



VIA K8 Series Chipsets Overview

Powering the AMD64 Revolution



VIA K8 Series: Powering the AMD64 Revolution!

VIA K8T800 Chipset & AMD Opteron™ Processor



- Dual/Single Processor Servers
- Dual/Single Processor Workstations

VIA K8T800 Chipset & AMD Athlon™ 64 Processor



- Performance Desktop / Enthusiast
- Media Centers

VIA K8M800 Chipset & AMD Athlon™ 64 Processor



- Mainstream Desktop

VIA K8N800 Chipset & AMD Athlon™ 64 Mobile Processor



- Full size Mobile
- Thin & Light Mobile



Long-Term Leadership on the AMD Platform

- **Leading Chipset supplier for AMD Athlon™ XP, Athlon & Duron Processors**
 - From VIA KX133 to VIA KT600, covering the entire life span of the Athlon processor
 - First to market integration of advanced features, including PC133, DDR266, AGP8X, USB2.0, etc
 - Only chipset vendor to cover ALL market segments
 - Performance Desktop/Enthusiast
 - Server/Workstation
 - Mainstream Desktop
 - Mobile
 - Universal support of motherboard manufacturers & leading OEMs



VIA K8T800 Chipset



- **Next-generation platform for new 64-bit AMD Opteron™ and forthcoming AMD Athlon™ 64 processors**
 - World's first dual processing capable chipset with AGP
 - Powering Dual/Single Opteron Workstations & Servers
 - AMD Athlon 64 Ready!
 - Performance Desktops & Enthusiast PCs
 - Media Center PCs
- **Hyper8 Technology**
 - Enables only full-speed, full-spec 16-bit/1.6GHz HyperTransport™ CPU to Chipset link on AMD64 platform
- **AGP8X**
 - Support for latest consumer and professional class 3D graphics processors
- **VT8237 South Bridge**
 - Native Serial ATA & V-RAID
 - VIA Vinyl Audio
 - Eight USB 2.0 ports & 10/100 Fast Et
- **Available: Now**



VIA K8M800 Chipset



- **Highly integrated platform for AMD Athlon 64 based Mainstream Desktop PCs**
 - Integrated UniChrome2™ Graphics
 - 200MHz engine
 - 8MB to 64MB UMA frame buffer
 - DuoView™
 - Full MPEG2 video decoder for perfect video performance
- **Hyper8 Technology**
 - Enables only full-speed, full-spec 16-bit/1.6GHz HyperTransport™ CPU to Chipset link on AMD64 platform
- **VT8237 South Bridge**
 - Native Serial ATA & V-RAID
 - VIA Vinyl Audio
- **Pin-to-Pin Compatible with K8T800**
 - Reduced design cycle and faster time-to-market for motherboard manufacturers
- **Sampling: Now**
- **MP: Q4**



VIA K8N800 Chipset



- **Industry's first chipset for new generation of AMD Athlon 64 mobile processor powered notebooks**
 - Full size mobile
 - Thin & Light mobile
- **Integrated UniChrome2™ Graphics**
 - 200MHz engine
 - 8MB to 64MB UMA frame buffer
 - DuoView™
 - MPEG2 video decoder for perfect video performance
- **Hyper8 Technology**
 - Enables only full-speed, full-spec 16-bit/1.6GHz HyperTransport™ CPU to Chipset link on AMD64 platform
- **Advanced Connectivity**
 - External AGP Expansion
 - USB 2.0
 - Internal / External SATA
 - 10/100 Fast Ethernet
 - MC'97 Modem
- **Sampling: Now**
- **MP: Q4**



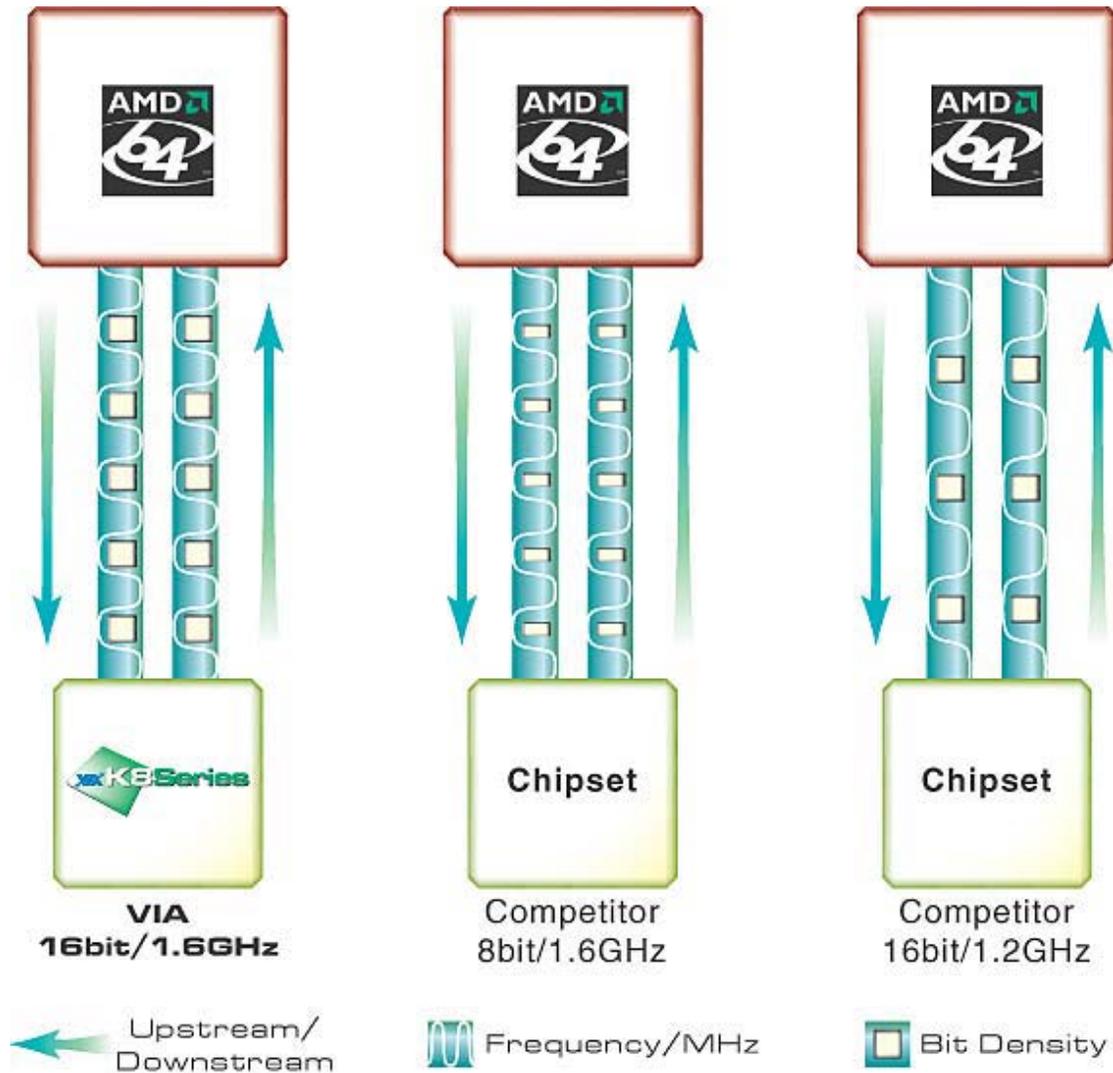
VIA Hyper8™ Technology



- **Enables industry's only full-speed, full-spec CPU to Chipset HyperTransport link**
 - Delivers only 16-bit/1.6GHz HyperTransport link available on AMD64 platform
 - Up to 6.4GB/s of system bandwidth for unparalleled performance levels and data integrity.

	Frequency	Bit Density	Total Bandwidth
VIA K8 Series	1.6GHz	16-bit	6.4GB/s
Competitor	1.2GHz	16-bit	4.8GB/s
Competitor	1.6GHz	8-bit	3.2GB/s

VIA Hyper8™ Technology



Most Scalable Platform for AMD64 Architecture

- **VIA's flexible and highly scalable architecture allows motherboard manufacturers to cover all market segments and price points**
 - **VIA Networking Gigabit Ethernet**
 - Single chip 10/100/1000 design
 - Advanced software interface
 - **VIA Vinyl Audio**
 - VIA Vinyl integrated 5.1 surround sound
 - VIA Vinyl Gold onboard 7.1 surround sound
 - **Advanced Connectivity Options**
 - VIA VT6307 1394 Controller
 - **VIA VPX2 for Servers**
 - 133MHz PCI-X support
 - Up to 12 standard PCI connections



FireWire



Industry's Most Comprehensive Portfolio of Scalable Solutions

	VIA	Nvidia	Intel
1394 Controller	✓	X	X
10/100 Ethernet (MAC & PHY)	✓	X	✓
Gigabit Ethernet (MAC & PHY)	✓	X	✓
Complete 5.1 Audio Solution (Controller + Codec)	✓	X	✓
Complete 7.1 Audio Solution (Controller + Codec)	✓	X	X
TV-Out	✓	X	X
Serial RAID Controller	✓	Not Ready	✓

VIA Motherboard Partners



More of the World's Leading Motherboard Makers
Choose VIA than any other AMD Compatible
Chipset Supplier!

VT8237 South Bridge Overview

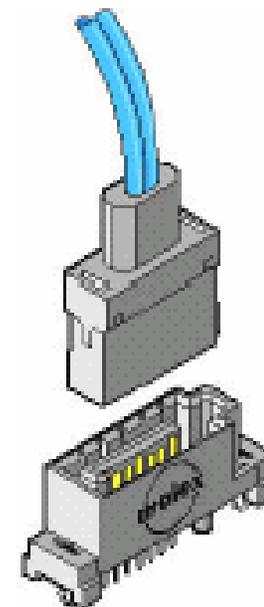


- **VIA DriveStation™ Advanced Controller Suite**
 - Serial ATA
 - High Performance 150MB/s Dual Channel Serial ATA interface
 - Extended support for additional two Serial ATA devices through SATAlite™ interface
 - V-RAID
 - Serial RAID controller
 - RAID 0, RAID 1, and RAID 0+1
 - User-friendly VIA RAID Tool software interface
 - Parallel ATA-133
 - Supports up to four PATA devices
- **VIA Advanced Connectivity Controller Suite**
 - USB 2.0 Controller
 - Support for 8 USB 2.0/1.1 ports
 - Network Controller
 - Enterprise Class 10/100Mbps Fast Ethernet MAC
 - PCI & LPC bus controllers
- **VIA Vinyl™ Audio**
 - VIA Vinyl integrated 5.1 surround sound
 - AC '97 audio
 - VIA Six-TRAC codec
 - VIA Vinyl Gold onboard 7.1 surround sound
 - 24/96 resolution audio
 - VIA Envy24PT + VIA Six-TRAC Codec + additional DAC
- **V-MAP Architecture**
 - Ultra V-Link
 - High throughput 1GB/s South Bridge/North Bridge interconnect
 - Supports new generation of VIA North Bridge options across all processor platforms
 - TwinBridge Architecture
 - Flexible, high bandwidth architecture for AMD Opteron™ & AMD Athlon™ 64 processors
 - V-Link
 - High speed 533MB/s South Bridge/North Bridge interconnect
 - Supports current generation of VIA North Bridge options across all processor platforms
 - VIA Hyperion 4in1 Unified Drivers
 - Optimized system performance and stability

VIA DriveStation: Leading the Way with Native Serial ATA



- **High Performance 150MB/s per Port Dual Channel Serial ATA interface**
 - Direct support for two SATA devices
 - Bypasses PCI Bus and flies straight to the 1GB/s Ultra V-Link chip interconnect for superior performance in the most data intensive applications
 - Unique VIA SATALite™ interface expands support to four SATA devices through external Serial ATA PHY
- **Easier Configuration**
 - Instant recognition by the Operating System for “On the Fly” installation
 - No Master/Slave configurations
 - Full Backward Parallel ATA Compatibility for seamless migration path
- **System Design Innovation**
 - Simpler cabling for improved airflow and easier system installation
 - Reduced pin-count to minimize use of valuable motherboard real estate
 - Lower power & lower voltage for smoother small form factor and low profile system design implementations



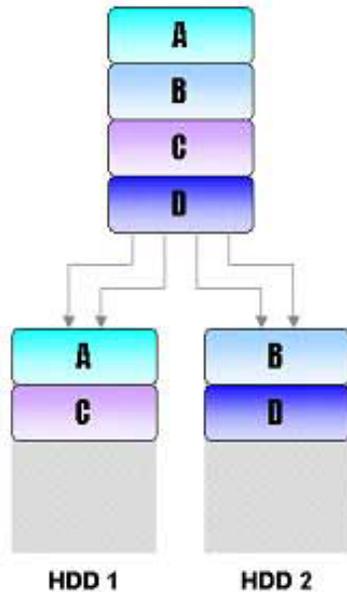


VIA DriveStation V-RAID

- **Industry's first full-featured native Serial RAID solution to be integrated into PC core logic chipset architecture**
 - Supports RAID Levels 0, 1 & 0+1¹
 - Highest HDD Data Transfer Rates for Maximum System Performance
 - Superior Fault Tolerance for Optimum Data Integrity
- **Ease of Use**
 - Easy installation and array management with user-friendly V-RAID Software Interface
 - VIA's DriveThru™ technology enables 'on-the-fly' upgrades to RAID configurations
- **Bringing RAID to the Mainstream**
 - Integrated V-RAID H/W and S/W solution reduces overall system cost
 - Easy installation and user-friendly software removes technical barriers

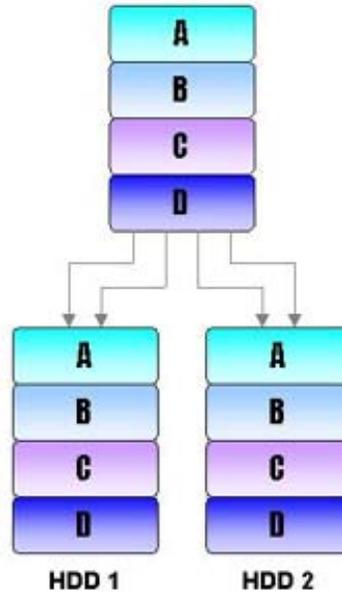
VIA DriveStation V-RAID Configurations

RAID Level 0



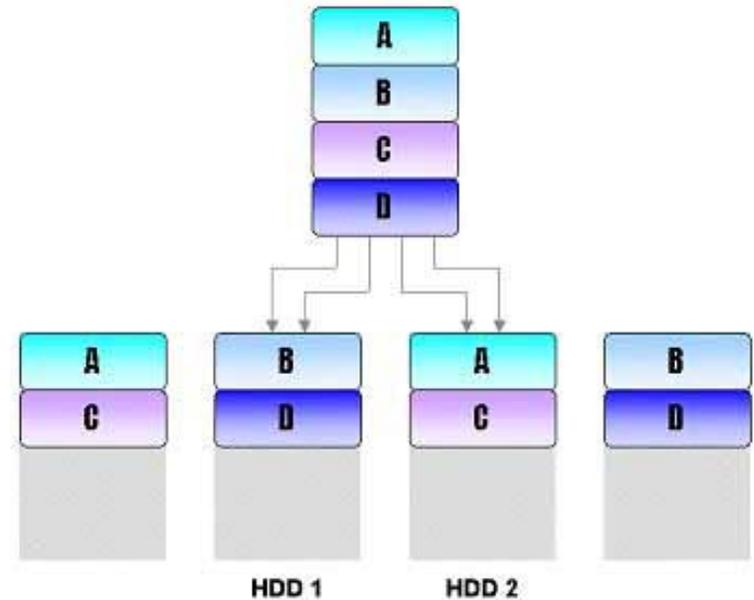
Effect: Striping
Capacity: 100%
Performance: High
Fault Tolerance: Low

RAID Level 1



Effect: Mirroring
Capacity: 50%
Performance: Normal/High
Fault Tolerance: High

RAID Level 0+1¹



Effect: Mirroring & Striping
Capacity: 50%
Performance: High
Fault Tolerance: High

VIA DriveStation V-RAID Software Interface



- **Industry-first user-friendly V-RAID software enables easy installation and array management**
 - Tricky BIOS installations are a thing of the past
 - Compatible with Windows® or Linux operating systems
 - VIA's DriveThru™ technology enables 'on-the-fly' upgrades to RAID configurations



VIA VT8237: Unmatched Support for Latest Storage Technologies

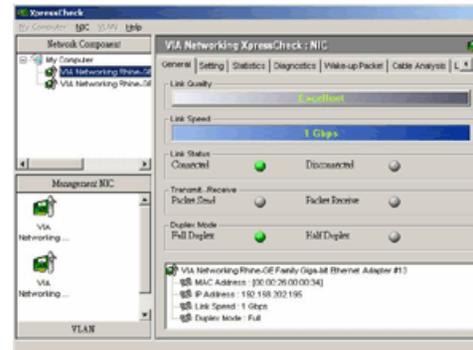
	VIA	Nvidia	Intel
Native Serial ATA	✓	Not Ready	✓
Serial ATA Ports	4 [†]	2*	2
Integrated RAID	✓	Not Ready	✓
RAID 0	✓	X	✓
RAID 1	✓	X	X
RAID 0+1	✓	X	X
JBOD (Spanning)	✓	X	X

* Requires addition of 2 Silicon Image IDE-to-SATA Bridge Chips

† VIA VT8237 supports 2 native SATA ports and 2 further ports with implementation of SATA Lite interface

VIA Networking Velocity™ Line of Gigabit Ethernet Controllers

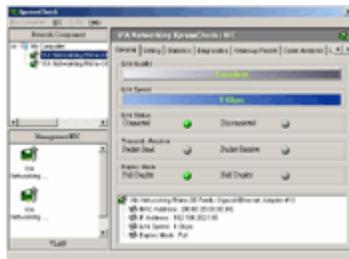
- **Only Complete Gigabit Ethernet solution offered for AMD platform**
 - Single chip 10/100/1000 design
 - Ready Now!
 - Integrated Cicada SimpliPHY™ Technology
 - Delivers superior real world Gigabit performance
 - GigaCheck™ Software Interface
 - Connection speed
 - Link Quality
 - Cable Analysis



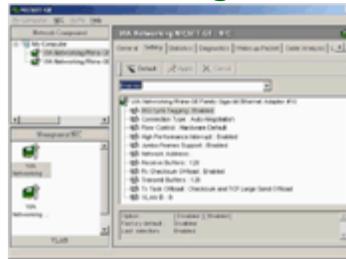
VIA Networking Velocity™: Advanced Operations Analysis

- **GigaCheck™ Software Interface**
 - Most complete Diagnostic Software Interface
 - Operates while link is running

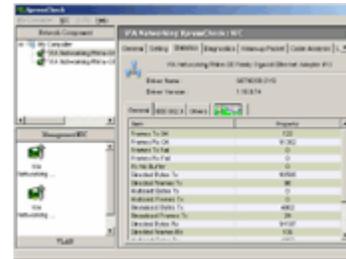
Link Status



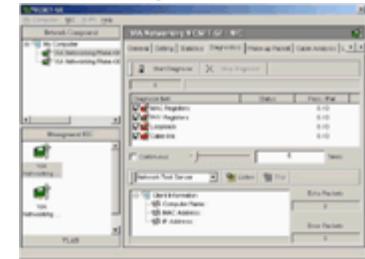
Settings



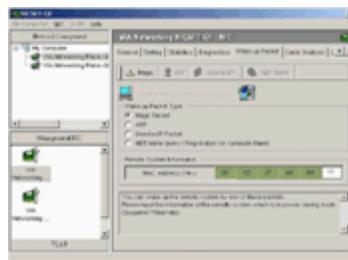
Statistics



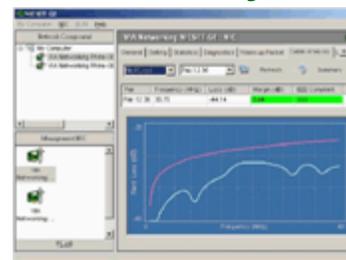
Diagnostics



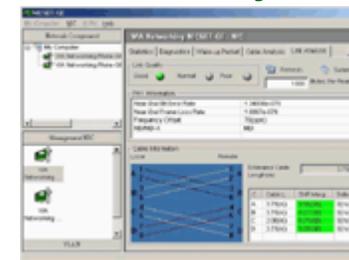
Wake-on LAN



Cable Analysis

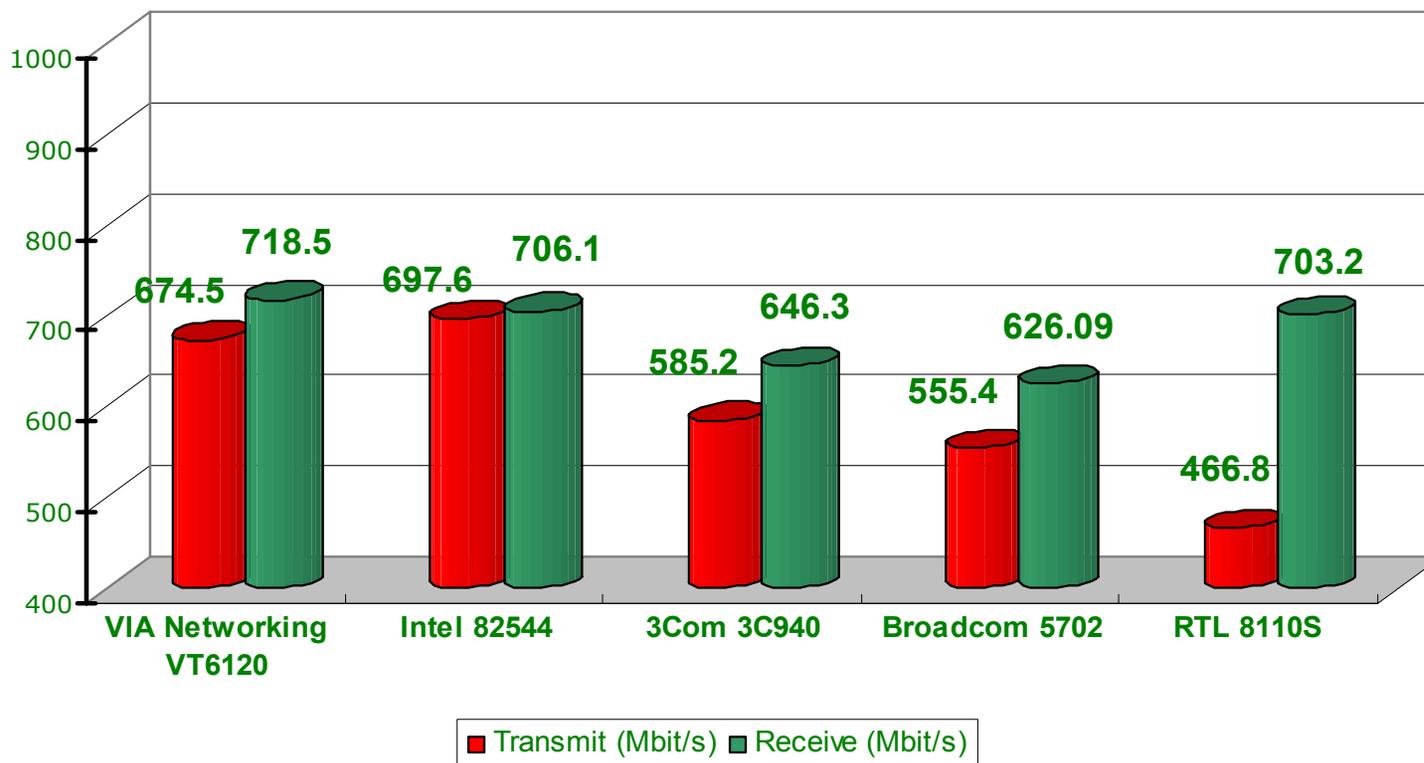


Link Analysis



VIA Networking Velocity™: Fastest Gigabit Ethernet on the Market

Gigabit Networking Throughput



Configuration: Asus P4P800 Motherboard, Pentium 4 2.4GHz, 512MB DDR 400, ASUS AGP-V7100 (GeForce 2 MX), Windows XP Professional

VIA Confidential and Proprietary



VIA Vinyl™ Multichannel Audio Suite

- **VIA Vinyl™ Audio**

- Richest choice of market leading integrated and onboard audio performance options

- VIA Vinyl integrated 5.1 surround sound

- VIA Vinyl AC '97 audio controller
- VIA Six-TRAC codec



- VIA Vinyl Gold onboard 7.1 surround sound

- VIA Envy24PT + VIA Six-TRAC + additional DAC
- Only onboard audio solution with 8-channel immersion audio
- 24/96 resolution digital outputs



V-MAP Architecture

- **V-Link**
 - High throughput 533MB/s South Bridge/North Bridge interconnect
 - Supports new generation of VIA North Bridge options across all processor platforms
- **Pin-to-pin Compatible Architecture**
 - Flexible, high bandwidth architecture for AMD Opteron™ & AMD Athlon™ 64 processors
 - Reduced motherboard design process and improved time-to-market
- **VIA Hyperion 4in1 Unified Drivers**
 - Optimized system performance and stability
 - Regular updates
 - Downloads and support at www.viaarena.com
 - Reducing Support Costs for VIA and VIA motherboard customers





VIA K8T800 & AMD Opteron™

Powering Powerhouse Workstations and
Servers based on the AMD64 Architecture

VIA K8T800 – Opteron Ready!

- **First dual processing capable chipset with AGP for AMD Opteron**
 - Ideal platform for powerhouse workstations based on single and dual AMD Opteron processors
- **Hyper8 Technology**
 - Enables only full-speed, full-spec 16-bit/1.6GHz HyperTransport™ CPU to Chipset link on AMD64 platform
- **Delivers powerful performance for the most demanding engineering and design applications**
 - Multimedia content
 - Graphics rendering
 - CAD based design
 - Data Asset Management
- **RAID done right!**
 - VIA VT8237 features native Serial ATA V-RAID controller
 - Optimum HDD performance and data protection for maximum uptime



VIA VPX2 – Bringing PCI-X to Servers and Workstations

- **PCI-X Flexibility**

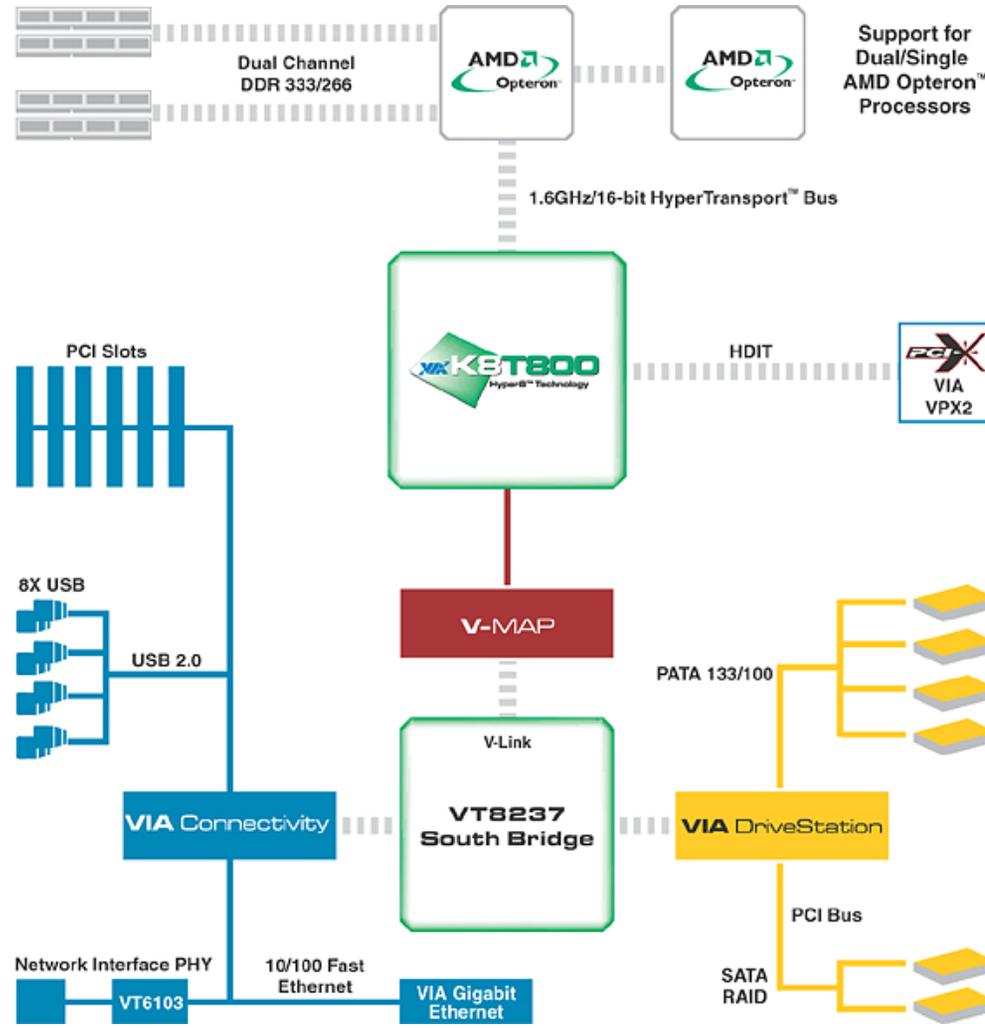
- High Bandwidth PCI: Increases PCI bandwidth from 33MHz up to 133MHz
- Maximized connectivity: Up to 12 standard PCI connections

- **VIA VPX2 Companion Chip**

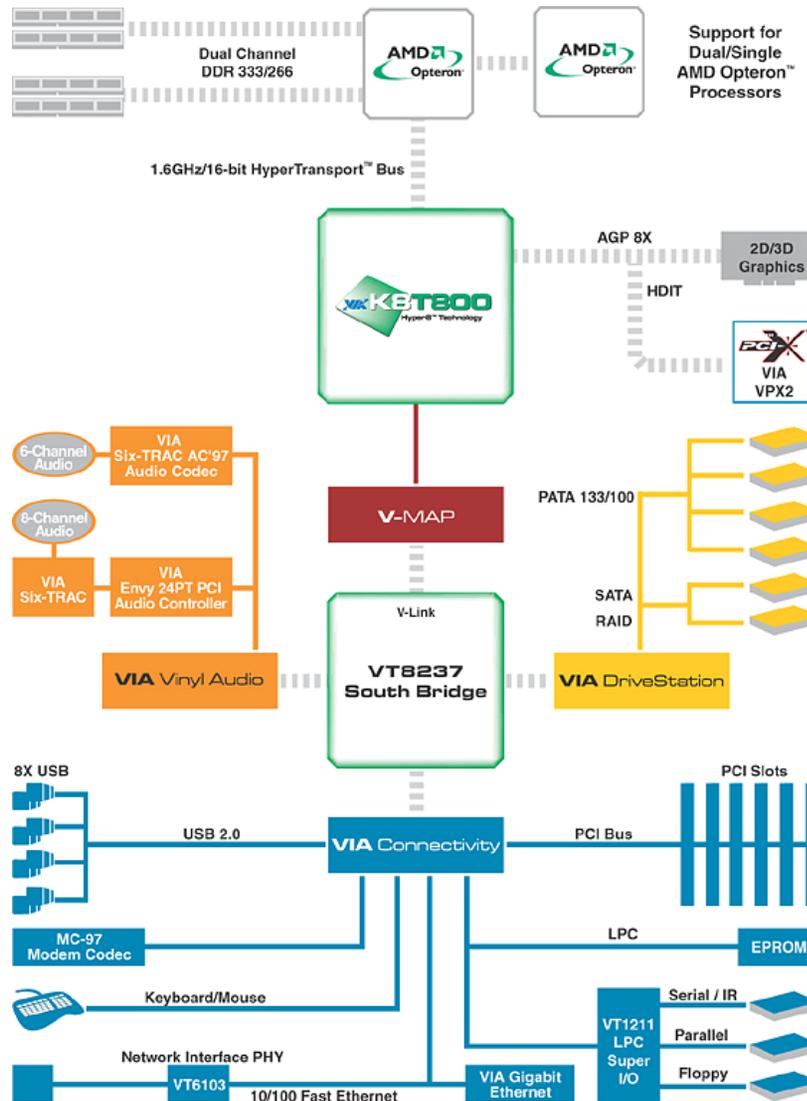
- VIA HDIT® Interface for ultra high-bandwidth PCI-X Expansion
- 2 Channels allows support for AGP8X and PCI-X
- Supports multiple configurations:
 - 2 slots x 133MHz
 - 4 slots x 100MHz
 - 8 slots x 66MHz
 - 12 slots x 33MHz



VIA K8T800 & Dual Opteron Server Platform



VIA K8T800 & Dual Opteron Workstation Platform

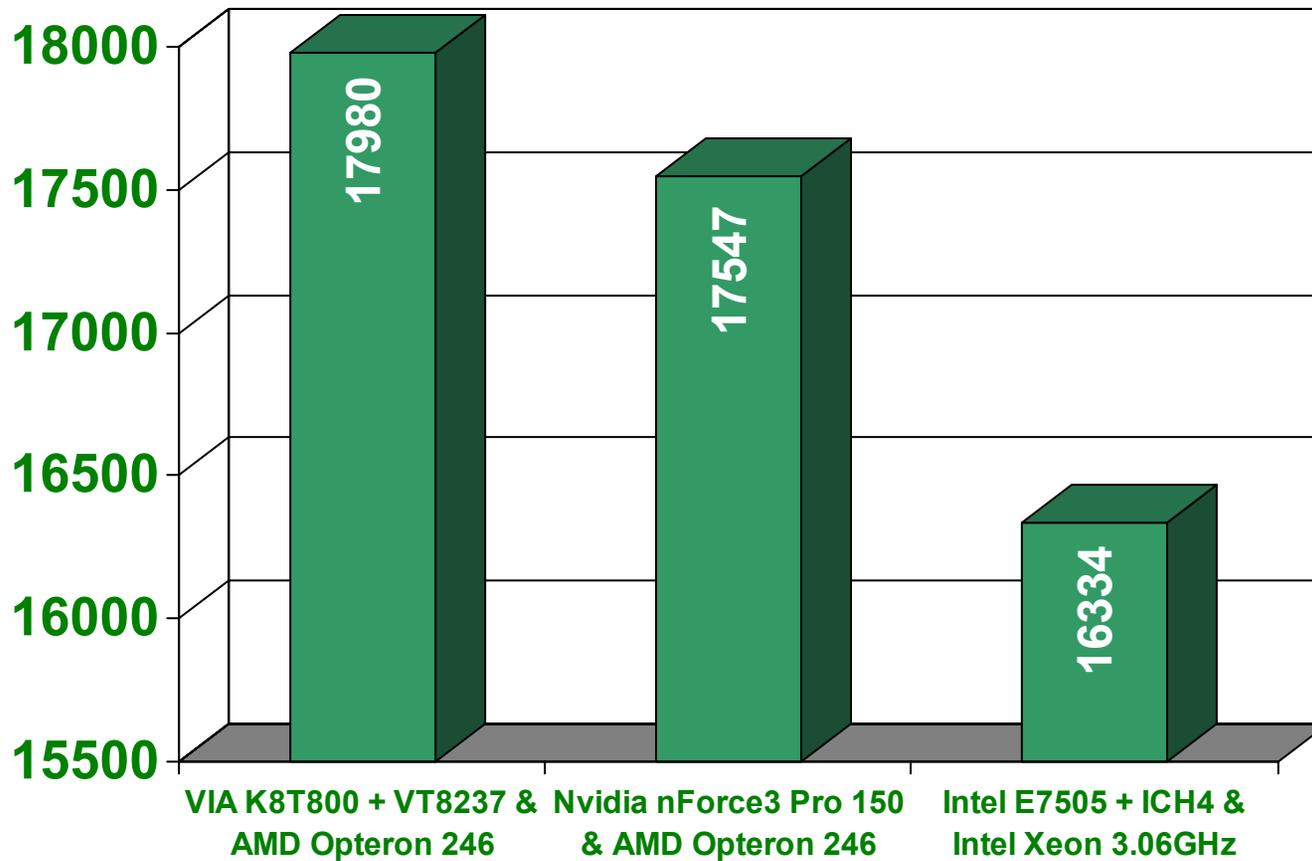


Dual Opteron Workstation Motherboard from MSI

- **MSI MS-9130 Workstation Motherboard with K8T800 Chipset**
 - Supports Single and Dual AMD Opteron processors
 - Targeting mid-range, front-end, application and general purpose server/workstation market
- **Key Features:**
 - AGP Pro
 - 2 x Serial ATA channels, 2 x ATA 133 channels
 - Gigabit Ethernet
 - V-RAID; supports RAID 0 & RAID 1
 - 4 DIMM for up to 2GB of DDR333 SDRAM
 - Up to 6 USB 2.0 connections
 - ATX Form Factor

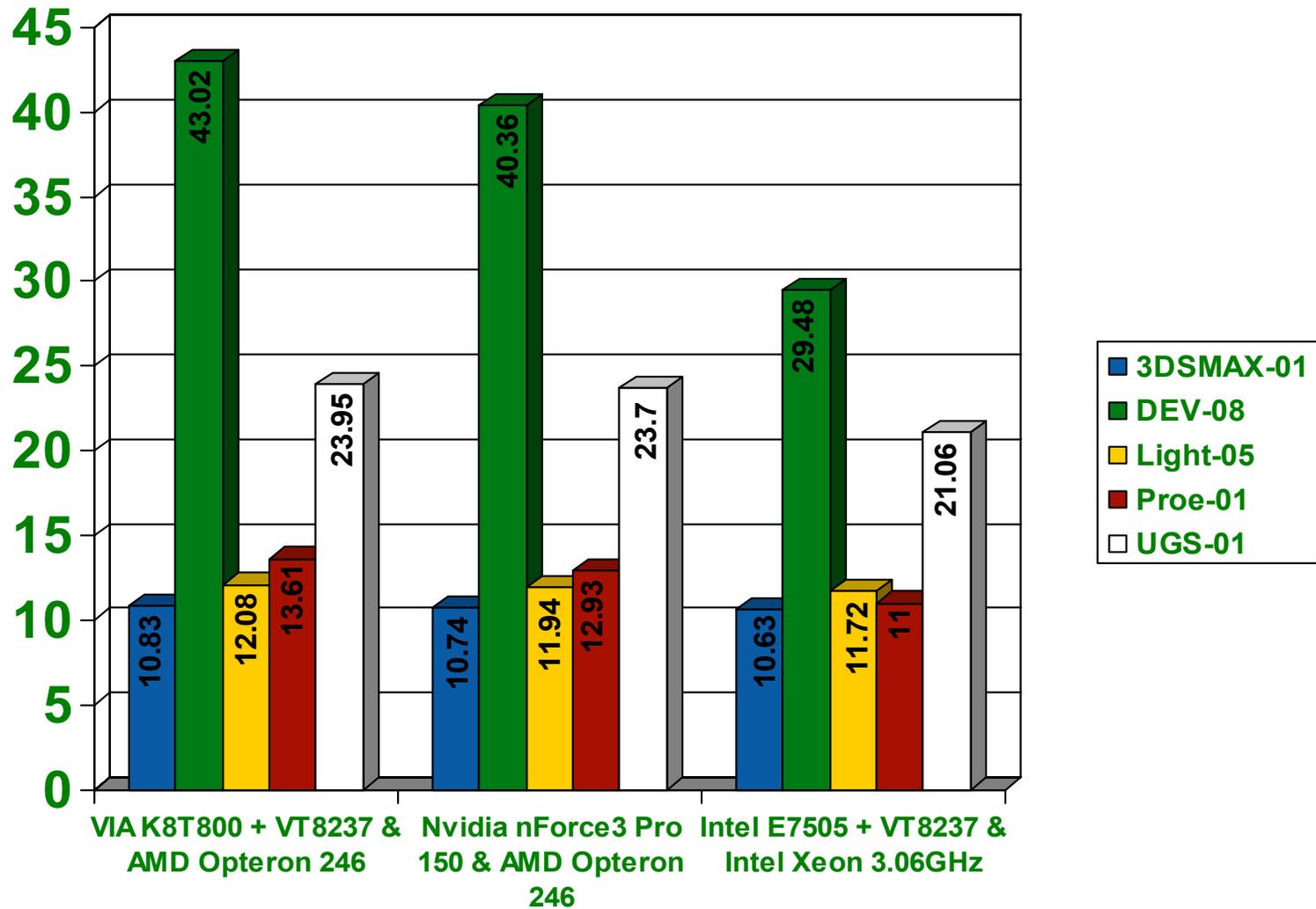


Performance – 3DMark 2001 Pro SE



Configuration: MSI MS-9130 (K8T800), Asus SK8N (nForce3), MSI MS-9121 (E7505)
1GB Infineon DDR333 ECC Reg X 2, ATI 9700Pro, Hitachi Deskstar 80GB, WinXP SP1a, DirectX 9.0a

Performance – SPEC ViewPerf 7.1



Configuration: MSI MS-9130 (K8T800), Asus SK8N (nForce3), MSI MS-9121 (E7505)
 1GB Infineon DDR333 ECC Reg X 2, ATI 9700Pro, Hitachi Deskstar 80GB, WinXP SP1a, DirectX 9.0a





VIA K8T800 & AMD Athlon™ 64

Powering the Next Generation of
AMD Athlon™ 64 Based Systems

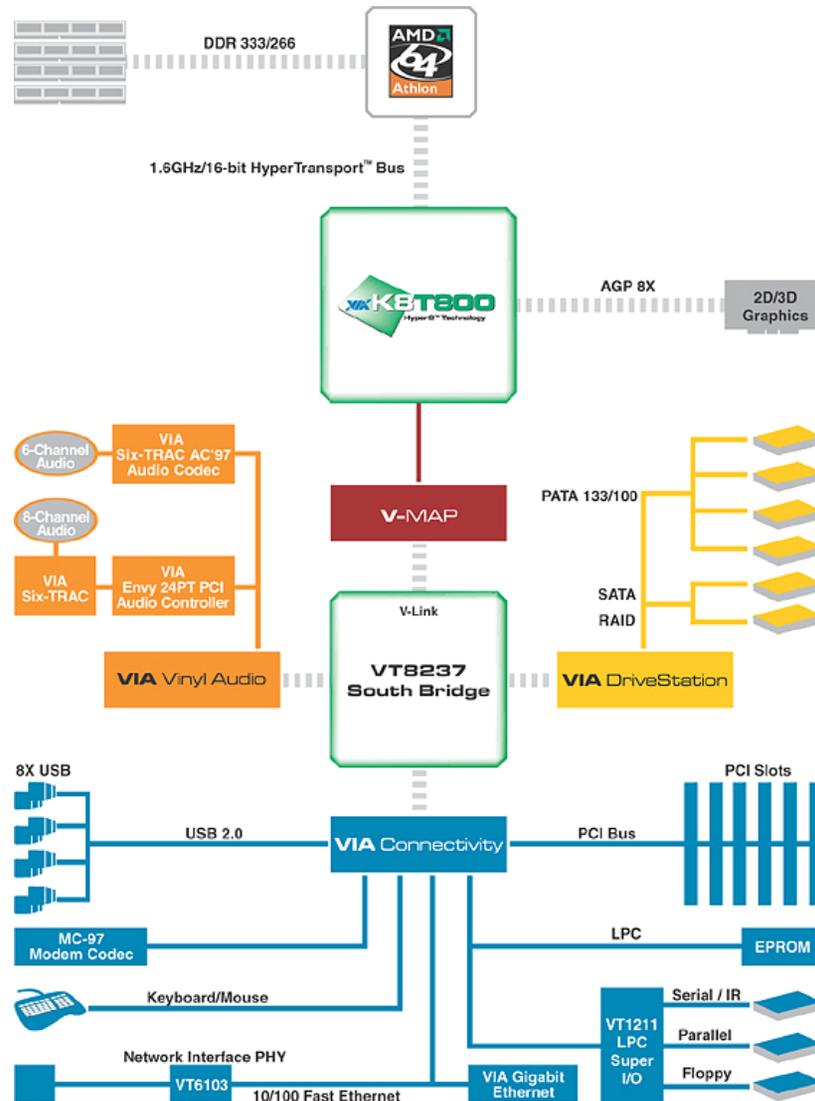


VIA K8T800: AMD Athlon 64 Ready!

- **First fully featured chipset for the new AMD Athlon 64 processors**
 - Shipping now!
 - Ideal platform for multiple solutions: Consumer, Corporate, Enthusiast, Media Center, Entry Level Server/Workstation
- **Hyper8 Technology**
 - Enables only full-speed, full-spec 16-bit/1.6GHz HyperTransport™ CPU to Chipset link on AMD64 platform
- **AGP 8X**
 - Support for latest 3D graphics processors
- **VT8237 South Bridge**
 - Serial ATA
 - V-RAID
 - VIA Vinyl Audio
- **Proven performance of K8T800 on AMD Opteron platform**
 - Easy design in process for MB manufacturers
 - Faster time-to-market



VIA K8T800 & AMD Athlon 64 Performance Desktop Platform



VIA Vinyl Onboard Audio Solutions

- **VIA's Strategy to enable hi-quality motherboard audio solutions**
 - Audio Codecs
 - Six-TRAC
 - Eight-TRAC
 - Stylus Audio Driver

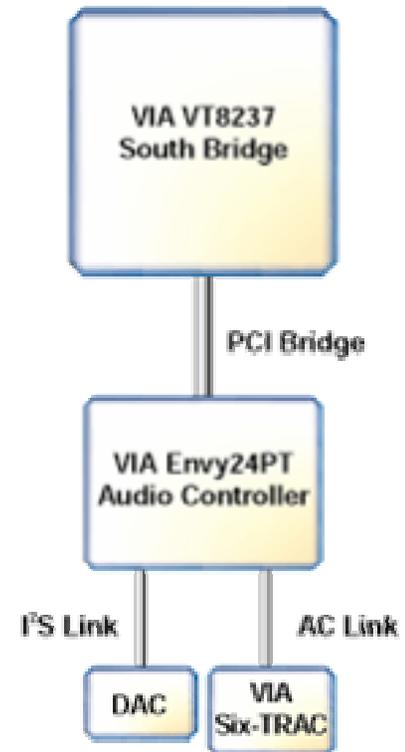


VIA Vinyl Gold 8-channel Audio

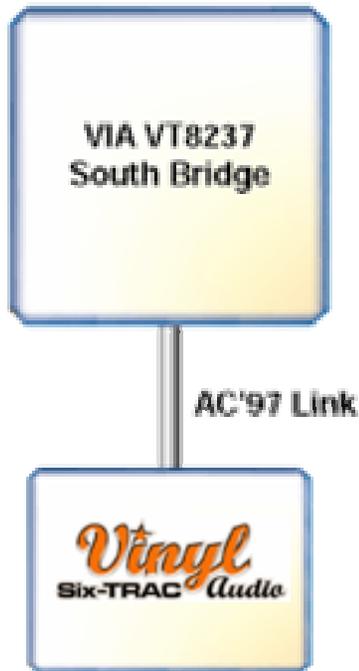
- First to market with 8-channel solution
- Integrates VIA Envy24PT Audio controller and VIA Six-TRAC
- Current design wins
 - Chaintech 9CJS Zenith
 - AOpen Athlon64 Tube MB



VIA Vinyl 8-Channel Configuration



VIA Vinyl 6-Channel Audio



- **Integrated six-channel AC'97 surround sound**
 - Warmest AC '97 audio experience
- **VIA Six-TRAC codec**
 - 20-bit architecture
 - Excellent audio performance
 - 90dB SNR tested on a motherboard
 - DualMAX hardware downmixing
 - CoolAMP reduced heat for consistent performance

VIA Stylus Audio Driver



- **Integrated Sensaura technology**

- Sensaura *MacroFX*[™]
 - creates 'near-field' proximity effects
- Sensaura *EnvironmentFX*[™]
 - acoustically renders up to 26 3D audio environments.
- Sensaura *MultiDrive*[™]
 - integrates front and rear sound hemisphere



Positional 3D
EAX 1.0
EAX 2.0
A3D[™] 1.x compatibility
Bass Boost
I3DL2
Fast Panning 3D Algorithm fallback
MMX optimization
SSE2 optimization
Voice manager
Multichannel
Multidrive
Global Reverb
Multidrive 5.1



Unparalleled Audio Support

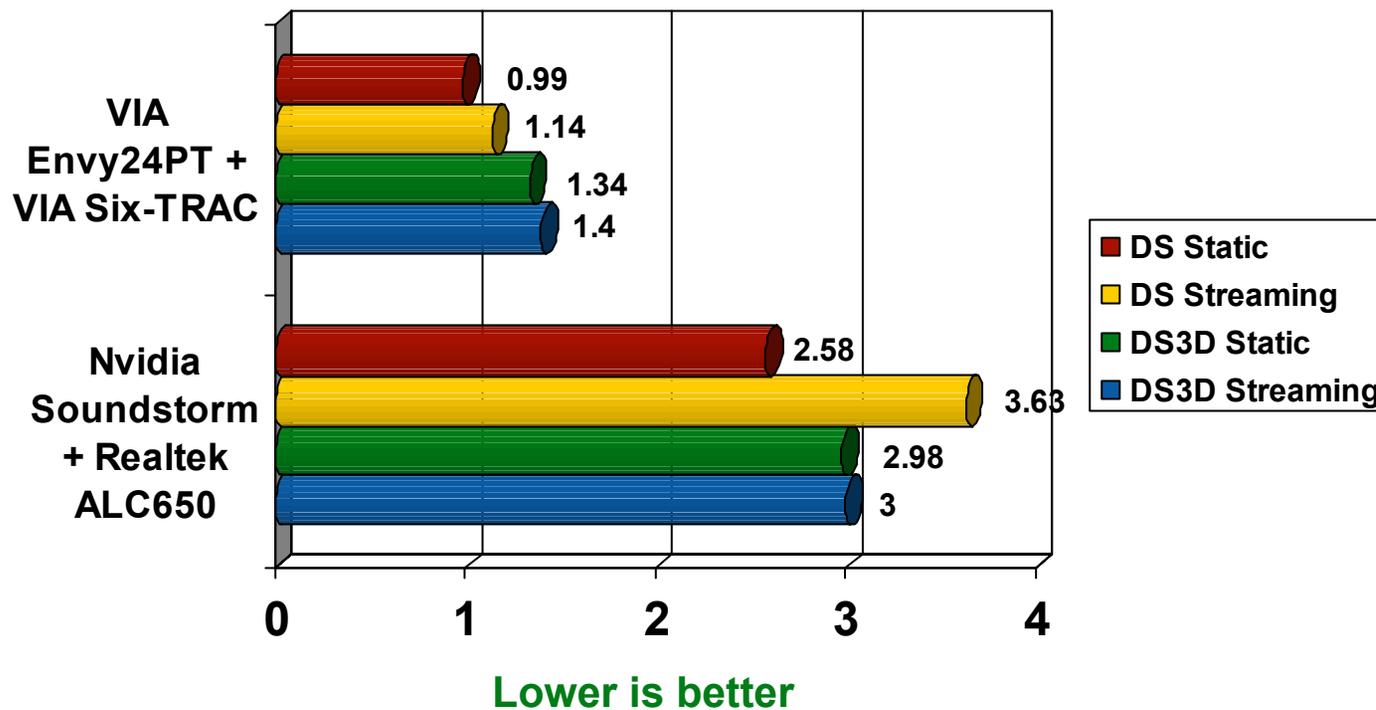
VIA offers the industry's most comprehensive portfolio of advanced Audio Platform Solutions to meet today's multimedia requirements

	VIA	Nvidia	Intel
7.1 Audio support	✓	X	X
24/96 Audio Support	✓	X	X
3D Gaming support*	✓	✓	X
Analog codec for complete solutions	✓	X	X

* Sensaura support

Benchmarking Comparison of Audio Gaming Performance

Audio Winbench

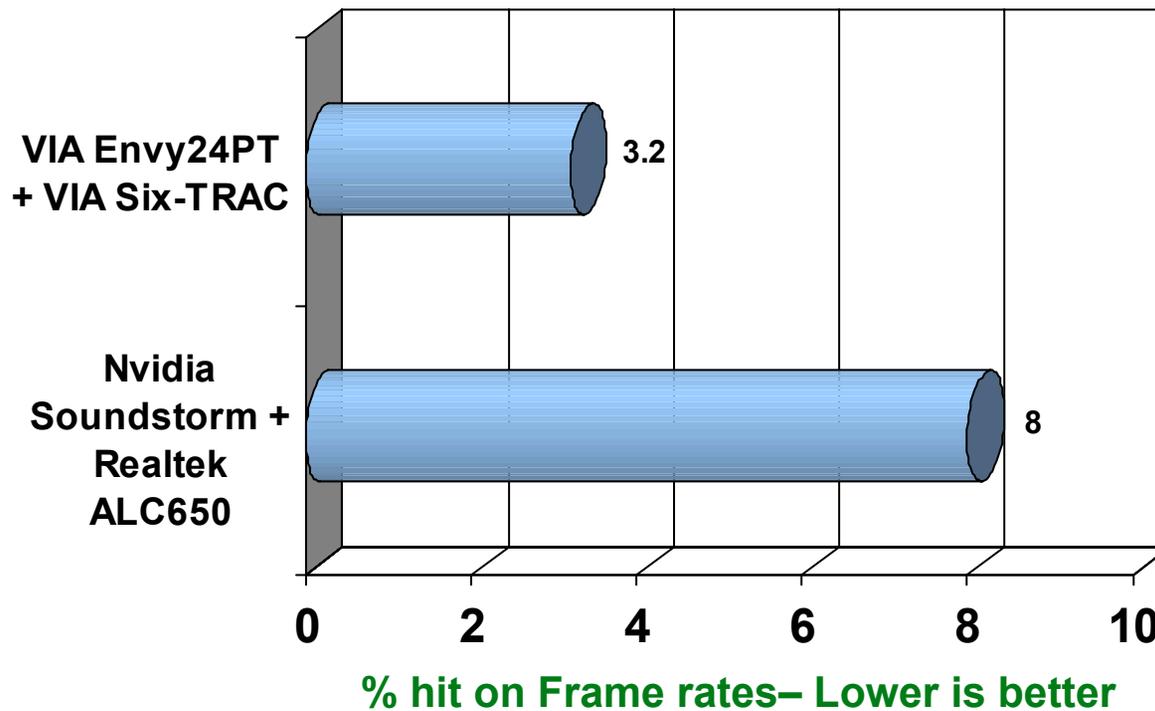


"The State of Motherboard Audio" July 1, 2003
 Albatron PX865PE Proll MB integrating VIA Envy24PT & Six-TRAC



Audio Benchmarking Comparison of Audio Gaming Performance

Comanche 4

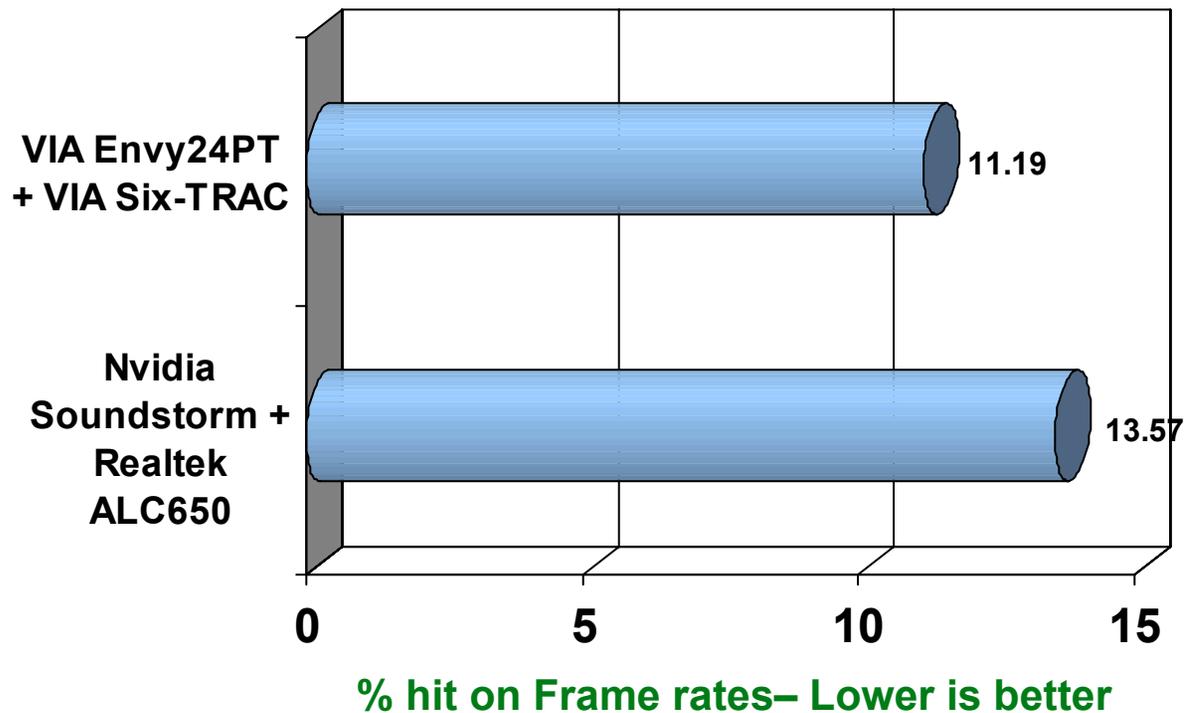


"The State of Motherboard Audio" July 1, 2003
Albatron PX865PE Proll MB integrating VIA Envy24PT & Six-TRAC



Audio Benchmarking Comparison of Audio Gaming Performance

Jedi Knight



"The State of Motherboard Audio" July 1, 2003
Albatron PX865PE ProII MB integrating VIA Envy24PT & Six-TRAC

What people are saying about onboard VIA audio...

ANANDTECH

"This 24-bit/96kHz solution is definitely a step in the right direction, as we'd love to find this type of high quality audio on many more motherboards to come."



"Against the integrated competition...(an nForce2 board and an ICH4-based motherboard)... the Zenith 9CJS's Envy24PT-powered audio definitely sounded better for music playback."



"Looks like this will be the best onboard sound I've ever heard."

VIA K8 Series North Bridge Roadmap

Pin-to-Pin Compatible

K8T800

- Athlon 64 & Opteron HyperTransport Bridge
- AGP4X/8X
- 8X V-Link
- MP: Now

K8M800

- Athlon 64 & Opteron HyperTransport Bridge
- Int. UniChrome™ 2 Graphics
- AG 4X/8X
- 8X V-Link
- S: Now
- MP: Q3'03

K8T890

- Athlon 64 & Opteron HyperTransport Bridge
- PCI Express
- Ultra V-Link
- S: Q4'03
- MP: TBD

- VIA Hyper8 Technology for full-speed & full-spec HyperTransport Implementation
- 8X V-Link
- Supports 1.5v AGP 4X/8X port

- VIA Hyper8 Technology for full-speed & full-spec HyperTransport Implementation
- 8X V-Link
- Supports 1.5v AGP 4X/8X port
- 8 to 64MB UMA frame buffer
- 2 pixel pipes & 2 texture units
- Full MPEG2 video decoder
- DuoView™
- Ext. DVI/TV-Out interface

VIA South Bridge Roadmap

VT8237

- Ultra V-Link
- **Total 6 HDD support**
 - 2 Serial ATA ports
 - 2 IDE channels for up to 4 ATA133 devices
- V-RAID
 - RAID 0,
 - RAID 1,
 - RAID 0+1
 - JBOD support
- 8 x USB 2.0
- VIA 10/100 MAC
- MII Interface w/ Ext. PHY
- VIA Vinyl Audio
- Int. IO/APIC
- MP: Now



VT8239

- Ultra V-Link
- **Total 8 HDD support**
 - 4 Serial ATA ports
 - 2 IDE channels for up to 4 ATA133 devices
- SATA Controller with command queue
- AHCI
- V-RAID
 - RAID 0,
 - RAID 1,
 - RAID 0+1
 - JBOD support
- 8 x USB 2.0
- VIA 10/100 MAC
- MII Interface w/ Ext. PHY
- VIA Vinyl Audio
 - 96K/20-bit audio
- Int. IO/APIC
- S: Q4'03



VIA K8 Series In Summary

- **Industry's most comprehensive portfolio of AMD64 chipsets, covering ALL market segments**
 - Athlon 64 Performance Desktop / Enthusiast
 - Dual / Single Opteron Servers & Workstations
 - Athlon 64 Mainstream Desktop
 - Athlon 64 Mobile
- **Industry's highest performance & most scalable platform for AMD64 Architecture**
 - VIA Hyper8 Technology for full speed & full-spec HyperTransport Implementation
 - V-MAP pin-to-pin compatible architecture
 - Scalable features including Gigabit Ethernet, VIA Vinyl Audio, 1394 & VPX2 for PCI-X
- **Established credentials**
 - Long-term leadership on the AMD platform
 - First to implement PC133, DDR266, AGP8X, USB2.0 etc
- **Aggressive future roadmap**
 - First to market with PCI Express



Thank You