SNMP Over T1:
The Quiet Revolution in Network Alarm Monitoring

Monitoring SNMP over T1 lines used to be difficult and expensive. Now, new technology allows you to effectively route SNMP traps over T1 lines whenever you need to.

Discover the keys to using T1 to:
• Transport SNMP traps,
• Inexpensively drop off Ethernet for your other gear, and
• Remotely access legacy serial equipment.

www.dpstelecom.com  • 1-800-622-3314

US $36.95
Executive Summary

Monitoring SNMP over T1. It’s improving alarm monitoring at telecoms and utilities across the United States. Are you getting ahead of your competition or getting left behind?

This white paper exposes the secrets of cost-efficient transport of SNMP traps across T1 lines. You’ll learn about the hidden costs that are eating away at your profits today, and the massive benefits that could skyrocket your ROI tomorrow.

More importantly, you’ll learn exactly where to look to find the right SNMP & T1 RTU. Without it, you’ll incur a huge upfront cost that could take years to pay off. If you simply do nothing, you will lose even more money from outages and increased operational costs.

As you read this entire white paper, just imagine the sustainable competitive advantage you could have if you implement this simple yet powerful monitoring technology...

Contents

Basic SNMP over T1 Architecture ................................................................. 4

Getting SNMP over T1 Used to be Very Costly ............................................... 5

The ROI Secret is Getting Multiple Devices in One Box ..................................... 5

The 5 Profit-Boosting Advantages of an All-in-One SNMP & T1 RTU .................. 6

Your Big Opportunity to Extend Your WAN .................................................... 8

Monitoring SNMP over T1 Lines is No Longer as Hard as You Think .................. 8

6 Expensive OSP Monitoring Options You Must Avoid .................................... 9

Why T1 Lines are Becoming Much Easier to Get ............................................. 10

The Importance of “Bridge Mode” .................................................................... 11

Watch Out for Proposals that Don’t Actually Meet All of Your Needs ................ 12

Do you use Frame Relay or PPP? Be sure the T1 RTU you choose supports the right protocol ................................................................. 13

Case Study: Consolidated Communications Finds the Right SNMP-over-T1 RTU 14

Make Sure Any RTU You Consider is Guaranteed Compatible with Your T1 Gear .. 16

Take Action Now - Before Your Next Big Outage .......................................... 18
Basic SNMP over T1 Architecture

The core SNMP-over-T1 architecture is not complicated. As you can see in the diagram below, your SNMP manager connects to your LAN as it normally does.

Then, a T1 router bridges LAN and T1 WAN traffic. If you have both a LAN and a T1 WAN that interact with each other, you already have this equipment in place.

The final step is to simply install a T1-capable SNMP RTU at your remote site. The T1 connection at that site is plugged directly into the RTU.

Once you’ve completed this step, you now have SNMP monitoring, a LAN hub, and a terminal server at the site - all being delivered over T1. You can wire in discrete alarms and analog sensors. You can connect legacy serial devices for remote access. You can even plug LAN into Ethernet devices that may have never had connectivity before.

That’s the really beauty of this type of SNMP-over-T1 solution. It’s simple to set up, yet it delivers multiple new connections at T1 WAN sites.

In this example, an SNMP-over-T1 RTU, such as the NetGuardian 216T, provides you with a “no-brainer” alternative to traditionally bad outside plant monitoring options.
Getting SNMP over T1 Used to be Very Costly

New SNMP-over-T1 RTUs are changing the monitoring landscape by combining multiple functions into a single box.

With the ability to collect alarms from your devices and send out SNMP traps over T1 lines, these new RTUs make it simple to bring non-LAN sites under your SNMP umbrella. All you need is a T1 line, and those have a very low cost at many companies.

Now you’ll be able to see what’s going on at your orphaned remote sites. By installing SNMP-T1 RTUs at all of your T1 sites, even those that are small, you’ll make an important investment in mission-critical network visibility.

When a problem occurs, you won’t waste time and resources locating the source. Instead of rolling a tech for hours without really understanding the problem, you’ll identify it immediately from your central office because you’ll get an SNMP trap - just like you would from any LAN-enabled site. With the correct information, your staff can act rapidly to minimize any impact to your revenue-generating uptime. In many cases, problems can be fixed before they grow into outages. A compact and versatile SNMP-over-T1 alarm remote can often pay for itself by preventing just one incident.

The ROI Secret is Getting Multiple Devices in One Box

One fundamental cause of poor purchasing decisions is having incomplete knowledge of your available options.

If you asked 10 people who manage a T1 WAN how they can get SNMP monitoring at their sites, most of them wouldn’t expect to get the job done with just one purchase. They’d expect to buy an Ethernet transport card and a separate SNMP RTU.

Since you’ve read this far, you already know that those 2 devices can and should be purchased as a single unit (an SNMP RTU with a T1 router). It’s cheaper and takes up less space and power. But what if you could also add a terminal server and a LAN hub to the package?

Then you’d have an astounding 4 devices in a single chassis. That kind of multi-function device is available to you today - sometimes in a form factor as small as 1 rack unit - and it’s the secret to achieving tremendous alarm monitoring ROI.

Plus, it’s easier to install a single unit, and you also avoid the hassles of trying to integrate devices from multiple manufacturers.

Let DPS Help You Survey Your Network — A Free Consultation at No Obligation to You

Determining your alarm monitoring needs can be tough. If you’ve got a busy job with a lot of responsibilities, you don’t have a lot of time to evaluate alarm systems and survey your remote sites.

So why not get help from experts you can trust? DPS Telecom will help you survey your remote sites step-by-step, making sure you don’t miss any opportunities to make your network monitoring simpler, more effective — and easier on your budget.

A DPS expert consultant can help your figure out what alarm system will most effectively meet your needs without overloading your budget. Our goal is to help you maximize your return on investment while minimizing your expenditure — without pressuring you to buy a particular system.

There’s no hard-sell sales tactics. No harassing sales calls. No pressure to buy. We won’t discuss specific equipment options until we’ve helped you plan the right monitoring strategy for your network.
The 5 Profit-Boosting Advantages of an All-in-One SNMP & T1 RTU

A truly “all-in-one” SNMP-over-T1 RTU will improve both sides of your profit equation.

First, you'll reduce costs with better monitoring and remote access capabilities. Many situations that used to require a multi-hour truck roll can now be diagnosed and corrected without leaving your chair in the NOC center. You’ll also be able to control other equipment remotely via LAN, terminal server, and control relays. This cuts even more wasted truck rolls. When you add these savings to reductions in preventable equipment damage, you’ve already justified the cost of an all-in-one T1 RTU.

But superior monitoring and control will also protect your revenue. Imagine how many service outages you could prevent with the ability to detect and correct little problems within seconds - before they’re allowed to grow into big problems. With higher uptime, your customers are much less likely to leave you for a more reliable competitor. Compare that to your current capabilities at sites on your T1 WAN. If there was a serious problem at one of those sites right now, would you even know about it?

These 5 advantages of all-in-one SNMP & T1 RTU add to your all-important bottom line:

1) You Don’t Have to Buy Expensive Ethernet Cards or T1 Routers

We’ve heard horror stories of Ethernet transport cards that can cost $5,000 to $10,000 or more. By avoiding that cost alone, a T1-capable SNMP RTU pays for itself. But that’s just the start of the value you’ll receive.

2) You Don’t Need a Separate Terminal Server

Not all SNMP RTUs that support T1 will include this functionality, but anyone claiming to have an “all-in-one” device had better have it. A terminal server is a big help at a wide variety of sites, especially your sites without LAN. You’ll be able to reach your legacy serial gear remotely, just as if you were on-site with a laptop. Ask yourself this: How many times have you had to drive to a site to spend 3 minutes at a console?

3) You Don’t Have to Make Another Purchase to Get Monitoring

Even if it were cost-effective to purchase Ethernet cards, you’d still need to purchase an RTU to have monitoring. That’s just another cost that saps your bottom-line profits. An all-in-one RTU will take care of both at the same time, often at a lower cost than purchasing either part separately.
4) You Don’t Have to Buy a LAN Hub
You might not think too much about buying an Ethernet hub, but it’s still a cost that you should avoid when you can. More importantly, a hub that’s integrated with your alarm remote runs on your site’s protected DC power instead of vulnerable commercial AC. And whatever the source, a separate hub draws more power than an integrated hub.

5) 4 Devices in 1 Unit of Rack Space
No matter the cost in dollars, every device you add eats up another RU of physical space in your equipment racks. And at your smaller sites, there probably isn’t much of it to go around. A good all-in-one RTU will perform the functions of a T1 router, terminal server, LAN hub, and RTU in just a single rack unit of space.

“How many of your sites could use a T1 router, terminal server, Ethernet hub, and SNMP alarm remote for the price of a 1 RU box?”

A few sites? A few dozen sites? A few hundred sites?

I asked you the question above because this SNMP-over-T1 RTU has been creating a lot of buzz at our Factory Training events.

This multi-function box is in our NetGuardian family of remotes, but it’s actually...

Four devices in one:

1. T1 router - avoid the cost of cards to drop off Ethernet (guaranteed compatible with PairGain, Siemens, & Nortel)
2. Terminal server - remote console to 5 RS232 serial devices
3. Ethernet hub - deliver LAN to 7 devices
4. Alarm remote - monitor 16 discrete and 7 analogs, latch 2 control relay

How much would it cost you to purchase those devices separately? Keep in mind that the terminal server and hub run on protected DC power. That’s a rare value-added feature you’d normally pay extra for.

So how much would all 4 devices cost separately? $10,000 or more? Good luck getting approval for that!

Now, imagine how easy it would be to get all four of these devices in a single 1 RU box - and for a single 1 RU price. With the number of truck rolls you’d eliminate, that would be a no-brainer purchase.

So, I’ll ask you again:
How many of your sites could use a T1 router, terminal server, Ethernet hub, and SNMP alarm remote for the price of a 1 RU box?

Call me, Joel Soto, at 1-800-693-0351 and tell me your answer...
Your Big Opportunity to Extend Your WAN

The value of core monitoring functionality speaks for itself, but you stand to gain even more at your T1 sites. Consider that, these days, you’re getting more and more LAN-based equipment in those remote orphaned sites. If you had Ethernet connectivity, your gear would give you all kinds of useful information.

But since you don’t have LAN available, you can’t get access to any of that information unless you physically travel to the site. Without the benefit of knowing what’s wrong at the site, you might even end up going to the wrong site, visiting sites in the wrong order, or sending the wrong technician, the wrong parts, or the wrong tools.

For the value you’re currently getting from it, your equipment might as well not even support Ethernet. From provisioning to operation to maintenance, not having LAN connectivity at your sites means plenty of unnecessary truck rolls and wasted time and expense.

Here’s your big opportunity: An ideal RTU solution won’t merely use the available T1 connection for transmitting its own alarm data. You’ll also be able to provide Ethernet to several devices on site. Now you have access to the data your gear was designed to transmit over LAN, including data sent as SNMP traps.

Think Ahead to Your Future LAN Expansions

Now that you’re preparing to invest in SNMP-over-T1 remotes, don’t forget that your LAN will probably expand in the future. When it reaches sites that are currently monitored via T1, will your remote support a smooth transition to Ethernet monitoring?

Only if you choose the right one. You’re looking for a remote that includes both T1 and LAN connections, with the ability to easily transition between them. With a remote like that, all you have to do is remove the T1, plug in LAN, and make a minor configuration change. You won’t have to buy a new RTU, reterminate alarm wiring, or make any other big investments in cost or manhours.

Monitoring SNMP over T1 Lines is No Longer as Hard as You Think

You may have thought that extending your WAN, deploying monitoring, and implementing a series of terminal servers would be an incredible feat of engineering, logistics, and deployment, requiring lots of capital budget and more time than you will ever have.

The reality is that an integrated solution, such as the NetGuardian 216T, addresses all of these issues. It allows you to, in a single-rack-unit and DC-powered device, address your T1 interface (FrameRelay or PPP), discrete alarm monitoring, and analog alarm monitoring, remotely control devices via relays, perform terminal server functionality, and provide 7 all-important LAN feeds that will bring your other site elements (including your technicians’ laptops) into your network.

Achieving visibility at sites outside of your LAN isn’t as hard as you think. In fact, it’s a lot easier than trying to maintain uptime without adequate monitoring and without access to revenue-generating equipment. If you can’t get the details about critical events at your sites, you’re doomed to drive for hours before you can even start working on a solution.
6 Expensive Outside-Plant Monitoring Options You Must Avoid

If you don’t think you have any good outside plant monitoring options, you used to be right. Until the recent introduction of SNMP-over-T1 RTUs, you might have made a decent case for not monitoring your outside-plant sites. Your available options just weren’t very good, being expensive, time-consuming, or both. Here are some traditional monitoring options that you should avoid:

1) Do Nothing
You can always, of course, do what many people do: Nothing at all. You have the option of leaving your sites at risk, increasing the chance of a revenue-draining outage. Many people fall into this trap because it requires no additional short-term effort, but it never fails to cause them grief over the long term.

If you think avoiding proactive monitoring expense now means you won’t pay later, think again. You will pay—and you’ll pay with interest!

2) Install Expensive Infrastructure
You could theoretically install expensive infrastructure that would deliver LAN to the site, but you probably don’t have the available budget. Even if you do, the ROI for that kind of large-scale installation simply isn’t there. These solutions require lots of planning, people, and approvals, often dooming them to failure before they start. They’re simply too big to make happen.

3) Pay Someone Else For an Internet Connection
You can pay someone else to bring Internet to your locations, but that’s hardly an elegant solution. Even if you use this method, you burden yourself (and your IS department) with an unknown array of security hassles. Once your data leaves your company network, you never know whose hands it might fall into. The bottom line is that you no longer have direct control over a critical infrastructure item.

4) Replace Your Fully-Functional Transport Equipment
You could update your transport equipment to drop off LAN, but that is an expensive and very slow process. Chances are very good your current equipment isn’t very old and/or not fully depreciated. In any case, it’s still doing the job, and you shouldn’t have to replace it.

5) Pay For Dialup Service
If telephone service is available, you could conceivably monitor via-dialup, but you’ll be paying monthly charges (and sometimes toll charges) for every one of your sites. Also, you’ll deny yourself the benefit of extending your WAN.

6) Install Low-Speed Dedicated Circuits
You could put in a dedicated circuit, but that’s slow, expensive, and requires a fair amount of supporting infrastructure. They are typically a device-specific tool and can’t be used as a “general” solution. Also, remember that dedicated circuits aren’t going to extend your WAN either. You won’t be able to communicate with all the LAN-based devices that you need to.

After facing this set of depressing alternatives, it’s no wonder that you probably aren’t very excited about the prospect of monitoring your outside plant sites. Fortunately, the new “SNMP over T1” trend in monitoring technology is changing the way people think about monitoring in areas without LAN.
Why T1 Lines are Becoming Much Easier to Get...

As the world moves on to faster, higher-bandwidth connections like fiber, T1 lines are rapidly becoming a legacy technology.

But there’s one beautiful silver lining anytime one transport channel is replaced with something newer. The T1 lines that have already been laid are still there and they’re still fully functional. Even though fiber has much higher capacity, T1 works just fine for alarm monitoring traffic.

If you need **SNMP over GigE Fiber**, this alarm remote is the answer...

Now that you’ve read most of this white paper, you know about the NetGuardian 216T that comes equipped with a T1 interface. You can access serial devices, drop off multiple ports of LAN, and monitor alarms all in a 1-rack-unit device.

But what if you need the **same functionality with GigE Fiber instead of T1**. Well, that’s where the NetGuardian 216F comes in. Its SFP fiber connectors allow it to communicate over a 1000Base-X fiber connection, and it’s compatible with fiber interfaces from many different manufacturers.

The NetGuardian 216F has SFP fiber connectors, making it a great solution for remote fiber site monitoring.

But don’t worry, the addition of fiber doesn’t mean the NetGuardian 216F gives up any core monitoring functions. It comes equipped with:

- 16 discrete alarm inputs for monitoring contact closure alarms
- 8 analog inputs for monitoring analog sensors, battery voltages, and more
- 2 control relays for controlling equipment remotely
- A 7-foot sensor probe for monitoring the temperature of another important device
- A 7-port Ethernet switch, which eliminates the need to purchase a separate switch
- **Industrial temperature rating** from -22 F to 158 F, far exceeding many RTUs that don’t even have a fiber interface. This device is made for outside-plant environments.

The NetGuardian 216F is the ideal solution for collecting alarms from your outdoor enclosures and reporting them over 1000Base-X fiber.

**To learn more about the fiber-capable NetGuardian 216F, visit www.DpsTele.com/RTUs**
Take a minute to think about the value you could get from a single T1 line and the right SNMP-over-T1 RTU. You’d get rock-solid alarm monitoring, LAN for multiple devices, and terminal server access to legacy gear. Now consider how little that T1 would cost you.

This is exactly what makes an SNMP-over-T1 RTU so valuable for you. It allows you to take cheap and easily available T1 lines and extract a ton of value. Imagine the competitive advantage you’ll create.

The Importance of “Bridge Mode”

Considering the positive impact that SNMP-over-T1 monitoring can have for your network, it would be a shame to let a small technical problem create a big disruption. That’s what makes a T1 RTU with “Bridge Mode” so important.

When activated, “Bridge Mode” causes your RTU to behave like a hub. Any network traffic that reaches it, either from local devices plugged into the hub or over T1 WAN, is broadcast out all physical ports. Contrast this with typical behavior that relays traffic only to devices that “need” it, which can lead to problems if the RTU makes an incorrect determination.

The ability of Bridge Mode to force traffic broadcasting becomes important in some applications with multiple subnets. If you have LAN devices connected to your RTU that are on a different subnet, your RTU might not recognize a need to send traffic from that device out over the T1 line. Bridge Mode solves this problem by forcing the broadcast of all traffic.

Keep Bridge Mode functionality in mind while you’re evaluating RTUs from your vendors. It’s an easy way to simplify your IP and subnet setup.

The Fastest Way to Get What You Need

The key to achieving your outside-plant monitoring goals is to get all of the functionality you need in a single box.

Don’t bother with a solution composed of several devices. That means more purchasing and a good chance that you won’t have enough physical space in your rack.

You will also have more user interfaces to learn, more power drain, more things that could go wrong, more points of contact for ordering, and more issues with interoperability.

A single-device solution fits comfortably in your rack and budget, and it will cause you fewer headaches down the road.

Protect Your Return on Investment — Make Sure Your Vendor Offers Guaranteed Results

In my experience, clients who think hard about cost justification have a more important concern than just price. They want to make sure that they’re not spending their company’s money on a system that doesn’t work as advertised.

That’s smart. You have to be careful when working with equipment vendors, especially on protocol mediation projects. Most vendors can’t support all your legacy equipment, and they don’t have the development capabilities to make integration work.

Some vendors will charge you large NRE (non-refundable engineering) fees up front for custom work, and give no guarantee that the resulting product will meet your performance requirements.

Personally, I think that’s a lousy way to do business. I give all my clients a 30-day guarantee: If my product doesn’t completely satisfy you, return it for a full refund. If I can’t give you a solution, I don’t want your money. If I’m doing custom work for you, I don’t expect you to pay for it until I’ve proven that it works to your satisfaction.

Very few vendors will make that guarantee. But you need to demand the best level of service from your vendor to ensure that your SNMP implementation is 100% successful.
Watch Out for Proposals that Don’t Actually Meet All of Your Needs

Good SNMP-over-T1 monitoring solutions are out there, but you do need to watch out for some common pitfalls when considering your options.

Carefully examine any claim about compact size. A lot of proposals you review may advertise themselves as fitting in a single rack unit, but they actually require much more space upon closer examination. For example, an RTU might truly have a one-rack-unit chassis, but if you have to terminate to a separate patch panel, you’re really going to need a lot more rack space than you thought.

You might actually want a separate patch panel at your larger sites, but at a small site, you need to conserve as much physical space as possible. In those cases, you have to be sure that you can terminate directly to your device. This means more than just having amphenol connectors. You need to meaningfully connect wire-to-wire and bring alarms in.

Also, make sure you don’t accept any proposals for devices that don’t accept analogs. In today’s monitoring environment, they are no longer a nicety, but a necessity. Monitoring temperature, humidity, battery voltages, fuel tank levels, signal strength and a range of other variables requires the versatility of analog inputs.

When talking with vendors, make sure that their offerings are capable of accepting input from analog sensors, which typically are 0-5 VDC or 4-20 mA outputs. Equally important, the same inputs should also be able to handle your –48 volt battery plant monitoring without any special transducers. Of course, once the alarms cross a series of warning and alarm thresholds, you need to be notified so you can take immediate action. While simple low and high thresholds are better than nothing, the best solutions have warning and alarms thresholds for both over and under directions.

It’s also good to ask about analog alarm scaling. When you view sensor data, you shouldn’t be given a meaningless current or voltage that you’ll have to manually convert to something usable. Temperature should automatically display as degrees, humidity as a percentage, etc. A good monitoring solution will allow you input a conversion factor that will automatically translate input from sensors into instantly actionable information.

Finally, it’s incredibly important to avoid proprietary monitoring protocols. You want a remote that can report to any standard SNMP manager. It should also be capable of routing SNMP traps issued by other site equipment over T1 to your manager.
Do you use FrameRelay or PPP? Be sure the T1 RTU you choose supports the right protocol...

Wouldn’t it be simpler if all T1 communications were the same, right down to the protocol? Well, that’s not the reality. Both PPP and FrameRelay are common protocols carried on T1 lines, and the T1 RTU you choose to deploy must obviously support your protocol.

You might not expect this to be a problem, but the case study in this white paper presents a perfect example. Consolidated Communications in Texas uses FrameRelay over T1, and they questioned one vendor about potential solutions. That vendor’s RTU only supported PPP and they refused to change their design.

In the end, Consolidated did exactly what they should have done. They found a vendor that was willing to make design changes to meet their needs. Make sure you do the same. When it comes to monitoring gear, your boxes should work for you - not the other way around.

Learn About Monitoring Over T1 From the SNMP Experts: Attend DPS Telecom Factory Training

Learn network alarm monitoring in-depth in a totally practical hands-on class. The DPS Telecom Factory Training Event will show you how to make your alarm monitoring easier and more effective. You’ll learn SNMP alarm monitoring, ASCII alarm processing, derived alarms and controls, and how to configure automatic email and pager notifications. DPS training is the easiest way to learn alarm monitoring, taught by technicians who have installed hundreds of successful alarm monitoring deployments

“DPS Factory Training is a big help in not feeling intimidated by your network monitoring system. It’s excellent — presented in the right way and tailored to the needs of the class.”

— Bill Speck, 3 Rivers Telephone

“[DPS Factory Training] really was the best training class I’ve been to in my telecom career.”

— Mary Steffen, National Grid

For dates and registration information, call 1-800-693-3314 today or go to www.dpstelecom.com/training
Case Study: Consolidated Communications Finds the Right SNMP-over-T1 RTU

Founded in 1894, Consolidated Communications is a family of companies providing advanced voice, data, and video services to both residential and business customers in Illinois and Texas. Consolidated Communications offers a wide range of services over its technologically advanced network, including local and long distance, high-speed Internet access, digital television, private line, and carrier services.

Billy Young is a Central Office Engineer for Consolidated Communication’s Texas operations, and he recently found himself face-to-face with a tricky monitoring challenge.

The Right RTU Was Hard to Find
Young was searching for an RTU that would function reliably in the 110-degree Texas heat. “We wanted to monitor our cabinets, and there was nothing hardened out there that worked within our network architecture,” Young said, adding “We were limited on space. We only had one rack unit.”

And Young was looking to squeeze a lot of functionality into that one rack unit. “We wanted a T1 interface with Frame Relay support. We wanted an Ethernet hub in the back, and we wanted it to be T1-fed,” Young said. “We wanted to have 16 scan points, some control relays and some analog relays, and we wanted it web-based.”

Many Vendors, Many Disappointments
Young’s search for a solution took him to several vendors. Some of them saw his desire for Frame Relay support as more of a nuisance than an opportunity.

The response from one was, “Absolutely not,” recalled Young. “They said PPP was their existing design and they weren’t going to change it.”

One Potential Answer
When he had trouble finding an RTU to meet the unique demands of Consolidated’s network, Young knew just where to turn. “I’ve had a good relationship with DPS Telecom. I’ve been dealing with them for years,” he said.

DPS Telecom’s NetGuardian RTUs have been performing well at Consolidated for quite some time. “They’re reliable,” Young said. “We have about 160 deployed at this time, some have been deployed since ’99, and I would say we might have a 1% failure rate.”

And Young recognizes the value of reliable alarm monitoring. When Mother Nature recently threatened Consolidated’s network, Young’s investment in monitoring equipment paid off. “Hurricane Rita struck last year, and where we had NetGuardians, we were able to look at the voltage and watch it drop,” he said. “We were able to determine from that number when we needed to take a generator out. We could look at sites and tell, ‘This one has more voltage than this one, so we need to move a generator here.’ These proved to be an invaluable tool during one of our company’s biggest crises.”

But for this particular job, Young needed a combination of specialized features that no existing NetGuardian had.

Vertical Integration for Perfect-Fit Solutions
Fortunately, DPS Telecom is well equipped to design, produce, and deliver customized products. Because it controls every part of its operations in-house, DPS is able to quickly develop perfect-fit solutions for its very satisfied clients.
Billy Young witnessed the process firsthand. It all started with his call to a DPS sales engineer. After establishing the client’s needs, DPS executed its time-tested new product development process. In the end, Consolidated got exactly the product they needed.

**A New Product, a Well Monitored Network, and a Very Satisfied Client**

The new product is the NetGuardian 216T, and it has already solved several of Consolidated’s monitoring problems. “One of our small offices is very remote, and we haven’t had detailed monitoring there,” said Young. “But since all it took was a T1, we now have monitoring of all our environmental and network connectivity for some very critical equipment,” Young continued. “It gives our technicians access to the network to check email, do testing, or look up records, and it saves time on truck rolls because now we can access it remotely.”

When asked about his satisfaction with the final product, Young let his purchase orders do the talking. “I’ve taken the liberty of ordering fifty, and I intend to order additional units next year,” he replied. “What does that say?”

Throughout the development process, Young never questioned whether Consolidated would find the perfect fit. “I had no doubt that whatever DPS committed to, they’d do it,” he recalled. “And they have.”

Young has advice for anyone else considering a custom-engineered monitoring solution. “They need to get their technical specs and contact DPS Telecom,” he said. “We’ve had nothing but a positive experience. It took very little time, and we got the product we wanted.”

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**The NetGuardian 216T: SNMP RTU with T1 Transport**

- T1 transport for outside plant monitoring
- LAN access for 7 network elements
- Integrated terminal server for remote access to serial equipment (1 or 5 ports)
- Convenient web interface
- 16 discrete alarms
- 32 ping alarms
- 7 analog alarms:
  - 4 general, 1 temperature, and 2 battery
- Expandable via NetGuardian Expansion units

The NetGuardian 216T was designed with your real-world monitoring needs in mind, and it’s guaranteed compatible with PairGain, Siemens, and Nortel equipment.

To learn more about how the the broad DPS product line can vastly improve your network visibility, including outside plant sites, **contact a DPS Telecom applications engineer at 1-800-693-0351.**
Make Sure Any RTU You Consider is Guaranteed Compatible with Your T1 Gear

Can you imagine what would happen if you got stuck with T1 RTUs that weren’t compatible with your existing T1 gear? Good luck explaining your way out of that one...

That’s why it’s so important to purchase an SNMP-over-T1 RTU that is guaranteed to work with your brand of T1 equipment. Whether it’s PairGain, Siemens, Nortel, or anything else, you need to protect yourself from incompatibility headaches.

There are two major ways to protect against incompatibility:

1) Ask your vendor if their RTU has been tested under real-world network conditions with your brand of T1 gear. If it has, that’s always a good sign. If it’s already been deployed by their clients in the field, that’s even better.

2) Your RTU vendor should have a 100% money-back guarantee. If they don’t, that should raise about a dozen red flags in your mind. Any vendor that’s confident about the quality of their products should have a complete money-back guarantee.

Make sure that you ask all prospective vendors about these 2 compatibility protections.

Guaranteed to Work with PairGain, Siemens, Nortel, and More...

The NetGuardian 216T is guaranteed compatible with T1 gear from:

- PairGain
- Siemens
- Nortel
- Many other vendors

If you’d like to try the NetGuardian 216T in your network, call DPS Sales at 1-800-622-3314. In the rare event that you have a compatibility issue with your T1 gear, DPS has an expert Engineering team that specializes in perfect-fit customization.

Ultimately, compatibility with your vendor is guaranteed through DPS Telecom’s 30-Day No-Risk Money-Back Guarantee. If you’re not happy with the NetGuardian 216T for any reason, just return it within the first 30 days for a full refund of the purchase price.

The NetGuardian 216T is guaranteed to communicate with your existing T1 gear.

To learn more about this 4-in-1 SNMP-over-T1 RTU, contact a DPS Telecom applications engineer at 1-800-693-0351.
Download Your Free Copy of this Buyer’s Guide

DPS Product Showcase

Supercharge Your Monitoring with the Latest and Greatest from DPS

This product showcase for 2009 features the newest and most popular products from DPS Telecom. Inside you’ll find:

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- Success Stories from real DPS clients
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DPS products are created to solve the real-world needs of real-world companies. They’ve helped DPS clients add millions to their bottom line by reducing unnecessary expense and protecting revenue-generating operations.

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Updated every quarter, this product guide is packed with over 60 pages of alarm monitoring solutions that deliver real-world ROI. To download your free copy now, visit:

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Take Action Now... Before Your Next Big Outage

If you allow your T1 WAN sites to remain outside of your SNMP monitoring umbrella, it’s just a matter of time before you (and your paying customers!) suffer through another preventable service outage.

But you don’t have to accept the painful cycle of inadequate visibility and easily preventable outages. You can get the T1 interface, terminal server, and RTU you need in a single box. You won’t have to invest expensive infrastructure or pay other companies to give you the connectivity you need. What’s more, you’ll actually extend your WAN through T1 router functionality.

It’s no longer too expensive to monitor all of your sites. In fact, it’s much more expensive in the long term if you fail to invest in revenue-protecting site visibility. This makes the question that you now face quite simple: Will you continue to leave your outside plant sites at risk now that an RTU is available that will fit in your enclosures and in your available budget?

If you continue to ignore parts of your network, you’ll keep getting the same results: expensive equipment damage, extended service outages, and unhappy customers. You can avoid these pitfalls by installing SNMP-over-T1 remotes at your outside plant sites.

DPS is Committed to Meeting Your Exact Needs

DPS Telecom is an industry-leading manufacturer of customized alarm management products. Our custom engineering and agile manufacturing capabilities allow create custom monitoring products that meet your exact needs.

“Considering the very strict AT&T OS systems compatibility requirements we placed on you, and the short project timelines we both faced on this project, we are very pleased with the remarkable end results. DPS Telecom has done a fantastic job, and your entire team has far exceeded our very high expectations.”

—Walter E. Dziama
AT&T

“We wanted to replace all the masters with one master. We also wanted to add native IP remotes and migrate as many sites as possible to IP network monitoring.”

—John Mullen and Daniel Jackson
Dominion

“It was very important for us to find a vendor who was willing to customize the alarm system to meet our needs. Like many carriers, we have a mix of equipment — everything from microwave radio systems to high capacity dense wave division multiplexing systems. We needed an alarm system that could pull in TBOS alarms, discrete alarms, SNMP ... DPS has products that meet our needs.”

—Paul Mankins
Norlight Telecommunications
Get the Facts Before You Purchase Your Next Network Monitoring System

If you found the information in this white paper useful, you’ll also be interested in the other white papers in the DPS Telecom Network Monitoring Guide series. Each paper is a complete guide to an essential aspect of network monitoring. These are the facts you need to know to make an informed purchase of your next network monitoring system.

SCADA Tutorial: A Fast Introduction to SCADA Fundamentals and Implementation

This white paper is a complete guide to what SCADA is and what SCADA can do for you. It includes details about real-world SCADA applications, including how to monitor, manage, and control your facilities while staying on time, staying on budget, and increasing profitability. To receive this report, visit: http://www.dpstele.com/white-papers

SNMP Tutorial

This guidebook has been created to give you the information you need to successfully implement SNMP-based alarm monitoring in your network. To receive this report, visit: http://www.dpstele.com/white-papers

SNMP Troubleshooting Guide

Do you have a nagging SNMP problem that is reducing your network visibility? Do you spend hours trying to find the cause because you’re not sure where to look? You’re not alone. Finding and solving problems in your SNMP implementation can be a difficult task. This White Paper is a guide to identifying and solving SNMP issues. http://www.dpstele.com/white-papers

Give Us Your Feedback

Send your comments to feedback@dpstele.com

This all sounds great, but where can I get product details?

If you would like to know more about the products and services mentioned in this white paper, visit www.dpstele.com and click “Applications.” or “Products.”
“Since all it took was a T1, we now have monitoring of all our environmentals and network connectivity for some very critical equipment... ...and it saves time on truck rolls because now we can access our equipment remotely.”

—Bill Young
Consolidated Communications

“It is hard to find companies with the intelligence and aptitude to meet the customer’s exact needs, and I believe that is what DPS is all about.”

—Lee Wells
Pathnet

Written by Robert Berry and Andrew Erickson

About the Author

Robert Berry is founder and CEO of DPS Telecom, an industry-leading developer of network alarm management solutions. Two decades’ experience designing remote telemetry systems have taught Berry that technology is most powerful when it meets real-world business needs. DPS Telecom clients have grown to appreciate Berry’s dedication to developing technology solutions that lower costs and raise revenue.

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