What is the Price of Productivity?

Don’t pay more than you need to

To help ensure the computers they purchase meet their needs, many organizations look to benchmark scores when evaluating systems. Benchmark scores might provide a yardstick to measure the raw speed at which computers perform certain tasks but they don’t truly demonstrate how long it will take users to complete a real-world workload. The fact is that under real-world conditions, the actual difference in the time comparably equipped computers may perform everyday, real-world tasks may be extremely minimal – one second or even less.

When it comes to purchasing PCs, buyers should take into account a variety of factors, including:

- System price
- Security
- Reliability
- Management
- Ease of deployment
- Performance

For performance, AMD recommends purchasers base their decision on the time it takes to execute a productivity script running applications the typical workforce uses most and not rely on artificial benchmark scores. Whether an individual purchaser or a procurement manager purchasing for a larger organization, the goal is to avoid overpaying as much as $196 per system for a mere half-second or less of performance.1

SYSmark, also referred to by its full name SYSmark® 2007 Preview, is a standard capacity planning tool widely used to gauge the peak capacity of a PC. It uses sophisticated workloads to measure the PC’s maximum capacity doing certain real-world applications (it would cost a user as much as $7,000 to replicate the software to do this).2 To the extent SYSmark helps governments, educators and commercial enterprises compare high-performance PCs to judge value for money, it can serve as a valuable tool. Many governments have standardized on SYSmark as their performance evaluation tool and some specifically mandate its use.

It’s a standard and repeatable workload benchmark that is actually based on an index of a number of workloads combined – and that’s where the problem lies. To properly gauge peak capacity, the index actually tests applications and environments that are, for most users, unrealistic and well beyond how most of us use a PC – so SYSmark’s success as a tool has encouraged many of us to buy much more machine capacity than we actually need.

As an alternative to a performance benchmark, AMD has created a multi-tasking script designed to simulate real world usage of common productivity applications. Running this script on your PC demonstrates the limited impact maximum processor performance can have on real world workloads. View the video below to see a comparison between two systems with different maximum performance levels and the corresponding impact on real world application use.

What it Means to You

- SYSmark may measure a system’s brute force – but it may not necessarily demonstrate true comparative processor performance “at ground level”. A higher SYSmark score does not necessarily ensure better real-world productivity.
- AMD recommends users base buying decisions on a timed productivity script depicting real-world workloads, not benchmark scores.
- Often performance benchmarks, including SYSmark scores, can be of questionable reliability, even on common software and workloads used in the measurement script.
- Using a SYSmark score as a sole data point may not tell the whole story – you may not see any real world performance advantage.

The “SYSmark Tax”

Overpaying for hardware based on biased scores

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AMD encourages you to think about your workforce in user segments to buy the right systems for their needs. The chart below shows common activities and applications used by different user segments and AMD’s recommended configurations. This approach is designed to help provide you with the right performance for your workforce and to help you achieve a better value for your budget.

### AMD Recommended Buying Approach

<table>
<thead>
<tr>
<th>User Model</th>
<th>Basic/Task Worker</th>
<th>Mainstream/Knowledge Worker</th>
<th>Power User</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMD Athlon™ II N330, ATI Radeon™ HD 4250 graphics (IGP), 2GB DDR3, Microsoft® Windows® 7</td>
<td>Office Productivity, File Compression, Email, Web/Hosted Apps</td>
<td>Advanced Productivity, Content Creation, Multi-tasking Concurrent Application Usage</td>
<td>Complex Data Modeling, Flash Creation, 3D Modeling</td>
</tr>
<tr>
<td>AMD Athlon™ II B24, ATI Radeon™ HD 4200 graphics (IGP), 4GB DDR3, Microsoft® Windows® 7</td>
<td>AMD Phenom™ II X2 N650, ATI Radeon™ HD 4250 4 GB DDR3, Microsoft® Windows® 7</td>
<td>AMD Phenom™ II X4 N930, ATI Radeon™ HD 5850 graphics, 4GB DDR3, Microsoft® Windows® 7</td>
<td></td>
</tr>
</tbody>
</table>

When considering your next purchase and the competitive offerings on the market, AMD provides the following comparison processor chart to help guide your decision.

### Notebook Processor Competitive Comparisons

<table>
<thead>
<tr>
<th>Cores</th>
<th>Processor</th>
<th>Bid Equivalent</th>
<th>Processor</th>
<th>Cores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1234</td>
<td>AMD Phenom™ II X4 N/P9XX</td>
<td>Power User Complex Data Modeling, Flash Creation, 3D Modeling, CAD, Video Rendering</td>
<td>Intel Core® i5™</td>
<td>12</td>
</tr>
<tr>
<td>123</td>
<td>AMD Phenom™ II X3 N/P8XX</td>
<td>Mainstream Worker Advanced Productivity, Content Creation, Multi-tasking Concurrent Application Usage</td>
<td>Intel Core® i3™</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>AMD Phenom™ II X2 N/P6XX</td>
<td>AMD Athlon™ II X2 N/P3XX</td>
<td>AMD Phenom™ II X2 B55, ATI Radeon™ HD 4200 graphics (IGP), 4GB DDR3, Microsoft® Windows® 7</td>
<td>AMD Phenom™ II X4 B95, ATI Radeon™ HD 5850 graphics, 4GB DDR3, Microsoft® Windows® 7</td>
</tr>
</tbody>
</table>

Note: This chart illustrates competitive product placement and is not necessarily an indication of relative performance.

### Desktop Processor Competitive Comparisons

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<tr>
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<th>Cores</th>
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<tbody>
<tr>
<td>1234</td>
<td>AMD Phenom™ II X4 B9X</td>
<td>Power User Complex Data Modeling, Flash Creation, 3D Modeling, CAD, Video Rendering</td>
<td>Intel Core® i5™</td>
<td>12</td>
</tr>
<tr>
<td>123</td>
<td>AMD Phenom™ II X3 B7X</td>
<td>Mainstream Worker Advanced Productivity, Content Creation, Multi-tasking Concurrent Application Usage</td>
<td>Intel Core® i3™</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>AMD Phenom™ II X2 B5X</td>
<td>AMD Dual-Core Processor E-350 with AMD Radeon™ 6310 discrete level graphics</td>
<td>AMD Phenom™ II X2 B2X</td>
<td>AMD Dual-Core Processor E-350 with AMD Radeon™ 6310 discrete level graphics</td>
</tr>
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1. See AMD Performance Labs’ demonstration of AMD and Intel-based systems running a script of common productivity applications: http://sites.amd.com/us/business/business-solutions/government-education/ Pages/government-education.aspx#/45478. In the demonstration, the AMD Phenom™ II X2-based system completed the script in 134.50 seconds while the Intel Core i5-based system took 133.98 seconds, a difference of only 0.52 seconds. According to pricing as of 12/1/2010 the AMD-based system depicted in the demonstration costs $600 (HP.com), while the Intel-based system costs $800 (Dell.com).


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