

# SUNIX IRQ Sharing ISA Card Driver Installation Guide

## For Windows CE 6.0

### A. Driver installation

#### A.1 Driver installation

Step 1. Please double click "SUNIX WinCE 6.0 Driver Vx.x.x.x.msi"

Step 2. Driver will install in C:\PLATFORM\Sunix\_WinCE60\

Step 3. Finish driver install wizard

#### A.2 Add driver into Platform Design

Step 1. Create a new platform design

Step 3. Select a BSP

Step 4. Select a design template

Step 5. in "Solution Explorer", choice "Subprojects" and click mouse right button.

Step 6. choice "Insert Existing Project..." and open snxcard.pbpxml in C:\PLATFORM\Sunix\_WinCE60\

Step 7. Prepare a hardware target platform (please follow [ **Prepare a hardware target platform** ] step)

Step 8. Modify snxcard.reg (please follow [**Modify snxcard.reg**]step).

Step 9. Modify init.c (please follow [**Modify init.c**]step).

Step 10. Use "Build and Sysgen" to build OS image.

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### (1). Prepare a hardware target platform

The platform setting must meet the following requirements.

1. If your motherboards have the standard serial port, then,  
Please don't have a conflict with standard serial port (IoBase or IRQ) in target device.  
(Serial Card jump setting don't like this example: 02F8, 03E8, 02E8... IRQ3, IRQ4, IRQ5)  
(please reference your motherboard menu)  
Serial card jump setting can use of the other IOBase and IRQ.
2. In the motherboard BIOS setting, you must be to preserve IRQ for serial card.  
Example step (AwardBIOS) (please reference your motherboard menu):  
BIOS --> PNP/PCI Configuration --> Resources Controlled By --> change setting to "Manual".  
BIOS --> PNP/PCI Configuration --> IRQ Resources --> **IRQ-5** assigned to --> change setting to "Legacy ISA".  
.....

#### Note :

If you want to use the same motherboard standard serial port IoBase or IRQ( 02F8, 03E8, 02E8... IRQ3, IRQ4, IRQ5)  
You must be disabled your motherboard standard serial port, and also need to mark standard serial port registry in the platform.reg. please follow [**Disabled motherboard step**] step.

## (2). Disabled motherboard step.

BIOS --> INTEGRATED PERIPHERALS --> Onboard Serial Port 1--> change setting to disabled.

BIOS --> INTEGRATED PERIPHERALS --> Onboard Serial Port 2--> change setting to disabled.

BIOS --> INTEGRATED PERIPHERALS --> Onboard Parallel Port --> change setting to disabled.

### 1. Mark standard serial port registry. Please open platform.reg under in “Parameter File.”

Find string "[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\Serial]" You will find this section.

IF **BSP\_NOSERIAL** !

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\Serial]

"SysIntr"=dword:13

"IoBase"=dword:02F8

"IoLen"=dword:8

"DeviceArrayIndex"=dword:0

"Prefix"="COM"

"IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"

"Dll"="Com16550.Dll"

"Order"=dword:0

"Flags"=dword:10 ; User Mode: DEVFLAGS\_LOAD\_AS\_USERPROC

; Turn on follows for Installable ISR (isr16550 supporting SOFTWARE FIFO

; "Irq"=dword:3

; "IsrDll"="isr16550.dll"

; "IsrHandler"="ISRHandler"

; "Flags"=dword:0 ; Disable User Mode if we need ISR16550.

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\Serial\Unimodem]

"Tsp"="Unimodem.dll"

"DeviceType"=dword:0

"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

#if ! (defined IMGPPC || defined IMGTPC)

"FriendlyName"=LOC\_FRIENDLYNAME\_SERIAL

#else (defined IMGPPC || defined IMGTPC)

{BEGIN MULTILANG}

; @BEGINASSOC LOCALE %LANGID%

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\Serial\Unimodem]

"FriendlyName"=LOC\_%LANGID%\_FRIENDLYNAME\_SERIAL

; @ENDASSOC

{END MULTILANG}

#endif ! (defined IMGPPC || defined IMGTPC)

IF **BSP\_SERIAL2**

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\Serial2]

"SysIntr"=dword:14

```
"IoBase"=dword:03F8
"IoLen"=dword:8
"DeviceArrayIndex"=dword:1
"Prefix"="COM"
"IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
"Dll"="Com16550.Dll"
"Order"=dword:0
"Flags"=dword:10 ; User Mode: DEVFLAGS_LOAD_AS_USERPROC
```

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2\Unimodem]
```

```
"Tsp"="Unimodem.dll"
"DeviceType"=dword:0
"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00
#if ! (defined IMGPPC || defined IMGTPC)
    "FriendlyName"=LOC_FRIENDLYNAME_SERIAL2
#else (defined IMGPPC || defined IMGTPC)
```

```
{BEGIN MULTILANG}
```

```
; @BEGINASSOC LOCALE %LANGID%
```

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2\Unimodem]
```

```
"FriendlyName"=LOC_%LANGID%_FRIENDLYNAME_SERIAL2
; @ENDASSOC
```

```
{END MULTILANG}
```

```
#endif ! (defined IMGPPC || defined IMGTPC)
```

```
ENDIF BSP_SERIAL2
```

**IF BSP\_SERIAL3**

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3]
```

```
"SysIntr"=dword:15
"IoBase"=dword:02E8
"IoLen"=dword:8
"DeviceArrayIndex"=dword:2
"Prefix"="COM"
"IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
"Dll"="Com16550.Dll"
"Order"=dword:0
"Flags"=dword:10 ; User Mode: DEVFLAGS_LOAD_AS_USERPROC
```

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3\Unimodem]
```

```
"Tsp"="Unimodem.dll"
"DeviceType"=dword:0
"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00
#if ! (defined IMGPPC || defined IMGTPC)
    "FriendlyName"=LOC_FRIENDLYNAME_SERIAL3
```

```

        #else (defined IMGPPC || defined IMGTPC)

{BEGIN MULTILANG}

        ; @BEGINASSOC LOCALE %LANGID%

        [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3\Unimodem]

        "FriendlyName"=LOC_%LANGID%_FRIENDLYNAME_SERIAL3

        ; @ENDASSOC

{END MULTILANG}

        #endif ! (defined IMGPPC || defined IMGTPC)

ENDIF BSP_SERIAL3

ENDIF BSP_NOSERIAL !

        :

```

## 2. Please use ";" characters mark all registry.

```

IF BSP_NOSERIAL !

; [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial]

; "SysIntr"=dword:13

; "IoBase"=dword:02F8

; "IoLen"=dword:8

; "DeviceArrayIndex"=dword:0

; "Prefix"="COM"

; "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"

; "Dll"="Com16550.Dll"

; "Order"=dword:0

; "Flags"=dword:10 ; User Mode: DEVFLAGS_LOAD_AS_USERPROC

; ; Turn on follows for Installable ISR (isr16550 supporting SOFTWARE FIFO

; ; "Irq"=dword:3

; ; "IsrDll"="isr16550.dll"

; ; "IsrHandler"="ISRHandler"

; ; "Flags"=dword:0 ; Disable User Mode if we need ISR16550.

;

; [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial\Unimodem]

; "Tsp"="Unimodem.dll"

; "DeviceType"=dword:0

; "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

; #if ! (defined IMGPPC || defined IMGTPC)

; "FriendlyName"=LOC_FRIENDLYNAME_SERIAL

; #else (defined IMGPPC || defined IMGTPC)

;{BEGIN MULTILANG}

;

; ; @BEGINASSOC LOCALE %LANGID%

;

; [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial\Unimodem]

;

; "FriendlyName"=LOC_%LANGID%_FRIENDLYNAME_SERIAL

;

; ; @ENDASSOC

```

```

;{END MULTILANG}

;                                #endif ! (defined IMGPPC || defined IMGTPC)

IF BSP_SERIAL2

;    [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2]
;
;    "SysIntr"=dword:14
;
;    "IoBase"=dword:03F8
;
;    "IoLen"=dword:8
;
;    "DeviceArrayIndex"=dword:1
;
;    "Prefix"="COM"
;
;    "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
;
;    "Dll"="Com16550.Dll"
;
;    "Order"=dword:0
;
;    "Flags"=dword:10 ; User Mode: DEVFLAGS_LOAD_AS_USERPROC
;
;
;    [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2\Unimodem]
;
;    "Tsp"="Unimodem.dll"
;
;    "DeviceType"=dword:0
;
;    "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00,
00,00,00,00
;
;    #if ! (defined IMGPPC || defined IMGTPC)
;
;        "FriendlyName"=LOC_FRIENDLYNAME_SERIAL2
;
;    #else (defined IMGPPC || defined IMGTPC)
;
;{BEGIN MULTILANG}
;
;                                ; @BEGINASSOC LOCALE %LANGID%
;
;                                [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2\Unimodem]
;
;                                "FriendlyName"=LOC_%LANGID%_FRIENDLYNAME_SERIAL2
;
;                                ; @ENDASSOC
;{END MULTILANG}
;
;                                #endif ! (defined IMGPPC || defined IMGTPC)

ENDIF BSP_SERIAL2

IF BSP_SERIAL3

;    [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3]
;
;    "SysIntr"=dword:15
;
;    "IoBase"=dword:02E8
;
;    "IoLen"=dword:8
;
;    "DeviceArrayIndex"=dword:2
;
;    "Prefix"="COM"
;
;    "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
;
;    "Dll"="Com16550.Dll"
;
;    "Order"=dword:0
;
;    "Flags"=dword:10 ; User Mode: DEVFLAGS_LOAD_AS_USERPROC

```

```

; [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3\Unimodem]
; "Tsp"="Unimodem.dll"
; "DeviceType"=dword:0
; "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00,
00,00,00,00
; #if ! (defined IMGPPC || defined IMGTPC)
; "FriendlyName"=LOC_FRIENDLYNAME_SERIAL3
; #else (defined IMGPPC || defined IMGTPC)
;{BEGIN MULTILANG}
; ; @BEGINASSOC LOCALE %LANGID%
; [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3\Unimodem]
; "FriendlyName"=LOC_%LANGID%_FRIENDLYNAME_SERIAL3
; ; @ENDASSOC
;{END MULTILANG}
; #endif ! (defined IMGPPC || defined IMGTPC)
ENDIF BSP_SERIAL3
ENDIF BSP_NOSERIAL !
:

```

### (3) Modify snxcard.reg

#### 1. Default snxcard.reg file section.

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\SnxPort1]
"Prefix"="COM"
"Index"=dword:2
"DeviceArrayIndex"=dword:0
"Dll"="snxport.dll"
"IsrDll"="snxintr.dll"
"IsrHandler"="ISRHandler"
"IOBase"=dword:0
"IOLen"=dword:8
"Irq"=dword:0
"SysIntr"=dword:0
"Flags"=dword:0
"ChipID"=dword:0
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\SnxPort1\Unimodem]
"Tsp"="Unimodem.dll"
"DeviceType"=dword:0
"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00
"FriendlyName"="SUNIX Port 1"

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\SnxPort2]
"Prefix"="COM"
"Index"=dword:3
"DeviceArrayIndex"=dword:1
"Dll"="snxport.dll"
"IsrDll"="snxintr.dll"
"IsrHandler"="ISRHandler"
"IOBase"=dword:0
"IOLen"=dword:8
"Irq"=dword:0
"SysIntr"=dword:0
"Flags"=dword:0
"ChipID"=dword:0
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\SnxPort2\Unimodem]
"Tsp"="Unimodem.dll"
"DeviceType"=dword:0
"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00
"FriendlyName"="SUNIX Port 2"
```

:  
:

2. Edit C:\Platform\Sunix\_WinCE60\snxcard.reg file to modify parameters for each serial port

Example: **IRQ: 5**

**Port 1: Sysintr -> 0X15 IOBase -> 0x0250**

**Port 2: Sysintr -> 0X16 IOBase -> 0x0258**

**Port 3: Sysintr -> 0X17 IOBase -> 0x0260**

**Port 4: Sysintr -> 0X18 IOBase -> 0x0268**

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort1]

"Prefix"="COM"

"Index"=dword:2

"DeviceArrayIndex"=dword:0

"Dll"="snxport.dll"

"IsrDll"="snxintr.dll"

"IsrHandler"="ISRHandler"

"IoBase"=dword:0250

"IoLen"=dword:8

"Irq"=dword:5

"SysIntr"=dword:15 ← **SysInter = Irq + 0X10**

"Flags"=dword:0

"ChipID"=dword:4

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort1\Unimodem]

"Tsp"="Unimodem.dll"

"DeviceType"=dword:0

"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

"FriendlyName"="SUNIX Port 1"

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort2]

"Prefix"="COM"

"Index"=dword:3

"DeviceArrayIndex"=dword:1

"Dll"="snxport.dll"

"IsrDll"="snxintr.dll"

"IsrHandler"="ISRHandler"

"IoBase"=dword:0258

"IoLen"=dword:8

"Irq"=dword:5

"SysIntr"=dword:16

"Flags"=dword:0

"ChipID"=dword:4

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort2\Unimodem]

"Tsp"="Unimodem.dll"

"DeviceType"=dword:0

"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00



"FriendlyName"="SUNIX Port 2"

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort3]

"Prefix"="COM"

"Index"=dword:4

"DeviceArrayIndex"=dword:2

"Dll"="snxport.dll"

"IsrDll"="snxintr.dll"

"IsrHandler"="ISRHandler"

"IoBase"=dword:0260

"IoLen"=dword:8

"Irq"=dword:5

"SysIntr"=dword:17

"Flags"=dword:0

"ChipID"=dword:4

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort3\Unimodem]

"Tsp"="Unimodem.dll"

"DeviceType"=dword:0

"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

"FriendlyName"="SUNIX Port 3"

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort4]

"Prefix"="COM"

"Index"=dword:5

"DeviceArrayIndex"=dword:3

"Dll"="snxport.dll"

"IsrDll"="snxintr.dll"

"IsrHandler"="ISRHandler"

"IoBase"=dword:0268

"IoLen"=dword:8

"Irq"=dword:5

"SysIntr"=dword:18

"Flags"=dword:0

"ChipID"=dword:4

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SnxPort4\Unimodem]

"Tsp"="Unimodem.dll"

"DeviceType"=dword:0

"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

"FriendlyName"="SUNIX Port 4"

#### (4) **Modify init.c**

Modify file “%\_WIN\_DIR%\PLATFORM\COMMON\SRC\X86\COMMON\INTR\init.c” and add the line as below:

**Example: IRQ: 5**

**Port 1: Sysintr -> 0X15**

**Port 2: Sysintr -> 0X16**

**Port 3: Sysintr -> 0X17**

**Port 4: Sysintr -> 0X18**

// IRQ3 - COM2 or COM4

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 3, 3);

// IRQ4 - COM1 or COM3

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 4, 4);

// IRQ5 is legacy LPT2 - this IRQ is potentially available.

//

// Currently this interrupt is being used for Audio support

// on the emulator.

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 5, 5);

OALIntrStaticTranslate( 22 , 5 );      ← add this line

OALIntrStaticTranslate( 23 , 5 );      ← add this line

OALIntrStaticTranslate( 24 , 5 );      ← add this line

// IRQ6 is normally the floppy controller.

// IRQ7 is normally LPT1

// OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 7, 7);      ← mark this line ( SYSINTR\_FIRMWARE = 16 )

// IRQ8 is the real time clock

OALIntrStaticTranslate(SYSINTR\_RTC\_ALARM, 8);

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 9, 9);

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 10, 10);

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 11, 11);

OALIntrStaticTranslate(SYSINTR\_TOUCH, 12);

// IRQ13 is normally the coprocessor

// IRQ14 is normally the hard disk controller

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 14, 14);

OALIntrStaticTranslate(SYSINTR\_FIRMWARE + 15, 15);

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