



Provit IPCs

Benchmarks

Version: 1.1
Model Number: –

We reserve the right to change the contents of this manual without warning. The information contained herein is believed to be accurate as of the date of publication, however, Bernecker + Rainer Industrie-Elektronik Ges.m.b.H. makes no warranty, expressed or implied, with regards to the products or the documentation contained within this book. Bernecker + Rainer Industrie-Elektronik Ges.m.b.H. shall not be liable in the event of incidental or consequential damages in connection with or arising from the furnishing, performance or use of these products.

The software names, hardware names and trademarks used in this document are registered by the respective companies.



1 Version Information

Version	Date	Remark	Author
1.0	11. 8. 2000	Document created	BRP
1.1	17. 8. 2000	Some layout changes	BRP

Table 1: Version Information



2 Table of Contents

1 Version Information	2
2 Table of Contents	3
3 General Information	4
4 Test Systems	5
4.1 Configuration	6
4.2 Benchmarks	6
5 General Overview	7
5.1 Hard Disk Benchmark	7
5.2 CPU Benchmark	9
5.3 Graphics Benchmark	10
5.4 Application Benchmark	11
6 CPU Comparison	12
6.1 CPU Benchmark	12
6.2 Application Benchmark	13
7 RAM Comparison	14

3 General Information

WinBench 99 and WinStone 99, benchmark software packages published by Ziff-Davis (www.zdbop.com) are used to test performance levels of Provit Industrial PCs.

WinStone99 is an application based benchmark which determines the overall performance of a PC in executing standard 32 bit applications.

Microsoft Office 97, MicroStation SE and Microsoft Visual C++ 5.0 are used in this test. Various functions within these applications are executed with the help of scripts.

The time the PC needs to process these scripts allows you to determine performance levels which are representative of those that would actually occur in real situations. This is because the test requires similar amounts of processor, memory, hard disk and graphics performance and therefore many actual situations and tasks are covered.

In contrast to WinStone99, WinBench99 is a benchmark tool that works on a sub system level. It tests the specific performances of the individual system's components e.g. graphic controller, CPU or hard disks.



The results supplied from WinBench and WinStone respectively, are comparative values. In the form shown here, these results allow no exact representation of units (e.g. MB/s).

4 Test Systems

Most of the Provit IPC product line as well as two comparable Compaq branded PC's are used in the test:

PC	CPU	DRAM	VGA-Controller
IPC2001	AMD 486-DX5 133MHz	8MB	Chips & Technologies 65550, 2MB RAM
IPC2001	AMD 486-DX5 133 MHz	32MB	Chips & Technologies 65550, 2MB RAM
IPC5000	Intel Pentium 100MHz	32 64	Chips & Technologies 65550, 2MB RAM
IPC5000	Intel Pentium 166MHz	32 64 128	Chips & Technologies 65550, 2MB RAM
IPC5000	Intel Pentium 200MMX	32 64	Chips & Technologies 65550, 2MB RAM
IPC5000	AMD K6 266MHz	64 128	Chips & Technologies 65550, 2MB RAM
IPC5000C	Intel Celeron 300MHz	64 128	Chips & Technologies 69000, 2MB RAM
IPC5000C	Intel Celeron 366MHz	64 128	Chips & Technologies 69000, 2MB RAM
IPC5000C	Intel Celeron 366MHz	64 128	Chips & Technologies 69030, 4MB RAM
IPC5000C	Intel Celeron 433MHz	64 128	Chips & Technologies 69000, 2MB RAM
IPC5000C	Intel Celeron 566MHz	64 128	Chips & Technologies 69000, 2MB RAM
IPC5000C	Intel Celeron 566MHz	64 128	Chips & Technologies 69030, 4MB RAM
IPC5000C	Intel Pentium III 600MHz	64 128	Chips & Technologies 69000, 2MB RAM
Compaq DeskPro 2000	Intel Pentium 166MHz MMX	32 64	S3 Trio64V2, 1MB RAM
Compaq DeskPro EP	Intel Pentium III 450MHz	64	Matrox Millenium G200, 8MB RAM

Table 2: Test Systems

4.1 Configuration

A Toshiba hard disk MK2110MAT UDMA33 with a size of 2.1GB, is used in the test. Microsoft Windows NT 4.0 Workstation with Service Pack 5 (Build 1381), as well as the benchmarks tools WinBench99 and WinStone99 are installed on a 2GB FAT16 partition.

Graphic resolution amounted to 800x600 pixels with 16 bit color (with the exception of the IPC2001 system 640x480, 16 bit) and the following driver versions were used:

Graphic Controller	Driver Version
Chips & Technologies 65550	1.3.3
Chips & Technologies 69000	1.3.3
Chips & Technologies 69030	2.3.9
S3 Trio64V2	x.x
Matrox Millenium G200	4.13.050

Table 3: Graphic driver versions

4.2 Benchmarks

The following tests were carried out within WinBench and WinStone respectively:

- WinBench 99/Business Disk WinMark 99
- WinBench 99/CPUmark 99
- WinBench 99/DirectDraw/Animate Blt
- WinBench 99/DirectDraw/Animate Clipped
- WinBench 99/DirectDraw/Animate Full Screen
- WinBench 99/DirectDraw/Animate Memory, Source in system, Work area in system
- WinBench 99/DirectDraw/Animate Memory, Source in video, Work area in video
- WinBench 99/DirectDraw/Animate Windowed
- WinBench 99/DirectDraw/Fill Color Depth, 16 bit color
- WinBench 99/Disk Access Time
- WinBench 99/Disk CPU Utilization (Percent Used)
- WinBench 99/Disk Playback/Bus:Overall
- WinBench 99/Disk Transfer Rate:Beginning
- WinBench 99/Disk Transfer Rate:End
- WinBench 99/GDI Playback/HE/MicroStation SE MP
- Winstone 99/Business/Microsoft Office 97:Winstone 99 scores
- Winstone 99/High-End/MicroStation SE:Winstone 99 scores
- Winstone 99/High-End/Visual C++ 5.0:Winstone 99 scores

Therefore it is clear that the main focus was placed on the criteria of the hard disk, graphics, CPU and applications performance and the subsequent measured values are arranged according to these criteria.

5 General Overview

5.1 Hard Disk Benchmark

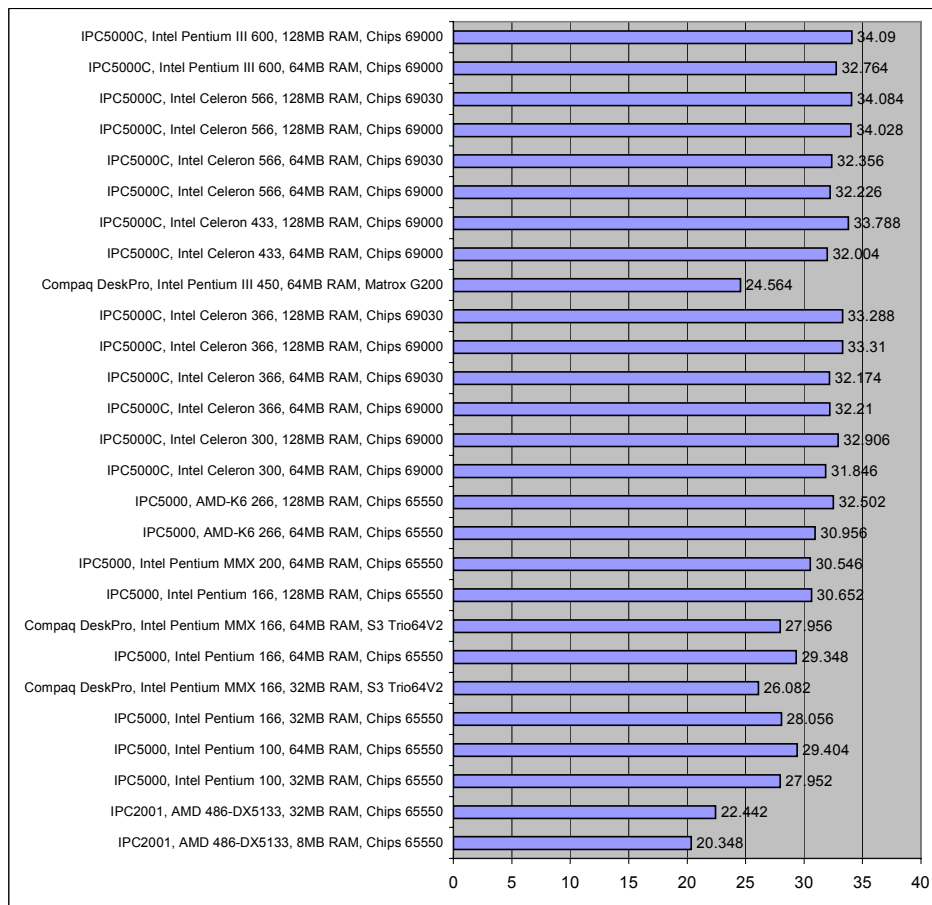


Diagram 1: Hard disk benchmark, all systems



The results contain the following data:

- Rate of data transfer
- Access time
- Load on the CPU with hard disk access
- WinBench Disk WinMark99 (performance test with the help of application programs)

Regardless of which PC was used, the hard disk had the following parameters :

Rate of data transfer: Approx. 4.6 MB/s
Access Time Approx: 20.6 ms

Measurement: Sequential and random readings and writing with different block sizes.

5.2 CPU Benchmark

The CPU performance was determined with the help of WinBench CPUMark99.

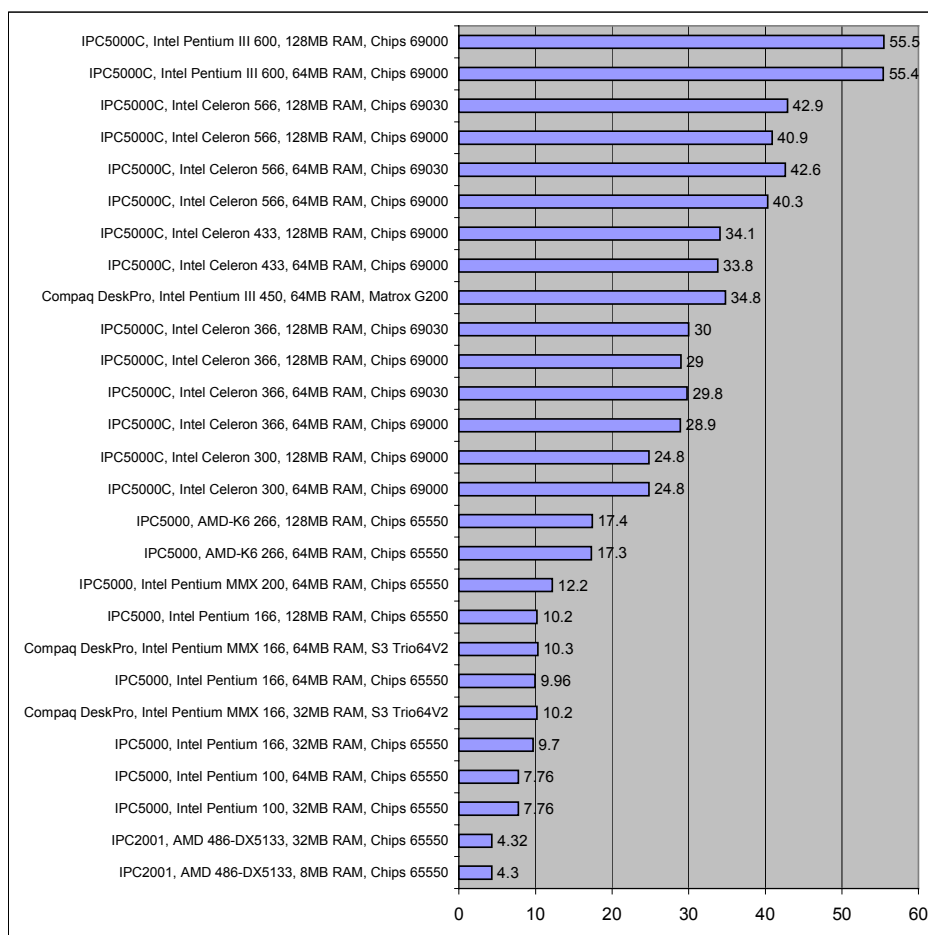


Diagram 2: CPU Benchmark, all systems

5.3 Graphics Benchmark

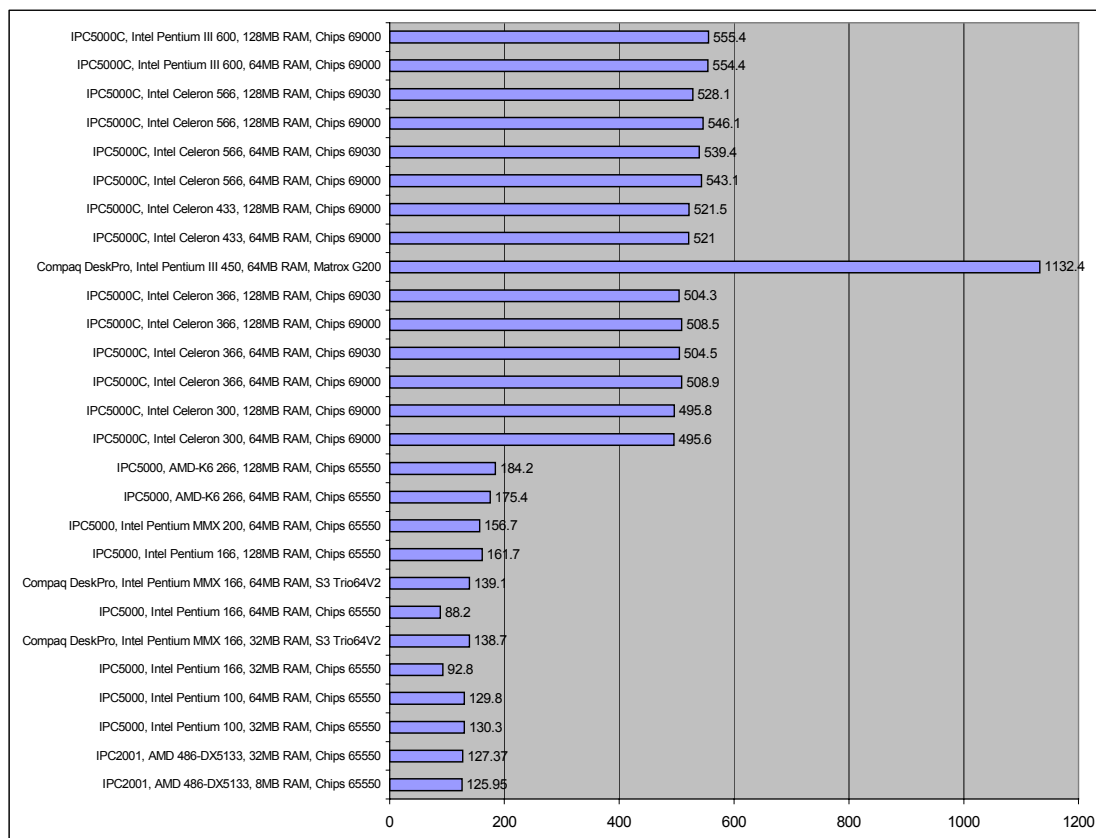


Diagram 3: Graphic Benchmark, all systems

The graphic controller benchmarks were carried out with a 800x600 pixel resolution and a 16 bit color (with the exception of IPC2001: 640x480, 16 bit).

The 2D performance was measured with various graphic operations using the DirectDraw interface.

5.4 Application Benchmark

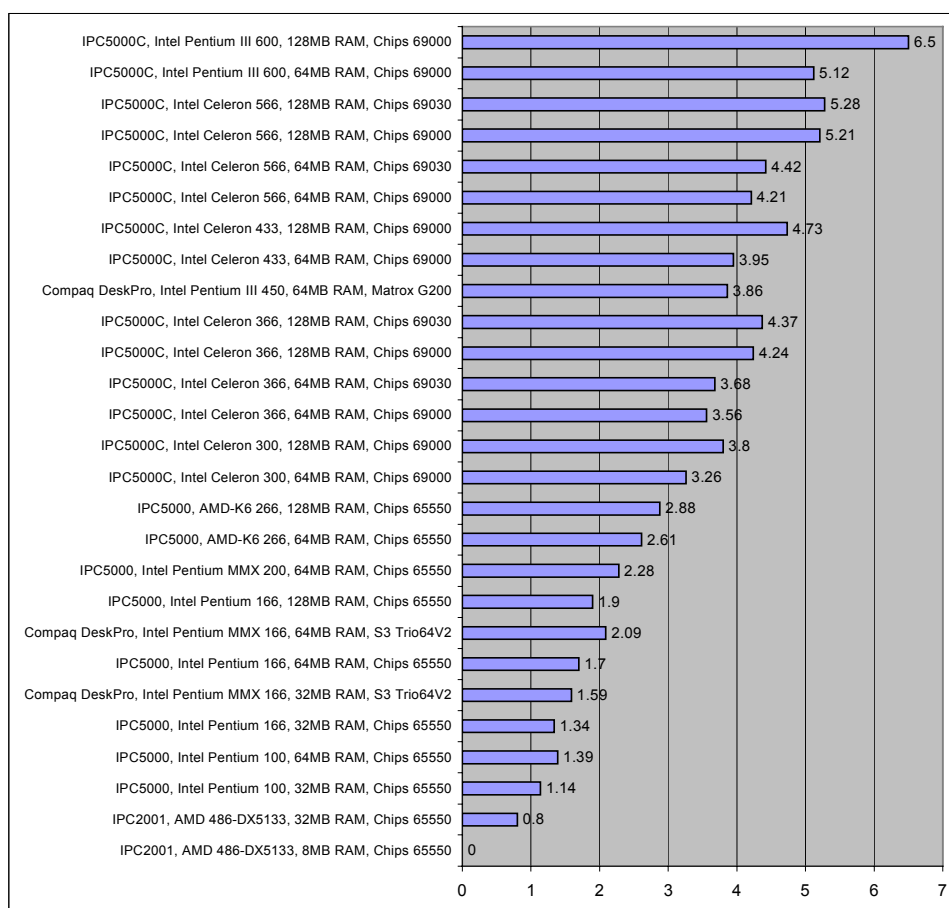


Diagram 4: Application Benchmark, all systems

WinStone99 is an application based benchmark which determines the overall performance of a PC in executing standard 32 bit applications.

Microsoft Office 97, MicroStation SE and Microsoft Visual C++ 5.0 are used in this test.

6 CPU Comparison

The following diagrams allow a direct comparison of the different CPUs.

6.1 CPU Benchmark

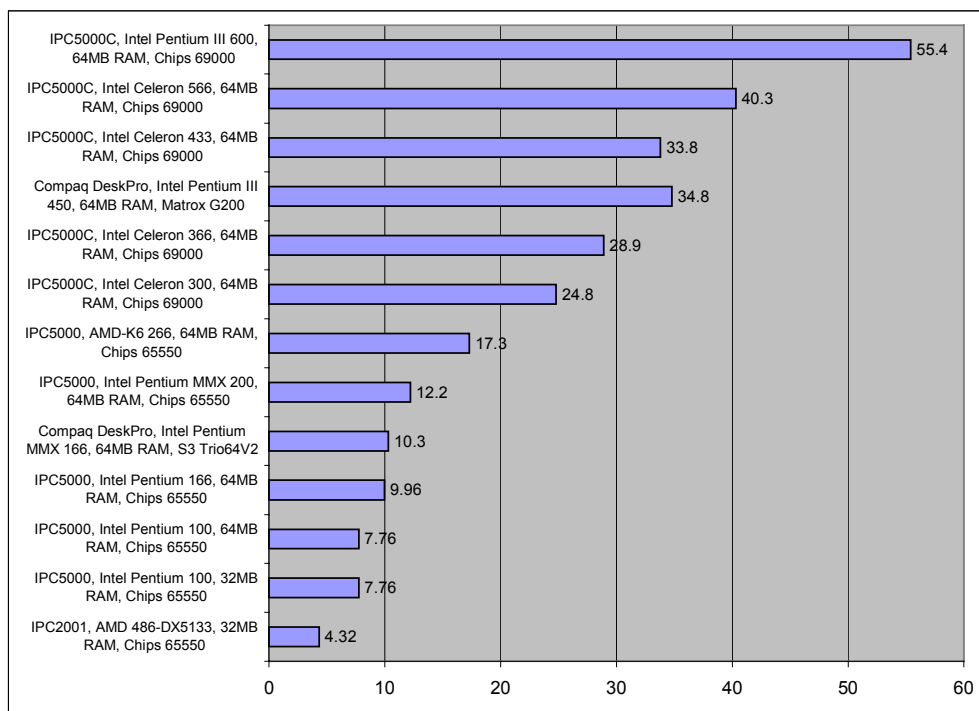


Diagram 5: CPU Benchmark, CPU Comparison

The values shown in this diagram refer to pure CPU performance. The improvement of overall performance through a faster CPU is evident from the following diagram:

6.2 Application Benchmark

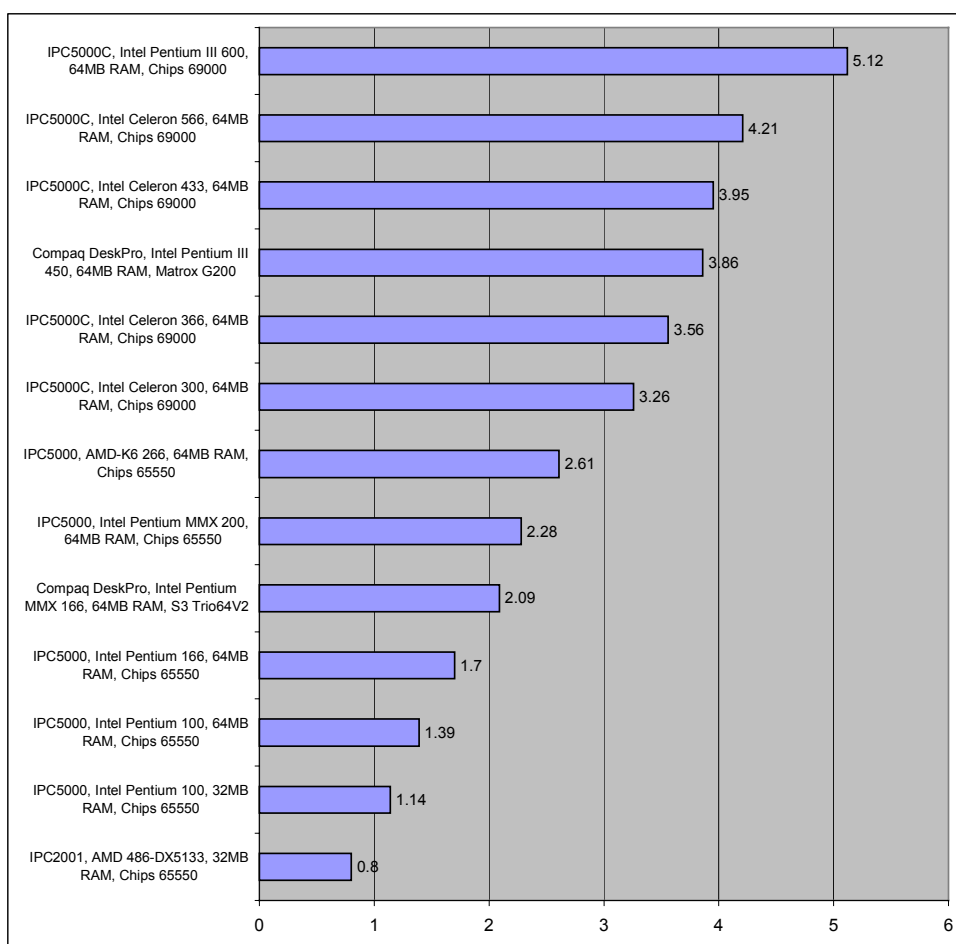


Diagram 6: Application Benchmark, CPU Comparison

7 RAM Comparison

From the following diagram it is evident that doubling the working memory enhances the performance of the overall systems by approx. 20%.

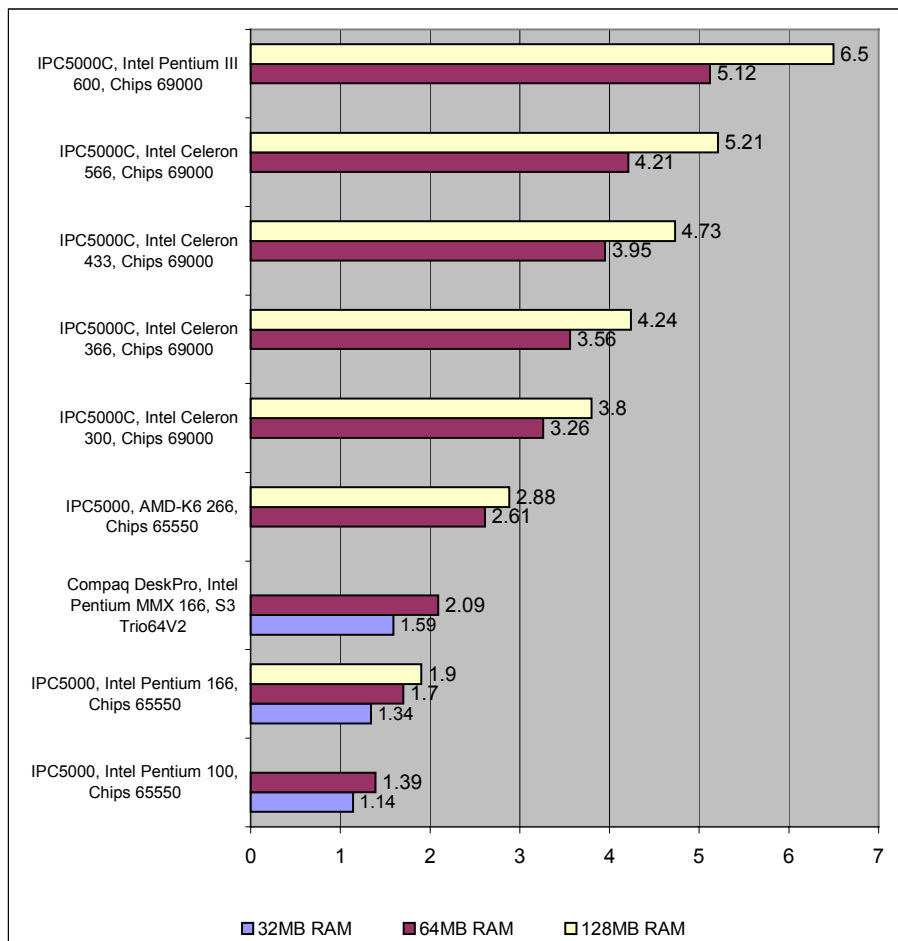


Diagram 7: Application Benchmark, RAM Comparison

