Industrial^{IT} System 800xA
Asset Optimization
PC, Network and Software Monitoring

The flexibility and extendability of ABB's System 800xA process automation system enables users to build a strategy to achieve their enterprise of the future.

Every good strategy relies on several well thought out steps to achieve the final goal. So while building a system of assets is part of the goal, ensuring that the system assets are always available and used to their maximum efficiency is equally important.

This is where PC, Network and Software Monitoring (PNSM) fits into the plans. Standard PC, network and software equipment is used extensively in automation systems. The optimal behavior of these systems has significant impact on the performance, reliability and ultimate cost of the system and the process being controlled.

Continuous monitoring of this equipment and the indication of approaching conditions have a significant impact on the control system. Companies are realizing the inherent value of having access to real time data and how the smallest of unexpected failures are detrimental to profit goals.

Well known solutions available on the market today are very costly or offer limited monitoring of hardware only. ABB's PC, Network and Software Monitoring provides a cost effective solution with a far broader range of monitored components. ABB has a library of pre-configured IT Assets representing devices and system processes widely used within industrial businesses today. The library is updated frequently to keep up with the ever changing IT devices in the marketplace. See Figure 1.

Functions
The software is comprised of 3 seamless components:
– An OPC server that supplies the IT Asset data to the system
– A set of IT Aspect types that access the IT status data making it available to any client application within the system
– An interface to Asset Optimization that generates alarms based on the state of the asset

Together they create a comprehensive package providing a wide range of IT Assets within the automation area being monitored.

There are three levels of monitoring:
– IT Assets which are defined as such items as computers, printers and switches
– Device monitoring where a device is characterized as the finer details of an IT Asset. For example, within computers there are many devices; a hard drive, ports, the processes running within the computer.
– For each of these devices granular details or properties can be uncovered. The hard drive has status and alarm types providing specifics on the amount of free disk space, or the health of the drive; is it functioning normally, or not available to the system at all. For processes running within the computer PNSM looks at the virtual memory, handles and threads of the system and also the various software components of the 800xA servers and clients.

The monitoring of network traffic is accomplished through the Network Monitoring IT Assets. Information is provided in bytes per second or the percentage of band-width used for the network segment, a given node or between nodes.

IT Assets can be monitored by using standard PNSM faceplates, the Industrial IT 800xA System Viewer and the Asset Optimization Asset Reporter and Viewer.

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Figure 1 Examples from ABB's library of IT Assets

Network Assets	Computer Assets	Other Assets
Hirschmann	HP	UPS
Phoenix	Dell	Network Utilization
MOXA	IBM	Node to Node Utilization
Westermo	Generic Computer Node	Single Node Utilization
Cisco		
N-Tron		
GarrettCom		
RuggedCom		
Sixnet		

Faceplates and Graphic Displays

A faceplate and a graphic display is included with every IT Asset. IT faceplates display the status of IT Assets. The displays include a status summary of IT Assets. See Figure 2. In addtion detailed status information is included for certain types of IT Assets like individual port status of a switch. Graphic displays include the asset condition alarm status. Normal status is displayed in green while abnormal status and alarm state are displayed in red.

The System Status Viewer lists the components within the system. See Figure 3. The Viewer provides instantaneous access to IT Assets presenting status information, descriptions, and timestamps. By right clicking the mouse users have detailed access to all aspects of the IT Asset drilling down to finer details of information.

Additional benefits are realized when connecting PNSM to a system utilizing Asset Optimization. Alarm conditions generate alarm messages back to the Operator Workplace where they are fully and transparently integrated into the alarm stream. The Asset Reporter displays a detailed view of the IT Assets being monitored and each conditions current sub-condition, timestamp and quality status.

Applications

Diagnosis of the cause of a network failure can be extremely time consuming. Where to start, it can be anything from a network cable, switch port, computer hard drive or port, right down to a blown fuse within the network switch. With the monitoring software users have access to limitless data detail.

Disruptive to a day's workflow and possibly detrimental to production is the inability to receive scheduled reports. If the computer that provides the reports is "locked up" then pertinent information is not being received. With PNSM running, users would be able to detect that a memory leak is the source of the lock up as computer processes slowly stop running.

Another major cause of day to day profit loss is system bottlenecks. These can also be the most difficult to trouble-shoot. A typical scenario might be that an operator starts his shift and finds that the operator console is responding at a slow rate. Not knowing what might be the cause he contacts his colleague who replies that he is unsure but is unable to check at that moment since he has just run a report. They continue to chat for a few minutes then return to work. Later the operator informs his supervisor who then informs the department who is in charge of regular system maintenance, now all four people are looking at the problem.

If the system had PNSM the original operator would have been able to immediately discern that there was an issue with the port on the Hirschmann switch. At this point the appropriate personnel can take action to determine if it is the physical port or the cable connecting to the port.

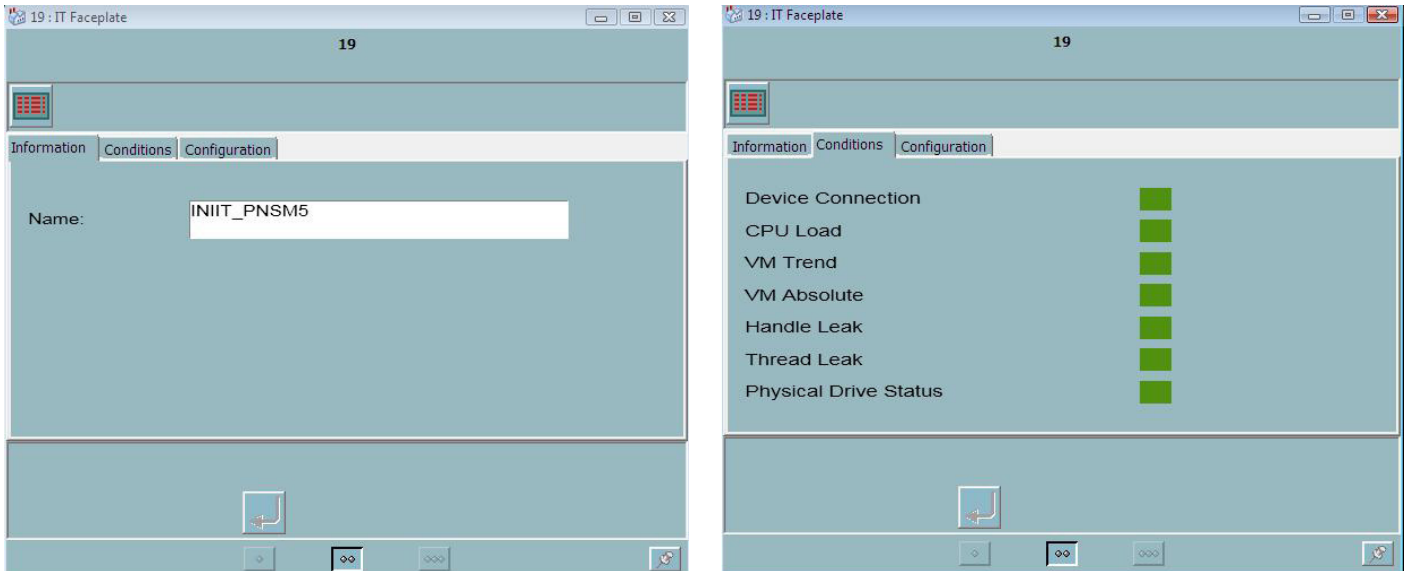Figure 2 Computer node asset health faceplate examples.

Figure 3 System Status Viewer with PNSM shows several IT Assets in alarm.

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Process Automation Division

Västerås, Sweden

Phone: +46 (0) 21 32 50 00

Fax: +46 (0) 21 13 78 45

E-mail: processautomation@se.abb.com

www.abb.com/controlsystems

ABB

Process Automation Division

Wickliffe, Ohio, USA

Phone: +1 440 585 8500

Fax: +1 440 585 8756

E-mail: industrialitsolutions@us.abb.com

www.abb.com/controlsystems

ABB

Process Automation Division

Singapore

Phone: +65 6776 5711

Fax: +65 6778 0222

E-Mail: processautomation@sg.abb.com

www.abb.com/controlsystems

ABB

Process Automation Division

Mannheim, Germany

Phone: +49 1805 26 67 76

Fax: +49 1805 77 63 29

E-Mail: marketing.control-products@de.abb.com

www.abb.de/controlsystems

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