Building an Affordable SOHO 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 SOHO PCs based on NVIDIA GPU Motherboard Solutions. NVIDIA-based SOHO PCs deliver a complete computing solution for entry-level home office or small office users. System manufacturers can deliver better customer experience 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 are looking 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), 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 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

NVIDIA GPU Motherboard Solutions for entry-level SOHO PC is an all-in-one solution for cost-conscious home office consumers that delivers better customer experience.

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—Experience media-rich applications 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 SOHO 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 business consumers.

NVIDIA recommends using the combination of an 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 home office and small office systems. It is an ideal platform for media-rich business applications.

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

Audio
NVIDIA GPU Motherboard Solutions supports all the major multichannel audio (5.1, 7.1) solutions, including high-definition audio (HDA), to deliver a surround sound entertainment experience to entry-level SOHO PCs.
NVIDIA recommends using AC97 audio for the entry-level SOHO PCs.

**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 80GB 7200rpm IDE hard disk and let consumers choose RAID as an upgrade option.

**Optical Storage**

8X DVD-ROM is suitable to handle most day-to-day requirements in home office and small office environment. Recordable CD drive and DVD combo will help users easily transfer Excel sheet, PowerPoint presentation, and other data files onto CD.

NVIDIA recommends using a branded 8X DVD-ROM for the entry-level SOHO PCs and keep CDRW / DVD combo drive as an option.

**Internet Connectivity**

The NVIDIA GPU Motherboard Solutions provide high-speed internet connection through industry standard 10/100Mbps 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 SOHO PCs. NVIDIA recommends system builders to include the following software categories as a basic software package. Additional software will depend on price point.

- **Operation System:** Microsoft Windows XP Home version
- **Office Productivity:** Microsoft Works 8
  - Adobe Acrobat Reader
- **Finance:** Microsoft Money 2005
- **Media:** Microsoft Media Player 10
- **Game:** WildTangent Game Channel
  - Selected 2D/3D game
- **NVIDIA Software:** NVIDIA nView multi-display software
  - NVIDIA nTune
  - NVIDIA MediaShield
- **Antivirus:** Symantec Norton Antivirus 2005
  - SpamSubtract Basic
**Premium Application:** Adobe Photoshop Professional Edition
Adobe Photoshop Album Starter Edition
Adobe Photoshop Elements 2.0
AutoCad LT 2006
Microsoft Office 2003 Small Business Edition
FrontPage 2003 - Full Version
ScanSoft - PDF Converter Professional 3
CorelDRAW Graphics Suite 12
Executive Software Undelete Pro
Nova Development Invoices and Estimates Pro
Peachtree Complete Accounting 2005
Quicken 2005
Norton System Works 2005
Symantec Ghost
Roxio Easy Media Creator 7.1
### Summary of Hardware Specifications for SOHO PCs

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

<table>
<thead>
<tr>
<th></th>
<th>Recommends</th>
<th>Other Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>AMD Sempron(TM) 3200+</td>
<td>AMD Sempron(TM) 2800+ ~ 3300+</td>
</tr>
<tr>
<td><strong>Core logic</strong></td>
<td>NVIDIA nForce 410</td>
<td>NVIDIA nForce 410</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>512MB PC-3200 RAM</td>
<td>512MB ~ 2GB PC-3200 RAM</td>
</tr>
<tr>
<td><strong>Memory expansion</strong></td>
<td>2 DIMM, up to 2GB</td>
<td>2 DIMM, up to 2GB</td>
</tr>
<tr>
<td><strong>Graphics card</strong></td>
<td>NVIDIA GeForce 6100</td>
<td>NVIDIA GeForce 6100</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>17” Flat Screen</td>
<td>17” CRT or 15”/17” LCD</td>
</tr>
<tr>
<td><strong>Hard Disk</strong></td>
<td>P80 80GB ATA-133</td>
<td>40GB ~250GB, RAID 0,1</td>
</tr>
<tr>
<td><strong>Optical Driver</strong></td>
<td>8X DVD-ROM</td>
<td>CD-ROM or DVD/CDRW Combo</td>
</tr>
<tr>
<td><strong>Sound</strong></td>
<td>AC 97 audio</td>
<td>AC 97 audio</td>
</tr>
<tr>
<td><strong>Speakers</strong></td>
<td>Optional</td>
<td>2.1, 5.1 or 7.1 audio system</td>
</tr>
<tr>
<td><strong>Mouse and keyboard</strong></td>
<td>PS/2 Keyboard + Mouse</td>
<td>PS/2, USB or Wireless</td>
</tr>
<tr>
<td><strong>Chassis</strong></td>
<td>Micro ATX</td>
<td>Micro ATX</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>250W</td>
<td>250W</td>
</tr>
<tr>
<td><strong>Expansion slots</strong></td>
<td>(1) PCI (1) PCI Express ×1 (1) PCI Express ×16</td>
<td>(1) PCI (1) PCI Express ×1 (1) PCI Express ×16</td>
</tr>
<tr>
<td><strong>Front productivity</strong></td>
<td>1 USB 2.0, audio connector</td>
<td>1 USB 2.0, audio connector</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>10/100M</td>
<td>10/100/1000M</td>
</tr>
<tr>
<td><strong>Case</strong></td>
<td>Tower</td>
<td>Tower</td>
</tr>
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