Building an Affordable Home PC  
NVIDIA GPU Motherboard Solutions

2005 Version – November 2005

Introduction
This paper provides guidelines, recommendations, and additional resources for system builders, OEMs, ODMs, and others who want to design and deploy affordable home PCs based on NVIDIA GPU Motherboard Solutions. System manufacturers can deliver a complete computing solution for entry-level home users at affordable prices by using NVIDIA GPU Motherboard Solutions and recommendations in this paper.

NVIDIA GPU Motherboard Solutions:
Featuring NVIDIA GeForce 6 Series GPUs and NVIDIA nForce4 MCPs

If you want to build a great PC in a small form factor or for a low price, consider NVIDIA GPU motherboard solutions featuring an NVIDIA® GeForce® 6 Series graphics processing unit (GPU), an NVIDIA® PureVideo™ video processor, and an NVIDIA nForce®4 media and communications processor (MCP). This unique combination creates a single motherboard featuring a world-class Microsoft® DirectX® 9.0 Shader Model 3.0 GPU, a standard definition video processing engine, and the industry’s most highly demanded core logic solution.

The NVIDIA GeForce 6 Series of GPUs provides a groundbreaking feature set for computing, including full support for Microsoft DirectX 9.0 Shader Model 3.0, to offer unparalleled graphics effects. Delivering a revolutionary superscalar architecture and an advanced on-chip video processor, GeForce 6 Series GPUs power the ultimate PC experiences.

NVIDIA PureVideo technology is a combination of the GeForce 6 Series GPUs video processor and NVIDIA PureVideo decoder software that delivers unprecedented picture clarity, smooth video, accurate color, and precise image scaling for all standard-definition video content.

NVIDIA nForce4 MCPs include cutting-edge technology featuring NVIDIA® MediaShield™ storage, NVIDIA native 10/100 Mbps Ethernet, SATA 3Gb/s drive support, and more. NVIDIA nForce4 MCPs are designed to deliver world-class system performance.
Advantages of NVIDIA GPU Motherboard Solutions

Experience Crisp, Vibrant Video
NVIDIA PureVideo technology allows you to experience lifelike video playback on your PC. With dedicated hardware to accelerate MPEG-2/DVD as well as the new Microsoft® Windows Media® standard, your DVDs come to life! Using NVIDIA PureVideo technology, the GPU offloads video decoding from the CPU, resulting in smooth, stutter-free, standard-definition video playback.

Award-Winning GeForce 6 Series GPUs—Play the Latest Games with Microsoft DirectX 9.0 Shader Model 3.0
The NVIDIA GeForce 6100 GPUs feature a revolutionary design that delivers best-in-class performance on today’s digital media and graphics applications. The only GPUs available on a motherboard to support Microsoft DirectX 9.0 Shader Model 3.0, the GeForce 6150 and 6100 GPUs power cutting-edge effects without compromising performance.

NVIDIA MediaShield—Confidently Store Your Digital Assets
Through a simple user interface, NVIDIA MediaShield storage lets you easily manage multiple hard disk drives so you can safely store your digital assets. With support for RAID 0 and RAID 1 hard disk drive configurations, including the latest SATA 3Gb/s hard drives, MediaShield offers one of the most advanced storage solutions available for desktop PCs. MediaShield’s unique interface allows you to easily configure or modify your multidisk arrays.

Designing for NVIDIA Home PC Experience—System Configurations

CPU and Memory
NVIDIA GPU Motherboard Solutions support the latest AMD Sempron and AMD Athlon 64 series CPUs, which provide great desktop performance at affordable prices to cost-conscious consumers.

NVIDIA recommends using the combination of AMD Sempron 3200+ and 512M PC-3200 DDR RAM for entry-level Home PC.

Motherboard Form Factor
NVIDIA GPU Motherboard Solutions provide solid system performance and advanced storage solutions for every home user. It is an ideal platform for home entertainment, gaming, and media-rich business applications.

NVIDIA recommends using the standard micro-ATX form factor motherboard to build micro-tower, compact, or slim entry-level Home PCs.

Audio
NVIDIA GPU Motherboard Solutions support all the major multichannel audio (5.1, 7.1) solutions, including high-definition audio (HDA), to deliver a surround sound entertainment experience into the entry-level home PC.

NVIDIA recommends using AC97 audio for the entry-level home PC.
**NVIDIA MediaShield Storage**

MediaShield offers one of the most advanced storage solutions for desktop PCs. MediaShield’s unique interface allows you to easily configure or modify your multidisk arrays. NVIDIA recommends offering RAID 0 and RAID 1 to meet the requirements of home PCs.

NVIDIA recommends using a single 80 GB 7200 rpm IDE hard disk and let consumers choose RAID as an upgrade option.

**NVIDIA PureVideo Decoder—Optical Storage**

A recordable CD driver and DVD combo will help users record personal photos, TV shows, and other multimedia files on a CD and also enjoy the experience of DVD video playback. NVIDIA PureVideo decoder software delivers unprecedented picture clarity and smooth video playback for DVD viewing.

NVIDIA recommends using a branded CDRW/DVD combo driver for the entry-level home PCs.

**Internet Connectivity**

The NVIDIA GPU Motherboard Solutions provide high-speed internet connection through industry standard 10/100 Mbps Ethernet technology.

**Input Devices**

NVIDIA recommends using a PS2 or a USB keyboard and mouse as an input device.

**Software Applications**

The software application package is important for demonstrating the power of NVIDIA GPU Motherboard Solutions–based home PCs. NVIDIA recommends system builders include the following software categories as a basic software package. Additional software will depend on the price point of the home PC.

**Operation System:** Microsoft Windows XP Home version

**Office Productivity:**
- Microsoft Works 8
- Adobe Acrobat Reader

**Finance:** Microsoft Money 2005

**Media:**
- Microsoft Media Player 10
- RealPlayer
- Apple iTunes

**Game:**
- WildTangent Game Channel
- Selected 2D/3D game

**Nvidia Software:**
- NVIDIA nView multi-display software
- NVIDIA nTune
- NVIDIA NVMixer
- NVIDIA PureVideo DVD decoder
NVIDIA MediaShield

**Antivirus:** Symantec Norton Antivirus 2005

**Premium Application:** Adobe Photoshop Album Starter Edition

Adobe Photoshop Elements 2.0

Greeting Card Factory Deluxe
Summary of Hardware Specifications for Home PCs

The following table lists the recommended hardware configurations and options. NVIDIA strongly encourages system builders to differentiate entry-level home PCs that use a differentiated chassis design, noise and heat control, and hardware configuration.

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Other Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>AMD Sempron(TM) 3200+</td>
</tr>
<tr>
<td><strong>Core logic</strong></td>
<td>NVIDIA nForce 410</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>512 MB PC-3200 RAM</td>
</tr>
<tr>
<td><strong>Memory expansion</strong></td>
<td>2 DIMMs, up to 2 GB</td>
</tr>
<tr>
<td><strong>Graphics card</strong></td>
<td>GeForce 6100</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>17&quot; flat screen</td>
</tr>
<tr>
<td><strong>Hard disk</strong></td>
<td>80 GB ATA-133</td>
</tr>
<tr>
<td><strong>Optical driver</strong></td>
<td>CDRW/DVD (52 × 24 × 52 x+16×)</td>
</tr>
<tr>
<td><strong>Sound</strong></td>
<td>AC 97 audio</td>
</tr>
<tr>
<td><strong>Speakers</strong></td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Mouse and keyboard</strong></td>
<td>PS/2 keyboard + mouse</td>
</tr>
<tr>
<td><strong>Chassis</strong></td>
<td>Micro ATX</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>250 W</td>
</tr>
<tr>
<td><strong>Expansion slots</strong></td>
<td>(1) PCI</td>
</tr>
<tr>
<td></td>
<td>(1) PCI Express ×1</td>
</tr>
<tr>
<td></td>
<td>(1) PCI Express ×16</td>
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<tr>
<td><strong>Front productivity</strong></td>
<td>USB 2.0, audio connector</td>
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<tr>
<td></td>
<td>9-in-1 card reader</td>
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<tr>
<td><strong>Network</strong></td>
<td>10/100M</td>
</tr>
<tr>
<td><strong>Case</strong></td>
<td>Tower</td>
</tr>
<tr>
<td><strong>10/100/1000M</strong></td>
<td>Tower</td>
</tr>
<tr>
<td><strong>9-in-1 card reader</strong></td>
<td>USB 2.0, audio connector, 1394 connector</td>
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</tbody>
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