



Connectware™

iSNMP Software facilitates management of industrial network devices

The Digi One IAP is a state-of-the-art serial device server offering you the ability to transport serial device and serial network information into your HMI and control software system via the plant Ethernet network. By bridging the plant's serial networks and the Ethernet network, investments in legacy serial equipment can be extended and parallel network cabling can be eliminated. But the Digi One IAP has another state-of-the-art feature that can help to diagnose problems in your serial networks as well. When Digi created their serial device server, they chose to implement a powerful simple network management protocol (SNMP) management agent in the device. This SNMP agent can monitor the health of the serial devices or serial network attached to it and accumulate diagnostic and troubleshooting data to present to the system administrator. By utilizing iSNMP, an SNMP extension for HMI software, this real-time data can be presented to the HMI system as "tags" which can be monitored and alarmed on. Using iSNMP and the Digi One IAP together can provide a powerful tool for keeping your plant serial and Ethernet networks in top condition.

What is SNMP? SNMP is a protocol designed to give remote management access to an Ethernet network device. The protocol was developed in the 1980s as a tool to allow network managers the ability to monitor and control their rapidly-growing Ethernet infrastructures. Prior to remote network management tools such as SNMP, a network administrator would have to be physically attached to a network device to access configuration and troubleshooting information. Although there were initially a number of remote management protocols, SNMP has become the de facto standard. SNMP-manageable network devices are actually quite similar to PLCs in a fashion. An SNMP agent monitors diagnostic and device configuration data. This SNMP agent is embedded on a microprocessor that is built into the network device. The management agent has data stored in memory locations, just like data registers in a PLC. Polling the SNMP agent in the network device from a remote computer via the SNMP protocol can access the device's data. The database within the manageable device is called a MIB (management information base.) The MIB contains real-time status data, such as port link status, network traffic per port, and network errors per port in hubs and switches.

How do I implement SNMP in my network? The first requirement for SNMP management is the use of a TCP/IP-based network. Almost all modern Ethernet control protocols are based on TCP/IP, and so very few systems are limited by this requirement. Secondly, you must have "manageable" network devices. A network hub or switch does not have to have a management agent embedded in order to operate. Unmanaged network devices do not have on board the processor necessary to house the SNMP agent. In most server operating systems (such as WIN2000 and WIN NT), you simply have to install the SNMP agent from the O/S disk, and then you have remote access to an enormous range of data from the PC and O/S.

Ethernet switch, router, hub, UPS and forward-looking serial device server manufacturers such as Digi are implementing SNMP in their devices. Digi has implemented a comprehensive SNMP MIB in their product that can monitor the health and gather statistics about the "downstream" serial communication as well as its Ethernet network connection. With this serial SNMP implementation, the Digi One IAP can report loss of communication to a serial device or gather statistics about the health of a multi-drop serial network.

Industrial Networking Solutions (www.industrialnetworking.com) has released a new hybrid network management package called IndustrialSNMP Suite. IndustrialSNMP has a traditional SNMP management tool interface so that a control system network administrator can read and write data to remote manageable network devices. However, a powerful new tool has been implemented. Using the popular Microsoft OPC Server within IndustrialSNMP, control systems can now monitor and operate both the controllers and their manageable network devices from within the HMI environment. SNMP MIB data can now be made into HMI "tags." This flexible driver can both read and write to the network devices, and SNMP MIB data can now be stored in the same database as control system tags. Using Active X control technology, HMI users are also spared much database and graphic creation time. This merging of the network and control system data into the same database ensures that analysis of control system upsets can also account for the network status at the time of the upset.

Additionally, since MIB data can be somewhat cryptic, IndustrialSNMP has incorporated predefined tag databases for a range of popular manageable network devices. By using these predefined tag databases, control system designers can save the time previously spent scouting through the MIB for pertinent tags. Although IndustrialSNMP Suite allows the designer access to any available MIB data, the pre-selected tags are those found most useful to control system operators. Information about each network device includes port link status, port speeds, power supply health, and traffic flow on each port amongst other vital information. Additionally, the cost of operating two "dashboards" is no longer necessary. The powerful historical data logging, trending, and graphical user interface tools that are part of modern HMI software can now be used to track network data as well. The extra cost and lack of database integration inherent in the traditional two "dashboard" system is no longer necessary.

Accessing and using SNMP data is the next logical step in the progression of Ethernet into the modern process control environment. Having the ability to ensure the health and performance of the serial network at all times is just another reason to choose Digi One IAP device servers when integrating serial devices into your plant Ethernet network.

