

## **The InvisiConnect™ Communications and Control System Application Note #1007**

### **InvisiConnect and IP over Cellular: Clearing up confusion**

1. The InvisiConnect system is an end to end IP system. It has the ability to provide serial interfaces (with or without AT modem command set support) to the application software and application device respectively. In addition to many other capabilities, InvisiConnect converts serial data to IP. You can think of the InvisiConnect architecture as being analogous to the “Blackberry” PDA service...i.e. many client devices connecting to one or a small number of servers.
2. If your application software and device have serial communication capability, then this is by far the most efficient way to configure the connections, since running (tunneling) another IP stack over InvisiConnect is redundant, slower and costs more because a lot more bytes are sent and received.
3. Practically speaking, if network security is important (and we know it is) no one should put devices configured as terminal SERVERS in the field, because it is a statistical certainty that they will be hacked at some point. They are servers. They listen on an open IP socket for incoming traffic. Servers get hacked. The more servers, the more risk. The InvisiConnect cellular modem unit is a client. So in addition to mitigated risk, there is no need for static addresses or custom service from the carrier to add security. It is intrinsic in the design of the InvisiConnect architecture.
4. If you have an application control program that connects to a remote device by issuing an IP address and port number, that program is, by definition, an IP CLIENT application program and the remote device is then an IP SERVER. This has nothing to do with whether the physical connection is Ethernet or Radio, wired or wireless. These are layer one [in standards speak], i.e. the physical connection layer in a complete protocol stack. All kinds of different link and network layers from IP to IPX (Netware) to HDLC, to proprietary, etc. could in fact be above the physical layer. Some of these are routable, some not. IP is. It is of course very common to see IP running over "Ethernet" physical facilities.
5. If your field device has ONLY an Ethernet physical port (sometimes called an RJ45 port) it is a virtual certainty the device operates as a SERVER, listening on an open IP socket for incoming traffic. InvisiConnect GSM20 and CDMA18 cellular client modems will not accommodate Ethernet RJ45 connections directly. However, it is rare when a field asset device does not include a serial port as well.
6. Even if your application software functions only as an IP client and does not offer serial connectivity, it can still interface with InvisiConnect Server....and everything will work even though the field device is connected serially to the InvisiConnect client modem. We have seen many examples of this including variable message signs and electric meters, etc. When we use InvisiConnect to make links for these applications, the control software speaks IP as a client to our InvisiConnect server software but at the remote end [i.e. at the end device], the connection is asynchronous serial.

End of application note