



**Intel® IXDPG465  
Reference Platform  
Bootloader LSP  
Release Notes**

**Version 1.0**

---

*May 2006*



INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY RELATING TO SALE AND/OR USE OF INTEL PRODUCTS, INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR OTHER INTELLECTUAL PROPERTY RIGHT.

Intel Corporation may have patents or pending patent applications, trademarks, copyrights, or other intellectual property rights that relate to the presented subject matter. The furnishing of documents and other materials and information does not provide any license, express or implied, by estoppel or otherwise, to any such patents, trademarks, copyrights, or other intellectual property rights.

Intel products are not intended for use in medical, life-saving, life-sustaining, critical control or safety systems, or in nuclear-facility applications. Intel may make changes to specifications and product descriptions at any time, without notice.

Intel may make changes to specifications and product descriptions at any time, without notice.

Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

The Software for IXP4XX Network Processors may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

MPEG is an international standard for video compression/decompression promoted by ISO. Implementations of MPEG CODECs, or MPEG enabled platforms may require licenses from various entities, including Intel Corporation.

This document and the software described in it are furnished under license and may only be used or copied in accordance with the terms of the license. The information in this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by Intel Corporation. Intel Corporation assumes no responsibility or liability for any errors or inaccuracies that may appear in this document or any software that may be provided in association with this document. Except as permitted by such license, no part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without the express written consent of Intel Corporation.

Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's website at <http://www.intel.com>.

Intel, and Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

\*Other names and brands may be claimed as the property of others.

Copyright © Intel Corporation 2006



## Table of Contents

1	RedBoot* v2.02 Building Step .....	4
2	Steps to Build LSP .....	6
3	Build Steps for IXDPG465 Reference Platform Intel® IXP400 Software.....	7

## Revision History

Date	Revision	Description
May 04, 2006	1.0	Initial version



## 1 RedBoot\* v2.02 Building Step

- 1) Set up the environment as Intel® IXDP465 Development Platform. You must unzip the following files:

```
redboot-intel-ixp4xx-050425.tar.gz
Redboot-v2_02-epk.zip
Redboot-v2_02-npe-microcode.zip
```

- 2) You must apply the patch for Intel® IXDPG465 Reference Platform:  
Get [ixdpg465\\_redboot2.02\\_1.0.1.patch](#), [ixdpg465\\_npe\\_2.02\\_1.0.1.patch](#).
- 3) Copy/Store **npe-2.02.epk** and **IxNpeMicrocode.c** into the designated directory. Issuing the following orders:

```
cd redboot-intel-ixp4xx-050425
export
PATH=/opt/redhat/xscale-030422/H-i686-pc-linux-gnulibc2.2/bin/:${PATH}
```

```
export TOPDIR=`pwd`
export ECOS_REPOSITORY=${TOPDIR}/packages
export VERSION=current
export BOARD=ixdp465
${ECOS_REPOSITORY}/ecosadmin.tcl add ../npe-2.02.epk
cp ../IxNpeMicrocode.c ./packages/devs/eth/intel/npe/npeDI/v2_01/src
```

```
$ patch -p0 < ixdpg465_redboot2.02_1.0.1.patch
patching file packages/hal/arm/xscale/ixdp465/current/cdl/hal_arm_xscale_ixdp465.cdl
patching file packages/hal/arm/xscale/ixdp465/current/include/ixdp465.h
patching file packages/hal/arm/xscale/ixdp465/current/misc/redboot_RAM.ecm
patching file packages/hal/arm/xscale/ixdp465/current/misc/redboot_ROM.ecm
patching file packages/hal/arm/xscale/ixdp465/current/src/ixdp465_misc.c
patching file packages/hal/arm/xscale/ixdp465/current/src/ixdp465_pci.c
$ patch -p0 < ixdpg465_npe_2.02_1.0.1.patch
patching file packages/devs/eth/arm/ixdp465/npe/v2_01/cdl/ixdp465_npe_eth_driver.cdl
patching file packages/devs/eth/intel/npe/common/v2_01/src/if_npe.c
patching file packages/devs/eth/intel/npe/ethMii/v2_01/src/lxEthMii.c
patching file packages/devs/eth/intel/npe/ethMii/v2_01/src/lxEthMii_p.h
```

```
$ mkdir ${TOPDIR}/build
$ cd ${TOPDIR}/build
$ ecosconfig new ${BOARD}_npe redboot
```

To build the Read-only-Memory (ROM) version:

```
ecosconfig import
${ECOS_REPOSITORY}/hal/arm/xscale/${BOARD}/${VERSION}/misc/redboot_ROM.ecm
ecosconfig tree
make
```

You can get redboot.srec in build/install/bin.



To build the Random Access Memory (RAM) version:

```
ecosconfig import  
${ECOS_REPOSITORY}/hal/arm/xscale/${BOARD}/${VERSION}/misc/re  
dboot_RAM.ecm  
ecosconfig tree  
make
```

### Version Updates using RedBoot

- 1) Download RAM version RedBoot to RAM by using the following command:  
`load -v redboot_RAM.srec`
- 2) Execute RedBoot using  
`go`
- 3) Download ROM version RedBoot to RAM using the following command:  
`load -v redboot_ROM.srec -b 0x01600000`
- 4) Program RedBoot ROM version to flash using the following command:  
`fis create redboot -b 0x01600000`  
You will get the following prompt:  
"An image named 'redboot' exists - continue (y/n)?". Click **y**.  
... Erase from 0x50000000-0x50080000: ....  
... Program from 0x01600000-0x01680000 at 0x50000000: ....  
... Unlock from 0x51fe0000-0x52000000: .  
... Erase from 0x51fe0000-0x52000000: .  
... Program from 0x03fe0000-0x04000000 at 0x51fe0000:  
... Lock from 0x51fe0000-0x52000000:.



## 2 Steps to Build LSP

You have to install Montavista\* Pro 3.1 in your computer and do the following:

- 1) Get [lsps-arm\\_xscale\\_be-intel-ixdp465-0401718.iso](#) from Montavista\* or internal website.
- 2) Use [mvl-update-packages](#) to install ixdp465 LSP to **/opt/montavista/pro/devkit/lsp/intel-ixdp465-arm\_xscale\_be**.
- 3) Copy LSP to your folder, for example, /home/jimmy/work/linux
- 4) You must apply the patch.

```
cd intetel-ixdp465-arm_xscale_be/linux-2.4.20_mvl31/  
patch -p1 < ixdp465_mvl3.1_1.0.1.patch
```

The following message will be showed:

```
$ patch -p1 < ixdp465_mvl3.1_1.0.1.patch  
patching file arch/arm/boot/compressed/head-xscale.S  
patching file arch/arm/config.in  
patching file arch/arm/def-configs/ixdp465  
patching file arch/arm/kernel/bios32.c  
patching file arch/arm/mach-ixp425/arch.c  
patching file arch/arm/mach-ixp425/ixdp465-pci.c  
patching file arch/arm/mach-ixp425/ixp425-irq.c  
patching file arch/arm/mach-ixp425/Makefile  
patching file arch/arm/tools/mach-types
```

- 5) make ixdp465\_config
- 6) make oldconfig
- 7) Issue following command:
  - i) "make dep"
  - ii) "make zImage"
- 8) You should get zImage under *linux/arch/arm/boot*
- 9) Copy zImage to your tftp folder.
- 10) When the Redboot brings up, provide the following command:

```
load -r -v -b 0x02000000 smbp/ramDisk  
load -r -v -b 0x01080000 smbp/zImage  
exec 0x01080000 -c "console=ttyS0,115200 devfs=nomount root=/dev/ram  
initrd=0x02000000,13M ramdisk_size=12288 mem=64M&0x0000000  
ip=off"
```



### 3 Build Steps for IXDPG465 Reference Platform Intel® IXP400 Software

- 1) Download the Intel® IXP400 Software Version 2.0 release and related patches from [http://www.intel.com/design/network/products/npfamily/ixp400\\_current.htm](http://www.intel.com/design/network/products/npfamily/ixp400_current.htm)
  - i) IPL\_ixp400AccessLibrary-2\_0.zip → IXP400 Software v2.0 source code
  - ii) IPL\_ixp400NpeLibrary-2\_0.zip → IXP400 Software v2.0 npe microcode
  - iii) [GPL\\_ixp400LinuxIntegrationPatch-1\\_3](#) → IXP400 Software v2.0 integration patch
  - iv) [GPL\\_ixp400LinuxEthernetDriverPatch-1\\_4.zip](#) → IXP400 Software v2.0 Ethernet driver patchFollow the instructions in [ixp400LinuxIntegrationPatch-1\\_3.readme.txt](#) and [ixp400LinuxEthernetDriverPatch-1\\_4.readme.txt](#) procedure.
- 2) Extract *IPL\_ixp400AccessLibrary-2\_0.zip* and *IPL\_ixp400NpeLibrary-2\_0.zip* to /home/test/<work>. This will generate two new folders: **ixp400\_xscale\_sw** and **ixp\_osal**.
- 3) Modify **ixp400\_xscale\_sw/buildUtils/environment.linux.sh**. Change the related path of linuxbe\_KERNEL\_DIR and IX\_XSCALE\_SW
- 4) Copy *ixp400\_eth.c* to linux/drivers/net.
- 5) Copy *ixp465LinuxKernel-BE-1\_3.patch* and *ixp400LinuxEthernetDriver-1\_4.patch* to <linux> folder and issue the following command:  
**patch -p1 < ixp465LinuxKernel-BE-1\_3.patch**  
**patch -p1 < ixp400LinuxEthernetDriver-1\_4.patch**
- 6) Apply IXDPG465 patch:
  - i) Copy *ixdpg465\_accesslibrary2.0\_1.0.1.patch* to <work>.  
**cd <work>**  
**patch -p0 < ixdpg465\_accesslibrary2.0\_1.0.1.patch**
  - ii) Copy *ixdpg465\_edd\_1.4\_1.0.2.patch* to linux/drivers/.  
**cd <work>/<linux>/drivers/**  
**patch -p0 < ixdpg465\_edd\_1.4\_1.0.2.patch**
- 7) Build IXP400 software:
  - i) Edit linux source path and **ixp400\_software** path in *environment.linux.sh*. Make sure **IX\_DEVICE=ixp46X**, **IX\_PLATFORM=ixdp46x** in <work>/ixp400\_xscale\_sw/buildUtils/environment.linux.sh.
  - ii) Issue command:  
"source <work>/ixp400\_xscale\_sw/buildUtils/environment.linux.sh".
  - iii) cd <work>/<linux>. Issue "make menuconfig" → "System Type" → Build IXP400 Access Library to be checked.
  - iv) "Network device support" → Ethernet (10 or 100Mbit) → "Intel IXP400 Ethernet Device support" to be checked.
  - v) cd <work>/linux,  
"make", then "make modules".
  - vi) cd <work>/ixp400\_xscale\_sw,  
"make modules IX\_INCLUDE\_MICROCODE=1".
  - vii) You can get ixp400.o and ixp400\_eth.o.