

IEEE 1284 Driver Toolkit

The 1284 Driver Toolkit is a software library that allows developers to write applications that take advantage of the IEEE 1284 Bi-directional capabilities on the parallel port. In the past, the parallel port was typically used as a one-way interface, from the host to the peripherals. Previously, the only thing connected to the parallel port was a printer. Today however, companies are developing other products that attach to the parallel port. This includes CD-ROM's, tape backup units, scanners and even hard disk drives.

As the products attached to the parallel port become more sophisticated, the need for bi-directional capabilities on the parallel port is needed. The IEEE 1284 specification addresses this by implementing a method of doing bi-directional communication across the parallel port. This means that instead of the data flow going one-way (from the host to the device, as in a printer), now we can have a two-way communication where the device can now send data back host via the parallel port. In addition to the bi-directionality feature, the 1284 protocol provides for faster data transfer rates using ECP or EPP mode.

The main purpose of the driver is to transmit and receive data and address information to and from IEEE 1284-compatible parallel port on behalf of a Windows application. The target platforms for the driver are Windows 95/98 and Windows NT/2000. For Windows 95/98 the driver is packaged as a VxD while for Windows NT/2000 the driver is packaged as a kernel-mode device driver.

The ECP mode of operation of the Warp Nine 1284 driver requires hardware assistance in the form of access to a parallel port implemented as specified in "Extended Capabilities Port Protocol and ISA Interface Standard" by Microsoft Corporation. Both polled and interrupt-driven modes of operation are supported. The interrupt-driven mode of operation provides a DMA-based or Programmed I/O-based method of data transfer. The interrupt-driven mode of operation requires that an IRQ be configured for the port. The DMA-based method of transfer requires that an IRQ be configured for the port as well as a DMA channel.



SUPPORTED ENVIRONMENTS

- Windows 95/98
- Windows NT/2000

SUPPORTED IEEE 1284 PROTOCOLS

- Negotiation
- Nibble
- Byte
- ECP with DMA and interrupt support
- EPP
- Device ID
- Compatible

The EPP mode of operation requires hardware assistance in the form of access to the EPP address port, EPP data port(s), and the ECR register. The Warp Nine 1284 driver will switch the interface in EPP mode by writing 100 in bits 7:5 of the ECR register. For EPP only a polled mode of operation is provided (with a programmed I/O-based method of data transfer), therefore no IRQ or DMA channel need to be configured.

Both the Byte mode and Nibble mode of operation are implemented in software only. The Byte mode of operation requires that the parallel port is capable to receive data using all eight data lines (PS/2 mode). For both modes only a polled mode of operation is provided (with a programmed I/O-based method of data transfer), therefore no IRQ or DMA channel need to be configured.

PERFORMANCE

(Typical reverse speed values)

- 85-100Kb/sec in Nibble Mode
- 100-300Kb/sec in Byte Mode
- 800 – 1.2MB/sec in ECP Mode
- 800 – 1.2MB/sec in EPP Mode

OTHER FEATURES

- Application developers can make calls to the driver via IO Device Control (IOCTL) calls
- Windows NT Overlapped I/O support
- Supports Daisy chaining
- Driver customizations available
- Source code licenses available
- Includes sample test program with source code
- Optional hardware package: 1284 cable, 1284 host card and 1284 prototype board

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