



## INTEGRATED GRAPHICS PROCESSOR (IGP)

### Redefining System and Graphics Performance

#### nFORCE PLATFORM PROCESSING ARCHITECTURE

The NVIDIA® nForce™ Platform Processing Architecture has been designed to address the needs of today's most demanding users—all of whom expect unmatched system and memory performance, stunning 3D graphics, awesome 3D audio, and fast broadband and networking connections.

To achieve this previously unattainable level of performance and reduce overall system latency, it was necessary for NVIDIA to depart from "traditional" PC platforms and create an entirely new architecture. In redefining the PC to deliver unmatched system performance, the nForce's revolutionary new system architecture includes:

- a distributed platform processing design;
- patent-pending system, memory and networking technologies for the most efficient processing and performance;
- integrated GeForce2 3D graphics and Dolby™ Digital 3D audio.

To achieve this level of unmatched system performance, nForce is comprised of two platform processors: the nForce Integrated Graphics Processor (IGP) and the nForce Media and Communications Processor (MCP).

#### nFORCE IGP

The nForce IGP redefines system and graphics performance. The core of the nForce IGP is comprised of the TwinBank™ Memory Architecture; a Dynamic Adaptive Speculative Pre-processor™ (DASP) to help boost CPU performance; an integrated GeForce2 GPU for an uncompromised 3D visual experience; and the AMD® HyperTransport™, a high-performance I/O bus interface.

#### TWINBANK MEMORY ARCHITECTURE

TwinBank's patent-pending, dual-independent, crossbar memory controller allows the CPU and the graphics and audio sub-systems to access TwinBank's 4.2GB/sec. of memory bandwidth simultaneously, allowing users to run multiple applications concurrently, all without any performance degradation. Fully scalable, with support for DDR-266MHz system memory technologies, TwinBank delivers up to 30% more peak memory bandwidth than comparable dual-channel-based RDRAM solutions.

#### DYNAMIC ADAPTIVE SPECULATIVE PRE-PROCESSOR (DASP)

NVIDIA's DASP technology dramatically enhances CPU performance well beyond other X86 architectures—even those with substantially higher "published" core frequencies. DASP applies a patent-pending, intelligent, pre-processing technology to store application instructions and data before they are needed, substantially eliminating the bottlenecks that occur between memory and the CPU, and graphics and audio subsystems, thereby boosting overall system performance.

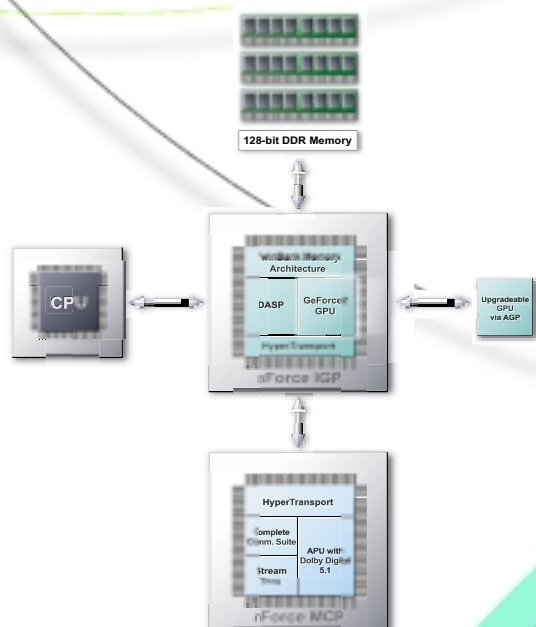


#### GEFORCE2 GPU

Transmitting huge amounts of geometry data across the AGP bus to create rich, real-time 3D images and animations consumes valuable system bandwidth. Leveraging its success in the graphics world, nForce integrates the graphics power of the award-winning GeForce2 GPU. With its second generation transform and lighting capabilities, per-pixel shading operations, a fill rate of up to 350M pixels per second and an internal 8X AGP interface, the integrated GeForce2 trounces the graphics performance of all other integrated graphics solutions. And, because the entire platform architecture is scalable, power users have the ability to override the GeForce2 with even more powerful NVIDIA GPUs, such as the GeForce3.

#### AMD HYPERTRANSPORT

With other platforms, the lagging performance of the PCI bus interface constrains overall system performance. nForce utilizes AMD's HyperTransport I/O bus to deliver the highest continuous throughput—800MB/sec. between the nForce IGP and MCP platform processors—ensuring information is relayed through the entire platform as quickly as possible.





## IGP FEATURES

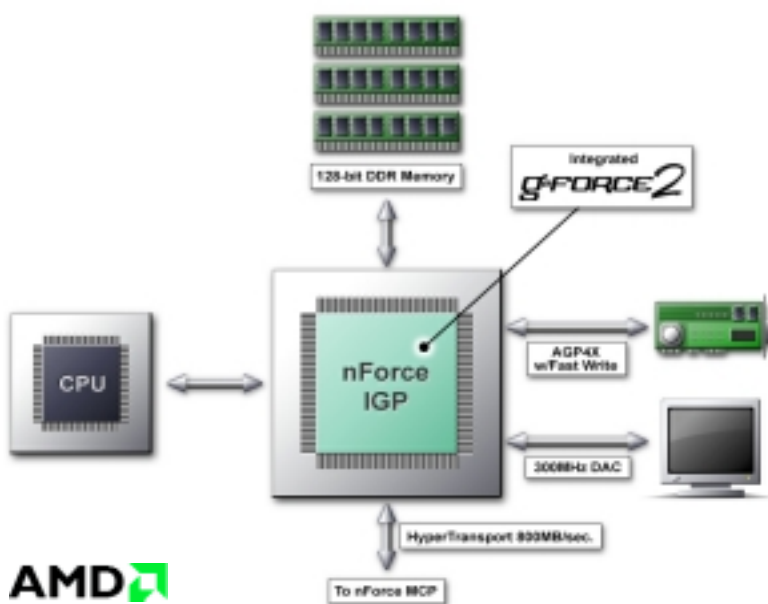
- TwinBank Memory Architecture
  - Integrated 128-bit Memory Controller
  - Concurrent Simultaneous Access for IGP, MCP, and CPU
  - Supports 2.5V, 133/100MHz (266/200MHz) DDR SDRAMs
  - Supports 3.3V, 133/100 SDR SDRAMs
  - Supports 64, 128, 256, and 512Mbit x8 and x16 DRAMs up to maximum 1.5GB
  - Allows Different Speeds and Sizes Per DIMM (Unbuffered, Non-ECC)
  - Concurrent DRAM Write-back and Read-around Write
  - Software Configurable Timing and Configuration Parameters
- Dynamic Adaptive Speculative Pre-processor (DASP)
  - Enhances CPU Performance
  - 8 Way Prediction of Memory Accesses
- Integrated GeForce2 GPU
  - High-Performance Two-Pixel Pipeline
  - NVIDIA Shading Rasterizer (NSR)
  - Integrated 2nd Generation T&L Engine
  - 32-bit Color with 32-bit Z/Stencil
  - Cube Environment Mapping
  - 300MHz Palette – DAC
  - Optional External AGP4X with Fast Write
- HyperTransport™ Technology
  - High Speed (800MB/sec.)
  - Low Voltage
  - Differential
  - Low Pin Count Interface
  - Isochronous Link between IGP and MCP
- CPU Interface
  - Supports AMD Athlon/Duron CPU
  - 133/100/66 MHz FSB Clock
  - DDR266/DDR200 Support 64-byte (Cache Line) Data Burst Transfers
- TV Encoder Interface
  - Multiplexed with AGP Interface
  - Clock Speeds Up to 80MHz in Slave Mode
  - Supports 12-bit Single Clock with Dual Edge
- DVI Interface
  - Multiplexed with AGP Interface
  - Clock Speeds Up to Full DVI Spec. of 165MHz
  - Simultaneous Display with CRT
- Integrated Clock Synthesizer
  - Internal PLL's Derive All Internal and External Clocks
  - Spread Spectrum Capable on All Output (Except DVI and LDT Clocks)

## PERFORMANCE

- Dynamic Adaptive Speculative Pre-processor (DASP)
  - Enhances CPU Performance
- Integrated GeForce2
  - 350Mpixels/sec. on Two Pipelines
- External AGP4X Option with Fast Write
- TwinBank Memory Architecture
  - 128-bit DDR Simultaneous Memory Access
  - 4.2GB/sec. Peak Bandwidth
- HyperTransport Technology 800MB/sec.
- 266MHz DDR Front Side Bus Support

## QUALITY

- NVIDIA Unified Driver Architecture (UDA)
- WHQL-Certified Windows 2000, Windows NT®, Windows 98, Windows 95, and Windows ME
- Complete Linux Drivers, Including Full OpenGL



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