

Typical Industrial Applications

Although there seem to be many different industrial applications most actually fall into one of four neat categories:

- **Monitoring**
- **Control**
- **Configuration/Programming**
- **Data Logging**

Digi products can prove a value in each of these scenarios by extending a serial connection over Ethernet.

Although there are plenty of serial devices scattered all around a plant, communicating with these devices to centralize the information is painful, if not impossible in most cases. However, with the release of the Digi Device Server and Terminal Server product lines, data from serial devices can now be shared anywhere across the LAN or WAN.

Let's take a closer look at how a Digi product can be used in each of the following scenarios:

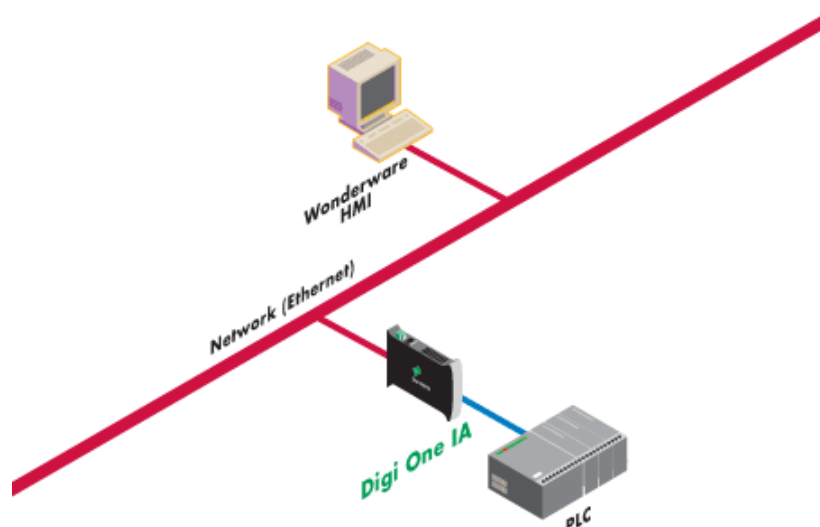
Monitoring

Monitoring means that one device needs to watch what is going on with another. Monitoring can be done via a SCADA or HMI package, or some other form of operator display. Often monitoring is used to determine the health of a device using information displayed or alarmed in some fashion.

In the following example, we will illustrate the point using a Wonderware Intouch software package monitoring information about a tank via a PLC. The sensors in the tank indicate information such as level, temperature, pressure and flow. Each of these sensors is connected to a PLC. The PLC is then connected to a Digi product via a serial connection. The Digi product is then connected to the Ethernet. Now, with this architecture, the Wonderware application can ask for data from the PLC across the Ethernet for display and notification.

Control

Control is exactly the same as monitoring from a configuration standpoint. The architecture is unchanged, yet because the Digi product allows for two way communications, the Wonderware application can actually send instructions back to the PLC. For example, Wonderware may ask the PLC to raise the level of the product in the tank by increasing the flow.



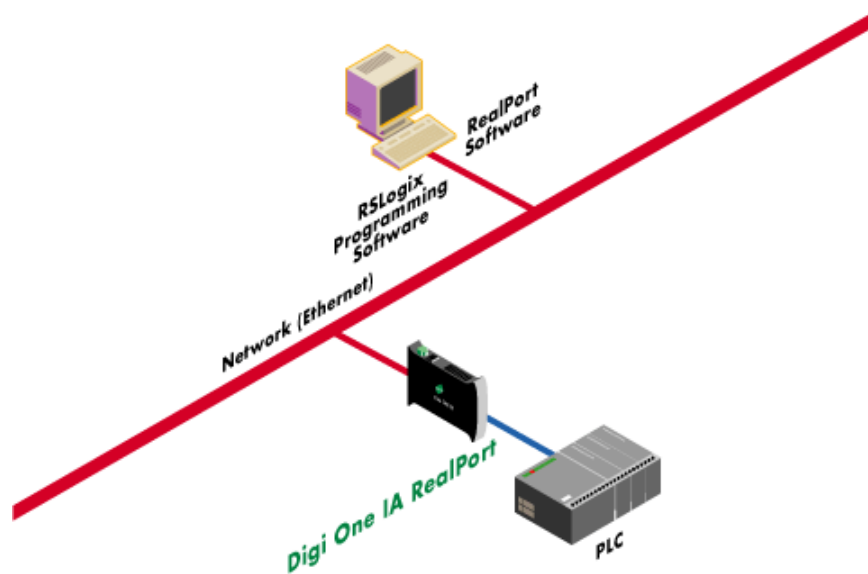
Configuration/Programming

Another popular example of how Digi products are useful is when they are part of a solution to program or configure a device remotely. Generally the same serial port on a device that is used for monitoring is also used to program that device.

Typically, in a plant an engineer will connect a laptop running configuration software into the serial port of the device and then download a new program for the device to run. For example, Rockwell uses software called RSLogix to download ladder logic code into an Allen Bradley PLC. Similarly, drives and motors are configured the same way. However, Digi products can help to extend the ability to program a device across Ethernet. The advantage is that now all the serial devices in a facility can be configured from one central pc on the network.

The way this works is similar to the monitoring/control model. A PC running the configuration software is installed on a network. At the other end of the network is a Digi product which is connected to Ethernet on one side and connected via a serial connection to the device on the other.

Digi owns the patent to a software called RealPort which runs on the PC and fools the PC into thinking that it has a local serial port, let's say COM 7. The RealPort software actually runs behind the scenes and sends the data directed to COM 7 to the IP address of the Digi product across the network. The configuration application simply thinks it is connected via COM 7 to the serial device locally. However, RealPort transparently facilitates the communication with the serial device, even though it is connected across the network. The advantage is that any program which used a COM port to communicate does not need to be modified in any way to talk to a serial device across the Ethernet.



Data Logging

The final most common use of Digi Device and Terminal Servers in Industrial Automation is for logging important data. Many devices have the ability to send out information about the machine they are connected to. Often time this information is time/date stamped info which is valuable in order to determine how the device functioned over a longer period of time. In many cases, government agencies such as OSHA and the FDA require that data be logged in important processes.

There are many applications on the market that are set up to read data from devices and store them into non-volatile memory. Popular applications for data logging are called Data Historians. Data Historians not only store data, but also provide an interface to recall the information in a meaningful way, for example trends.

The following example shows how to connect a Digi Device or Terminal server up to a device for data logging. As in the other examples, the connection begins by plugging in the device which is logging the data into the serial port on the Digi product. Next plug the Digi product into the network. Finally, somewhere on the network is a PC which is actively polling and listening to the device which is generating information.

Generally data is logged from PLC's, industrial PC's, temperature controllers and power meters. Data logging applications, such as Wonderware's In SQL product could either use the RealPort connectivity described above, or a direct connection to the device using the appropriate Industrial protocol (contact Digi for a list of currently support protocols).

Or the user may choose to use an OPC server, for example, from Kepware, to connect to the device. Another popular connectivity option utilizes the serial tunnel technique that is protocol independent. In any case, the PC data logging application believes the device is connected locally, when in fact the device is somewhere on the other side of the Ethernet.

