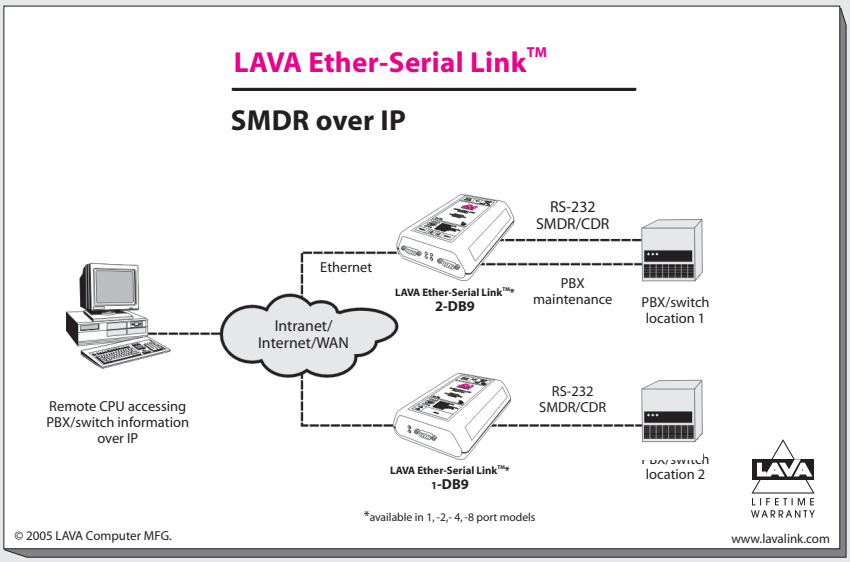

Figure C.

When directly printing from an SMDR port is also needed, Ethernet-enabling a PBX with a **LAVA DataTap-IP™** is the solution. Now, users can tap into call information from that unit *and* additionally port the data to a printer. Hotel chains can bill guests for individual telephone usage while also collecting chain-wide call information for aggregating in a call management system.

Simple, Secure Transactions

Retailers and other establishments using payment terminals are increasingly choosing to process credit and debit card data over secure IP to eliminate the need for a dedicated phone line.

"In a world where retailers battle interchange rates and the average cost of telephone expenses accrue to $40 per month, plus additional long distance, 1-800, or 1-900 toll calls, any company with a static IP address can save money with a **LAVA PayLink-IP™**," says Andrey Genyk, Vice President Payment Products.

In addition to providing an alternative to leased-line (Telco) credit/debit card processing with legacy POS terminals, the **LAVA PayLink-IP™** speeds up transaction times.

To take advantage of these benefits, however, merchant connections to individual payment processors' systems must follow rules set forth by acquirers such as Visa and MasterCard. Accordingly, LAVA has recently certified the PayLink-IP with Heartland Payment Systems (NYSE: HPY) and is currently pursuing certifications for this product with other payment processors.

The PayLink-IP has been approved using Visa Second Generation Standard Message format for the **Verifone Tranz 330** and the **Verifone Tranz 380** POS terminals. Additionally, it has been approved using the ISO 8583 designation for the **Hypercom T7P** and **Ingenico Elite 712** POS terminals.

The PayLink-IP comes in two versions: the PayLink-IP/232 is designed for terminals that can transmit transaction data over a COM port, while the PayLink-IP/Dial provides a standard RJ-11 phone jack interface and is intended for use with terminals with integrated dial-up modems.

LAVA's growing range of serial-to-IP connectivity solutions combines LAVA's renowned ease of use, configurability, and reliability with its expertise in serial hardware design to provide hardware and software connectivity for a wide range of market verticals. **Connect Simply.**

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