

## DEC FDDIcontroller/EISA and DEC FDDIcontroller/PCI

### Microsoft Windows NT Driver Installation Notes

The Contents lists Help topics available for the Digital FDDI controllers. Use the scroll bar to see entries not currently visible in the Help window.

To learn how to use Help, press F1 or choose Using Help from the Help menu.

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## Additional Information

For the latest software updates and electronic documentation on your FDDI controllers, connect to Digital's anonymous FTP server at URL:

```
ftp://ftp.digital.com/pub/DEC/adapters/fddi/
```

For the latest information on Digital Equipment Corporation networking products and services, visit our World Wide Web (WWW) server at URL:

```
http://www.networks.digital.com/
```

For those not connected to the World Wide Web, the same information can be accessed through a Bulletin Board System (BBS). All that is needed is a PC and a modem to call: (508) 486-5777 in the U.S. Set the modem to 8 bits, no parity, 1 stop bit.

## Installation Customization

For most configurations, no customization of the driver should be necessary. However, a number of parameters are available for users to change by selecting **Configure** after highlighting the desired DEC FDDIcontroller under **Network Settings**.

Receive Buffers

Transmit Buffers

Requested TTRT (ms)

Full Duplex Enable

## Receive Buffers

This parameter affects the maximum number of host receive buffers that can be used by the adapter at one time. Although this number is small, increasing it is not likely to increase performance since the adapter itself provides a large amount of on-board receive buffering (~1MByte).

Value Name: RcvBuffCnt  
Data Type: REG\_DWORD  
Values: 2, 4, 8  
Default: 4

## Transmit Buffers

This parameter affects the maximum number of map registers that can be allocated by the adapter. During packet transmission, an NDIS\_PACKET may be comprised of several NDIS\_BUFFERs where each NDIS\_BUFFER requires a map register for physical DMA (Direct Memory Access). The default is within NDIS 3.0 specification, but the adapter may be able to handle more outstanding transmit packets if this value is increased. However, map registers are a limited system resource and arbitrarily increasing this parameter may make this adapter or other adapters in the system unusable. Arbitrarily lowering this parameter may impact driver performance or cause undesired behavior.

Value Name: XmtBuffCnt  
Data Type: REG\_DWORD  
Values: 8, 16, 32, 64, 128  
Default: 32

## Requested TTRT (ms)

This parameter affects the MACTReq SMT MIB object. FDDI selects the target token rotation time during the claim process (e.g. when an FDDI node has entered or left the ring). During this time, each FDDI node offers its requested TTRT (MACTReq MIB object) and the lowest bidder wins. Normally this parameter does NOT need to be modified from the default of 8ms. However, some installations may set this value arbitrarily high on end node stations so that the requested TTRT can be more easily managed from an FDDI concentrator or switch. This parameter should only be modified by experienced FDDI network managers.

Value Name: RequestedTTRT  
Data Type: REG\_DWORD  
Values: 4-165  
Default: 8

## Full Duplex Enable

This parameter affects the eFDXEnable private MIB object. Digital FDDI adapters are in Full-Duplex (FDX) mode when the mode setting is enabled and the adapter is connected point-point with another similarly enabled FDDI adapter or an FDX capable FDDI switch, like the Digital GIGAswitch/FDDI. FDX mode takes advantage of the point-point connection by removing the FDDI token and allowing simultaneous receive and transmit of packets. FDX mode will help reduce latency and may increase network throughput if the adapter is nearing the standard FDDI maximum throughput.

The **OFF** and **ON** radio buttons in the dialog box translate to the values **2** and **1**, respectively, in the Registry.

Value Name: FullDuplexEnable  
Data Type: REG\_DWORD  
Values: 2, 1  
Default: 2

## Advanced Customization

There are additional custom parameters which may be added to the Registry by using the Registry Editor. These parameters can be added to the following subtrees:

HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Defpaf?  
Parameters

and

HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Defpaf?  
Parameters

where ? is an integer indicating the specific hardware instance of this controller. These parameters should only be added or modified by experienced Windows NT system managers.

Adapter Burst Size

Maximum Frame Size

Static Transmit Buffer Count



## Adapter Burst Size

This parameter affects the maximum longword (32 bits) burst that the adapter can perform on the bus. The values are encoded. A value of 0 represents 4 longword burst, a value of 1 represents 8 longword burst, and a value of 2 represents 16 longword burst. Normally this parameter should not be changed from the default. However under certain circumstances it may preferred to match the burst size with the burst capabilities of the system bus.

Value Name: BurstSize  
Data Type: REG\_DWORD  
Values: 0, 1, 2  
Default: 2

## Maximum Frame Size

This parameter affects the maximum advertised frame size by the driver. The maximum FDDI frame size (not including the FDDI frame header or 4-byte CRC) is 4478 bytes. The protocols supported by Windows NT normally handle frame size negotiation, but there may be a need to lower the frame size from the default. Care should be taken before adding this parameter since the maximum performance of the adapter will be impacted by lowering the maximum frame size.

Value Name: MaxFrameSize  
Data Type: REG\_DWORD  
Values: 0-4478  
Default: 4478

## Static Transmit Buffer Count

This parameter affects the number of static transmit buffers the driver allocates during initialization. For performance reasons, the driver normally DMA's directly from the transmit buffers (See [Transmit Buffers](#)) sent by the operating system. However, it's possible that the driver has an insufficient number of map registers to queue the transmit request. Rather than drop the request, the driver will buffer copy the transmit packet data into an available static transmit buffer and queue the static buffer.

To reduce the amount of system resources needed by this driver, the default number of static transmit buffers is kept low. This parameter can be used to increase this number.

Value Name: StaticXmtBuffCnt  
Data Type: REG\_DWORD  
Values: 2, 4, 8, 16, 32, 64, 128  
Default: 2

## Interpreting Event Viewer Entries

Note: During runtime operation, the operating system enables a *watchdog timer* that polls the driver on a regular basis to verify that it is operational. Should the driver return status indicating that it is not operational, the operating system will reset the driver. If the driver reset is successful, it returns to normal operation. Otherwise, the adapter is halted. This process is automatic and does not require user intervention. However, should the system performance become sporadic with constant driver event viewer entries being added, the user should verify that the driver is not being constantly reset. If it is, shutdown the machine and restart the system. If the problem persists, run the diagnostics on the adapter.

When the driver detects errors, it may write entries into the event log file. These events can be viewed by running the Event Viewer. To interpret the error code, examine the entry that was written by the driver and read the last longword that is contained in the entry.

Unless otherwise stated, the following error codes apply to both the DEC FDDIcontroller/EISA (DEFEA.SYS) and DEC FDDIcontroller/PCI (DEFPA.SYS) drivers.

The following table describes the interpretation of the longword:

Longword	Description
0x00	There is no specific information detailing the error.
0x01	No DEC FDDIcontroller/PCI controller found in system, or no controller found for this Registry entry. Verify that number of controllers installed matches the number configured. DEFPA.SYS driver only.
0x02	EISA slot (SlotNumber) parameter missing or incorrect in Registry. DEFEA.SYS driver only.
0x10	I/O space not enabled in PCI Configuration Table. This can be caused by not having PCI slot enabled during PCI system configuration. DEFPA.SYS driver only.
0x11	Could not register adapter I/O mapped space with operating system. If DEFEA.SYS driver, I/O port addresses are based on EISA physical slot numbers and normally cannot conflict. If DEFPA.SYS driver, I/O address is normally set by system and is not user configurable.
0x12	Interrupt level (IRQ) not set or invalid in PCI Configuration Table for this adapter. If system allows for user-configuration of PCI slots, verify that a proper IRQ value has been set. DEFPA.SYS driver only.
0x13	Could not register interrupt. FDDI drivers support shared interrupts, so interrupt registration failure often means that interrupt is already registered to another driver that doesn't support shared interrupts. Try changing IRQ.
0x20	Could not allocate normal (regular) system memory. Verify that system has enough memory to run Windows NT.

0x21 Could not allocate sufficient shared memory. Verify that system has enough memory to run Windows NT. If running Windows NT 3.5, install Service Pack 2 (SP2) or greater. Reduce Receive Buffers and Static Transmit Buffer Count parameters if increased from default.

0x22 Could not allocate map registers needed for proper transmit packet operation. Verify that system has enough memory to run Windows NT. If running Windows NT 3.5, install Service Pack 2 (SP2) or greater. Reduce Transmit Buffers parameter if increased from default.

0x30 Could not uninitialized or reset adapter. Try power-cycling system. If this doesn't help, run DOS-based diagnostics included with adapter. If problem persists, have adapter replaced.

0x31 Could not transition to link (un)available state.

0x32 Could not set adapter burst size.

0x33 Could not set adapter consumer block address.

0x34 Could not set adapter descriptor block address.

0x35 DMA commands failed during adapter initialization. Verify that adapter is installed in Bus Mastering slot.

0x36 Could not set content addressable memory (CAM) block.

0x37 Could not set adapter filters.

0x38 Could not read factory MAC address (MLA) from adapter.

0x40 The adapter indicated a Non-Existent Memory (NXM) error. Run diagnostics on adapter. If the diagnostics fail or if error occurs regularly, have the adapter replaced.

0x41 The adapter indicated a packet memory parity error. Run diagnostics on adapter. If the diagnostics fail or if error occurs regularly, have the adapter replaced.

0x42 The adapter indicated a host bus parity error. Run diagnostics on adapter. If the diagnostics fail or if error occurs regularly, have the adapter replaced.

0x43 The adapter transitioned to the HALT state. Run diagnostics on adapter. If the diagnostics fail or if error occurs regularly, have the adapter replaced.

0x50 Registry configuration data could not be opened for this adapter. The Registry is possibly corrupted.

0x51 PCI slot number (SlotNumber) parameter is missing or incorrect in Registry. DEFPA.SYS Windows NT 3.51 or later driver only.

0x52 PCI slot number (CardInstance) parameter is missing or incorrect in Registry. DEFPA.SYS Windows NT 3.5 driver only.

0x60 Receive buffer count (RcvBuffCnt) parameter missing or incorrect in Registry.

0x61 Transmit buffer count (XmtBuffCnt) parameter missing or incorrect in Registry.

0x62 Burst size (BurstSize) parameter missing or incorrect in Registry.

0x63 FDDI Full Duplex (FullDuplexEnable) parameter missing or incorrect in Registry.

0x64 Requested Target Token Rotation Time (RequestedTTRT) parameter missing or incorrect in Registry.

0x65 Maximum frame size (MaxFrameSize) parameter is incorrect in Registry.

0x66 Static transmit buffer count (StaticXmtBuffCnt) parameter

is incorrect in Registry.

