DPS Telecom

"Your Partners in Network Alarm Monitoring"

Biggest "Aha!" Ideas from DPS Telecom Factory Training

- 16 network alarm monitoring secrets taught at DPS Telecom Factory Training
- How to do things you didn't know you could do
- Monitoring tools that will solve your toughest problems

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www.dpstelecom.com · 1-800-622-3314

"We protect your network like your business depends on it"™

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How This White Paper Will Help You

Tips, tricks, and ways to do things you didn't know you could do

You can do more with your network monitoring than you know.

If you have a T/Mon system and DPS Telecom remotes, you have tools to manage almost any network equipment — send alarm notifications to multiple users 24/7 — and precisely diagnose and eliminate problems before they cause serious damage.

When clients come to DPS Factory Training and learn the full capabilities of their DPS equipment, they have lots of "aha!" ideas — breakthrough realizations of what they can do with their network monitoring, and how it can save you time, money and trouble.

This white paper will show you 16 of the best "aha!" ideas clients learn in DPS Factory Training. You'll learn the tips and tricks that will make your monitoring more effective and save you hours of work.

Contents

Monitor more equipment more effectively with the T/Mon NOC Remote Alarm Monitoring System

1. T/Mon Can Monitor All Your Network Equipment

This is the biggest “aha!” idea of all, because it’s the key to how the T/Mon Remote Alarm Monitoring System reduces the time and cost of network maintenance.

Most alarm monitoring systems support only one protocol or only the vendor’s own devices. T/Mon isn’t limited like that. T/Mon is designed to monitor all your equipment — no matter who made it, or what protocol it uses — and display all your alarms on one screen.

T/Mon can monitor nearly all your network equipment — DPS remotes, other manufacturers’ remotes, switches, routers, PBXs, SONET equipment, multiplexers, battery plants, microwave radios, and more.

Why is this so important? Integrating all your alarms on one system gives you capabilities you can’t get from separate, isolated systems:

- **Know absolutely, 100% for certain if you have an alarm**

  If you have to watch several different screens to keep track of your monitoring, it’s only a matter of time before you’ll miss a critical alarm — so you can’t really trust what all those screens are telling you. With T/Mon, one glance at the screen will tell you if you’ve got a problem anywhere in your network, with no ifs, ands, or buts.

- **Monitor every essential piece of equipment in your network**

  Network managers are often forced to leave significant segments of their networks unmonitored, because their monitoring doesn’t support all their different equipment. If your monitoring can’t handle SNMP, or ASCII, or analog inputs, there’s a lot of essential equipment you can’t monitor.

  These gaps in your network visibility aren’t good — they’re places where you can’t see problems until equipment is damaged and service is down.

  If you have a T/Mon, you can monitor all your equipment, from switches to generator fuel tanks, giving you a detailed picture of your whole network. If you acquire new equipment, you can extend T/Mon’s monitoring capabilities with additional software modules.

- **Correlate alarms across your entire network**

  T/Mon has lots of features for performing data processing with your alarm information— alarm history reports, trend analysis, derived alarms and controls, etc. — and you can use these features with all alarms. If you want to know how often generator failures precede battery failures that precede switch card failures — and you want to see a special alarm when this chain of events happens — you can do it.

- **Integrate older, incompatible monitoring equipment**
  If you've got older monitoring equipment that's incompatible with modern systems, but it's too expensive to replace, you might think you're stuck. T/Mon offers a way out. T/Mon supports a wide range of older equipment, giving you options to keep your legacy gear in place or gradually swap it out.

- **Simplify training, maintenance and databasing**
  Using one T/Mon system is easier and cheaper than using multiple separate systems. You won't have that clutter of consoles in your NOC; you don't have to train your staff on multiple interfaces; and you only have one system to maintain. Best of all, you only have one alarm database to cover all of your monitoring equipment.

2. You Can Use All T/Mon Features on All Alarms

T/Mon supports all your network equipment equally. T/Mon converts all your alarms from all your devices to a common format, and all T/Mon alarms support all T/Mon features.

You can use any T/Mon alarm, no matter what its source, in a derived alarm or derived control equation; you can send a pager or email notification of any alarm; and you can set a qualification time on any alarm.

This is why T/Mon is a great solution for supporting your older legacy monitoring devices. T/Mon will give you immediate access to modern monitoring features without spending a fortune on replacing your legacy devices.

3. T/Mon Is Also an Alarm Forwarder and Protocol Mediator

T/Mon can also forward alarms to your Master of Masters (MOM) system. When forwarding alarms, T/Mon also acts as a protocol mediator. You can mediate any T/Mon alarm to the following protocols:

- ASCII
- DCP, DCPf or DCPx
- E2A
- SNMP
- TABS
- TBOS
- TL1

How Many Devices Does T/Mon Really Support?

DPS has documented that T/Mon supports over 90 different kinds of network devices, using over 20 different protocols. (To get an idea of what T/Mon can do, see the appendix, "Partial list of protocols and devices supported by T/Mon NOC,"on page 11.)

That's actually a low estimate, for two reasons:

1. For every protocol it supports, T/Mon supports every device that uses that protocol. So for a widely used protocol like ASCII, SNMP or TL1, there are hundreds of devices that you can monitor with T/Mon.

2. Support for new protocols is frequently added to T/Mon. Because of T/Mon's modular software design, new capabilities are easily added to T/Mon.

In most cases, T/Mon already supports your equipment. But if your equipment isn't currently supported by T/Mon, call DPS at **1-800-622-3314** and ask about a custom-designed T/Mon support solution. DPS custom solutions are guaranteed to work for you 100% — or your money back.

4. Monitor Nearly Any Kind of Network Equipment with ASCII Processing

One of T/Mon’s most powerful tools is the ASCII Processor Software Module. The ASCII Processor can parse and extract actionable alarm data from any ASCII text source.

With ASCII processing, you can monitor nearly any kind of network equipment: channel banks, PBXs, SONET equipment, digital switches, logging devices, RTUs, routing platforms, DSUs, CSUs, NIUs — even email, FTP and HTTP servers.

As long as a device as some kind of ASCII output — an admin, craft, logger or printer port — T/Mon can monitor it.

5. Pinpoint the Exact Location and Description of Alarms

T/Mon alarms are highly detailed — each alarm is databased with its exact location, including the site, the device, and a plain English description of the alarm. Every alarm can be set to one of four severity levels: Critical, Major, Minor and Status. And each alarm has an accurate date-time stamp.

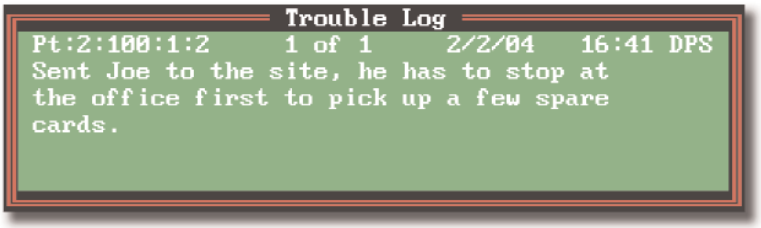
With T/Mon, you’ll know exactly when an alarm happened, where it happened, and what the problem is. Before your technicians get in the truck, they’ll know what to do to resolve the problem and what tools and supplies to bring to the remote site.

T/Mon’s detailed alarm notifications will enable you to monitor proactively, not reactively. You’ll find problems before they can cause equipment damage or a service outage. You’ll be able to minimize serious damage to your equipment; speed repairs and reduce service restoration times; and reduce the cost of maintaining your network.

6. T/Mon Can Help Coordinate Your Service Restoration Plan

The T/Mon interface includes two convenient features to help you automatically coordinate service restoration efforts — even after hours, and even if your staff doesn’t have specialized training:

- **Customizable text messages** ensure that everyone on your staff knows what to do when an alarm happens. Every alarm can be assigned a text message that displays an explanation of the alarm and/or specific instructions to correct the alarm.



- **Trouble logs** ensure that everyone knows the current restoration plan. System operators can record on screen what corrective action has been taken for each alarm. You’ll have clear documentation of completed work, eliminating duplication of effort and guesswork after shift changes.

7. Control Nuisance Alarms

There are three ways to control nuisance alarms in T/Mon:

- **Alarm tagging:** Tagging an alarm silences it permanently until the user un-tags it. To tag an alarm, highlight the alarm point in the T/Mon COS screen and press Shift-F10. The alarm will remain silenced until you un-tag it by highlighting the point and pressing F10.
- **Alarm silencing:** Silencing an alarm temporarily silences an alarm for a user-specified time. To silence an alarm, highlight the alarm point in the T/Mon COS screen and press Alt-F3.

  You can also silence an entire alarm window. Select the window in the T/Mon Alarm Summary Screen and press Alt-F3.
- **Alarm qualification times:** Alarm qualification is a convenient way to control alarms that are usually self-correcting, like power failures and fades. You won't see the alarm if it self-corrects, but if the alarm stays failed for a user-specified time, T/Mon will declare an alarm.

8. Create Custom Derived Alarms

T/Mon's Derived Alarms feature lets you create customized alarms based on multiple alarm inputs. Derived Alarms are great for tracking complex situations where a combination of problems happening at once is more serious than any one problem happening by itself.

For example, neither a generator failure nor a low backup battery may be a critical alarm by itself, but it is a critical situation if both happen simultaneously, especially during times of peak network activity. You can configure T/Mon so that these alarms are Minors when they occur separately, but a Critical when they happen at the same time.

Derived Alarms are user-configured through simple Boolean equations using AND/OR logic. Derived Alarm equations can combine alarms from any of your equipment, anywhere in your network.

Derived Alarm formulas can also include date and time factors. You might not want to know about a door that is frequently opened and closed during business hours — but you do want to know if an intruder opens the door after hours.

9. Create Automatic Derived Control Responses

With T/Mon's Derived Controls feature, you can use alarm inputs to trigger automatic control relay actions. Both ordinary and Derived Alarms can be used as Derived Control inputs.

For example, you could configure T/Mon to automatically start a remote site generator if there's a low battery alarm. Or a Derived Alarm signaling that the battery is low AND the generator is down could trigger an automatic page to a service tech.

10. Create Derived Alarms for Events That Don't Happen As Scheduled

A Derived Alarm can even tell you when events **DON'T** happen. Why is this useful?

Let's suppose a generator self-test is supposed to happen every Tuesday at 3 A.M. You don't want to be notified every time a successful self-test happens — that's a nuisance alarm that your staff will ignore, and no one will notice if the weekly notification doesn't come.

But you can create a Derived Alarm that will be triggered only when the self-test doesn't happen on schedule — so you get the most useful information when you need it.

11. Ping IP Devices

T/Mon can ping up to 960 IP devices, and an alarm will be declared if a device fails to respond to a ping within a user-specified interval.

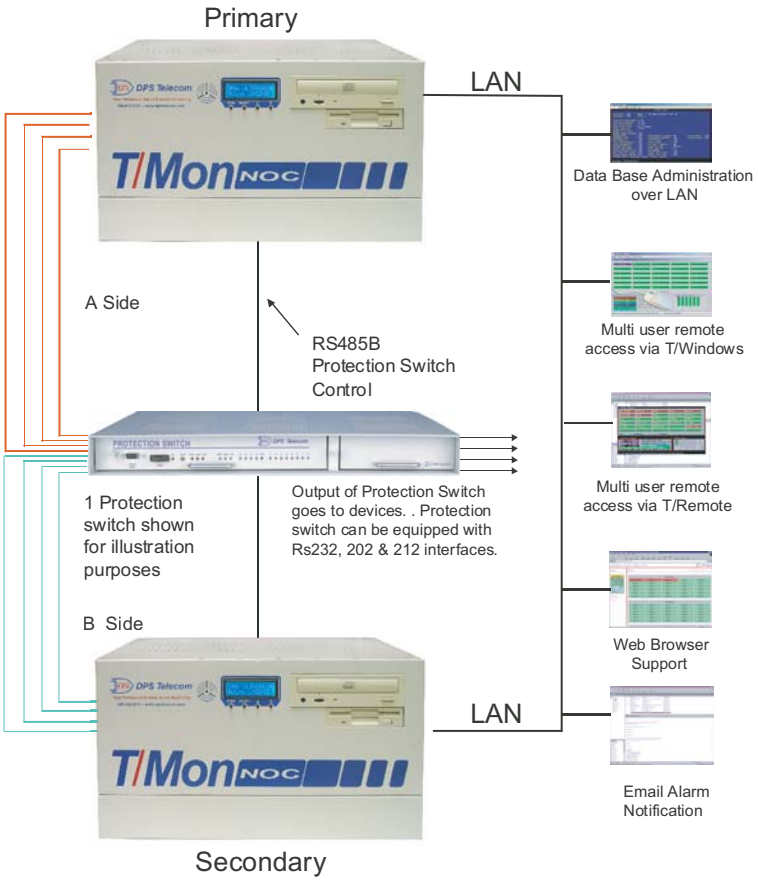
12. Send Pager and Email Alarm Notifications for Any Alarm

With T/Mon, you can send alphanumeric pager and email notifications for any alarm — even alarms from your oldest legacy devices.

Paging is the ideal way to get alarm notices to techs in the field, so they can immediately correct alarms without checking in with the NOC.

Email alarms are ideal for sending alarm notices to senior supervisors, and can be used to create an automatic alarm history log. Email alarms can also be sent to cell phones and PDAs that support email.

Email alarms can be acknowledged by simply sending a blank reply to T/Mon.



A backup T/Mon means your network will be protected under even the toughest circumstances.

13. Use a Second T/Mon as a Backup System

If you have two or more T/Mons in your network, you can assign one T/Mon unit to serve as a secondary backup. If your primary T/Mon fails, a protection switch will transfer monitoring to the backup T/Mon.

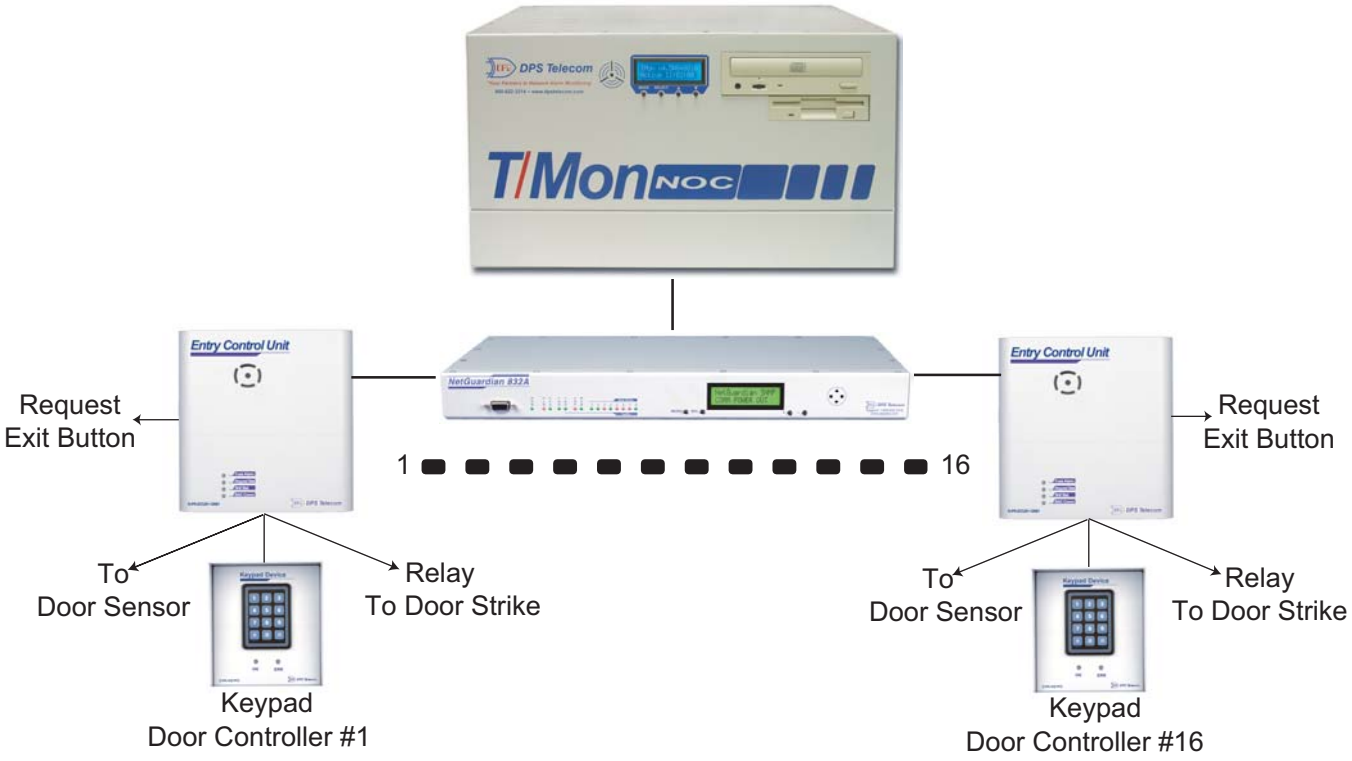
For even greater security, you can place your backup T/Mon in a different location to create a LAN-based geodiverse backup.

14. A Secondary Backup T/Mon is a Great Databasing Tool

You might be reluctant to update your T/Mon database, because you don't want to take the T/Mon out of Monitor Mode. But if you have a secondary backup T/Mon, you can easily do live updates of your T/Mon database.

Just do your databasing work on the backup T/Mon. When you're finished, you can copy the new database to the primary T/Mon on the fly.

As an added bonus, this procedure makes sure that both T/Mon units have the most recent alarm database.



T/Mon's Building Access System provides integrated security control for up to 16 entry points.

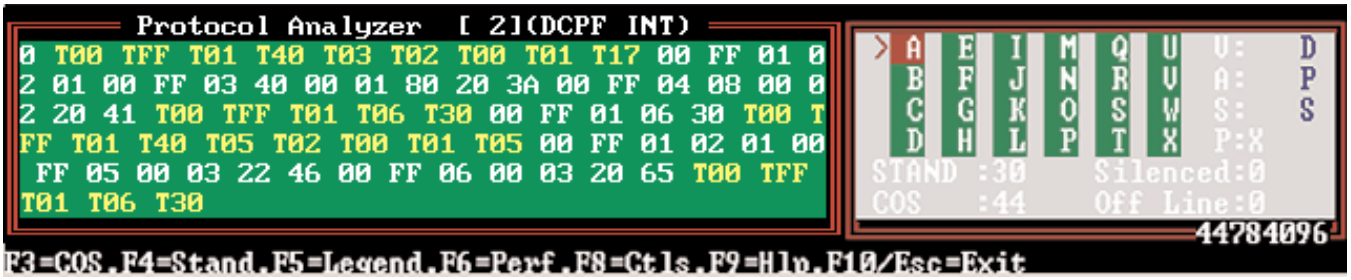
15. Control Facility Access and Remote Site Security

Isolated and unmanned, remote sites are vulnerable to vandalism and theft — but T/Mon monitoring can defend the security of your facility.

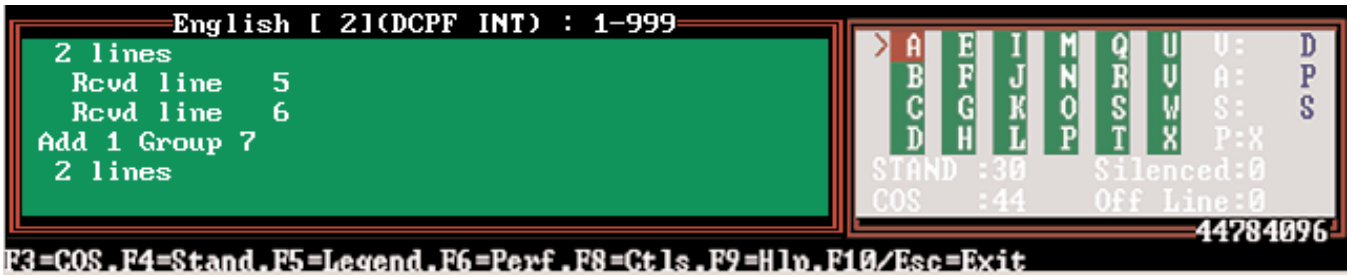
T/Mon's Building Access System gives you complete control over who can enter your remote sites and when they can enter. You can control specific permissions for personnel, dates, times, and even individual doors.

To enter your remote site, personnel must enter a security code, which eliminates the need for keys and their accompanying security risk. BAS access codes expire after a user-selected time period.

The BAS also acts as a security alarm system, reporting attempts at unauthorized entry directly to T/Mon.



T/Mon’s Protocol Analyzer shows communication in raw hex format ...



... while the English Analyzer shows communication in an easy-to-read format.

16. T/Mon Has Built-In Protocol Analyzer Tools

T/Mon has a built-in Protocol Analyzer and several other tools that you can use to analyze communications:

- **Protocol Analyzer** (Alt-F8 in the Alarm Summary, COS or Standing Alarm screens)
  Protocol Analyzer shows communications traffic on the selected port in a continuously updated real-time display. Protocol Analyzer is a tool for experts — it displays communications data in raw hexadecimal or ASCII format.

- **English Analyzer** (Alt-F5 from the Alarm Summary, COS or Standing Alarm screens)
  English Analyzer is similar to Protocol Analyzer, but it translates the raw communications data into a readable English format. For the nonexpert user, this is the most useful way to view communications traffic.

- **Performance Statistics** (F6 in the Alarm Summary Screen)
  Performance Statistics shows how many polls are sent and how many poll responses are received on the selected port. This is the best indicator of connection problems — for example, if Performance Statistics shows that, out of 100 polls, 60 are good and 40 are bad, you have a communication problem.

- **Site Statistics** (Shift-F6 in the Alarm Summary Screen)
  Site Statistics shows polling stats for each individual device on the selected port. This isolates communication problems more exactly. Site Statistics also tells you whether an individual device is failed, active, online or offline.

- **Channel Summary** (Alt-F9 in the Alarm Summary Screen)
  Channel Summary provides a quick view of the percentage of bad polls on each serial port.

Appendix: Partial List of Protocols and Devices Supported by T/Mon NOC

ASCII
- Any device with plain text formatted output (craft ports, etc.)
- ROP (Report Only Printer) ports
- PBX Switches
- Class 5 Switches
- Microwave radios
- Routers
- AEB
- AFC DLC
- Alcatel DACS
- CDMA
- CEB
- Cerent OC48
- Cisco 15454 (SONET)
- Cisco OC48
- Definity System 75
- Digtac
- Ericsson Switch
- Fujitsu FLM 150
- Harris Radio
- Lucent 5ESS
- Lucent ECP
- Lucent OC48
- Motorola CBSC
- Motorola EMX
- Nokia Switch
- Nortel DMS-10
- Nortel DMS-100
- Nortel DMS-250
- Nortel DMS-500
- Nortel MTX250
- Nortel OC48
- Nortel PCS
- OMC System
- Paradyne 740
- PBX Switches
- Tellabs DACS
- Tellabs DACS 5500

Badger
- Badger 481
- Badger 1200
- Larse 1200
- Badger Mini-Master
- Badger 482

Cordell

Datalok
- Pulsecom Datalok 10A
- Pulsecom Datalok 10D
- Other Pulsecom Datalok devices

DCM
- Dantel 460 Alarm & Control System (ACS)
- Dantel MAT
- Dantel CPM
- Dantel VDM
- Dantel SBP sub-assembly

DCP (DCP, DCPf, DCPx, DCP1)
- Any DCP enabled device
- DPS Telecom remotes
- Dantel 460 Alarm & Control System (ACS)

E2, E2A
- Any E2 or E2A enabled device
- DPS Telecom KDA-E2A
- DPS Telecom NTP (Network Telemetry Processor)
- Lucent DAS (Digital Alarm Scanner) remote
- Lucent APR (Alarm Processing Remote)
- Lucent ATP (Advanced Telemetry Processor)
- Lucent GTP (General Telemetry Processor)
- Lucent SAC (Status and Command) remote

Felix

FX8800

Granger 8000 Alarm System

ICMP PING
- Any network enabled device (printers, servers, routers, RTUs, etc.)

Modbus
- Any Modbus ASCII device
- Any Modbus RTU device
- Any Modbus TCP/IP device
- Analog and contact closure sensors
- Environmental sensors (temp, humidity, etc.)
- Tridium JACE 512

NEC 21SV
- NEC 21SV supervisory and control remotes
- NEC 21RB supervisory and control remote
- NEC 21GTX fault-management system

NTP
- Network Time Protocol
- Synchronize the T/Mon clock to Network Time Servers

TABS
- Any device that supports the TABS protocol
- NEC RC-28D digital multiplexer

TBOS
- Any device that supports TBOS
- DPS Telecom remotes
- Alcatel DML-3X50 Digital Muldem/ Lightwave multiplexer
- Lucent DDM 1000 DS3 multiplexer
- Lucent DDM 2000 OC-12 multiplexer
- Lucent DDM 2000 OC-3 multiplexer
- Microwave radios
- Multiplexers
- NEC Async
- NEC FD-39001 multiplexer
- Nortel FD-565
- Nortel Async (now CTDI Async product line of Digital Loop Carriers (DLCs), Channel Banks, and Multiplexers)
- OC-3s from various manufacturers

Telco Systems Teltrac devices

TL1
- Any device that supports TL1
- PBX Switches
- Class 5 Switches
- Microwave radios
- Routers
- SONET equipment

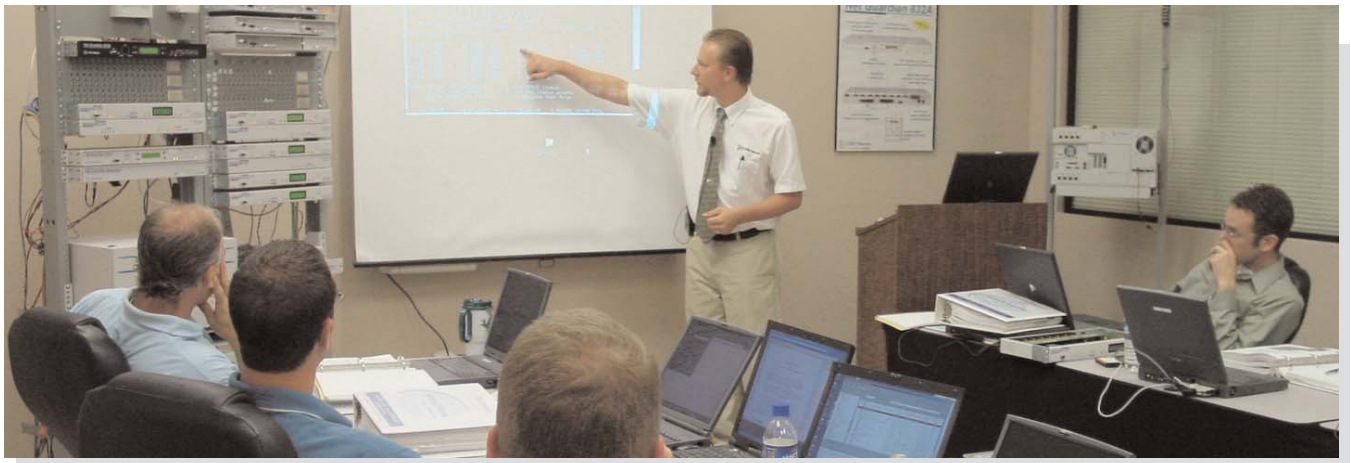
TMonNet (Network of multiple T/Mons)

POP3 - Email acknowledgment of alarm notifications in T/Mon

SMTP - Email notifications of alarms sent from T/Mon

SNMP
- Any device that supports SNMP

Why Should You Come to DPS Telecom Factory Training?



Hands-on training on advanced T/Mon techniques, taught by professional engineers.

DPS Telecom Factory Training is the fast way to learn everything you need to know about your T/Mon system and DPS remotes. If you work with DPS equipment, or train or manage those who do, you need DPS training.

This in-depth course will make you an expert T/Mon user in just four days, saving you weeks of trying to teach yourself with a manual. Plus you'll learn advanced T/Mon techniques — tips and tricks that will save you hours of work and make your monitoring much more effective.

"This training is worth a lot more because it's taught by the people who actually work with the system, not some corporate trainer."
—Larry Hamilton, U.S. Telepacific

Personal Instruction in a Friendly Atmosphere

Anyone who's attended a DPS Factory Training Event will tell you it's not like any other training course. Here's the difference:

- **Personal instruction in small classes**: Classes are capped at nine people, so your instructor can focus on you. If you want to spend more time on a topic, your instructor or a DPS engineer will be happy to meet with you in a one-on-one breakout session.
- **Learn from engineers with real-world experience:** Your DPS instructors are skilled engineers who have worked on DPS product design and field implementations. They know your equipment and how you use it.
- **Work hands-on with real-world equipment:** At a DPS Factory Training Event, you'll work directly with the equipment — and you'll get the unique know-how that only comes with personal experience.
- **Complete access to DPS Telecom:** You'll talk to the engineers who designed your equipment, tour the factory where it's built, and see the latest DPS products. If you've got a suggestion on how we can improve our products or services, we'll listen to you — and act to meet your needs.
- **Friendly, welcoming atmosphere:** The entire DPS staff will make you feel welcome. Hosted lunches and dinners will give you a chance to casually unwind with your classmates. You'll be able to share telemetry tips and experiences, and you'll get to know people you can relate to. Come to Fresno a day or two early and you can explore the splendors of nearby Yosemite, Sequoia, and Kings Canyon National Parks.

DPS Telecom Factory Training Event Instructors

Chad Linnenbrick

As senior support tech, Chad has unique understanding of DPS products and real-world alarm monitoring. Chad has trained hunderds of clients to use DPS equipment successfully.

Eric Storm

One of the founders of DPS Telecom, Eric has years of experience in client service and developing network alarm monitoring solutions.

Marshall DenHartog

As Platform Developer Manager, Marshall is a key innovator in the development of DPS's client-focused solutions.

Chris Hower

In tech support, installation, training and sales, Chris has worked with every DPS product. Chris brings a wealth of knowledge to share with Factory Training clients.

"It's rare to see manufacturing staff, including the company founders, genuinely concerned about getting feedback on how their products perform, coupled with keen interest in improving their products."

—George Black, Advantel

What You Can Expect During the DPS Factory Training Event

Here's a standard four-day curriculum for the DPS Factory Training Event — but if you want to cover other topics, we'll change the curriculum to fit you.

- **Day 1:** T/Mon Basics: Monitor Mode, databasing, remote access and hardware.
- **Day 2:** DPS Factory Tour; NetGuardian 832A hardware, installation and configuration; KDA remote telemetry unit; AlphaMax dial-up RTU; firmware downloads; T/Windows; and T/GrafX.
- **Day 3:** ASCII alarm processing.
- **Day 4:** SNMP: T/Mon trap processing; mediating contact closures to SNMP traps.

"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

Act Now to Secure Your Place at the Next DPS Factory Training Event

Attending DPS Factory Training will immediately repay you in faster implementation times, more efficient alarm monitoring, and better uptime. And if you have a T/Mon Gold Plan Maintenance Agreement, you and two of your colleagues can attend DPS Factory Training absolutely free — one of the great bonuses of Gold Plan membership.

Please see the enclosed calendar for dates of upcoming DPS Telecom Factory Training Events. **Call 1-800-622-3314 or visit www.dpstele.com/training today —** Factory Training classes are small and they fill up quickly.

www.dpstelecom.com/training

1-800-622-3314

2005 Factory Training Calendar

2005 DPS Telecom Factory Training Events

January 24-27. 2005
February 28-March 3, 2005
April 4-7, 2005
May 9-12, 2005
June 13-16, 2005
July 18-21, 2005
August 22-25, 2005
September 26-29, 2005
October 31-November 3, 2005
December 5-8, 2005

January 2005

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December 2005

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Call 1-800-622-3314 today or visit www.dpstelecom.com/training to register for your DPS Telecom Factory Training Event

Alarm Monitoring Solutions from DPS Telecom

Alarm Monitoring Masters

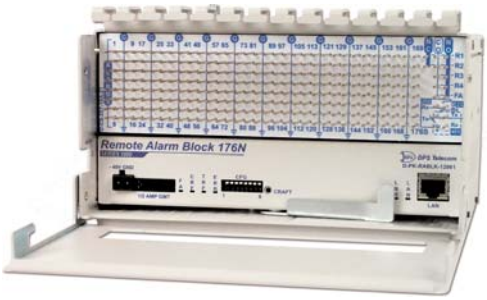
T/Mon NOC: Full-featured alarm master for up to 1 million alarm points. Features support for 25 protocols, protocol mediation, alarm forwarding, pager and e-mail alarm notification, Web Browser access, multi-user access, standing alarm list, alarm history logging.

T/Mon LT: Light capacity SNMP-only alarm master. Supports SNMP Trap Processor software module, up to 10 SNMP devices, and up to 20 DPS Telecom remotes. Features pager and e-mail alarm notification, Web Browser access, standing alarm list and alarm history logging.

Remote Telemetry Units

NetGuardian 832A: RTU monitors 32 alarm points, 8 analog inputs, 8 control relays, 32 ping targets, 8 terminal server ports; reports to any SNMP manager, T/Mon NOC or T/Mon LT

NetGuardian 216: RTU monitors 16 alarm points, 2 analog inputs, 2 control relays, 1 terminal server port; reports to any SNMP manager, T/Mon NOC or T/Mon LT.



Remote Alarm Block 176N: Wire-wrap alarm block monitors 176 alarm points, 4 controls; reports to any SNMP manager, T/Mon NOC or T/Mon LT

NetGuardian 480: RTU monitors 80 alarm points, 4 control relays; reports to any SNMP manager, TL1 master, T/Mon NOC or T/Mon LT

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