OPTO 22

SNAP–IT

How to Extend the Reach of IT

Opto 22's SNAP-IT Connects Non–IT Devices to Your Infrastructure

As you walk back to your office, you turn over in your mind the CEO's words: To avoid the cost of potential lawsuits claiming illness due to meat spoilage, the IT department you manage must set up a way to monitor the temperature of freezers at your 500 grocery store locations nation-wide. Your company cannot afford to lose market share because a consumer suffered an illness if one of your company's freezers failed and the food spoiled. You already monitor PCs, routers, printers, and databases. How can you add the freezers to your managed assets?

Or perhaps you are in the tele-communications industry, and your department must monitor aircraft safety lights atop cellular or microwave towers across the entire United States. Failure to notify the U.S. Federal Aviation Administration (FAA) of a signal lighting outage can result in hefty fines. But that's just the financial consequence of non-compliance. What if passengers or crew were killed because an aircraft crashed into an unlit tower? Maintaining communication towers should be as straightforward as maintaining and monitoring your other technology assets. How can you monitor tower sites?

Or maybe you are in the health-care industry, and you must maintain a hospital's on-site blood supply for transfusions and surgeries—particularly critical for emergency rooms and trauma centers. Improperly main-tained and stored blood can result

in patient harm, litigation, and possible regulatory intervention. The hospital CIO now wants you to monitor non-IT assets, such as your blood storage units, just as you monitor IT equipment. But you've heard that non-IT integration can be complex and expensive. How can you do it quickly and easily, with all the other projects you're responsible for?

If you're in the 24-hour convenience store business, you have an assortment of equipment to worry about: under-ground storage tanks, freezers and refrigerators, heating and air con-ditioning equipment, parking lot and interior lights, communication links used for credit card verification and transactions. Improper management of this equipment can drive customers away, substantially lower your com-pany's income, even result in costly lawsuits and regulatory penalties. In addition, point-of-sale (POS) data is needed in regional and corporate offices for management reporting, trend analysis, and budget justifi-cation. Is there a way to monitor all this equipment at so many locations across the country?

The Expanding Role of IT

Whatever industry you are in, there's no doubt that today's information technology staff must access, monitor, and control a much wider variety of devices and data than ever before. You're IT—you're where top manage-ment comes for the information necessary to compete in the new millennium. As more companies

embrace the newest technologies and expect more from those technology investments, equipment reliability, product availability, and serviceability are keys to providing customers efficient, world-class service.

While traditional IT devices like routers, servers, and printers fit seamlessly into a managed environ-ment, companies must now keep a finger on the pulse of other vital business assets. These include storage equipment, manufacturing equipment, process control equip–ment, facilities maintenance, power management, environmental systems, and virtually any other mission-critical component within the organization.

The Non-IT Realm

As many IT managers are aware, enterprise management systems such as Computer Associates' Unicenter TNG® or Hewlett-Packard's OpenView® manage traditional IT devices. However, capturing data and managing equipment outside of the traditional IT domain has been difficult.

In rare cases, the latest non-IT equipment may be ordered with SNMP capability, so it can be managed with an SNMP-based management system. Or devices can be made ready for managing through SNMP agent development. But agent development typically requires a computer to execute the agent.

The versatile SNAP-IT unit can monitor and manage a wide variety of outdoor real-world devices, from communication towers to tank farms to oil rigs, as well as devices inside manufacturing plants and commercial or office buildings.
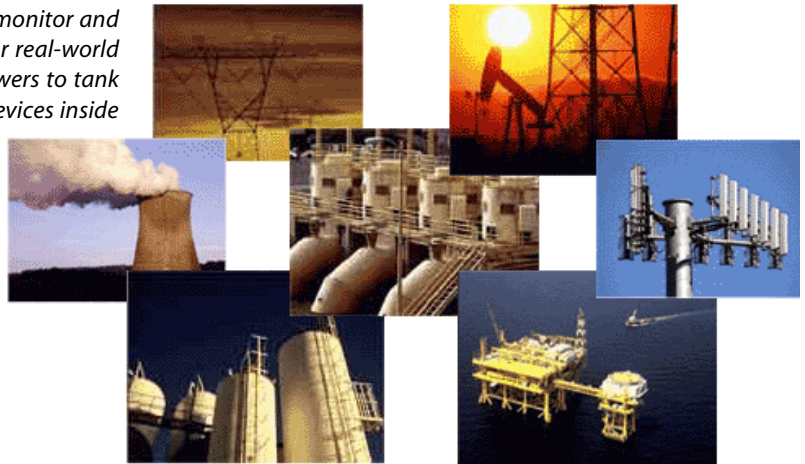
Older equipment presents an especially difficult problem. Generally you must connect your non-IT equipment to a computer with gateway software, and then install or develop the necessary software drivers to interface with the non-IT device. Once completed, you then interface the gateway software with the management system.

Some vendors offer special software for this type of solution, but it is usually complex and costly. Capital costs include several thousand dollars for the computer and the licensing for the gateway software. Once up and running, software drivers for non-IT devices must be installed, configured, and tested. These software drivers are usually proprietary to the gateway software. If the gateway software vendor does not currently offer a driver for a particular non-IT device, seamless connection is unlikely without a resource-intensive development effort. The bottom line is: there must be a better approach.

Opto 22's Solution: SNAP-IT

A better approach implements technologies that step outside of traditional IT solutions. A better approach allows you to reach into the non-IT realm for business data and effectively manage non-IT devices for continuous business flow, without expending unnecessary time and resources.

The better approach is cost effective and easy to implement: it's Opto 22's SNAP-IT system. A quantum leap forward in managing real-world devices, SNAP-IT from Opto 22 is a *hardware-centric solution* that employs full SNMP and agent technologies, requires zero programming, and seamlessly interfaces with SNMP-based management systems. To use SNAP-IT, you just wire your real-world equipment to one side of the unit, connect the other side of the SNAP-IT unit to your IT network, and start managing, controlling, and monitoring your existing non-IT devices.

A hardware-centric solution has several advantages. To begin with, SNAP-IT works over 10/100 Mbps Fast Ethernet, over a wireless Ethernet LAN, and over a modem connection with PPP. It uses TCP/IP transport no matter what physical connection is used, and it includes SNMP. Therefore, the physical connections and the communication protocols match your traditional IT devices such as hubs, switches, and computers. Configuration software isn't necessary. A separate interface computer is not required. And there isn't any time-consuming agent development. To a degree, it simply becomes a matter of plug and play.

Another advantage of the hardware-centric solution is lower cost. Because the Opto 22 SNAP-IT system is modular, you have the flexibility to meet the requirements of virtually any non-IT device. The SNAP-IT system is composed of modular components that handle analog signals (like temperatures) and digital signals (like door sensors), and provide serial ports (for intelligent devices). Depending upon the specific signals and requirements of your application, you buy only the components you need.

Examples of SNAP-IT System Applications

Because the SNAP-IT system is so versatile, the applications that can be tackled with it are virtually limitless. Here are just a few examples of ways you might use a SNAP-IT system:

- Read the temperature and humidity from local and remote locations in your enterprise.

- Send an alarm if lights go out or a security zone is breached.

- Determine if a critical piece of machinery is about to fail, based on vibration, current draw, or excessive heat.

- Gather data from raw material tank farms to automate the supply chain.

- Monitor legacy food storage equipment and archive daily operating temperatures to comply with U.S. Food and Drug Administration (FDA) regulations.

- Start and stop emergency generators at remote locations for routine operating maintenance.

- Remotely reboot servers and other IT equipment if a failure or lockup occurs.

- Archive data from smokestacks or underground tanks for U.S. Environmental Protection Agency (EPA) compliance, and set an alarm triggered by out-of-compliance events.

How Opto 22's SNAP-IT System Works

Opto 22 developed the SNAP-IT system to connect IT to the "real world" of analog, digital, and serial devices. SNAP-IT technology blends Ethernet, TCP/IP, and SNMP technologies into a package that provides a modular architecture for attaching input and output signals to an enterprise management system.

As an implementation example, let's take the freezer application, where your company has freezers installed in hundreds of grocery stores across the country. Some locations have LANs that are connected to your company WAN. Other locations have only a dial-in connection to the company network. For this example, we'll say you have Unicenter TNG from CA installed and configured at headquarters.

Step 1: Define Your Requirements

First you need to define the application's requirements. For this example, let's assume that for each grocery store freezer, the following tasks need to be performed:

1) Notify Unicenter TNG if the freezer temperature in any location rises above or falls below pre-determined temperature limits.

2) Monitor the freezer door status, and if a door remains open for an extended period of time, alert the management console.

3) Acquire data on periodic peaks in electrical current draw to determine how load balancing might reduce your energy costs.

4) Alert maintenance personnel if the current draw of the freezer increases at a rapid rate, signaling a potential failure of the freezer compressor.

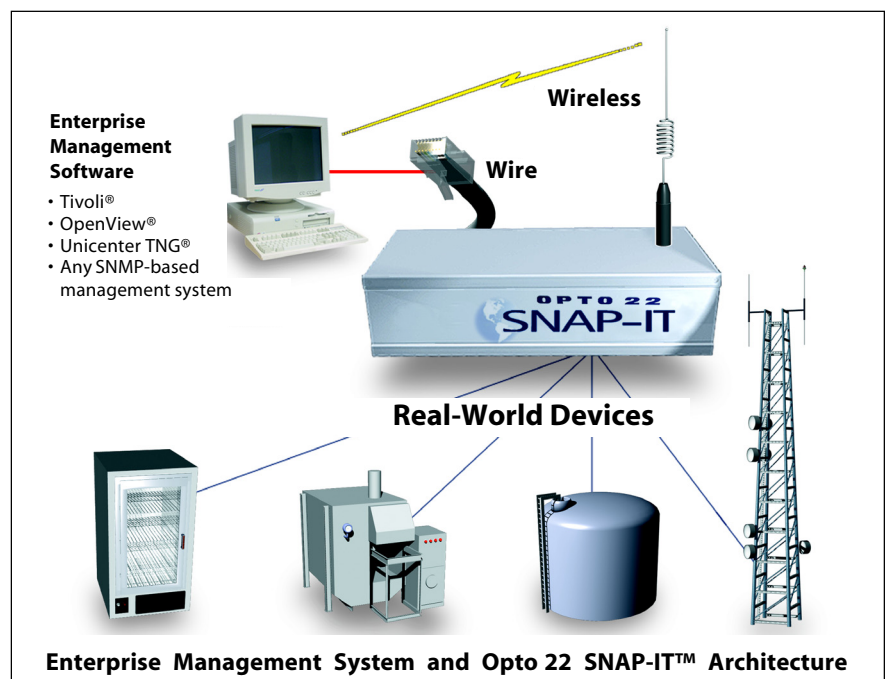Step 2: Contact Your System Integrator

Next, you will contact your system integrator—Opto 22-certified Professional Consulting Services of Chicago, IL, or others—and obtain the Opto 22 SNAP-IT hardware for your specific needs.

Your system integrator will mount the compact SNAP-IT system on the freezer and then connect the temperature sensors, door contacts, and compressor from the freezer to the appropriate input modules. Finally, your integrator will connect the SNAP-IT unit to your IT network infrastructure.

Step 3: Configure the SNAP-IT System and the Management System

The system integrator will use configure the I/O points. For example, the high temperature alarm on the temperature input would be set at 38 degrees F. Finally, an SNMP trap would be configured, to be sent when the monitored temperature exceeds the alarm high limit.

Enterprise Management Software
- Tivoli®
- OpenView®
- Unicenter TNG®
- Any SNMP-based management system

Wireless

Wire

Real-World Devices

Enterprise Management System and Opto 22 SNAP-IT™ Architecture

SNAP-IT monitors and manages real-world devices, connecting them to your enterprise management software through a standard Ethernet network, a wireless Ethernet LAN, or over a modem connection.

Back at headquarters, your system integrator will install OptoAgent, which gives Unicenter TNG the necessary information to auto-discover the devices. You now have an integrated, seamless connection between your remote freezers and Unicenter TNG.

Step 4: Monitor and Manage

You can now completely manage your freezers. All of the following tasks are performed automatically:

• If the freezer exceeds 38 degrees F., the IT group is notified and an e-mail and page are sent to the grocery store location. Then the event is documented by an e-mail notification to the maintenance department that a high temperature alarm event occurred. This documentation provides a history of events at a particular location.

• If the door to the freezer remains open for longer than two minutes, an alphanumeric page is sent to grocery store personnel to alert them that an obstruction may be preventing the door from closing properly.

• If the current draw on the freezer exceeds 150% of normal, maintenance and store personnel are notified that a freezer failure may occur. Store personnel can then move perishable items to a different freezer, and main-tenance can investigate the incident and take preventative action.

• Periodic data is acquired on current draw levels to determine peak power usage, so a plan can be developed for reducing energy costs.

In addition to notifications via SNMP traps, e-mail, and paging, the intelligent Opto 22 SNAP-IT system can be configured to react auto-nomously to local events. For example, suppose a monitored freezer unit rose above a configured temperature level due to a primary compressor failure. The SNAP-IT system can respond immediately by automatically starting a backup compressor, in addition to issuing an SNMP trap to notify your enterprise management system. The system might then page or e-mail the maintenance crew that a freezer is operating on the backup compressor.

During the compressor changeover, the SNAP-IT system could stream data at selected intervals to a remote database for archiving the time, date, and temperature readings until the system returned to normal. All of these functions are available *without programming.* All of these capabilities can be accessed directly from your enterprise management system.

An Information Appliance for the Real World

One of the significant advantages of the Opto 22 SNAP-IT hardware-centric solution is its reliability and performance, even under harsh environmental conditions. As an industrial-grade product with an operating temperature range of 0 to 70º C, the SNAP-IT system can be placed just about anywhere. In fact, more than 50 million devices worldwide are reliably connected to Opto 22 systems. Opto 22 input/output modules are so reliable, they are *guaranteed for life*.

SNAP-IT builds on the foundation of Opto 22's more than 25 years of integrating real-world electrical devices with computers and networks.

Our optically isolated design makes sure that spikes and voltage surges can't harm high-level computer equipment or data. Moving into the non-IT realm requires an awareness of working in harsh, industrial environ-ments. Opto 22 is the partner IT can count on to bring first-hand know-ledge of connecting to the real world.

Opto 22 and SNAP-IT — Extending Your Enterprise

Now, with SNAP-IT from Opto 22, there is a better solution. As an IT professional, you can tackle virtually any application the CEO sends your way. With a modular, easy-to-use information appliance like SNAP-IT, managing your enterprise from top to bottom, IT to non–IT, is a reality. The possibilities are endless.

About Opto 22

Opto 22 manufactures and develops hardware and software products for applications in industrial automation, remote monitoring, and enterprise data acquisition. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's SNAP systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, or electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel. Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability. Opto 22 products are sold through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at 800-321-OPTO or visit our Web site at www.opto22.com.