



## **Universal Device Access**

Use SCADA and the World Wide Web to Monitor Almost Anything

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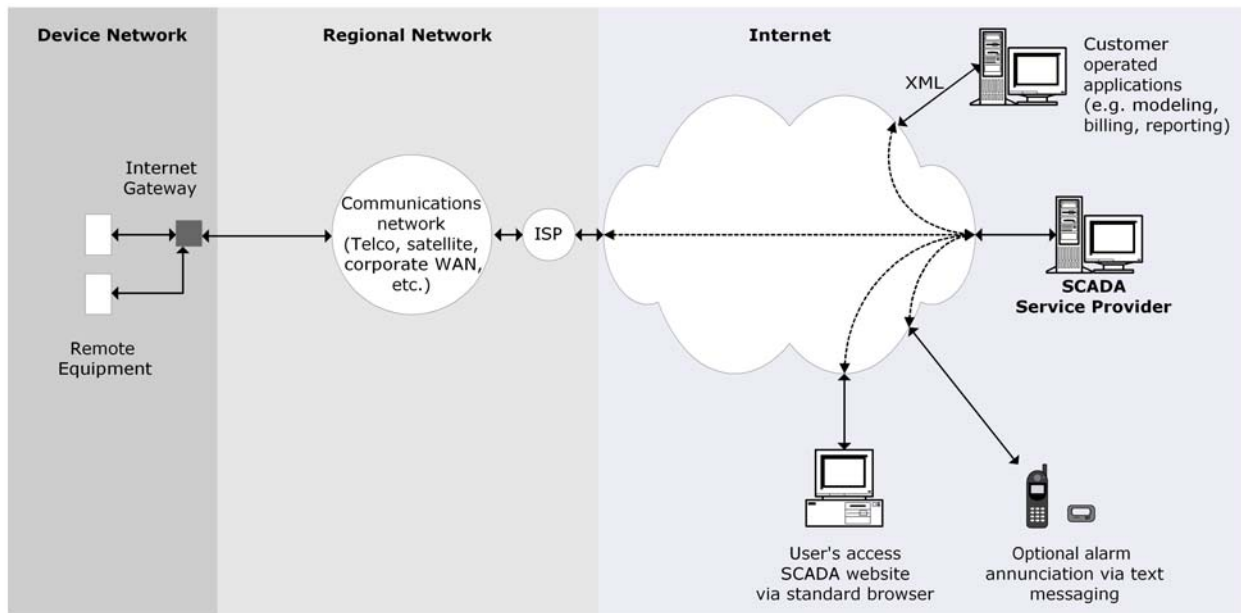
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*Businesses that depend on equipment installed away from their direct control should consider using an Internet-based SCADA service.*

Whether equipment is spread all over the state or all over the country - or even all over the world - today' it can be connected to the Internet for supervisory control and data acquisition (SCADA). The Internet has enabled a new class of applications to collect data from remote equipment and provide browser-based access to real-time display, alarming, control, trending, and reporting.

The kinds of equipment that can benefit from web-based monitoring and control include compressors, pumps, utility meters, substations, and transformers - to name only few examples.



SCADA services that use the Web to monitor and control remote equipment save users money by reducing operating budgets. SCADA services collect and display operating data in real-time, as well as providing trending and alarming information that results in improved equipment maintenance.

**Networking Remote Equipment**

The concept of using PC-based networks for the monitoring and control of remote equipment is not new. Over the last ten years hundreds of thousands of pieces of equipment, from pipeline compressors to HVAC controllers have been connected to networked PCs for monitoring and control by custom PC programs. In many cases these local networks were connected via private or public networks to custom supervisory computers.

Experience has shown that the cost to develop, deploy, and maintain these proprietary networks is high due to the cost to transport the data over long distances, and the cost of developing and maintaining proprietary custom host software.

The solution to both problems is the Internet.

**The Internet and SCADA**

Using the Internet and SCADA eliminates long distance data transportation and attendant communications costs. Remote equipment is connected to the Internet via a gateway and a local ISP, therefore the need for long distance communications simply does not exist.

Use of Internet protocols and services to collect data makes it simple to use standard Web browsers for data presentation, thus eliminating the need for proprietary host software. The World Wide Web very quickly became the largest interoperable network in the world because of the development of the Web browser, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), and Hypertext Transport Protocol (HTTP). These same standards and tools applied to SCADA equipment bring about the same result: simple deployment, easy support, and interoperable equipment and systems. Using Internet protocols and data formats at the equipment level eliminates the need to support legacy protocols at SCADA host software level, thus making it possible to use standard web pages for data presentation. Once implemented, an Internet-based SCADA system provides flexibility to add new equipment, or incorporate old equipment without the need to constantly update SCADA host software.

SCADA service providers add a web server to the equipment - either embedded in its controller or by adding a separate Internet Gateway. Once web-enabled, the equipment may be connected directly to the Internet, or, if there are several items of equipment at a given location, data radios may be used to create a local network to a Gateway, which in turn is connected directly to the Internet.

**A Simple Example**

The use of Internet-based SCADA systems to monitor and control gas production wells has been proven to improve production and lower maintenance costs. For example, a field operator installed proprietary gas flow computers at nine wells to record flow data and store it for collection once every twenty minutes via a SCADA subscription service.

The operator estimated that operational efficiencies achieved through use of the SCADA service resulted in production increases of 7% per year. The subscription service fee was \$25 per month per well for a period of 36 months and the cost of field automation equipment was \$30,000. Using a discount

**Vendor Options**

SCADA vendors are split into two main categories: system providers and service providers. Systems providers sell software and hardware components web-enabling SCADA applications. This option is typically best suited to companies with existing SCADA infrastructures and experienced SCADA operating personnel. Service providers supply and manage all web software and hardware on a turnkey, subscription basis. This option is typically best suited to companies that do not have extensive SCADA expertise.

**Conclusion**

Internet-based SCADA provides universal access to any remote asset for monitoring and control while offering many benefits when compared to traditional SCADA systems:

- easy to scale system from a few assets to the whole enterprise;
- eliminates long distance data transportation communications costs;
- use of standard Web browsers for data presentation eliminates need for proprietary host software.

*About the author*

*Donald Wallace, a graduate of the University of East London, is a Professional Member of the British Computer Society ([www.bcs.org](http://www.bcs.org)). He is a past Director of the HART Foundation ([www.hartcomm.org](http://www.hartcomm.org)), an industry group formed to standardize sensor data communications, and he holds two patents for wide area telemetry (SCADA). He has over 30 years experience in the design, marketing, and sale of complex systems for industrial automation and data communications applications. He is currently Chief Operating Officer of M2M Data Corporation ([www.m2mdatacorp.com](http://www.m2mdatacorp.com)), a Denver, Colorado, company specializing in the provision of Internet-based SCADA services in oil & gas, power, and government markets.*