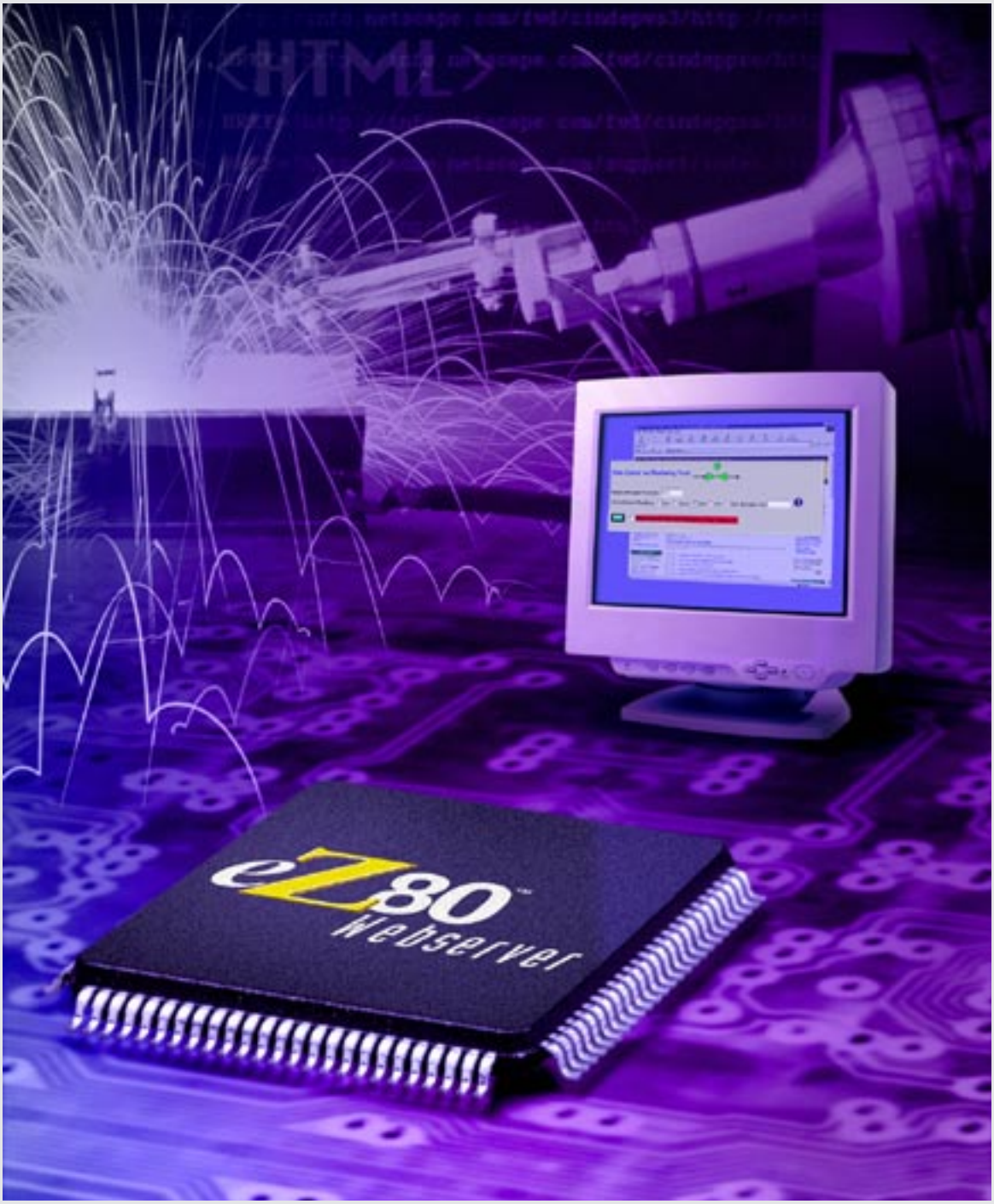
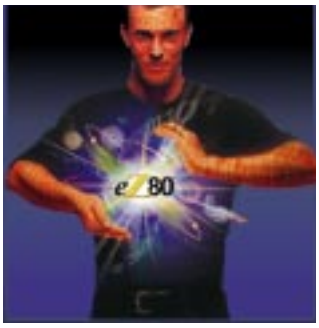
eZ80™ Webserver



Introduction to Embedded Webservers

What is an embedded webserver?

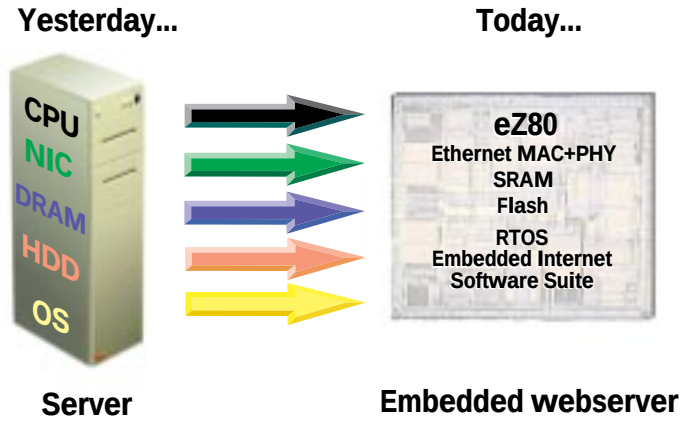


An embedded webserver is a microprocessor or microcontroller that contains an Internet software suite as well as application code for monitoring and controlling systems. Embedded webservers are an integral part of an embedded network. Web pages, written in HTML and converted to C code, provide user-friendly interfaces to complex embedded systems. Embedded webservers receive and send data to browsers anywhere in the world. For some applications, embedded webservers can replace larger servers running Unix, Windows NT, or Linux.

Simplifies software and communications

An embedded webserver contains dynamic web pages that control communications to and from the embedded device via TCP/IP. This methodology provides a standardized communication mechanism for all embedded devices. In addition, web pages simplify software installation and maintenance, while providing a universal Graphical Universal Interface (GUI) through a web browser.

The browser can offload processing from an embedded controller, or can augment the embedded webserver by manipulating data via JavaScript, Java, and VBScript. Large amounts of data, such as images or PDF files, can be downloaded once and stored locally.

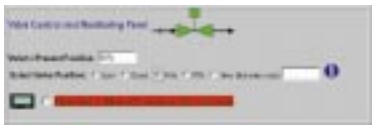


The traditional embedded way

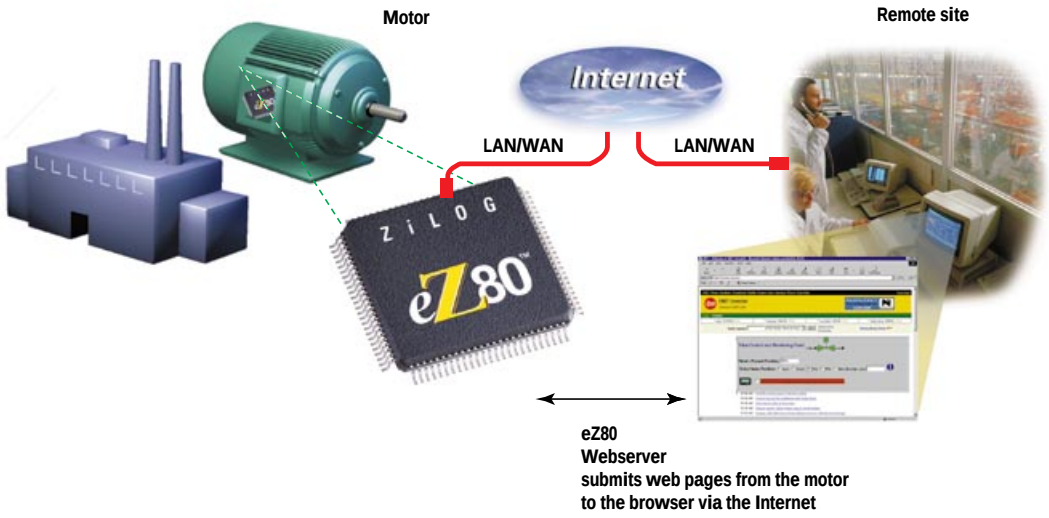
In a traditional embedded application, a series of embedded devices communicates to a master computer. Typically, the communication mechanisms (software protocol and physical link) are proprietary. The master computer has a user interface that is tied to the embedded application. To modify the embedded devices or the user interface requires reprogramming the system.

Offers increased functionality over traditional monitoring systems

Web browsers offer a tremendous advantage over tradition control and monitoring systems where GUI code is running on a computer's operating system. Unlike these traditional systems, browsers are platform independent. They are very easy to use and require minimum operator training. Since browsers are widely used, operators can be very quickly trained on how to manage a system with a browser over the Internet. Browsers also provide both informational and dynamic pages. Dynamic pages are interactive and can accept input from an operator and provide feedback on the system's status. Creating platform-independent GUIs saves development and training time as well as money.



eZ80 Webserver application



Makes system management easy

Web pages can be used to monitor, control, and update any embedded webserver system. Any authorized user can access the system through a browser to conduct maintenance, change system settings, and update system software. Updating code and adding new services or features can be done quickly over the TCP/IP stack.

How does the communications software work?

The TCP/IP stack refers to a collection of protocols. For example, HTTP (HyperText Transfer Protocol) delivers web pages when requested by a browser. The protocol stack has four primary layers to facilitate communications from the browser to the embedded webserver. This Internet software suite acts as a virtual circuit between the chip and the browser. A virtual circuit uses packets to transmit data, whereas, a physical circuit creates a direct connection between two points. The protocol stack contains an applications layer, transport layer, network layer, and data link layer.

1) Application Layer: The browser and the embedded webserver reside at this layer, as does the embedded application code.

2) Transport Layer: This layer manages the flow of data between two sites. The Transmission Layer uses two protocols: Transmission Control Protocol (TCP) for reliable packet delivery and User Datagram Protocol (UDP) for much simpler, faster message deliveries with no guarantee of arrival.

3) Network Layer: The Internet Protocol (IP) takes the TCP frame and adds the data's source and its final destination.

4) Data Link Layer: This layer directs the data across the network. An example of this layer is Ethernet.

5) Physical Network Layer: This layer is the physical medium over which the data is transmitted.

ZiLOG extreme connectivity©

eZ80™ Webserver

Industrial strength Internet connectivity

Supporting a wide variety of applications

Embedded webservers are especially suited for appliances that require fast time-to-market, low system cost, and Internet connectivity to LANs and WANs. They also serve the needs of the industrial control, office and factory automation, and Web management markets as well as high-performance electronic games.

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