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Intel Desktop Builds: January 2011

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1. Introduction

The motherboard chipset defines the capabilities of a computer. Specifically, the motherboard chipset defines; 1.) the central processing unit (CPU), system memory (RAM), graphics processing unit (GPU), drives, expansion cards, and peripheral devices (e.g., keyboard, mouse, and printer) that can be installed on a computer, and 2.) the devices (e.g., network connection and audio) and technologies (e.g., RAID and virtualization) that are integrated into the motherboard, itself. Therefore, when building a computer, the most important component to choose wisely is the motherboard chipset, or chipset for short.

PC-compatible chipsets are divided into two types: 1.) Intel chipsets, which support Intel CPUs, and 2.) AMD chipsets, which support AMD CPUs. In 2007, Intel chipset manufacturers included ATI, Intel, NVIDIA, SiS, and VIA. Currently, Intel has a virtual monopoly on the Intel chipset market.

A motherboard is simply an implementation of a chipset. Motherboard manufacturers incorporating Intel chipsets into their motherboards include [ASRock \(asrock.com\)](#), [ASUS \(asus.com\)](#), [BIOSTAR \(biostar.com.tw\)](#), [ECS \(ecs.com.tw\)](#), [EVGA \(evga.com\)](#), [Foxconn \(foxconn.com\)](#), [GIGABYTE \(gigabyte.com\)](#), [Intel \(intel.com\)](#), and [MSI \(msi.com\)](#).

Computers can be divided into two types: 1.) Intel based computers, which have an Intel chipset/CPU, and 2.) AMD based computers, which have an AMD chipset/CPU. This page describes Intel desktop computer builds based on price point and user need.

1.1. Component Overlay

Component considerations that serve as an overlay for each build and this page as a whole.

• Motherboard

- Use latest [Intel Desktop Chipsets \(intel.com\)](#): [Intel H55 Express Chipset \(socket LGA1156\) \(intel.com\)](#), [Intel H57 Express Chipset \(socket LGA1156\) \(intel.com\)](#), [Intel Q57 Express Chipset \(socket LGA1156\) \(intel.com\)](#), [Intel P55 Express Chipset \(socket LGA1156\) \(intel.com\)](#), and [Intel X58 Express Chipset \(socket LGA1366\) \(intel.com\)](#).
- Use microATX form factor for eMachine, Workstation 1 Entry, and Workstation 2 Intermediate. Use ATX form factor for Workstation 3 Performance and Enthusiast.
- Front USB and audio required. Therefore, motherboard and case must provide front USB and audio.
- No overclocking. Therefore, no fancy cooling system required.
- Manufacturers considered: [ASUS \(asus.com\)](#), [GIGABYTE \(gigabyte.com\)](#), [Intel \(intel.com\)](#), and [MSI \(msi.com\)](#).

• CPU

- Use latest [Intel Desktop CPUs](#): [Intel Pentium Processor G6950 \(socket LGA1156\) \(ark.intel.com\)](#), [Intel Core i3 Processor \(socket LGA1156\) \(intel.com\)](#), [Intel Core i5 Processor \(socket LGA1156\) \(intel.com\)](#), [Intel Core i7 Processor \(socket LGA1156 or LGA1366\) \(intel.com\)](#), and [Intel Core i7 Processor Extreme Edition \(socket LGA1366\) \(intel.com\)](#).
- No overclocking. Therefore, no fancy cooling system required. Get boxed CPU and use factory heat sink/fan.

• RAM

- No overclocking. Therefore, no fancy cooling system required. Get value RAM that passed motherboard testing.
- Manufacturers considered: [Kingston \(kingston.com\)](#)

• GPU

- [Intel HD Graphics \(intel.com\)](#) is the new Intel integrated graphics solution. Intel HD Graphics has the GPU on the CPU, not the motherboard. The Intel Pentium Processor G6950, all Intel Core i3 Processors, and some Intel Core i5 Processors

- have Intel HD Graphics. The Intel Core i7 Processors and Core i7 Processors Extreme Edition do not have Intel HD Graphics. Motherboard support for Intel HD Graphics is simply providing video out connector and an interface to the GPU integrated on the CPU. The Intel H55 Express Chipset, Intel H57 Express Chipset, and Intel Q57 Express Chipset support Intel HD Graphics. The Intel P55 Express Chipset and Intel X58 Express Chipset do not support Intel HD Graphics.
 - Use Intel HD Graphics for eMachine. Use add-in GPU for all other builds. Use add-in GPU that requires external power connector for Workstation 3 Performance and Enthusiast.
 - Follow [Tom's Hardware \(tomshardware.com\)](http://tomshardware.com) recommendations.
 - ATI add-in GPU manufacturers considered: [Sapphire \(sapphire.com\)](http://sapphire.com)
- Hard Drive
 - SATA 3Gb/s not required for eMachine, Workstation 1 Entry, or Workstation 2 Intermediate. SATA 6Gb/s required for Workstation 3 Performance and Enthusiast.
 - Manufacturers considered: [Western Digital \(wdc.com\)](http://wdc.com).
- CD/DVD Burner
 - Not interested in Blu-ray support.
 - Issues with Pioneer DRV-112D and Plextor PX-740A have me interested in trying different CD/DVD burner manufacturer. That 4x [Newegg \(newegg.com\)](http://newegg.com) Customer Choice Award Winner - CD/DVD burner is an ASUS model made the decision easy.
- USB
 - USB 3.0 not required for eMachine, Workstation 1 Entry, or Workstation 2 Intermediate. USB 3.0 required for Workstation 3 Performance and Enthusiast.
 - Front USB required. Therefore, motherboard and case must provide front USB. Front USB does not need to be USB 3.0.
- Audio
 - Integrated audio is sufficient.
 - Front audio required. Therefore, motherboard and case must provide front audio.
- Case
 - No neon colors, no lights, no see through side panels, no crazy designs: appearance must be business-like.
 - One case mounted fan required. No overclocking. Therefore, no fancy cooling system required.
 - Use mini tower/small mid tower for eMachine. Use small mid tower for Workstation 1 Entry and Workstation 2 Intermediate. Use mid tower or larger for Workstation 3 Performance and Enthusiast.
 - Front USB and audio required. Therefore, motherboard and case must provide front USB and audio.
 - Manufacturers considered: [Antec \(antec.com\)](http://antec.com), [Cooler Master \(coolermaster.com\)](http://coolermaster.com), [Lian Li \(lian-li.com\)](http://lian-li.com), and [Thermaltake \(thermaltakeusa.com\)](http://thermaltakeusa.com).
- Power Supply
 - ATX12V v2.2 compliant or above required.
 - Must provide all connectors required. No mismatched connectors or adapters.
 - Manufacturers considered: [Antec \(antec.com\)](http://antec.com), [Cooler Master \(coolermaster.com\)](http://coolermaster.com), and [Thermaltake \(thermaltakeusa.com\)](http://thermaltakeusa.com).
- Legacy Devices
 - VGA, IDE, FDD, PCI, serial (COM) port/internal header, parallel port/internal header, PS2 keyboard, and PS2 mouse support is not required.

1.2. Changes From [Intel Desktop Computer Builds Based On User Needs: September 2010 \(stevestechresource.com\)](http://www.stevestechresource.com)

- Intel Desktop Casual/Budget User renamed Intel Desktop eMachine (Model: ID-EMA):
 - Motherboard: [Intel DH55PJ \(intel.com\)](http://intel.com) \$100 to [GIGABYTE GA-H55M-S2V \(gigabyte.com\)](http://gigabyte.com) \$85.
 - Memory: 1333MHz CL9 to 1066MHz CL7: [Kingston KVR1333D3N9K2/2G \(shop.kingston.com\)](http://shop.kingston.com) \$50 to [Kingston KVR1066D3N7K2/2G \(shop.kingston.com\)](http://shop.kingston.com) \$30.
 - Hard Disk: 250GB to 500GB: [Western Digital WD2500AAKS \(wdc.com\)](http://wdc.com) \$50 to [Western Digital WD5000AAKS \(wdc.com\)](http://wdc.com) \$55.
 - CD/DVD Burner: ASUS DRW-24B1ST \$35 to \$25.
 - Case/Power Supply: [Antec NSK 4480 II \(antec.com\)](http://antec.com) / [Antec NSK 4480B II \(antec.com\)](http://antec.com): Antec case with Antec EarthWatts 380W power supply \$110 to [Cooler Master Elite 342 case with Cooler Master Elite Power 400W power supply \(coolermaster-usa.com\)](http://coolermaster-usa.com) \$70.
 - Build Retail Price: \$445 to \$365.
- Intel Desktop Intermediate User/Budget renamed Intel Desktop Workstation 1 Entry (Model: ID-WS1):
 - Motherboard: [Intel DH57DD \(intel.com\)](http://intel.com) \$120 to [MSI H55M-ED55 \(us.msi.com\)](http://us.msi.com) \$100.
 - Processor: [Intel Core i3-530 Processor \(ark.intel.com\)](http://ark.intel.com) \$120 to [Intel Core i3-550 Processor \(ark.intel.com\)](http://ark.intel.com) \$130.
 - Memory: [Kingston KVR1333D3N9K2/4G \(shop.kingston.com\)](http://shop.kingston.com) \$95 to \$55.
 - Hard Disk: [Western Digital WD5000AAKS \(wdc.com\)](http://wdc.com) \$60 to \$55.
 - CD/DVD Burner: ASUS DRW-24B1ST \$35 to \$25.
 - Case/Power Supply: [Antec NSK 6580 \(antec.com\)](http://antec.com) / [Antec NSK 6580B \(antec.com\)](http://antec.com): Antec case with Antec EarthWatts

- 430W power supply \$140 to [Cooler Master Sileo 500 case with Cooler Master eXtreme Power Plus 500W power supply \(cooler-master-usa.com\)](#) \$110.
- Build Retail Price: \$640 to \$545.
- Intel Desktop Intermediate User/Performance renamed Intel Desktop Workstation 2 Intermediate (Model: ID-WS2):
 - Motherboard: ATX to microATX: [Intel DP55WG \(intel.com\)](#) \$150 to [MSI P55M-GD45 \(us.msi.com\)](#) \$135.
 - Memory: 4GB to 8GB: [Kingston KVR1333D3N9K2/4G \(shop.kingston.com\)](#) \$95 to [Kingston KVR1333D3N9K2/8G \(shop.kingston.com\)](#) \$120.
 - GPU: 512MB to 1GB: [Sapphire ATI Radeon HD 5670 \(Model: 100287L\)](#) \$100 to [Sapphire ATI Radeon HD 5670 \(Model: 100289L\)](#) \$120.
 - Hard Disk: Western Digital Caviar Black to Caviar Blue: [Western Digital WD1001FALS \(wdc.com\)](#) \$100 to [Western Digital WD10EALS \(wdc.com\)](#) \$80.
 - CD/DVD Burner: ASUS DRW-24B1ST \$35 to \$25.
 - Case/Power Supply: Antec NSK 6580 ([antec.com](#)) / [Antec NSK 6580B \(antec.com\)](#): Antec case with Antec EarthWatts 430W power supply \$140 to [Cooler Master Sileo 500 case with Cooler Master eXtreme Power Plus 500W power supply \(cooler-master-usa.com\)](#) \$110.
 - Build Retail Price: \$805 to \$775.
- Intel Desktop Power User/Budget renamed Intel Desktop Workstation 3 Performance (Model: ID-WS3):
 - Motherboard: [Intel DX58SO \(intel.com\)](#) \$240 to [ASUS SABERTOOTH X58 \(usa.asus.com\)](#) \$210.
 - Memory: 6GB to 12GB: [Kingston KVR1066D3N7K3/6G \(shop.kingston.com\)](#) \$145 to [Kingston KVR1066D3N7K3/12G \(shop.kingston.com\)](#) \$180.
 - GPU: Upgrade: [Sapphire ATI Radeon HD 5750 \(Model: 100284L\)](#) \$150 to [Sapphire ATI Radeon HD 5770 \(Model: 100283-3L\)](#) \$175.
 - Hard Disk: SATA 3.0Gb/s to SATA 6.0Gb/s: [Western Digital WD1001FALS \(wdc.com\)](#) \$100 to [Western Digital WD1002FAEX \(wdc.com\)](#) \$100.
 - CD/DVD Burner: 2 x ASUS DRW-24B1ST \$70 to \$50.
 - Case/Power Supply: Antec Titan 650: Antec Enterprise Server Chassis with Antec TruePower Trio 650W (TP3-650) ([antec.com](#)) \$250 to [Lian Li PC-9F \(lian-li.com\)](#) \$140 and [Thermaltake Toughpower 575W \(TPX-575M\) \(thermaltakeusa.com\)](#) \$110.
 - Build Retail Price: \$1255 to \$1265.
- Intel Desktop Power User/Performance renamed Intel Desktop Enthusiast (Model: ID-ENT):
 - Build TBA.

2. Intel Desktop eMachine (Model: ID-EMA)

Intended For:

- Casual user wanting a basic computer for Internet, Microsoft Office, and viewing multimedia content.

Specification Summary:

- Lowest cost Intel desktop chipset supporting Intel HD Graphics: Intel H55 Express Chipset (socket LGA1156).
- Lowest cost motherboard form factor/case: microATX/mini tower.
- Lowest cost Intel desktop CPU with Intel HD Graphics: Intel Pentium Processor G6950 (socket LGA1156).
- Lowest cost GPU: Intel HD Graphics.
- 2GB RAM.

Intel Desktop eMachine (Model: ID-EMA)			
Comp	Spec	Note	Retail
Motherboard	GIGABYTE GA-H55M-S2V (rev. 1.4) (gigabyte.com) : <ul style="list-style-type: none"> • Intel H55 Express Chipset (intel.com) / LGA1156 / microATX. • 1 x 24 pin motherboard main / 1 x 4 pin ATX 12V CPU. • Dual channel / 2 DIMMs / 1.5V / 1333 / 1066MHz DDR3 / 16GB max. • Supports Intel HD Graphics. 1 x DVI-D / 1 x VGA. • 1 x PCIe 2.0 x16 / 1 x PCIe x1 / 2 x PCI. • 6 x internal SATA 3Gb/s. • 12 x USB 2.0/1.1 (8 x back + 4 x internal header). Audio header. • 1 x gigabit (10 / 100 / 1000 Mb/s) ethernet. 	<ul style="list-style-type: none"> • microATX. • SATA 3Gb/s. USB 2.0/1.1. • Selected GIGABYTE GA-H55M-S2V over more PCIe 2.0 slot providing second and third place finishers below because it does not have a single negative review - not even a purported DOA - at Newegg (16 total). • Second place: ASUS P7H55-M LX (usa.asus.com) \$85. • Third place: MSI H55M-E23 (us.msi.com) \$85. 	\$85
CPU	Intel Pentium Processor G6950 (ark.intel.com) : <ul style="list-style-type: none"> • 3MB Cache / 2.8GHz / 2.5GT/s / LGA1156 / 32nm / Clarkdale. • Dual core no Intel Hyper-Threading Technology (2C / 		\$100

	2T). • Intel HD Graphics.		
RAM	<u>KVR1066D3N7K2/2G (shop.kingston.com):</u> • 2GB 1066MHz DDR3 / 1.5V / Non-ECC / CL7 / Kit 2 x 1GB.	• 1066Mcycles/s x 8Bytes/cycle x 2 channels = 17.1GB/s, which equals the Pentium Processor G6950 max memory bandwidth.	\$30
GPU	<u>Intel HD Graphics (intel.com):</u> • 1 x DVI-D / 1 x VGA.		\$0
Hard Drive	<u>Western Digital WD5000AAKS (wdc.com):</u> • Caviar Blue / 500GB / SATA 3Gb/s / 16MB Cache / 7200rpm.		\$55
CD/DVD Burner	ASUS DRW-24B1ST: • SATA. 2MB Cache. • 24X DVD+R/8X DVD+RW/12X DVD+R DL/24X DVD-R/6X DVD-RW/12X DVD-RAM/16X DVD-ROM/48X CD-R/32X CD-RW/48X CD-ROM.	• 4x Newegg Customer Choice Award Winner - CD/DVD Burners.	\$25
Case/ Power Supply	<u>Cooler Master Elite 342 case with Cooler Master Elite Power 400W power supply (coolermaster-usa.com):</u> • 352mm x 180 x 440 (H x W x D). • 2 x external 5.25" / 1 x external 3.5" / 5 x internal 3.5". • 4 x expansion. • Front I/O: 2 x USB 2.0/1.1 / Audio. • Fan: Front 1 x 120mm 1200rpm. • Cooler Master Elite Power 400W power supply. • ATX 12V v2.31. • 1 x 20+4 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 1 x 6 pin PCIe / 4 x SATA / 3 x molex / 1 x floppy.	• Mini tower. • Supports microATX, not ATX motherboards. • Removable hard drive cage. • Case 4 kg.	\$70
Intel Desktop eMachine (Model: ID-EMA)			\$365

3. Intel Desktop Workstation 1 Entry (Model: ID-WS1)

Intended For:

- Normal home/office user.
- Multithread and low CPU/RAM utilization, not multicore and high CPU/RAM utilization.

Specification Summary:

- Inexpensive Intel desktop chipset: Intel H55 Express Chipset (socket LGA1156).
- Inexpensive motherboard form factor/case: microATX/small mid tower.
- Inexpensive Intel desktop CPU: Intel Core i3 Processor (socket LGA1156).
- Inexpensive add-in GPU.
- 4GB RAM.

Intel Desktop Workstation 1 Entry (Model: ID-WS1)			
Comp	Spec	Note	Retail
Mother-board	<u>MSI H55M-ED55 (us.msi.com):</u> • <u>Intel H55 Express Chipset (intel.com)</u> / LGA1156 / microATX. • 1 x 24 pin motherboard main / 1 x 4 pin ATX 12V CPU. • Dual channel / 4 DIMMs / 1.5V / 1333 / 1066MHz DDR3 / 16GB max. • Supports Intel HD Graphics. 1 x HDMI / 1 x DVI-D / 1 x VGA. • 1 x PCIe 2.0 x16 / 1 x PCIe x16 (x4 mode) / 1 x PCIe x1 / 1 x PCI. • 6 x internal SATA 3Gb/s / 1 x back eSATA. • 12 x USB 2.0/1.1 (6 x back + 6 x internal header). Audio header. • 1 x gigabit (10 / 100 / 1000 Mb/s) ethernet.	• microATX. • SATA 3Gb/s. USB 2.0/1.1. • Second PCIe x16 slot is x4 and from the H55 PCH (2.5GT/s), not x16 and PCI 2.0 (5.0GT/s) as the manual and online specs might lead one to believe. • Second place: Or for slightly more capable <u>Intel Q57 Express Chipset (intel.com)</u> <u>Intel DQ57TM (intel.com)</u> \$120.	\$100
CPU	<u>Intel Core i3-550 Processor (ark.intel.com):</u> • 4MB Cache / 3.20GHz / 2.5GT/s / LGA1156 / 32nm /		\$130

	Clarkdale. <ul style="list-style-type: none"> Dual core with Intel Hyper-Threading Technology (2C / 4T). Intel HD Graphics. 		
RAM	<u>Kingston KVR1333D3N9K2/4G (shop.kingston.com):</u> <ul style="list-style-type: none"> 4GB 1333MHz DDR3 / 1.5V / Non-ECC / CL9 / Kit 2 x 2GB. 	<ul style="list-style-type: none"> 1333Mcycles/s x 8Bytes/cycle x 2 channels = 21.3GB/s, which equals the Intel Core i3-550 Processor max memory bandwidth. 	\$55
GPU	Sapphire ATI Radeon HD 4650 (Model: 100254HDMI): <ul style="list-style-type: none"> 1GB DDR2 / 128-bit / 600MHz core / 800MHz memory effective. 1 x PCIe 2.0 x16 / DX10.1 / SM4.1. 1 x HDMI / 1 x Dual link DVI / 1 x VGA. 	<ul style="list-style-type: none"> Occupies one motherboard expansion slot and one case expansion slot. No external power connector required. 400W power supply required. <u>Tom's Hardware Best Graphics Cards For The Money: December 2010 (tomshardware.com).</u> 	\$70
Hard Drive	<u>Western Digital WD5000AAKS (wdc.com):</u> <ul style="list-style-type: none"> Caviar Blue / 500GB / SATA 3Gb/s / 16MB Cache / 7200rpm. 		\$55
CD/DVD Burner	ASUS DRW-24B1ST: <ul style="list-style-type: none"> SATA. 2MB Cache. 24X DVD+R/8X DVD+RW/12X DVD+R DL/24X DVD-R/6X DVD-RW/12X DVD-RAM/16X DVD-ROM/48X CD-R/32X CD-RW/48X CD-ROM. 	<ul style="list-style-type: none"> 4x Newegg Customer Choice Award Winner - CD/DVD Burners. 	\$25
Case/ Power Supply	<u>Cooler Master Sileo 500 case with Cooler Master eXtreme Power Plus 500W power supply (coolermaster-usa.com):</u> <ul style="list-style-type: none"> 432mm x 200 x 480 (H x W x D). 5 x external 5.25" / 1 x external 3.5" / 4 x internal 3.5". 7 x expansion. Front I/O: 2 x USB 2.0/1.1 / 1 x eSATA / Audio. Fans: Front 1 x 120mm 800rpm / Rear 1 x 120mm 800rpm. Cooler Master eXtreme Power Plus 500W power supply. ATX 12V v2.3. 1 x 20+4 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 1 x 6 pin PCIe / 4 x SATA / 5 x molex / 1 x floppy. 	<ul style="list-style-type: none"> Small mid tower. Supports microATX and ATX motherboards. 8 kg. 	\$110
Intel Desktop Workstation 1 Entry (Model: ID-WS1)			\$545

4. Intel Desktop Workstation 2 Intermediate (Model: ID-WS2)

Intended For:

- Home/office user who occasionally executes multiple system resource intensive applications simultaneously. For example, a user who occasionally edits multimedia content while simultaneously converting multimedia content.
- Occasional multicore and high CPU/RAM utilization.
- Entry level gaming.

Specification Summary:

- Mid level Intel desktop chipset: Intel P55 Express Chipset (socket LGA1156).
- Inexpensive motherboard form factor/case: microATX/small mid tower.
- Mid level Intel desktop CPU: Intel Core i5 Processor (socket LGA1156).
- Low/mid level add-in GPU.
- 8GB RAM.

Intel Desktop Workstation 2 Intermediate (Model: ID-WS2)			
Comp	Spec	Note	Retail
Motherboard	<u>MSI P55M-GD45 (us.msi.com):</u> <ul style="list-style-type: none"> Intel P55 Express Chipset (intel.com) / LGA1156 / microATX. 1 x 24 pin motherboard main / 1 x 4 pin ATX 12V CPU. 	<ul style="list-style-type: none"> microATX. SATA 3Gb/s. USB 2.0/1.1. The second PCIe x16 slot is x4 and from P55 PCH (2.5GT/s), not PCI 2.0 (5.0GT/s) as manual and online specs 	\$135

	<ul style="list-style-type: none"> • Dual channel / 4 DIMMs / 1.5V / 1333 / 1066MHz DDR3 / 16GB max. • No Intel HD Graphics support. Add-in GPU required. • 1 x PCIe 2.0 x16 / 1 x PCIe x16 (x4 mode) / 1 x PCIe x1 / 1 x PCI. • 6 x internal SATA 3Gbps / 2 x back eSATA. RAID. • 14 x USB 2.0/1.1 (10 x back + 4 x internal header). Audio header. • 1 x gigabit (10 / 100 / 1000 Mbps) ethernet. 	<p>might have one believe.</p> <ul style="list-style-type: none"> • Second place: Or if P55 chipset without dual GPU x8/x8 compatibility seems strange for non-gaming computer, and spending more for motherboard without SATA 6Gb/s and USB 3.0 does not GIGABYTE GA-P55M-UD4 (gigabyte.com) \$150. 	
CPU	<p>Intel Core i5-650 Processor (ark.intel.com):</p> <ul style="list-style-type: none"> • 4MB Cache / 3.20GHz / 2.5GT/s / LGA1156 / 32nm / Clarkdale. • Dual core with Intel Hyper-Threading Technology (2C / 4T). • Intel Turbo Boost. • Intel HD Graphics. 		\$185
RAM	<p>Kingston KVR1333D3N9K2/8G (shop.kingston.com):</p> <ul style="list-style-type: none"> • 8GB 1333MHz DDR3 / 1.5V / Non-ECC / CL9 / Kit 2 x 4GB. 	<ul style="list-style-type: none"> • 1333Mcycles/s x 8Bytes/cycle x 2 channels = 21.3GB/s, which equals the Intel Core i5-650 Processor max memory bandwidth. 	\$120
GPU	<p>Sapphire ATI Radeon HD 5670 (Model: 100289L):</p> <ul style="list-style-type: none"> • 1GB DDR5 / 128-bit / 775MHz core / 4000MHz memory effective. • 1 x PCIe 2.1 x16 / DX11 / SM5.0. • 1 x DisplayPort / 1 x HDMI / 1 x Dual link DVI. • ATI CrossFireX. ATI Eyefinity. 	<ul style="list-style-type: none"> • Occupies one motherboard expansion slot and one case expansion slot. • No external power connector required. 400W power supply required. • Tom's Hardware Best Graphics Cards For The Money: December 2010 (tomshardware.com). 	\$120
Hard Drive	<p>Western Digital WD10EALS (wdc.com):</p> <ul style="list-style-type: none"> • Caviar Blue / 1.0TB / SATA 3Gb/s / 32MB Cache / 7200rpm. 	<ul style="list-style-type: none"> • SATA 3Gb/s. 	\$80
CD/DVD Burner	<p>ASUS DRW-24B1ST:</p> <ul style="list-style-type: none"> • SATA. 2MB Cache. • 24X DVD+R/8X DVD+RW/12X DVD+R DL/24X DVD-R/6X DVD-RW/12X DVD-RAM/16X DVD-ROM/48X CD-R/32X CD-RW/48X CD-ROM. 	<ul style="list-style-type: none"> • 4x Newegg Customer Choice Award Winner - CD/DVD Burners. 	\$25
Case/Power Supply	<p>Cooler Master Sileo 500 case with Cooler Master eXtreme Power Plus 500W power supply (cooler-master-usa.com):</p> <ul style="list-style-type: none"> • 432mm x 200 x 480 (H x W x D). • 5 x external 5.25" / 1 x external 3.5" / 4 x internal 3.5". • 7 x expansion. • Front I/O: 2 x USB 2.0/1.1 / 1 x eSATA / Audio. • Fans: Front 1 x 120mm 800rpm / Rear 1 x 120mm 800rpm. • Cooler Master eXtreme Power Plus 500W power supply. • ATX 12V v2.3. • 1 x 20+4 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 1 x 6 pin PCIe / 4 x SATA / 5 x molex / 1 x floppy. 	<ul style="list-style-type: none"> • Small mid tower. • Supports microATX and ATX motherboards. • 8 kg. 	\$110
Intel Desktop Workstation 2 Intermediate (Model: ID-WS2)			\$775

5. Intel Desktop Workstation 3 Performance (Model: ID-WS3)

Intended For:

- Home/office user who frequently executes multiple system resource intensive applications simultaneously. For example, a user who frequently edits multimedia content while simultaneously converting multimedia content.
- Frequent multicore and high CPU/RAM utilization.
- Mid level gaming.

Specification Summary:

- High end Intel desktop chipset: Intel X58 Express Chipset (socket LGA1366).
- Mid level motherboard form factor/case: ATX/mid tower.

- High end Intel desktop CPU: Intel Core i7 Processor (socket LGA1366).
- Mid level add-in GPU.
- 12GB RAM.

Intel Desktop Workstation 3 Performance (Model: ID-WS3)			
Comp	Spec	Note	Retail
Mother-board	<p><u>ASUS SABERTOOTH X58 (usa.asus.com):</u></p> <ul style="list-style-type: none"> • <u>Intel X58 Express Chipset (intel.com)</u> / LGA1366 / ATX. • 1 x 24 pin motherboard main / 1 x 8 pin EPS 12V CPU. • Triple channel / 6 DIMMs / < 1.65V / 1866 / 1800 / 1600 / 1333 / 1066MHz DDR3 / 24GB max. Supports Intel Extreme Memory Profile (XMP). • No Intel HD Graphics support. Add-in GPU required. • 2 x PCIe 2.0 x16 / 1 x PCIe x16 (x4 mode) / 2 x PCIe x1 / 1 x PCI. Supports dual GPU ATI CrossFireX/NVIDIA SLI at x16/x16. • 2 x internal SATA 6Gb/s / 6 x internal SATA 3Gb/s / 2 x eSATA 3Gb/s back. RAID. • 2 x USB 3.0 back / 12 x USB 2.0/1.1 (6 x back + 6 internal header). Audio header. • 1 x gigabit (10 / 100 / 1000 Mb/s) ethernet. 	<ul style="list-style-type: none"> • ATX. • SATA 6Gb/s. USB 3.0. • Second place: <u>ASUS P6X58D-E (usa.asus.com)</u> \$240. 	\$210
CPU	<p><u>Intel Core i7-950 Processor (ark.intel.com):</u></p> <ul style="list-style-type: none"> • 8MB Cache / 3.06GHz / 4.80GT/s / LGA1366 / 45nm / Bloomfield. • Quad core with Intel Hyper-Threading Technology (4C/8T). • Intel Turbo Boost. • Intel HD Boost. • Intel QuickPath Interconnect (QPI). • No Intel HD Graphics. 		\$300
RAM	<p><u>Kingston KVR1066D3N7K3/12G (shop.kingston.com):</u></p> <ul style="list-style-type: none"> • 12GB 1066MHz DDR3 / 1.5V / Non-ECC / CL7 / Kit 3 x 4GB. 	<ul style="list-style-type: none"> • 1066Mcycles/s x 8Bytes/cycle x 3 channels = 25.6GB/s, which equals the Intel Core i7-950 Processor max memory bandwidth. 	\$180
GPU	<p><u>Sapphire ATI Radeon HD 5770 (Model: 100283-3L):</u></p> <ul style="list-style-type: none"> • 1GB DDR5 / 128-bit / 850MHz core / 4800MHz memory effective. • 1 x PCIe 2.1 x16 / DX11 / SM5.0. • 1 x DisplayPort / 1 x HDMI / 2 x Dual link DVI. • ATI CrossFireX. ATI Eyefinity. 	<ul style="list-style-type: none"> • Occupies one motherboard expansion slot and two case expansion slots. • 1 x 6 pin PCIe power connector required. 500W+ power supply required. • <u>Tom's Hardware Best Graphics Cards For The Money: December 2010 (tomshardware.com)</u>. 	\$175
Hard Drive	<p><u>Western Digital WD1002FAEX (wdc.com):</u></p> <ul style="list-style-type: none"> • Caviar Black / 1.0TB / SATA 6Gb/s / 64MB Cache / 7200rpm. 	<ul style="list-style-type: none"> • SATA 6Gb/s. • Caviar Black. 	\$100
CD/DVD Burner	<p>2 x <u>ASUS DRW-24B1ST:</u></p> <ul style="list-style-type: none"> • SATA. 2MB Cache. • 24X DVD+R/8X DVD+RW/12X DVD+R DL/24X DVD-R/6X DVD-RW/12X DVD-RAM/16X DVD-ROM/48X CD-R/32X CD-RW/48X CD-ROM. 	<ul style="list-style-type: none"> • 4x Newegg Customer Choice Award Winner - CD/DVD Burners. 	\$50
Case	<p><u>Lian Li PC-9F (lian-li.com):</u></p> <ul style="list-style-type: none"> • 473mm x 210 x 498 (H x W x D). • 3 x external 5.25" (one with 5.25" to 3.5" adapter) / 6 x internal 3.5". • 8 x expansion. • Top front I/O: 2 x USB 3.0 / 1 x eSATA / Audio. • Fans: Front 2 x 120mm / Rear 1 x 120mm. 	<ul style="list-style-type: none"> • Regular size mid tower. • Supports microATX and ATX motherboards. • Removable hard drive cage. • 6 kg. • Alternative: If basic regular size mid tower is good enough <u>Antec One Hundred (antec.com)</u> \$60. 	\$140
Power Supply	<p><u>Thermaltake Toughpower 575W (TPX-575M) (thermaltakeusa.com):</u></p> <ul style="list-style-type: none"> • ATX 12V v2.3 / EPS 12V v2.91. • 80 PLUS Bronze Certified / Active PFC / 5 year 	<ul style="list-style-type: none"> • Second place: Or if 6 x SATA and 3 year warranty are good enough <u>Antec High Current Gamer 620W (HCG-620) (antec.com)</u> \$100. 	\$110

	warranty. <ul style="list-style-type: none"> • 1 x 24 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 1 x 8 pin EPS 12V CPU / 1 x 6+2 pin PCIe / 1 x 6 pin PCIe / 8 x SATA / 6 x molex / 1 x floppy. 	
Intel Desktop Workstation 3 Performance (Model: ID-WS3)		\$1265

6. Additional Reading

- [Intel Technologies Demonstrated \(intel.com\)](http://intel.com).
- [Intel Graphics Technology \(intel.com\)](http://intel.com).
- [Intel HD Graphics \(intel.com\)](http://intel.com).
- [Quick Reference Guide To Intel HD Graphics \(software.intel.com\)](http://software.intel.com).
- [Intel Chipsets \(intel.com\)](http://intel.com).
- [Intel Desktop Chipsets \(intel.com\)](http://intel.com).
- [Intel H55 Express Chipset \(intel.com\)](http://intel.com).
- [Intel H57 Express Chipset \(intel.com\)](http://intel.com).
- [Intel Q57 Express Chipset \(intel.com\)](http://intel.com).
- [Intel P55 Express Chipset \(intel.com\)](http://intel.com).
- [Intel X58 Express Chipset \(intel.com\)](http://intel.com).
- [Intel Processors \(intel.com\)](http://intel.com).
- [Intel Desktop Processors \(intel.com\)](http://intel.com).
- [Intel Pentium Processor \(intel.com\)](http://intel.com).
- [Intel Pentium Processor G6950 \(ark.intel.com\)](http://ark.intel.com).
- [Intel Core i3 Processor \(intel.com\)](http://intel.com).
- [Intel Core i5 Processor \(intel.com\)](http://intel.com).
- [Intel Core i7 Processor \(intel.com\)](http://intel.com).
- [Intel Core i7 Processor Extreme Edition \(intel.com\)](http://intel.com).
- [Intel Motherboards \(intel.com\)](http://intel.com).
- [Intel Desktop Boards \(intel.com\)](http://intel.com).
- [ASUS Motherboards \(usa.asus.com\)](http://usa.asus.com).
- [Gigabyte Motherboards \(gigabyte.com\)](http://gigabyte.com).
- [MSI Motherboards \(us.msi.com\)](http://us.msi.com).
- [Kingston \(kingston.com\)](http://kingston.com).
- [Tom's Hardware Best Graphics Cards For The Money: December 2010 \(tomshardware.com\)](http://tomshardware.com).
- [ATI Radeon and ATI FirePro Graphics Cards from AMD \(amd.com\)](http://amd.com).
- [Sapphire \(sapphiretech.com\)](http://sapphiretech.com).
- [Sapphire: Radeon Specifications Matrix \(sapphiretech.com\) \(.xls\)](http://sapphiretech.com).
- [Western Digital: Desktop Hard Drives: WD Caviar Blue \(wdc.com\)](http://wdc.com).
- [Western Digital: Desktop Hard Drives: WD Caviar Black \(wdc.com\)](http://wdc.com).
- [Antec \(antec.com\)](http://antec.com).
- [Cooler Master \(coolermaster.com\)](http://coolermaster.com).
- [Lian Li \(lian-li.com\)](http://lian-li.com).
- [Thermaltake \(thermaltakeusa.com\)](http://thermaltakeusa.com).

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