



Application Note
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Using eXDI/MAJIC to Debug Pocket PC 2002

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Introduction

There are several necessary steps to build and debug a Pocket PC 2002 kernel with a MAJIC series intelligent debug probe from EPI.

1. Installation of Platform Builder and Pocket PC 2002 files. (Microsoft Distribution)
2. Installation of EPI Development tools (EDT) with eXDI driver.
3. Building your Pocket PC 2002 Kernel.
4. Loading and debugging the Kernel using Platform Builder and MAJIC via eXDI.

Necessary Materials:

- 1 MAJIC, MAJICMX, or MAJIC^{plus} Intelligent JTAG Debug Probe with eXDI drivers.
- EPI Development Tools (EDT) Software Package.
- Microsoft Platform Builder Software. (versions 4.0 and 4.1 have been validated by EPI)
- Pocket PC 2002 software. Our tested version consisted of the following:
 - Pocket PC (Merlin) build 11178 Core files (from Microsoft)
 - Pocket PC (Merlin) build 11178 WWE Language pack (from Microsoft)
- Evaluation board with Pocket PC 2002 BSP (from Intel)

We tested using an Intel DBPXA250 board from Intel with version 3.00.008 of the Intel® PXA250 and PXA210 Applications Processors Board Support Package for Microsoft Pocket PC 2002 from Intel.

Installing Platform Builder

Use the following procedure to install Microsoft Platform builder and Pocket PC 2002.

1. Follow the instructions in your Windows CE.net or Platform Builder 4.0/4.1 documentation to install the Microsoft Platform Builder tools.
2. Create a directory to be the root of your Pocket PC 2002 build process.
We used C:\Merlin\ because we were building the “Merlin” Pocket PC 2002 kernel.
3. Install the Pocket PC 2002 files to this directory.
In our tests this was accomplished by simply copying over the contents of the \Merlin directory on the CDs containing the Build 11178 files. Be sure to copy the Core files first and then copy the language pack over the top of this.
4. Follow the instructions from the distributor of your BSP to install the BSP into the proper place within the Pocket PC 2002 build tree.

Installing EPI tools and eXDI drivers for MAJIC.

Follow the steps below to install the EPI Development Tools on a Windows PC:

1. Insert the EDT CD into your CD drive.
2. If the installer does not launch after a few seconds, then use the Windows [START] menu, select Run... and [Browse] to find your CD drive, then run setup.exe.
3. Follow the instructions provided by Install Shield. The 'keycode' is on a sticker on the back of the CD jewel case.
4. Check the Support page at www.epitools.com for potential update information.

Building the Pocket PC 2002 Kernel.

Building the Pocket PC 2002 kernel can be either a simple or a difficult task depending on whether or not you properly followed the guidelines set out in the instructions from the vendor of your BSP. Be sure to follow these instructions. The procedure used in our tests is described below. For more information, please reference the Intel PXA250 and PXA210 Applications Processors Board Support Package for Microsoft Pocket PC 2002 User's Guide (UserGuide_DBPXA2xx_BSP_PPC.pdf).

1. **Configure the Build:** With the files we tested it is necessary to disable the display drivers in order for the build process to complete successfully. This is done by editing the file `xsc1bd.bat` located in the `c:\merlin\platform\xsc1bd\` directory. To disable the display drivers simply add the following line to the very end of the file and save the revised version.

```
set PLAT_NODISPLAY=1
```

1. **Build the Kernel:** Open a command prompt and change directory to `c:\Merlin\`. Then run the following command to build the Pocket PC 2002 kernel. **bldplat -cpu SA1100 -p xsc1bd -c -retail** Please note that despite the fact that the command used indicates a StrongARM SA1100 processor this is in fact the correct setting for the pxa250 XScale processor. This command will open another command window in which the actual build takes place. When finished, you should see a screen that looks something like this:

```

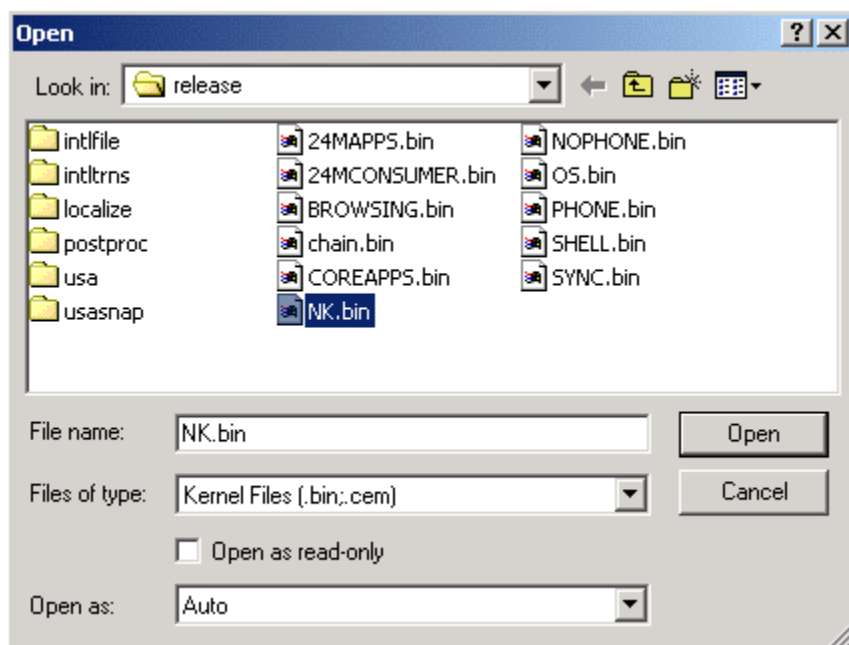
Bldplat: SA1100 xsc1bd (USA;USA)
Kernel Data Copy Section      814b62e8  00000010h  <      16>
Creating native binary file...
Number of ROMS=1 buffer length=1000000h
Creating ROM file C:\merlin\release\NK.nbd
First DLL Address:           00de0000h
Last DLL Address:            02000000h
Physical Start Address:      8008d000h
Physical End Address:         814b62f8h
Start RAM:                    8208d000h
Start of free RAM:            820a6000h
End of RAM:                   83e8cfffh
Number of Modules:           189
Number of Copy Sections:     1
Copy Section Offset:          814b62e8h
Starting ip:                  8008e000h
Raw files size:               0070f070h
Compressed files size:        0060d2e9h
FileSys 4K Chunks/Mbyte:      128 <2Mbyte  128 2-4Mbyte  128 4-6Mbyte  128 >6Mbyte
CPU Type:                     01c0h
Extensions Pointer:           8008fed0h
Total ROM size:               014292f8h < 21140216>
[Fri 11/01/2002  5:36p] ----- SUCCEEDED: built nk.bin
C:\merlin>

```

Loading and Debugging your Kernel Image.

Debugging a Pocket PC 2002 Kernel is very similar to the procedure used to download and debug a WinCE kernel as described in the *MAJIC Windows CE .net eXDI User's Guide*, so if you have not yet read Chapter 4 in that manual you should.

1. First, you must select the file you wish to debug. To do this, start Platform Builder and choose open from the dropdown menu. Next set the file type to Kernel Files and locate the nk.bin file created by your build process. Ours is in c:\merlin\release\. Once the file is selected click open.



2. Now you can follow the steps outlined in Chapter 4 of the *MAJIC Windows CE .net eXDI User's Guide* to download and debug your image.

Documents referenced.

<u>Title</u>	<u>Filename</u>	<u>Source</u>
MAJIC Windows CE .net eXDI User's Guide	majic_exdi.pdf	(EPI)
MAJIC Quickstart Guide	MAJIC_QuickStart.pdf	(EPI)
Intel PXA250 and PXA210 Applications Processors Board Support Package for Microsoft Pocket PC 2002 User's Guide	UserGuide_DBPXA2xx_BSP_PPC.pdf	(Intel)
MDI for MAJIC Users Guide	mdiuser.pdf	(EPI)
Windows CE.net or Platform Builder 4.0/4.1 documentation	Hardcopy	(Microsoft)