

# Getting Started with the IBM 6x86 Microprocessor



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## *Application Note*

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Revision Summary: This is the initial release of this Application Note.



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## Introduction

This application note is addressed to system and system board designers as well as to Field Application Engineers (FAEs) and any one responsible for bringing up and optimizing a personal computer system based on the IBM 6x86 microprocessor. This note is intended to provide you with an overview of the steps involved and to point you to the documents that contain the detailed information for each.

In any system, the overall performance is determined by the configuration of the BIOS, the chipset, the processor and surrounding hardware. In order to achieve high performance, it is important to optimize each of these. Even before optimizing performance, though, it is sometimes necessary to make modifications to the board and the BIOS in order to simply get the system to boot correctly. This application note will step you through the initial system bringup and optimization.

Caution: In all cases you should consult the IBM 6x86 BIOS Writer's Guide and the errata notice that applies to your hardware revision level before enabling or disabling any performance related features.

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## Overview

Most boards support the Intel\*\* Pentium\*\* processor, so begin by booting with this processor to ensure that the board itself functions correctly. Next replace the Pentium processor with an IBM 6x86 processor and set the jumpers appropriately. Jumper settings for the IBM 6x86 processor should be readily available for a board designed for this processor, but may require some ingenuity if the board only supports the Intel Pentium processor. The flowchart in Figure 1 contains pointers to documents that will be helpful in this and other steps.

For all boards the remainder of the process is the same. Verify that the processor works at its rated supply voltage and boots to the BIOS screen. If it doesn't reach the BIOS screen, recheck the jumper settings, all peripherals and all connections. After making the appropriate BIOS settings, continue booting to DOS.

If you cannot get to DOS, selectively disable BIOS settings until you can boot DOS. Once DOS is functioning, you can proceed with performance tuning and enhancement using PUZZLE.EXE and other, more sophisticated benchmark programs.

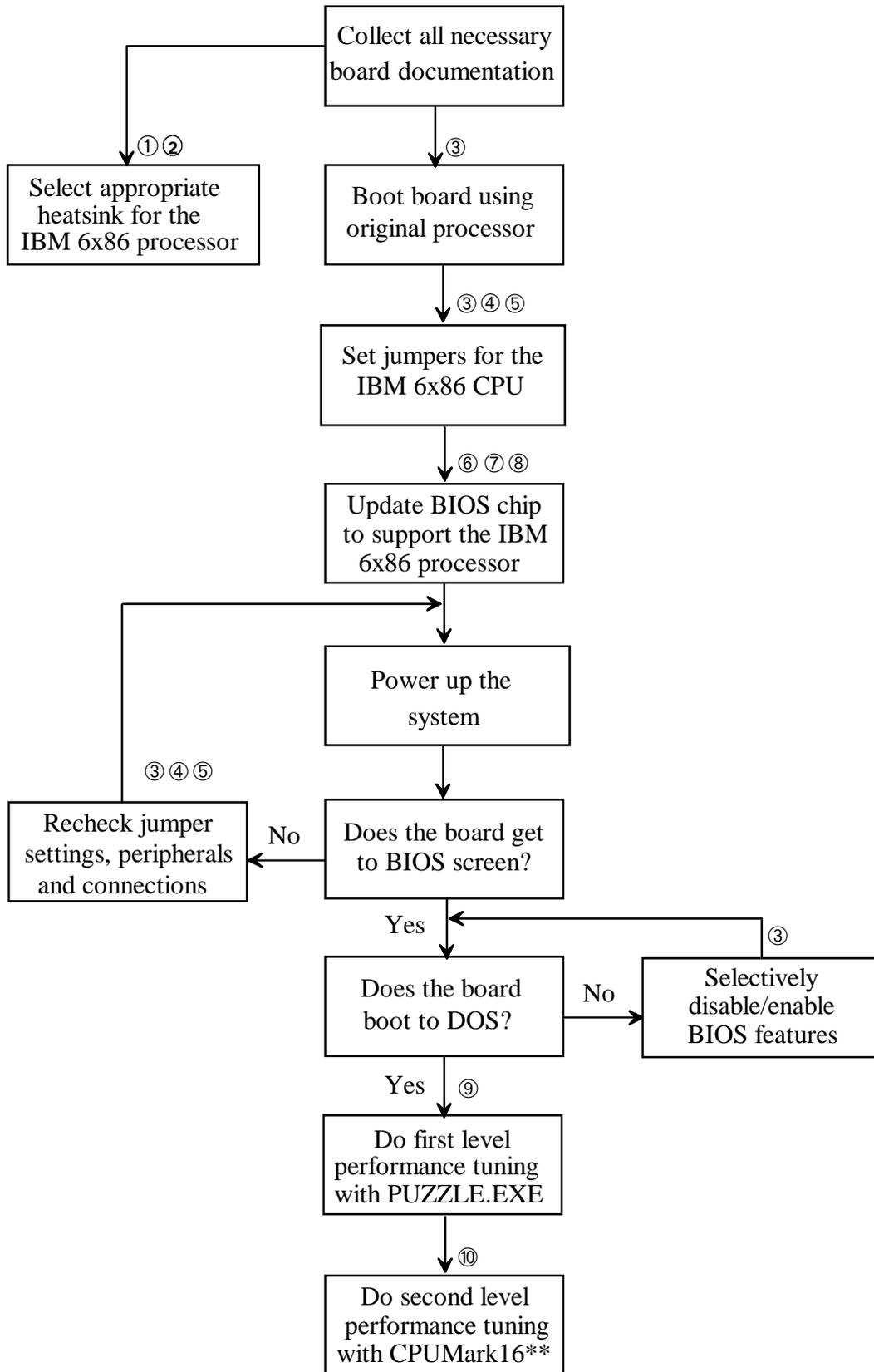
If, at any point, you are unable to proceed in this process, contact your FAE for further assistance. In some cases it may be necessary to return the board to IBM Microelectronics for detailed analysis and debugging.

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## Other Considerations

Most boards will need a BIOS update to take full advantage of the 6x86 processor's functions and performance capabilities. A guide to sources for these updates is provided in Reference 8.

All applications will require a heatsink. Reference 2 lists some possible sources.



**Figure 1. Flowchart for getting started with the IBM 6x86 processor.**

Circled numbers in the flowchart indicate documents listed under "References."

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## References

The documents in the following list are referenced by number in the flowchart on the preceding page. Documents identified by a Fax # may be obtained by dialing the IBM fax service at **(415) 855-4121** or on the WorldWideWeb at <http://www.chips.ibm.com/products/x86/doclist.html>.

1. Fax #40209 "Selection of Appropriate Thermal Solution for the IBM 6x86 Microprocessor"
2. Fax # 40214 "Heatsink and Fan/Heatsink for the IBM 6x86 Microprocessor"
3. The user's guide and schematic for the system board
4. Fax #40204 "Guide for Adapting Intel Pentium Processor Design for the IBM 6x86 Microprocessor"
5. *IBM 6x86 Microprocessor Databook*
6. Fax #40205 "IBM 6x86 Microprocessor BIOS Writer's Guide"
7. Fax #40218 "Appendixes for the IBM 6x86 Microprocessor BIOS Writer's Guide"
8. Fax #40217 "Solution Pak for the IBM 6x86 Microprocessor"
9. Fax #40206 "Optimizing IBM 6x86 Microprocessor-Based Systems Using PUZZLE.EXE"
10. Fax #40207 "Optimizing IBM 6x86 Microprocessor-Based Systems Using CPUmark16"

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