Intel® Internet Exchange Architecture Software Development Kit

Tools Getting Started Guide

November 2003

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Revision History

Date	Revision	Description
November 2003	002	Intel® Internet Exchange Architecture Software Development Kit Tools 3.5 Pre-Release 2
September 2003	001	Intel® Internet Exchange Architecture Software Development Kit Tools 3.5 Pre-Release 1

About This Publication 1

This publication, the *Intel® Internet Exchange Architecture Tools Getting Started Guide* provides an overview of the Intel® Internet Exchange Architecture Software Development Kit (Intel® IXA SDK) and various IXP2XXX product line architectures.

1.1 Audience

This publication is intended for software developers who will design, develop, and deliver network applications that must process packets at high speed. It assumes that you are familiar with real-time network applications.

1.2 Other Sources of Information

This manual is part of the Intel® Internet Exchange Architecture Software Development Kit (Intel® IXA SDK) documentation set.

The Tools CD contains the following documents:

- *Intel® Internet Exchange Architecture Software Development Kit Tools Installation Guide*

  This document provides installation procedures for the Tools CD and information about setting up and configuring development environments for advanced development platforms. Refer to Chapter 2, "Advanced Development Platforms" for information about advanced development platforms.

- *Intel® Internet Exchange Architecture Optimized Data Plane Libraries Reference Manual*

  This manual provides details about the API for the following data plane libraries:

  — Hardware Abstraction Layer

  — Utilities

  — Protocol

- *Development Tools User's Guide*

  This guide provides details about the development tools that are included on the Tools CD.

- *Intel® IXP2400/IXP2800 Programmer's Reference Manual*

  This manual provides details of the symbolic instruction set of the IXP2400 network processor and the IXP2800 Network Processor as well as details of features with information specific to each processor: its DRAM, its Media and Switch Fabric (MSF) Interface, and their register maps.

- *IXP2400/IXP2800 Intel XScale® Support Libraries Reference Manual*

  This manual provides details about development tools API and Intel XScale® core libraries.

- *IXP2400/IXP2800 Microengine Compiler LIBC Library Reference Manual*

  This manual provides details on the implementation of the standard C library LIBC including exceptions in its functions.

- *IXP2400/IXP2800 Microengine C Compiler Language Support Reference Manual*

  This manual provides details of the subset of the C language supported by the Intel® Microengine C Compiler and the extensions to the language to support the unique features of the Intel® IXP2400 Network Processor and Intel® IXP2800 Network Processor.

- *Intel® IXA SDK Tools Release Notes*

  The Release Notes contain restrictions and late-breaking information about the Intel® IXA SDK Tools.

- *Intel® IXP2400 Hardware Reference Manual*
- *Intel® IXP2800 Hardware Reference Manual*
- *Assembly Language Coding Standards*
- *Micro C Coding Standards*

The Firmware and Drivers CD contains the following documents:

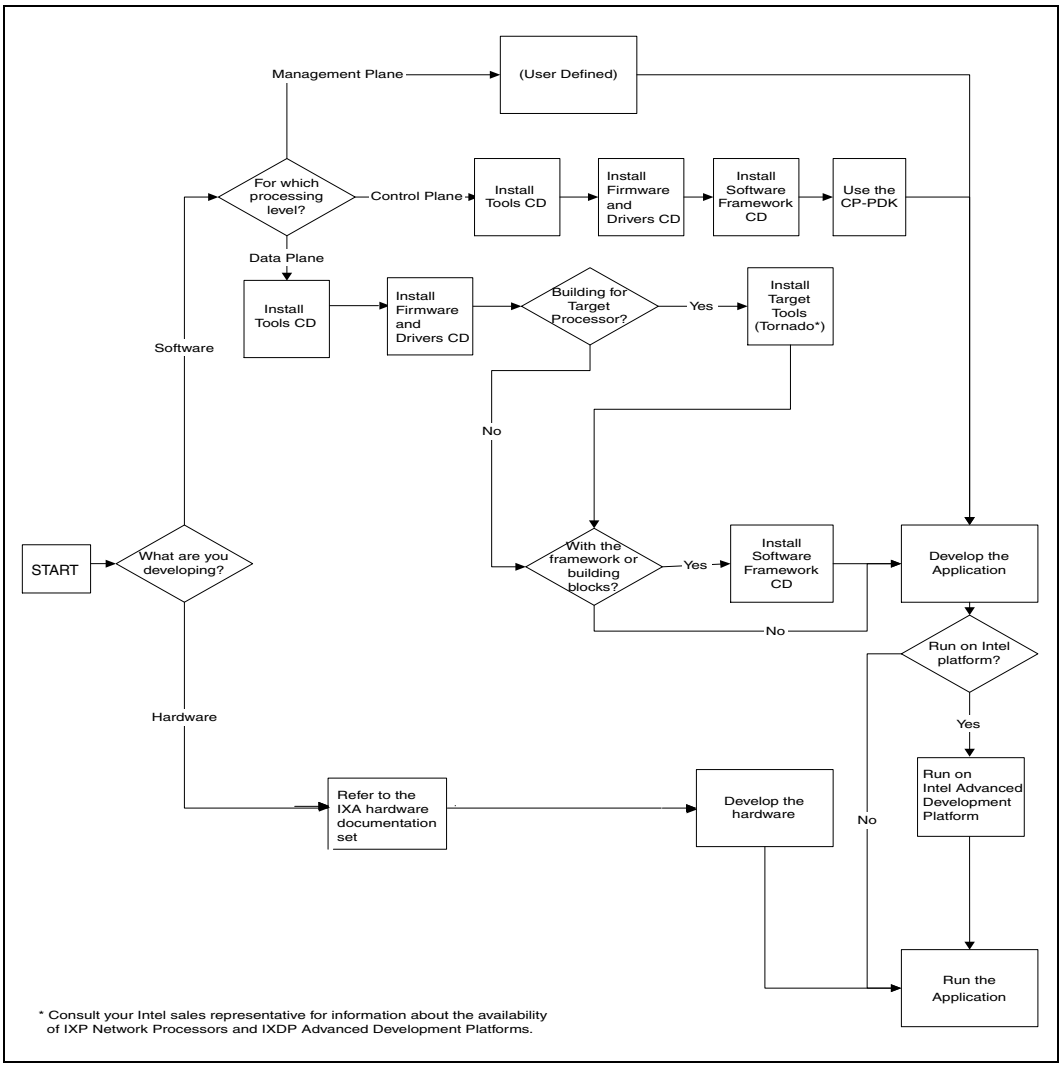
- *Intel® IXDP2400/Intel® IXDP2800 Advanced Development Platform I/O Card Driver API Developer's Manual*

  This manual describes add-on media card device driver APIs for the Intel ® IXDP2400 and IXDP2800 advanced development platforms. Media card driver development information for VxWorks and Linux operating systems is included.

- *Intel® IXDP2800 Firmware Release Notes*

Introduction 2

The following flowchart presents the use of top-level development products available for the Intel® IXP2400 Network Processor and the Intel® IXP2800 Network Processor:



2.1 Software Development Kit

The following Software Development Kit (SDK) products are available:

- Intel® IXA SDK Tools CD

- Intel® IXDP Firmware and Drivers CD (included with the Tools CD)
- Intel® IXA SDK Software Framework CD including CP-PDK (separately orderable)

The complete Intel® IXA SDK provides facilities for application development on the Intel® IXP2400 network processor and the Intel® IXP2800 network processor. The architecture makes it possible to divide processing into three planes: data, control, and management.

The data plane is where packets are received, given normal or exception processing, and transmitted to a fabric or network. Data plane applications are written in either microcode or Microengine C. If your efforts deal with software that does this work, install the Intel® IXA SDK Tools CD, the Intel® IXDP Firmware and Drivers CD (for developing with the Intel® IXDP2400 Advanced Development Platform or Intel® IXDP2800 Advanced Development Platform) and the Intel® IXA SDK Software Framework CD. The Tools CD provides support for microcode and/or Microengine C development.

If your efforts include development for a specific target operating system, install the tools for that target OS (for example, Tornado*).

Although neither the Intel® IXA SDK portability framework nor the software building blocks are strictly necessary for application development, they can reduce time-to-market in many ways. For example applications and documentation on using the portability framework/software building blocks to develop customized applications, install the (separately orderable) Intel® IXA SDK Software Framework CD.

Note: Refer to the *Intel® Internet Exchange Architecture Software Development Kit Software Framework Getting Started Guide* for an overview of the Intel® IXA SDK Software Framework CD.

The control plane is where protocol stacks are handled -- for example, for exception processing beyond the Intel XScale® core. If your efforts deal with software that does this work, install the Intel® IXA SDK Software Framework CD. The Software Framework CD installs the Control Plane Platform Development Kit (CP-PDK).

Note: The CP-PDK supports the Intel® IXDP2400 Advanced Development Platform only.

The management plane is where the network processing application is started and where the user interface is handled. This part of the system is entirely up to the designers and is outside the scope of the products offered for the IXP2XXX product line architecture. However, acquaintance with the capabilities of the products will help with designs.

2.2 Advanced Development Platforms

The Advanced Development Platforms are high-performance systems used by developers for the design and verification of network processors. The advanced development platform is also used to evaluate the performance of the network processors. When used with the Intel® Internet Exchange Architecture Software Developers Kit (Intel® IXA SDK), it allows in-depth testing to validate data paths, device functionality, system functionality, device driver behavior, and the board support package software.

The following advanced development platforms are offered:

- Intel® IXDP2400 Advanced Development Platform

- Intel® IXDP2401 Advanced Development Platform
- Intel® IXDP2800 Advanced Development Platform

With each development platform, you get the associated System User's Manual, which contains information on setting up the platform to run network applications.

The *Intel® Internet Exchange Architecture Software Development Kit Tools Installation Guide* provides procedures for connecting the development host to the advanced development platform.

The *Intel® Internet Exchange Architecture Software Development Kit Software Framework Getting Started Guide* contains procedures for running example applications on the advanced development platforms.

2.3 Additional Information

Additional information can be found from the following sources:

- Network processor data sheets. Consult your Intel representative for the following data sheets:
  - Intel® IXP2400 Network Processor Data sheet
  - Intel® IXP2800 Network Processor Data sheet
- Intel IXA® Developer's Network
  http://www.intel.com/design/network/devnet/index.htm
- Advanced Development Platform Software download page
  http://www.intel.com/design/network/products/software/
- Network Processing Forum
  http://www.npforum.org/
- IETF ForCES
  The Forwarding and Control Element Separation (ForCES) Working Group is part of the Internet Engineering Task Force (IETF).
  - Charter page at http://www.ietf.org/html.charters/forces-charter.html
  - Supplemental home page at http://www.sstanamera.com/~forces/