



Intel[®] IXDP425 / IXCDP1100 Development Platform

Boot-Loader Flash Conversion Guide

January 2005



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Revision History

Date	Revision	Description
January 2005	005	Updated for Microsoft* Windows* CE
July 2004	004	Updated RedBoot* start-up message.
July 2003	003	Updated flash replacement instructions.
June 2003	002	Added VxWorks* boot loader.
January 2003	001	This is the first release of this document.

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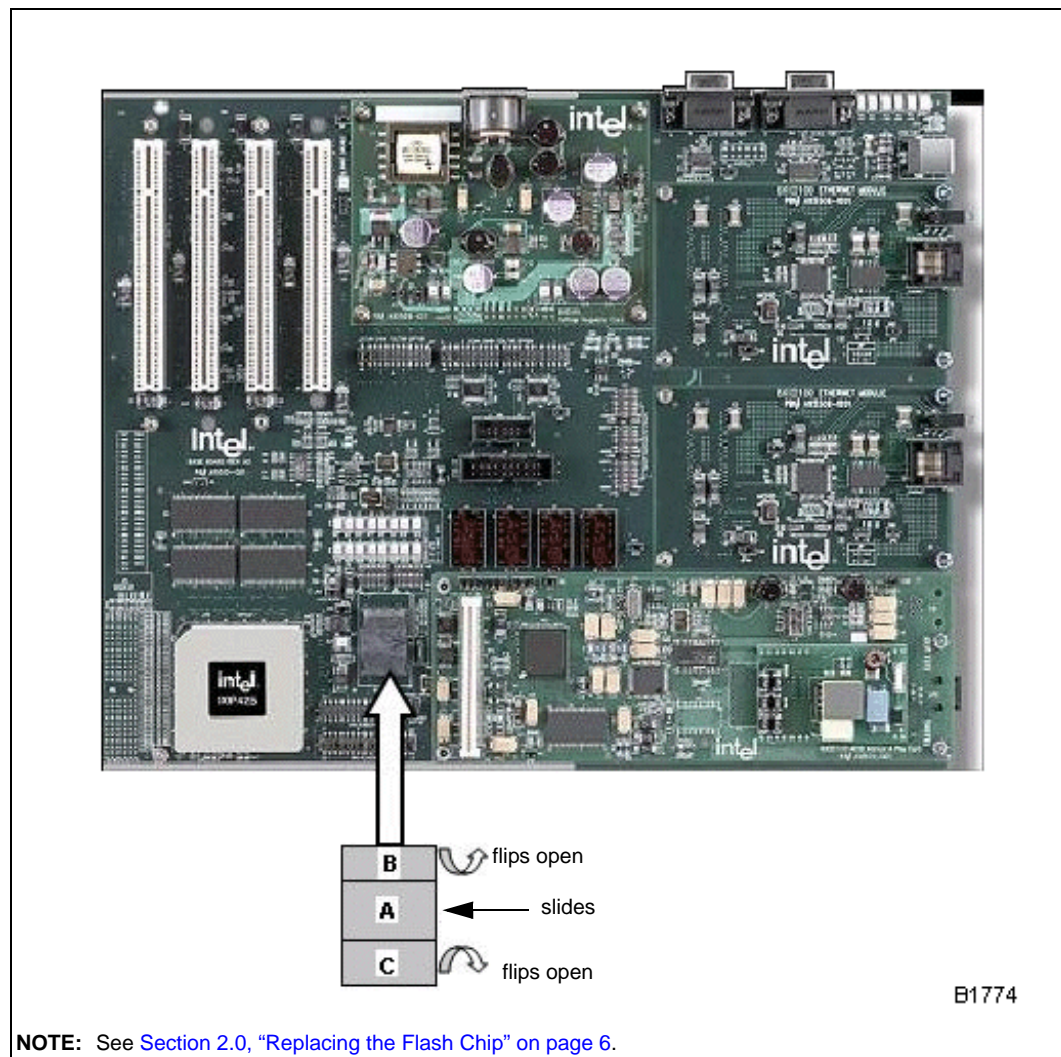
1.0 About This Guide

This guide describes how to replace the existing boot flash chip, installed on the Intel® IXDP425 / IXCDP1100 Development Platform, with an alternate flash chip that contains either the VxWorks® 5.5 boot loader or the RedBoot® boot loader.

The RedBoot boot loader is installed on the IXDP425 / IXCDP1100 platform when it is shipped. If you are developing Linux® based systems, then RedBoot is the appropriate boot loader and you can proceed to [Section 3.2](#). If you are developing a VxWorks based system or a Microsoft® Windows® CE based system, follow [Section 2.0](#) to replace the existing boot flash chip with the alternate VxWorks 5.5 boot loader flash chip (labeled “VX 5.5 BL”) or Windows CE eBoot® flash chip that shipped in a small black box with the IXDP425 / IXCDP1100 platform.

The RedBoot boot loader is capable of booting Linux® kernel images as well as loading other operating-system kernels and executable images.

Figure 1. Flash Socket Diagram



2.0 Replacing the Flash Chip

Read completely through these instructions before attempting to remove the existing boot flash chip from the chip carrier.

Warning: The pins of Flash chips are *very* sensitive and can be bent easily, resulting in a board that will fail to boot. Be careful when handling the part when you are replacing the chip in the socket.

Warning: Flash chips are *very* sensitive to the smallest of static discharges. Always hold the board by the edges or bracket to avoid touching the edge connector. The easiest way to avoid shocking the board or the chip is to wear a wrist strap and use a conductive work space to ground yourself while handling the board or chip.

The boot flash on the IXDP425 / IXCDP1100 platform is held in a black plastic, dual-hinge socket that is located near the Intel® IXP425 Network Processor's socket. (See [Figure 1.](#))

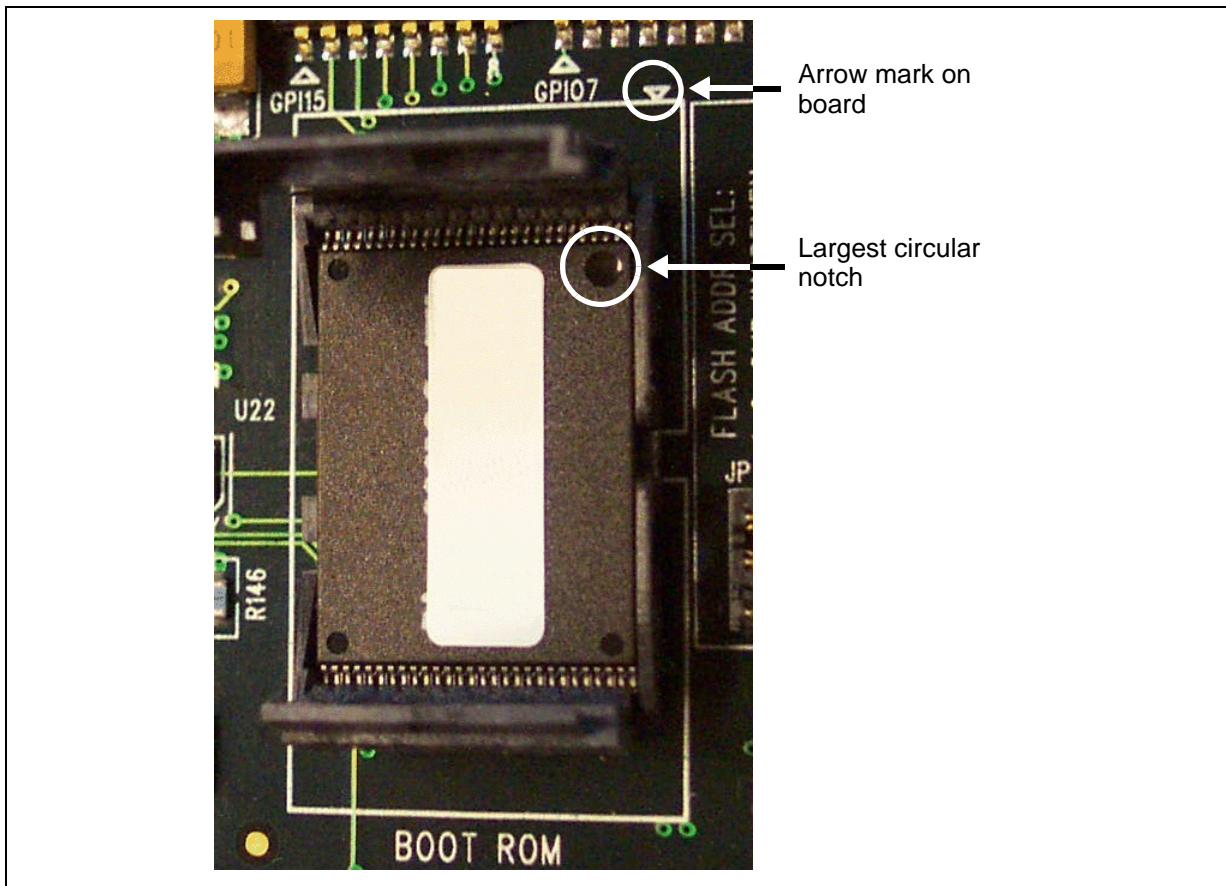
To remove the flash chip currently on the board:

1. Verify the power is off.
2. Orient the IXDP425 / IXCDP1100 platform so that the four PCI connectors of the board are away from you and the IXP425 network processor is on the side of the platform that is nearest to you.
3. Refer to [Figure 1](#). Open the socket by sliding the A panel to the left about 1 mm and flipping panels B (by lifting panel A away from you) and C open.
4. *Very carefully* remove the chip from the socket using a bulb-vac suction tool. Touch the suction cup portion of the tool to the top of the Flash chip and then squeeze the black tube to attach the chip to the tool. Carefully lift straight up so the flash pins do not hit anything and properly store the flash. The flash can be released by squeezing the black tube again.

To insert the new chip:

1. Ensure that the IXDP425 / IXCDP1100 platform still is oriented so that the four PCI connectors of the board are away from you and the IXP425 network processor is on the side of the platform that is nearest to you.
2. If the socket is not already open, unlock it and swing open both hinges.
3. Use the bulb-vac suction tool to pick up the Flash chip you would like to install.
4. Orient the new chip so that the largest circular notch is positioned as shown in [Figure 2](#).

Figure 2. Placing the Flash Chip in the Socket



5. *Very carefully* place the chip into the socket — aligning the chip's Pin-1 mark with the arrow mark on the board silk screen. Squeeze the bulb-vac suction tool to release the Flash chip. The location of the board's arrow mark is shown in [Figure 2](#).
6. Verify the flash is securely in the socket and the orientation is correct, the pin-1 markers should match as shown in [Figure 2](#)
7. Refer to [Figure 1](#). Flip panels C and then B back down and slide panel A to the right to close the socket.

3.0 Verifying Boot Loader Operation

If you have the RedBoot boot loader flash installed in the socket, skip to [Section 3.2](#). If you have the VxWorks 5.5 boot loader flash installed, continue to [Section 3.1](#). If you have the eBoot boot loader flash installed in the socket, skip to [Section 3.3](#).

3.1 Verifying VxWorks* 5.5 Boot Loader Operation

To verify that the VxWorks 5.5 Boot Loader flash chip is operating:

1. Use UART 1 as the console connection to the IXDP425 / IXCDP1100 platform.
2. Configure your serial communications application with the values shown in [Table 1](#).

Table 1. UART-1 Communications Configuration

Parameter	Value
Bits per Second	9,600
Data Bits	8
Parity	None
Stop Bit	1
Flow Control	None

3. Power on the IXDP425 / IXCDP1100 platform.
When the VxWorks device starts, the console displays the text shown in [Figure 3](#) and the four hex-digit displays 0027.

Figure 3. VxWorks* 5.5 Start-Up Messages

```
VxWorks System Boot

Copyright 1984-2001 Wind River Systems, Inc.


CPU: Intel IXP425 - IXDP425 Platform
Version: VxWorks5.5
BSP version: 1.3/3
Creation date: May 6 2003, 21:24:40


Press any key to stop auto-boot...
5

[VxWorks Boot]:_
```

4. Skip to [Section 4.0](#).

3.2 Verifying RedBoot* Operation

To verify that the RedBoot flash chip is operating:

1. Use UART 0 as the console connection to the IXDP425 / IXCDP1100 platform.
2. Configure your serial communications application with the values shown in [Table 2](#).

Table 2. UART-0 Communications Configuration

Parameter	Value
Bits per Second	115,200
Data Bits	8

Table 2. UART-0 Communications Configuration

Parity	None
Stop Bit	1
Flow Control	None

3. Power on the IXDP425 / IXCDP1100 platform.

When the RedBoot device starts, the console displays the text shown in [Figure 4](#) and the four hex-digit displays 0001.

Figure 4. RedBoot* Start-Up Messages

```
Ethernet eth0: MAC address 00:03:47:e1:a4:a0
Can't get BOOTP info for device!
RedBoot(tm) bootstrap and debug environment [ROM]
Red Hat certified release, version 1.94 - built 17:02:10, Mar 30 2004
Platform: IXDP425 Development Platform (XScale) BE
Copyright (C) 2000, 2001, 2002, 2003, 2004 Red Hat, Inc.
RAM: 0x00000000-0x10000000, 0x0001f178-0x0fffd1000 available
FLASH: 0x50000000 - 0x51000000, 128 blocks of 0x00020000 bytes each.
RedBoot>
```

4. Skip to [Section 4.0](#).

3.3 Verifying eBoot* Operation

To verify that the eBoot flash chip is operating:

1. Use UART 0 as the console connection to the IXDP425 / IXCDP1100 platform.
2. Configure your serial communications application with the values shown in [Table 3](#).

Table 3. UART-0 Communications Configuration

Parameter	Value
Bits per Second	38,800
Data Bits	8
Parity	None
Stop Bit	1
Flow Control	None

3. Power on the IXDP425 / IXCDP1100 platform.

When the eBoot device starts, the console displays the text shown in [Figure 5](#) and the four hex-digit displays 0010.

Figure 5. eBoot* Start-Up Messages

```
***** IXDP4XX System Initialization *****

      CPU ID      = 533 Mhz IXP425 B0

Beginning SDRAM Scrub...
SDRAM Scrub Complete

*****
*      Intel Corporation IXDP425 WinCE BSP      *
*      Copyright Intel 2003                    *
*                                              *
*****
OEMInitDebugSerial using 1

Microsoft Windows CE Ethernet Bootloader Common Library Version 1.1 Built Aug 31
2004 10:09:11
Microsoft Windows CE Ethernet Bootloader for the Intel IXDP425 Development Platf
orm
Version 1.2 (Built Dec 10 2004 : 12:04:19)

Boot Strap settings (capture on reset) 0x00FFFFFFE

Requestd IXP4xx Clock Speed : 533Mhz

Flash Information:
-----
Bytes Per Block ..... 0x20000
Number of Blocks ..... 0x80
Flash Type ..... 0x1
Data Bytes Per Sector .. 0x200
Sectors Per Block ..... 0x100

FlashRead: Reading from flash address 0xB4680000 to 0x80121CF0 (length=0xA40): D
one.
Press [ENTER] to download now or [SPACE] to cancel.

Initiating image download in 1 seconds.
```

4.0 Getting Additional Information and Support

- For additional information on the Intel® IXP400 Software, see the software release notes on the following Web page:

<http://www.intel.com/design/network/products/npfamily/ixp425swr1.htm>



- For more information on MontaVista's* (<http://www.mvista.com/>) Linux* support package (LSP) and documentation for using Linux on the IXDP425 / IXCDP1100 platform, use the link on the previously mentioned Web page.



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