



Web Enabling Non Networked Devices Using JAVA

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Leveraging the Internet.

With the advent of the Internet, end-users are increasingly requesting access to information via their browser interface. In addition to the traditional uses of the Internet, users have become accustomed to accessing on-line account information, allowing them to determine and monitor the status of their checking account, credit card and many other personal information-related activities. This capability requires access to real-time customer data and also requires a Graphical User Interface (GUI) tailored for presenting personal information in a simple, easy to read format.

In today's world of high-speed, real-time data acquisition there exists a myriad of devices that do not have the built-in capability to allow access to on-line information. As companies strive to become more competitive, they need access to accurate information quickly. [Device Server™ Technology](#) (DST) allows users to quickly and easily add this functionality to any non-networked device without the expense of totally redesigning the device.

Problem: How can I access a remote device over the Internet?

Do you want to access the status of a motion sensor within your building? Would you like to monitor the water level in a remote storage tank halfway across the country? Do you need to monitor the humidity level in your IT room in Boston? Do you need to remotely control and monitor your airport's baggage system? Would you like to be able to check to see who's entered your building from the main entrance over the last twelve hours? Would you like to be able to have the motion detector for your security system also be able to turn the lights on and off when someone enters or leaves the room?

If you answered yes to any of these questions you need the ability to remotely access devices (typically serial based devices) and control them over the Internet or wide area network. The problem is that the majority of these devices are relatively unintelligent and they are not capable of being connected to a network to allow you to access the information you need. They are typically serial based devices. How do you put a serial-based device on the network?

Solution: Device Server™ Technology

Device Server Technology allows you to take the same device that originally required a direct PC or terminal connection and connect it to any standard Ethernet network. You can eliminate the cost and unreliability of the PC. You can now access the device from anywhere over the Internet or a wide area network. You can now have access to real-time device status and device controls.

You can network bar code readers, motion sensors, temperature sensors, PLCs and many other devices to any standard Ethernet network. From there, you can span out over the Internet or your corporate WAN and share

information across your organization. You can also control or administer remote devices from a central point! Better yet, you don't have to be tied to a single vendor's proprietary system. You can use industry standards such as TCP/IP, SNMP, RS-232, RS-485 and standard browser technology such as HTML and Java.

How does Device Server Technology work?

Normally you would connect a bar code reader or motion detector straight to a PC or proprietary control panel using a serial cable. Device Server Technology allows you to connect a non-networked serial device directly to any Ethernet network. Use the provided PC software to convert serial commands sent from the controlling application via IP that are sent over the network to the remote Device Server. From there, the Device Server converts the IP packets back to serial commands and communicates to the attached device. Your application has no idea that the device it's communicating with is remote, and the device has no idea that the application controlling it is remote.

Can I communicate directly with a remote device without having to have a special application?

Yes. Our Device Server Technology has built in WEB serving capabilities. Each Device Server has its own IP address. As a result, you can access a Device Server and the device connected to the Device Server through any standard Internet browser. If you want to customize the interface to the remote device, you can take advantage of the Device Server's Web serving capabilities by embedding your own HTML pages and Java applets in the Device Server itself, which can then serve up the embedded pages and applets to any standard browser.

How do I develop and deploy Java applets using Device Server Technology?

Simply and easily! Any device can be managed using the latest Internet innovations. You can now leverage real-time data acquisition through your own customized presentation (GUI) and you can manage remote devices from a central site.

You can build HTML pages using your preferred HTML editor, layout text and graphics the way you want, and you can embed Java applets within your HTML pages using your preferred Java development environment. It's quick and easy. Four simple steps!

Connect the serial device you want to control to the serial port of the Device Server.

Connect the Ethernet port of the Device Server to your network.

1. Using your preferred HTML editor and Java development environment, create an HTML home page that will be used as the startup page for the Device

- Server. You can lay out text and graphics to suit your needs. This page will be served up to any browser that connects to the Device Server.
2. Begin writing your embedded Java Applets. When writing a host application to control a directly connected serial device, you would write code that essentially sends serial commands directly to the device. In this new environment, you'll start off by opening a socket to the Device Server by identifying the Device Server's IP address. Each Device Server has its own IP address. From there, you'll send the normal serial commands/strings you would send if you were working in a non networked environment, but you'll send the serial strings encapsulated in socket commands. You can use standard Java and HTML development tools, compilers and debugging tools.
 3. Once completed, your HTML page(s) and embedded Java applets can be transferred to the Device Server using standard TFTP. This will store the pages in the non volatile memory of the device server.
 4. You can now use the Device Server independently of your host PC. You can use any standard Internet browser to connect to the Device Server by specifying the Device Server's IP address. Once connected, the Device Server will serve up your HTML page(s) and associated Java applets to the connecting browser where the Java code will run on the PC's Java Virtual Machine. The Java code will execute the socket encapsulated serial commands, which will be sent directly to the Device Server using TCP/IP packets over Ethernet. The Device Server will in turn pass the serial strings/commands directly to the attached device. Your Java application thinks it's directly connected to the remote serial device.

How can my organization benefit from using Device Server Technology?

In today's dynamic, competitive business environment, you need real-time access to accurate information. Take control of the environment around you by using the latest generation of Internet technology. You can realize rapid returns on your investment as you bring the current devices within your organization up to the level required for real-time data collection and centralized device management. Leverage industry standards that exist today and increase the efficiency of your organization.