The ProSoft Magazine

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Boost productivity and reliability

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The ProSoft Magazine

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ProSoft Perspective

A Peek Behind the (Engineering) Curtain

By Daniel Wade
VP, Engineering

At ProSoft, we're working hard behind the scenes to provide you with simple, secure solutions.

In the last issue, Joe Rich, our head of sales, made it clear that ProSoft Technology is refocusing our attention to better support our customers' businesses. I'd like to discuss how our approach to Secure Remote Access with ProSoft Connect™ demonstrates that focus and commitment.

In our product groups (Engineering and Product Management), we love technology but we value our customers. We love to geek out about the latest specs, smartphone features, hardware accelerated industrial protocols, cloud-native microservices and containerization, continuous integration/continuous deployment, design architecture … the list goes on.

It's always easy to get excited about the latest technology trends, but even though we get excited about technology we value you over that technology. We think our customers are no different in that they know security is important or they like the technology to remotely access a site - but they really value their application. They value that pressure and temperature reading, the critical ladder logic in the PLC, the always up, always on consistent production output.

When you're using ProSoft Connect™, we hope that our commitment to your application, priorities, and user experience is evident. We're not drawing attention to all of the possibilities in Web UI flexibility or exciting and robust technology underneath but instead concentrating on making Remote Access simple, transparent, and secure for you – we understand that above any new tech trends, you value your application and just want to get up and running on whatever is essential to your operation (aka not the nuts and bolts of remote access). We refuse complicated, elaborate designs, instead opting for simple approaches on top and engineering complex, secure, and robust solutions underneath.

Did you know that our microservices run in threes today and that when any one gets stuck or is being updated, the others are happily continuing on? As we grow, adding additional instances is a simple click to increase the number from 3 to x. The container images for these microservices are signed and locked up tight to protect from outside infiltration (… geeking out, oops.) At ProSoft, we like Secure Remote Access, but we value our customers.

In June we started live beta testing our new wired network bridge, the PLX35-NB2, which selectively bridges devices in your plant network and the devices in a machine network while also allowing one to bridge the network in your remote machine to your local network. "Selectively" in this case means that you pick the PLC, sensor, or gateway that the HMI in the plant network can talk to inside your machine network. You might be thinking, "Sounds like a router or firewall. Is it a firewall?" Well, no - while it blocks all traffic like a firewall it doesn't automatically allow any connections; we translate only the set of IP addresses you specify. It's simple and secure. *(Read more about the safeguards taken in regard to the network bridge on page 16.)*

As we expand our Secure Remote Access and the other applications we have planned for ProSoft Connect™, we will continue to place our value in our customers. As part of a continuous improvement culture, we value your feedback. ◆

If there's a way you'd like to see ProSoft Connect™ improve, drop us a note in **prosoft.io**. We have lots more on the horizon for ProSoft Connect™ and want to be sure that all of the exciting additions and changes we're making to our application help you focus on *your* applications.

EDITOR'S NOTE

By Lauren Robeson

When I was young(er) I didn't think anything of the eventual importance of taking more-than-required STEM courses. I was heading toward the journalism path and 16-year-old me wouldn't have found STEM useful – and that's if I had ever heard that shorthand mentioned.

That was pretty shortsighted in retrospect (a hallmark of 16-year-old thinking if ever there was one). Now the importance of STEM – shorthand for science, technology, engineering, and mathematics – is plain to see. From ensuring that the workforce in a variety of industries stays robust to encouraging girls and young women to break through in male-dominated areas, engagement in and encouragement of STEM programs for younger generations are key components as we plan for the future at companies around the world.

In recent years, STEM has become more mainstream and accessible for kids and teens – whether they're being inspired by the film "Hidden Figures" or various programs, including FIRST (For Inspiration and Recognition of Science and Technology). ProSoft's parent company, Belden, has served as a sponsor of the FIRST Robotics Competition and provided donations to the organization, and earlier this year members from FIRST's LEGO League took part in a robotics challenge with the company's leaders at an annual Belden conference. Rockwell Automation® is a strategic partner of FIRST and has worked with the program extensively. In addition, Schneider Electric® has sponsored 15 FIRST teams.

Interested in learning more about how to encourage interest in STEM, I talked with Jay Flores, Global STEM Ambassador at Rockwell Automation, to find out how we can all help closer to home.

Flores noted that at this point – in a world that's rapidly changing, and one where we don't necessarily know what skills will be essential even a few years from now – an interest in problem solving is key.

"How do we get more kids excited about the idea of solving problems in general, and how do we get them to look at things differently and ask questions – that kind of mindset and thought process is what's going to allow them to fill those gaps in the future," he said.

A major component to fostering that curiosity is a willingness from parents to encourage it – yep, even after that 30th "But why?" from your child. Flores said that in his opinion "everyone's born an engineer – from the time that you first open your eyes everything's an experiment." As children try to figure out why the world works as it does, they are naturally going to ask why a lot.

"If we're able to be more patient and kind of go along with that exploration process and guide them through it and encourage it, those kids are going to be much more creative and question more things later in life," he said. Meanwhile, "those who may have been shot down or don't get the same kind of support when they're asking questions will kind of accept things for how they are."

Flores noted that FIRST provides programs for students starting at age 6, meaning that they could potentially have 12 years of experience with engineering, design, and problem solving by the time they're 18. That prospect was made especially clear soon after he started at Rockwell Automation. An early assignment in a training program had him promoting sensors, then going to Automation Fair® soon after. There, he met a child taking part in FIRST's LEGO League who showed him her robot, which featured an ultrasonic sensor enabling it to navigate a table.

"She explained how it was kind of like a dolphin, how it sends out a signal and it listens to get a signal back and can make decisions because of that," he recalled. "To think that she could have another eight to ten years of sensor technology experience prior to even becoming an intern for us or someone else was pretty powerful and impactful."

In 2018, I'll be volunteering for STEM programs near ProSoft's headquarters. I encourage you to find out how you can volunteer, too – whether within your community, through FIRST, or at home. You never know what a child who shows a little interest in STEM now will accomplish in the future given encouragement to learn, explore, discover. Our kids may advance entire industries in the future – so let's give them all the help we can now. ◆

AGV Systems Deliver

with help from ProSoft Technology's Wireless Solutions

Manufacturers in many industries are investing in automated material handling systems to improve operations and increase worker safety. Sales of automated guided vehicle (AGV) systems are growing fast, as these systems provide great flexibility to work in a variety of different manufacturing processes.

Continued on the next page.

By Keith Blodorn

Let's take a closer look at what AGV systems are, why manufacturers are choosing AGV systems, and how ProSoft Technology's advanced wireless communications solutions make AGV systems more reliable in the most demanding environments.

AGV systems come in many shapes and sizes based on the needs of the operation. Most often, AGVs replace manned material handling vehicles such as forklifts. The AGV system is comprised of a central control system, a navigation system, and multiple vehicles that move about the plant according to the needs of the operation. The vehicles are often customized to the needs of the operation. AGVs are available as unmanned forklifts, pallet trucks, tuggers, assembly line carriers, and many others. The vehicles communicate to the central control system to receive work orders, and move about the plant with help from the AGV navigation system to complete the work. AGVs deploy a variety of technologies for navigation, as well. The most basic systems follow a fixed path of magnetic tape or marked line on the plant floor. Advances in navigation have added laser and infrared sensors, machine vision, and "natural" guidance that require less installed infrastructure.

ProSoft is completely focused on industrial communications, and our application expertise can guide each customer to the best wireless solution for his particular case.

With the average AGV system representing a $1 million USD investment, these systems have to deliver on significant operational improvements to justify the expense. Manufacturers invest in AGVs for a few key reasons, and often find quick payback on their investment. Originally, AGVs helped to reduce labor costs. In fact, labor cost makes up 72 percent of the total cost of ownership for a manned forklift. As AGVs became more prevalent, other benefits became apparent. AGVs help to improve worker safety. Hundreds of injuries from forklift operations are recorded each year in the U.S. alone. AGVs also reduce product damage, and the automated system significantly reduces inventory errors. Finally, AGVs are ideal for operation in hostile environments like cold storage warehouses for frozen foods or clean rooms in pharmaceutical production.

The tremendous growth in automated material handling systems is a sure sign that these systems deliver on the promise of improved operations. Still, system reliability is critical to realizing the value of an investment in an AGV system. AGV vendors and system integrators around the world have turned to ProSoft Technology to address one critical element of the system – wireless communications between the central control system and the vehicles. As experts in industrial wireless

communications, ProSoft Technology solves the toughest communications challenges and boosts overall system reliability for AGV users.

Many AGV applications need to transmit I/O signals from each vehicle. I/O traffic does not require a lot of bandwidth, but uninterrupted communication is critical. Even a short 50- to 100-millisecond disruption in the link can cause the I/O system to fault, stopping the AGV in its tracks. As AGVs move about the plant, their wireless links must "roam" from one fixed radio to another – and these roam events can cause enough delay to trip the I/O system offline. ProSoft RLX2 radios employ Ultra-Fast Roaming technology that ensures the AGV never experiences more than 10 milliseconds of disconnection while roaming from one fixed radio to the next, and does this without any central wireless controller or complicated network configuration.

Another factor for wireless communication reliability in AGV applications is the dynamic nature of the environment. Plants are constantly changing, with people, parts, and machinery moving around, blocking radio paths, reflecting or absorbing radio signals, and generally making things difficult for the AGVs to find a signal to connect. ProSoft addresses this problem with a unique "client-repeater" function that allows each AGV in the plant to act as a repeater. That means that if one AGV finds itself in a location with poor or no connection to the fixed radios, it can direct its transmission through another AGV that will pass the transmission along until it can find a clear signal to the master control system. Using this technology, AGV systems virtually eliminate "dead spots," and can even tolerate the failure of a fixed radio without interrupting the operations.

Finally, ProSoft Technology helps reduce the risk of installing a new AGV system. ProSoft is completely focused on industrial communications, and our application expertise can guide each customer to the best wireless solution for his particular case. Our application engineers perform site surveys to identify the optimum location of fixed radios, ideal antenna selections, and the best channels for minimal interference. We also provide solutions that are unique to the industrial market, like radiating cable (leaky feeder) systems. Radiating cable can be an ideal solution for AGVs as the cable can follow the AGV's path through a plant, providing highly consistent RF signal with minimal risk of interference and reflection issues.

AGV vendors and system integrators around the world have turned to ProSoft Technology and our RLX2 wireless communications to achieve outstanding system reliability. Contact us to find out how we can make your investment in automated material handling as successful as possible. ◆

Keith Blodorn is the director of the wireless program at ProSoft Technology.

To learn more about ProSoft's Industrial Wireless Solutions, go to ***psft.com/B8V.***

Security: The Key to Successful IIoT Deployment

By Fabrice Jadot
Schneider Electric®

The Industrial Internet of Things (IIoT) has been a hot topic of late. One key consideration that will impact its acceptance and ultimate success is security.

A successful attack on an IIoT system could result in the loss of sensitive data, interruption of operations, and destruction of systems. This will result in damage to brand and reputation, material economic loss, and damage to critical infrastructure. Worse, there could be damage to the environment, injury, or loss of human life. A secure IIoT solution is comprised of a variety of elements, including secure products, secure protocols, a secure network, ongoing

security monitoring, and employees with cybersecurity expertise.

Secure Protocols

IIoT systems may feature new connection techniques that will require secure communication protocols. It is important to consider two key concepts when discussing secure protocols – encryption and data integrity/authenticity. Encryption can be used to secure protocols, but it can inhibit other security appliances like Intrusion Detection Systems. Data integrity and authenticity can be provided without encryption, enabling intrusion detection systems.

Legacy systems utilized insecure communications protocols. Communications protocols are evolving to incorporate security enhancement – DNP3 has moved to DNPV5, OPC-UA, Modbus® is evolving to Modbus Secure, and EtherNet/IP™ is becoming EtherNet/IP Secure. Selection of secure protocols is required to enhance solution security.

Permeation of Trust in the IIoT Lifecycle

Trust in the IIoT lifecycle refers to both the integrity of each element in a system and the integrity of data generated by the system. Trust impacts supply chain, installation, configuration, regular usage, and eventual decommissioning – requiring regular monitoring to ensure that trustworthiness is preserved throughout the product lifecycle.

Let's use an example to illustrate the permeation of trust model. Assume an end user is purchasing a PLC with secure features. The PLC vendor purchases microprocessors and memory from component vendors who ship their products to manufacturing sites. Product software can be developed at vendor development facilities or purchased from partners. Products are fabricated and shipped to warehouses. Equipment can then be shipped to distributors or system integrators prior to shipment to end users. In this example, we have multiple organizations handling the hardware/software. There is the potential for security issues to be introduced at any of these locations.

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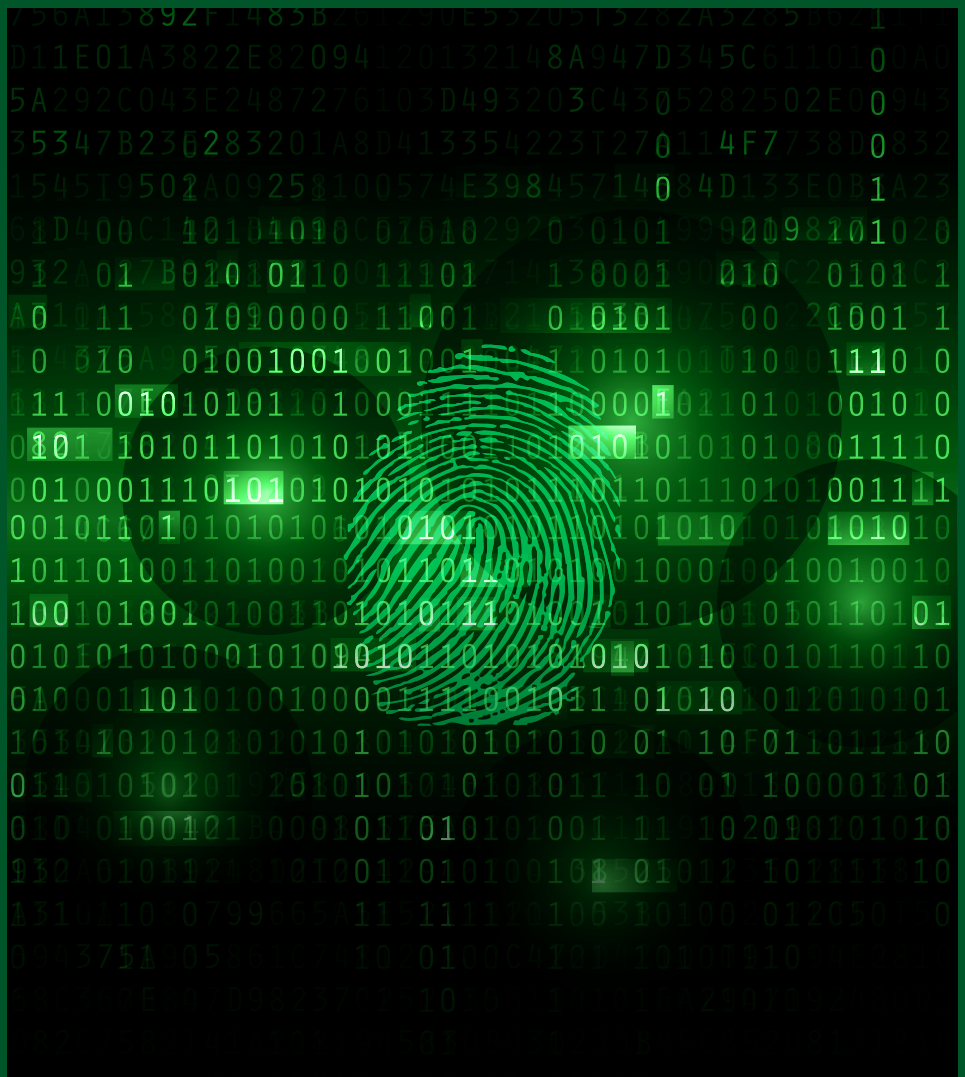


Fabrice Jadot first joined Schneider Electric in 1997, focusing on motor control within R&D as part of the variable speed drives activity, which became a joint venture with Toshiba in 2000 named Schneider Toshiba Inverter. In 2012, he joined the corporate side of the company as the Strategy and Innovation Platforms VP, dealing with cross-business technology platforms in the domain of digital services, supervisory control, and embedded control. Today, he is the Chief Technology Officer for Industry business driving automation system architecture, cybersecurity, and automation digital transformation (Industrial Internet of Things, Industry 4.0, etc.). In 2015, he became a board member of ODVA, an international association comprised of members from the world's leading automation companies. He enjoys traveling, especially visiting historical sites and architectures, along with wine tasting and walking.

End users must have trust in the integrity of the supply chain providing system components.

Permeation of trust between system operators and suppliers is key to the security of IIoT systems.

Acquiring Cybersecurity Expertise

One challenge facing many industrial end users is cybersecurity expertise. Industrial personnel have developed core competencies focused on optimizing processes. Small- to medium-sized companies in particular may have difficulty internally building cybersecurity expertise. Equipment vendors and system integrators can be leveraged to cost-effectively provide cybersecurity expertise. Vendors effectively merge industrial control and cybersecurity expertise – many IT-based consultants lack OT expertise. Vendors will also have the expertise to guide end users in the selection of data that should be pulled from the process.

Another key consideration is training to effectively operate a system after it has been activated. Tips to effectively operate, monitor, and update processes need to be implemented. Guidance on proper corporate security policies is also critical.

Cloud Considerations

Cloud services enable external computing power to be utilized to analyze and control OT infrastructure. In a cloud architecture, data from thousands of devices is stored, analyzed, and accessed from a server. The cloud infrastructure can be located within the corporate network, or outside the

network operated by a partner. Many end users are implementing an internal cloud model. Data pulled from the IIoT would be gathered and stored on equipment residing in the corporate network. Housing data on internal equipment connected to a network controlled by the end user helps to safeguard potentially critical data.

Using an external partner creates a number of trust boundaries that can impact security and privacy. Information must be protected for both privacy and security. For example, stolen credentials could allow attackers to access critical data. Moreover, attacks on other cloud customers hosted by the partner may propagate.

Secure Products: Dealing with Legacy Equipment

The first key concept in IIoT deployment involves securing systems. Product lifecycle has a huge impact on security in industrial applications. Unlike IT environments, products can remain in active service in industrial control systems for as long as 30 years. It is unrealistic to assume that end users will update older components when implementing IIoT. Thus, IIoT systems will include legacy end devices that were developed prior to the advent of security standards alongside new end devices with native security features.

Let's begin by looking at the challenges posed by legacy devices. Most industrial installations contain equipment that is antiquated from IT and security perspectives. Legacy equipment is at greater risk of attack than equipment with the latest versions of security features. There are two options available to mitigate this issue, with their selection driven by the application:

1. Limit communication to data collection only. This is the safest option but may not be viable for all applications.
2. Place restrictions on device access. Note that this will require monitoring of the integrity of communications to ensure that data is not changed as it travels between devices.

This option is more practical as limiting access to data collection is not feasible for many applications.

Devices that have been recently deployed will have security features. In this case you may be able to operate without building security around devices.

Considerations when Purchasing Equipment

If customers choose to update legacy equipment, selecting equipment with firmware and software signing is critical to ensure secure patching. You should also lean toward products developed using a secure development lifecycle. Most organizations have a well-defined process to create, release, and maintain products. However, increasing concerns and business risks associated with insecure products have brought increased attention to the need to integrate security into the development process. You should ask potential vendors to supply proof that development centers have been certified to standards such as IEC 62443-4-1. Third-party certification of a development process can provide confidence that products were developed using secure practices, reducing potential implementation risk.

Conclusion

Connecting devices to each other and the cloud opens the door for an intelligent process, potentially leading to significant improvements in productivity and efficiency. The tools to successfully implement the IIoT are in place today, but change will be evolutionary vs. revolutionary. End users will weigh the value of new functionality against the risk of making changes to their control system which will impede rapid change. Security will be a key factor impacting success. System design, product features, secure development processes, and implementation expertise will have to be taken into consideration when implementing the IIoT. ◆

Permeation of trust between system operators and suppliers is key to the security of IIoT systems.

A New Bridge for REMOTE ACCESS

By Lauren Robeson

Some of you will recognize this scenario all too well.

You're headed home after what turned out to be 12 hours' total flight time for an on-site issue that took maybe two hours to fix, max. A couple connections and three airport delays later, and pretty much all you really want to do is see your family and relax for the half of a weekend you now have left. A few blocks from home and you get the call: How soon can you get on a flight back in the same direction you're returning from? An alarm has been received and you need to take care of it.

For some workers, occasional travel can be a job perk; but if you're an OEM or system integrator whose travel requirements for small fixes seem never-ending, you've probably wondered at some point whether those long trips for smaller issues could be avoided.

The good news is that secure remote access solutions can help minimize this type of unneeded stress and optimize your time.

"Secure remote access provides engineers the ability to connect to a piece of equipment without having to be directly in front of it," said Bobby Maxwell, a Product Manager at ProSoft Technology. "As industrial equipment manufacturers expand their operations, shipping equipment all over the world, the travel expenses for commissioning, maintenance, troubleshooting, and warranty work increase exponentially as well. These travel costs are significantly reduced and in some cases eliminated by having a means to connect to the equipment regardless of where it is in the world."

Last year, we introduced ProSoft Connect™, allowing users to monitor their remote equipment securely around the world via cellular gateways. Now, ProSoft has added a wired remote access solution to the platform – the Network Bridge. It allows authorized personnel to remotely connect to the network to resolve any issues, minimizing downtime and – yep – travel and its associated costs.

The solution also supports 1:1 Network Address Translation (NAT), ensuring that machines stay isolated from plant networks. Maxwell noted that this capability is especially key when integrating OEM machines into an existing plant network.

"OEMs typically build a machine in a cookie-cutter fashion. They use the same PLC code, the same components, the same IP addresses. They do this for efficiency within their process," Maxwell explained. "However, when they send these machines out of their facility and into production, the end user's IP addresses don't match what the OEM used in their machine."

There are options for how the machine could then get connected to the end user's plant network, but some have their drawbacks. Setting up virtual local area networks (VLANs) with routes to the OEM machine can be "time-consuming and a little overkill." Meanwhile, another option – changing all of the IP addresses to match the end user's network – could backfire and end up with hundreds of IP addresses on a single network. A NAT-supporting device is a good third option, he said.

"The NAT device lets the machine builder keep their equipment configured in the same manner it was built, and it gives the end user the ability to control this piece of equipment without adding an unnecessary amount of IP addresses to the network or creating a bunch of complex VLANs," Maxwell said.

With the Network Bridge's NAT support, OEMs and end users can realize major benefits; and thanks to the solution's secure remote access capabilities, anyone who's on call for troubleshooting and maintenance can spend a little more time at home and a little less time up in the air.

For more information about ProSoft's Secure Remote Access solutions, go to psft.com/CCN.

Bringing the Network Bridge into ProSoft Connect™

We talked with Keith Blodorn, Director of the Wireless Program & Cloud Program at ProSoft, about how the Network Bridge fits into ProSoft Connect.

Q: How does the Network Bridge fit in to the overall mission of ProSoft Connect?

A: ProSoft Connect™ makes it easy to establish secure access to your remote automation systems. In many cases, a cellular connection is the perfect way to get your machines connected. However, when an Internet connection already exists at the machine site, it can be better to simply use the connection that's there. The new PLX35-NB2 lets customers use the powerful, secure ProSoft Connect™ remote access service by just plugging in to the wired Ethernet network on site.

Q: What have you heard from Connect users?

A: Customers are really excited about ProSoft Connect™. In less than a year, we have hundreds of users in over 50 countries around the world saving time and money with Connect. The user experience is unlike anything else on the market. The level of security in our service makes it easier for IT departments to accept. The addition of a wired gateway option to complement our 4G/LTE gateway provides more flexibility for customers to get the most out of Connect, save money on site visits, and provide top-notch remote support for their automation systems.

Continued on the next page.

How Secure is this Solution?

In a word? Very. The good news is that this high level of security is intact while still allowing for a streamlined setup.

"The new Network Bridge is built on our robust PLX30 product platform, which has been tested by thousands of customers in harsh environments around the world," said Daniel Wade, Vice President of Engineering at ProSoft. "The software has been completely rewritten to provide security at the lowest OS layers while simplifying the configuration. If you're familiar with using ProSoft Connect™ to set up an ICX35 cellular gateway, then you have all the training you need to set up our network bridge and start using our wired Secure Remote Access solution. The technology is rather complex and way cool, but at ProSoft Technology we value our customers who value their application over our cool technology so we've spent a lot of time making our solution secure and simple to use."

Underneath that simplicity of ProSoft Connect™ are several features that ensure a high level of security, Blodorn notes. They include no PC-installed software, which can be more vulnerable to cyberattacks and typically requires the user to do an update whenever security patches are created for the platform. When an update is made to ProSoft Connect™, all users immediately benefit from that patch.

The platform is hosted on Amazon Web Services, with industry-leading levels of security already built in.

The service uses a container and microservice architecture, which increases security in several ways. ◆

Solutions UPDATE

Longevity for your Remote Access Application

Imagine being in Chicago, and the point person for any issue that arises on automation equipment in, say, Alaska. After a few trips from O'Hare to Juneau for minor – but unfortunately necessary – fixes, you'd probably be wishing for a solution that didn't have you on a first-name basis with TSA agents.

With a cellular gateway monitoring your equipment, you could minimize that time away from home. And now that ProSoft's cellular remote access solution supports Verizon networks in the U.S., coverage for your application has become even more far-reaching.

"With applications involving cellular communications, you really need to consider the level of service," said Keith Blodorn, the Director of the Wireless Program at ProSoft Technology. "This solution's support of 4G LTE worldwide helps ensure longevity for your application."

You can monitor and troubleshoot your remote assets in a couple ways through this remote access solution, no unnecessary trips required. With a free ProSoft Connect™ account, you can monitor your automation equipment around the world – your only requirement is an Internet connection. In addition, the gateway can communicate with your EtherNet/IP™-based PLC, letting you monitor your cellular data usage, signal strength, and more, as well as send and receive text messages through your PLC to get alarm statuses.

With a cellular solution that's designed to keep you connected to your remote equipment now and for years to come, you can eliminate most time-sucking maintenance visits and increase your productivity.

Wireless I/O: Optimized for Smaller Applications

Are you a major fan of doing some trenching, running conduit, pulling wires? Neither are we.

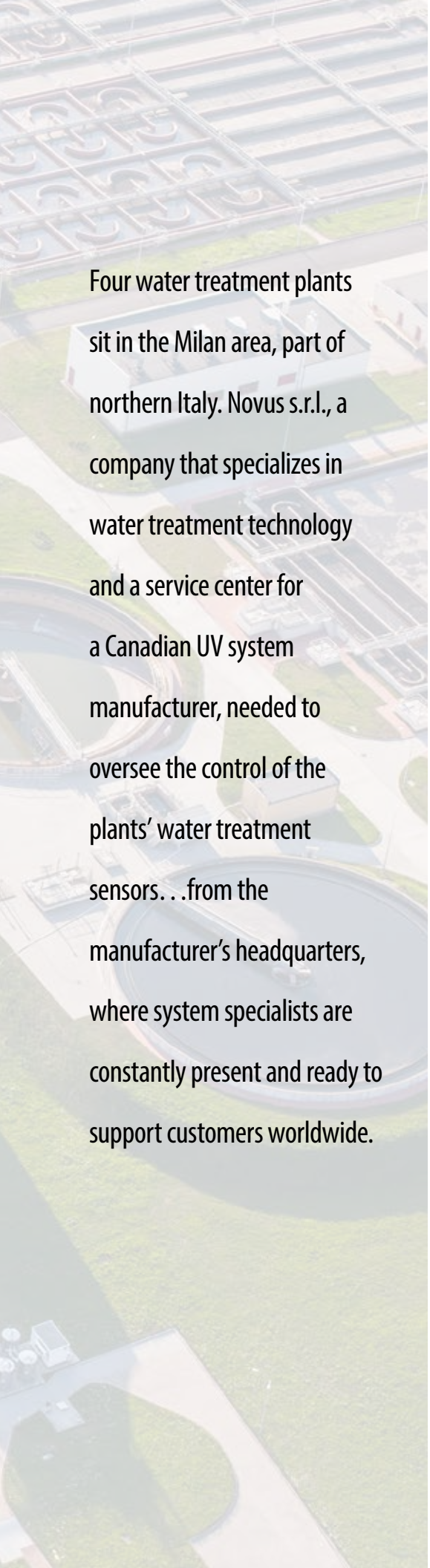
With Wireless I/O communications, you have the opportunity to avoid that kind of thrilling work and get your data transfers set up quickly – whether you're opting for a setup that's point-to-point or multipoint. A secure, expandable system that doesn't take days to set up? Sounds great.

But if you only need a couple of discrete and 1 or 2 analog points, an expandable system isn't necessary. A new solution – Wireless I/O with Onboard I/O – is designed for operations that need a small amount of I/O signals. This new point-to-point system, which can currently be used in the U.S. and Canada, has the same time- and sanity-saving deployment as the other solutions, and each module set is factory-paired with 128-bit AES encryption. ◆

For more information about the Industrial Cellular Gateway, go to ***psft.com/CBL.***

For more information about all of ProSoft's Wireless I/O solutions, go to ***psft.com/CBR.***

Gateway Helps Monitor Italian Water Treatment Plants



Four water treatment plants sit in the Milan area, part of northern Italy. Novus s.r.l., a company that specializes in water treatment technology and a service center for a Canadian UV system manufacturer, needed to oversee the control of the plants' water treatment sensors. . .from the manufacturer's headquarters, where system specialists are constantly present and ready to support customers worldwide.

By Lauren Robeson

The manufacturer is a leader in the UV water treatment systems market that wants to provide its customers with top-notch technical support. The company knew that constant monitoring of its plants would allow it to obtain savings in terms of energy consumption, because it would allow Novus' specialists to check the running parameters and adjust the system settings in the plants in real time.

Novus wanted to explore options to let it have a centralized monitoring system to support its customers on daily operations and troubleshooting. This would also help them reduce travel expenses.

E.S.A Engineering, a system integrator in Italy, proposed using ProSoft Technology's ICX35 Industrial Cellular Gateway, which would communicate with a FactoryTalk® View SE SCADA system. In addition to allowing the company to monitor the plants at all times, the gateway supported 4G LTE with fallback to 3G, enabling high-speed data rates, clear communications, and longevity for the application.

With the gateway, Novus specialists would be able to analyze in real time the running parameters from each system under the real water conditions, and suggest the right settings to customer operators and maintenance technicians. This would help them decrease power usage while maintaining disinfection requirements.

E.S.A Engineering Technical and Sales Engineer Salvatore Perrucci had prior knowledge of ProSoft solutions' quality and technical support.

"In more than 15 years, ProSoft products have always met our expectations, and they are very easy to use because of the good-quality manuals," Mr. Perrucci said.

Beyond the benefits brought by 4G communications, Novus appreciated streamlined communications between the SCADA system and the plants' controllers thanks to the gateway's Ethernet Layer 2 connections. The company also enjoyed real-time control for diagnostics, in addition to optimized maintenance.

While Novus opted to use a VPN private server for its application, the Industrial Cellular Gateway can also be used for secure remote access via ProSoft Connect™, a cloud-native platform.

With this new setup, Novus is able to propose to its customers remote supervision of the system and reply exactly to the HMI in the field in order to share data with customer maintenance technicians in real time.

And at the end of the installation an extra perk was discovered: The server, through the modem connected to the PLC, allows the specialist in Canada to work on the PLC like it was on his desk. ◆

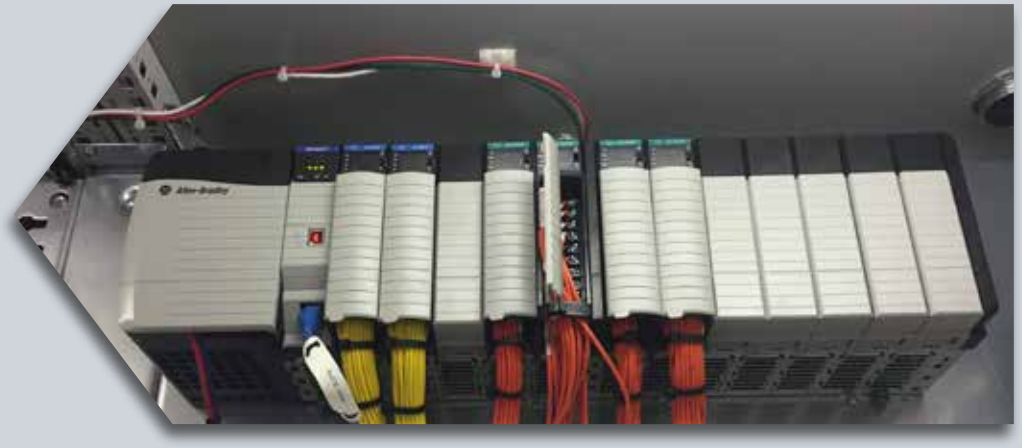
Learn more about ProSoft Technology's Industrial Cellular Gateway at psft.com/B5P.

New Flow Computer Setup Brings Several Benefits for Canadian Company

By Lauren Robeson

ARC Resources is a major oil and gas company centered on four areas across Western Canada. In such a large operation, efficiency is key.

The company was looking to minimize cabinet space and streamline its operations. On a multi-well pad site in Dawson Creek, British Columbia, they had a Rockwell Automation® ControlLogix® system with standalone flow computers that were used to meter natural gas. The flow computers were only able to handle 8 meter runs apiece, however, which wasn't optimal for such a large operation that had its sights on future expansion. The company also found it was difficult to get meter data from the standalone units into their ControlLogix system. For real-time information and control of their equipment, that integration needed to be seamless.



In ProSoft Technology's Enhanced Flow Computer, ARC Resources found a solution that would allow the company to minimize space and left room for expansion in the future.

By the end of the project, the company saw a variety of benefits, including:

- Reduced wiring
- Data integration
- Fewer flow computers
- No licensing fees
- Smaller cabinet

ProSoft's team and Rockwell Automation's Calgary sales group, working with Rexel Westburne (the local distributor), helped the company see the benefits of this simplified setup.

"ProSoft's in-chassis flow computers fit right into their controller. That's helped streamline data integration and reduced their wiring," said Scott Monton, Regional Sales Manager at ProSoft. This streamlined setup has also enabled the company to make better use of its cabinet space.

And those limited meter runs? No longer an issue.

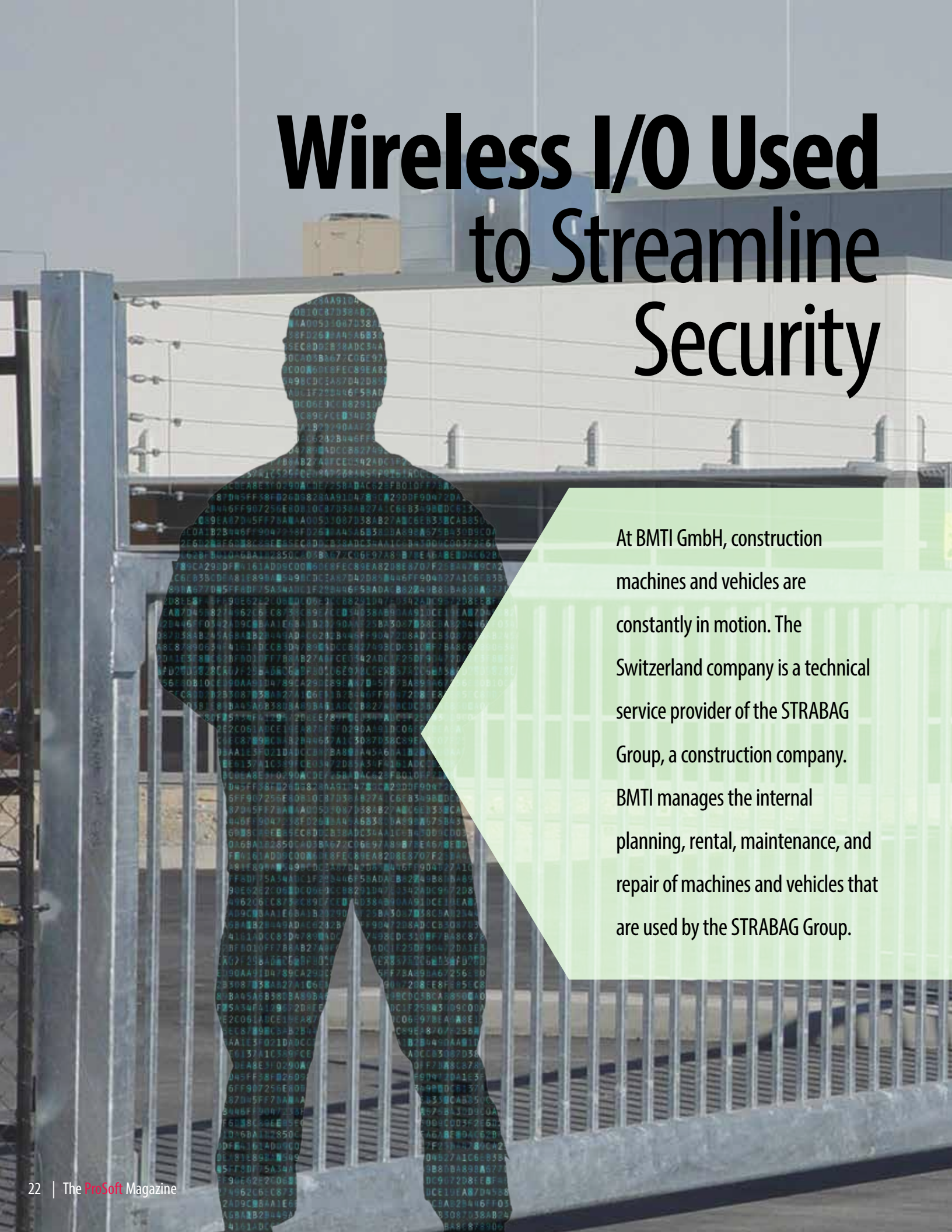
"With this solution, we're now able to do 16 meter runs per flow computer, limiting the number of units we need," said Charlie Kettner, Programming Specialist at ARC Resources. "We also like that the system can be expanded later if we need more meter runs."

With the decreased number of units and their placement in the PAC, the company has been able to reduce wiring and labor costs, and use a smaller cabinet – all of which has helped ARC Resources lower its overall system cost, which was a major goal. Licensing costs have also been eliminated with the addition of ProSoft's solution, since they will no longer need separate licenses for gas and liquid metering.

With this streamlined setup, ARC Resources is able to optimize their space and resources, and receive important data even more quickly. ◆

Find out more about ProSoft Technology's Oil and Gas solutions at ***psft.com/B7X.***

Wireless I/O Used to Streamline Security



At BMTI GmbH, construction machines and vehicles are constantly in motion. The Switzerland company is a technical service provider of the STRABAG Group, a construction company. BMTI manages the internal planning, rental, maintenance, and repair of machines and vehicles that are used by the STRABAG Group.

By Lauren Robeson

As in any business, time is money in the construction industry. At the BMTI facility, one person had to be out at the front gate continually to allow access to the property to construction truck drivers. That's an important task but one that BMTI thought could be streamlined to optimize the resources of the company: If that one person didn't need to be out at the gate all day every day, they could be freed up to do other tasks.

They worked with Patrick Müller, a sales representative at the distributor Staveb AG. Mr. Müller suggested a point-to-point Wireless I/O solution from ProSoft Technology.

"The Wireless I/O system allowed the customer to forgo conduits, trenching, permits, and laying any cable, a definite benefit given the 150-meter distance between the gate and the office," Mr. Müller said.

The Wireless I/O system was installed quickly. The company appreciated that an advanced knowledge of wireless connections was not required for the system's installation, as well as the lack of maintenance required for the system. The construction trucks' drivers, meanwhile, like that there is not a long waiting time to get past the gate: Now they only need to press a button at the gate, which triggers a signal in the office to open the gate for them. ◆

Find out more about ProSoft Technology's Wireless I/O systems at psft.com/B4V.

Connecting Industrial Automation's Giants

By Ken Roslan
VP, Global Marketing

While there are many industrial protocols in existence, three giants have emerged in automation. Schneider Electric® has standardized on EtherNet/IP™ and Modbus®, Rockwell Automation® has standardized on EtherNet/IP, and Siemens® and GE have standardized on PROFINET.

If it were up to the manufacturers, you would buy all your automation equipment from a single supplier. But in the real world, your operations probably have automation systems and control devices with a mix of these and some other protocols. Now the challenge for you is to get all of these to communicate together so that your systems can operate together. The shared data can also help you optimize your production, alert you to issues within the various parts of your facility, and generally help keep the components of your operation running consistently.

The solutions you need vary from passing large amounts of data peer to peer, to interlocking high-speed systems, to controlling high-speed I/O devices. You may be going from a Schneider Electric controller to a GE device or a Rockwell Automation PLC to a Siemens I/O system or many other combinations. Your best solution is to use an industrial protocol gateway.

Other Benefits

We know that already sounds pretty good, but the great news is that ProSoft offers EtherNet/IP-PROFINET and Modbus TCP-PROFINET solutions that do more than just transfer data.

Have a PAC from which you need to control your PROFINET devices? New gateway solutions help you do just that. And by using a gateway with two isolated Ethernet ports, you can keep your EtherNet/IP or Modbus TCP and PROFINET devices on separate subnets. This allows you to isolate your networks, ensuring that only the data you want to transfer is sent between your equipment. This can help your IT personnel by allowing them to more easily identify devices in the event of a problem.

This feature is also useful when integrating an OEM's piece of equipment. You can avoid having to change each device's IP address, which can require getting access to several software packages, and could affect your OEM's warranty.

Gateway solutions offer multiple I/O connections when using the EtherNet/IP protocol, to get the fastest transfers of large amounts of data. This can also help you optimize your Ethernet bandwidth, by sending your high-speed data in fast connection(s) and the diagnostics in a slower connection. The gateway's diagnostic data can be transferred to your PAC or PLC and monitored in your operator station, helping you reduce unscheduled downtime by narrowing down the problem so that the technician can quickly get to the source of the issue. An example is when a device that you were talking to is unexpectedly powered off, and you want to quickly locate it and get it powered back up.

By connecting industrial automation's biggest protocols via your communication solutions, you can optimize your resources and reduce your downtime – while connecting manufacturing's most prevalent protocols. ◆

Learn more about how you can connect your PROFINET devices to EtherNet/IP or Modbus TCP controllers at psft.com/CBI.

LDM: A "Blank Slate" Multi-tasking Solution

By Larry Frieson

Any system integrator who's worked in the field has come across some protocol that is so old, so specialized, or so rare that they end up calling ProSoft Technology's support line to find out if we have a solution that might allow them to connect to this old device.

We do have one especially unique solution for just such an occurrence: the Linux Development Module for ControlLogix® and CompactLogix™ systems. If you don't know Linux, you may be a little concerned now, but no worries: There are companies out there that can offer custom programming of the module to relieve you of the burden.

So, what is the LDM, why would you need it, and lastly, what has it been used for?

The LDM is lovingly referred to in Technical Support as a "Blank Slate Module." This solution allows anyone the ability to write a C/C++ program that uses any number of protocols that they see fit to develop.

A little history lesson

The original precursor to the Linux Development Module allowed users to write custom code to control serial ports on a BASIC module, and write custom protocols while having access to the backplane. This was a popular solution for complicated tasks, custom protocols, and even DH485 access to other PLCs. From there, ProSoft created a DOS-based in-chassis module for just about every backplane Rockwell Automation® offered. This solution had customers and OEMs using it to implement their machines into a ControlLogix rack, without having to reinvent a wheel that would have to be shoe-horned into digital logic chips in the already existing machine.

The next step – the current Linux solution – gave users even more power by allowing OEMs and SIs to write custom programs in an in-chassis module.

The solution essentially serves as a computer running in your control panel, allowing you to connect with a variety of IP protocols without the IT support hassles of a traditional Windows PC. You can now FTP into your rack, and upload or download files that could be used as part of your control system. These capabilities allow for more streamlined data integration. Concerned about being vulnerable to attacks given these features? Good news: Because it is Linux, it has all the strength of a Linux Kernel, with 100 percent control over what is allowed to connect, and even what protocols you want to allow.

A multi-tasking superstar

So why exactly might you need a Linux Development Module? The LDM not only acts as a PC in the rack - it can also run your custom-developed drivers for protocols, interface with serial devices, and record changes to tags in the host PLC.

And it can do all of that simultaneously. Because of the natural ability of the LDM to multi-task, it is very simple to design multiple tasks at the same time without limiting yourself to that reality.

Continued on the next page.

(If the multi-functional nature of the module isn't needed for your application, you can also set up the LDM to launch your driver daemon, and then not allow the command line user interface to boot up, leaving the module in more of a single-purpose mode.)

The LDM is lovingly referred to in Technical Support as a "Blank Slate Module." This solution allows anyone the ability to write a C/C++ program that uses any number of protocols that they see fit to develop. It opens up a whole new world of access for the OEM or the SI, without having to write everything that it takes to create a full module. For example, the LDM already comes with an API for communicating with the PLC and has an HTTP server running on it. This can be used to flash the firmware, saving time and effort when designing a new custom module. And remember - the LDM runs your compiled code, so you can run proprietary algorithms without the worry of others viewing your code.

What it's been used for

So what has the LDM been used for in the real world? Some OEMs we've talked with are using the LDM as a co-processor for the main controller in the rack. Sure, just about anything you would ever want to accomplish with a number can be done in ladder. However, several customers have found that when they do this it slows down the ladder processing to an unacceptable level. It is much faster to hand off the data across the backplane, have the LDM handle it in machine language, and return the dataset back to the controller.

The LDM has been used to control robots - more than 1,200 of them, to be exact. It has been used to create a full HMI/SCADA server that comes built into your rack – the real-world benefit being that it is not a PC and you don't have to worry about how to get dissimilar systems to communicate. It has also been used to record tag values, and keep logs of the changes that could then be parsed by other software running on your desktop instead of the LDM itself.

The possibilities are near-endless with this module! And with the Open Source community, the code base for the LDM is virtually unlimited. ◆

Larry Frieson is a North America Technical Support Engineer at ProSoft Technology.

Learn more about the Linux Development Module at ***psft.com/CBA.***

SPOT THE DIFFERENCE

There are 10 differences in these photos, taken at last year's Automation Fair. Can you spot them?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

1. Extra vent on top shelf 2. "802.11n" text left of radio is moved down 3. Letters in the word "OIL" have been swapped 4. Poster in the background is removed 5. Line of text below PLC is removed 6. ProSoft Connect logo is missing 1 red symbol 7. Arrow keys on keyboard are missing 8. Vents on PLC are removed 9. A corner of orange poster in background is missing 10. PLC has extra black dot on the right

Rockwell Automation
Automation Fair®

Will we see you at Automation Fair® 2017 in Houston?

We're excited to return to Texas for this year's Automation Fair! At Booth #533 we'll have live demos highlighting:

- How you can benefit from a simplified, wireless Oil and Gas setup
- Remote Access solutions that can help you decrease your support travel budget
- Modernization solutions that will allow you to update your facility in phases, minimizing downtime and decreasing risk

We'll also be joined in our booth by our sister company Tripwire, a leader in cybersecurity solutions!

Learn more about what you can expect at this year's show at psft.com/CBH.

WERE YOU THERE?

Schneider Electric® Innovative Summit — Dubai
Feby Mohammed, ProSoft Regional Director – Middle East & Africa, shared information about ProSoft's connectivity solutions for Schneider Electric® systems at this May show. Schneider Electric hosted several events this spring that ProSoft took part in. For more information about ProSoft's solutions for Schneider Electric systems, go to ***psft.com/B9E****.*

Rockwell Automation® University Classic — Switzerland
From left, ProSoft Technology EMEA Director of Sales & Marketing Aurélien Fabre, and Regional Sales Managers Krzysztof Hajzyk and Sven Golda, were on hand at this June event to share how ProSoft solutions can benefit Rockwell Automation users.

Risoul Event — Mexico
ProSoft Technology participated in several events this year throughout Mexico that were hosted by Risoul, a major distributor in the country. At one, ProSoft Regional Sales Manager Hugo Amador (second from right) took part in a panel for show attendees.

HYDROGAIA Event — France
ProSoft distributor EBDS shared information about ProSoft's wireless solutions at this two-day event in May.

Rockwell Automation University Classic — Gauteng, South Africa
Bob Petrie of Throughput Technologies, a ProSoft partner in South Africa, talks with attendees at this May show. At the event, ProSoft led a session focused on how Rockwell Automation users could save time on installation with ProSoft's communication solutions.

RAOTM — Suzhou
*Nikita Yang, ProSoft's Marketing Executive in China, helps Rockwell Automation® On the Move attendees in May. To learn more about ProSoft's solutions for Rockwell Automation systems, go to **psft.com/B9F**.*

IICA Technology Expo — Griffith, Australia
ProSoft took part in three IICA Technology Expos during the summer. Gordon Brown, ProSoft's Business Development Manager for the territory, was at each show to share with visitors how they can optimize their resources and improve their productivity.

Reduce your support travel – the stress and expense. Do it with ProSoft Technology's

Secure Remote Access Solutions.

To learn more, visit **psft.com/CCG**

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