Windows CE Network Interface Installation
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Summary

The configuration files provided with the Windows* CE driver enable support for single or multiple network interfaces based on the 82559ER Fast Ethernet PCI Controller. This technical note provides information on installation and configuration. A specific example is shown for a 2-port scenario in a single system.

Single Network Interface Configuration

Use an ASCII text editor to read and modify the contents of the **CONFIG.BIB**, **PLATFORM.BIB** and **PLATFORM.REG** files. The network interface requires its own reserved memory range, denoted in the **CONFIG.BIB** file. The size should match the size of the default range (currently about 120KB) and must not conflict with any other reserved ranges. The network interface also needs a Registry configuration in the **PLATFORM.REG** file. The protocol information should be modified (e.g., different IP address or gateway) to correspond to your application.

Modify the **CE_PhysAddr** Registry value to match the base address of the corresponding memory range reserved above in the **CONFIG.BIB** file. The interface will have a PCI **SlotNumber** value in its configuration information under the **KEY_LOCAL_MACHINE\Comm\E100CE1\Parms** key. A program called PCIENUM.EXE is available to determine slot numbers. Bind the generic device information for the interface in the **PLATFORM.REG** file by adding the device label (the "**E100CE1**" string) to the **KEY_LOCAL_MACHINE\Comm\E100CE\Linkage** key under the **Route** value. Bind the network interface to the TCP/IP stack in the **PLATFORM.REG** file by adding the device label (the "**E100CE1**" string) to the **HKEY_LOCAL_MACHINE\Comm\Tcpip\Linkage** key under the **Bind** value.

Multiple Network Interface Configuration

Each 82559ER-based network interface requires its own reserved memory range. These additional memory ranges must be added to the **CONFIG.BIB** file. The size of each range should match the size of the default, approximately 120KB. These memory ranges must not overlap or conflict with any other reserved ranges. Each network interface adapter also needs its own Registry configuration in the **PLATFORM.REG** file. For each additional interface, copy the default (**E100CE1**) Registry data to a new **E100CEx** key (e.g., the **E100CE1** key stores the configuration for the first interface; the **E100CE2** key stores the configuration for the second interface; and so on) under the **HKEY_LOCAL_MACHINE\Comm** key in the PLATFORM.REG file. Be sure to copy all of the adapter configuration data beneath the default **E100CE1** key as well as any protocol configuration data. The protocol information (e.g., different IP address or gateway) may be modified as desired for each interface.

Modify the **CE_PhysAddr** Registry value for each of the new interfaces to match the base address of the corresponding memory range reserved above in the **CONFIG.BIB** file. Add a **SlotNumber** value to each configuration information set under its **KEY_LOCAL_MACHINE\Comm\E100CEx\Parms** key. If your system implements physical PCI slots, this number must correspond to the slot containing the network adapter. Again, use PCIENUM.EXE or a similar third-party program to determine the slot numbers if unknown. Bind the generic device information to each new instance of network interface in the **PLATFORM.REG** file by adding the device label (the "**E100CEx**" string used above) to the **KEY_LOCAL_MACHINE\Comm\E100CE\Linkage** key under the **Route** value. Bind each adapter to the TCP/IP stack in the **PLATFORM.REG** file by adding the device label (the "**E100CEx**" string used above) to the **HKEY_LOCAL_MACHINE\Comm\Tcpip\Linkage** key under the **Bind** value.

Example Configuration for Two Network Interfaces

Note: The changes are in bold. For your modifications, pay particular attention to bold italicized text.

<CONFIG.BIB>

```
MEMORY
...
IF IMGMOREROM16 !
  ; Default case
  NK      80200000  00900000  RAMIMAGE
  RAM     80b00000  00500000  RAM
ENDIF
ENDIF
ENDIF
  EPKTBUF 80050000  00020000  RESERVED
  EPKTBUF 80070000  00020000  RESERVED
  FRAMEBUF 800A0000 00020000  RESERVED
  PCMCIABUF 800D0000 00010000  RESERVED
  ; Debug Ethernet packet buffers
  NSCIRDA  801BC000 00020000  RESERVED
  EDBG     801DC000 00020000  RESERVED
  AUDIOBUF 801FC000 00002000  RESERVED
  LOADRBUF 801FFF00 00000100  RESERVED
...
```

<PLATFORM.REG>

```
…
IF CEPC_GD82559ER_PCI
; Generic adapter configuration/description
[HKEY_LOCAL_MACHINE\Comm\E100CE]
  "DisplayName"="GD82559ER-based Ethernet Driver"
  "Group"="NDIS"
  "ImagePath"="e100ce.dll"
[HKEY_LOCAL_MACHINE\Comm\E100CE\Linkage]
  "Route"=multi_sz:"E100CE1","E100cE2"
```

```
; Specific configuration for an adapter instance
[HKEY_LOCAL_MACHINE\Comm\E100CE1]
  "DisplayName"="GD82559ER-based Ethernet Driver"
  "Group"="NDIS"
  "ImagePath"="e100ce.dll"
[HKEY_LOCAL_MACHINE\Comm\E100CE1\Parms]
  "BusNumber"=dword:0
  "BusType"=dword:5
  "BusTypeLocal"=dword:5
  ; Shared packet buffer storage, must match reserved memory range
  "CE_PhysAddr"=dword:80050000
  ; Other adapter-specific Registry parameters may be inserted here
  "SlotNumber"=dword:a
; Settings for DHCP, if enabled
IF DHCP
[HKEY_LOCAL_MACHINE\Comm\E100CE1\Parms\TcpIp]
  "EnableDHCP"=dword:1
  "DefaultGateway"=""
  "UseZeroBroadcast"=dword:0
  "IpAddress"="0.0.0.0"
  "Subnetmask"="0.0.0.0"
ENDIF
; Settings for static IP configuration, if enabled
IF STATIC_IP
[HKEY_LOCAL_MACHINE\Comm\E100CE1\Parms\TcpIp]
  "EnableDHCP"=dword:0
  "DefaultGateway"="1.2.3.4"
  "UseZeroBroadcast"=dword:0
  "IpAddress"="192.168.168.98"
  "Subnetmask"="255.255.255.0"
ENDIF

; Specific configuration for a network interface instance
[HKEY_LOCAL_MACHINE\Comm\E100CE2]
  "DisplayName"="GD82559ER-based Ethernet Driver"
  "Group"="NDIS"
                                    "ImagePath"="e100ce.dll"
[HKEY_LOCAL_MACHINE\Comm\E100CE2\Parms]
  "BusNumber"=dword:0
  "BusType"=dword:5
                                    "BusTypeLocal"=dword:5
  ; Shared packet buffer storage, must match reserved memory range
  "CE_PhysAddr"=dword:80070000
  ; Other adapter-specific Registry parameters may be inserted here
  "SlotNumber"=dword:b
; Settings for DHCP, if enabled
IF DHCP
[HKEY_LOCAL_MACHINE\Comm\E100CE2\Parms\TcpIp]
                                    "EnableDHCP"=dword:1
  "DefaultGateway"=""
  "UseZeroBroadcast"=dword:0
                                    "IpAddress"="0.0.0.0"
  "Subnetmask"="0.0.0.0"
ENDIF
; Settings for static IP configuration, if enabled
```

```
IF STATIC_IP
[HKEY_LOCAL_MACHINE\Comm\E100CE2\Parms\TcpIp]
  "EnableDHCP"=dword:0
  "DefaultGateway"="1.2.3.4"
  "UseZeroBroadcast"=dword:0
                                      "IpAddress"="192.168.168.99"

  "Subnetmask"="255.255.255.0"
ENDIF

; Link between adapter and protocol stack
[HKEY_LOCAL_MACHINE\Comm\Tcpip\Linkage]
  ; This should be MULTI_SZ
  ; This is the list of llip drivers to load
  "Bind"=multi_sz:"e100ce1","e100ce2"
ENDIF
…
```

About Display Names

When the same Display Name (GD82559ER-based Ethernet Driver) is used for multiple network interfaces, no changes can be made once the Windows CE image is loaded. This behavior is due to a limitation in the OS. Windows CE treats adapter settings with identical Display Names as the same. When a change is made in the Network Configuration (Control Panel) to one network interface, it affects all the others with the same Display Name. When a static IP address is used in the Windows CE build, all network interfaces with the same Display Name will list the same IP address. The Registry settings will have the correct values. This limitation does not apply in a PC development platform due to the ability to remove and re-insert a network adapter for the changes to take effect.

DISCLAIMER