Intel Desktop Computer Builds: April 2011

Original | No Header, No Background, No Images

Last Updated: 14Apr11 | Published: 28Mar11 | Status: Disontinued

---

1. Introduction

A motherboard chipset (chipset, for short) is a defined set of capabilities upon which a motherboard is built. Specifically, a chipset defines: 1.) the processor, memory, expansion cards, data storage devices, and peripheral devices that are compatible with a motherboard; and 2.) the additional devices (e.g., audio and ethernet) and technologies (e.g., RAID and power management) that are integrated into a motherboard. In other words, a chipset defines a motherboard's capabilities, which, in turn, defines a computer's capabilities. Therefore, when building a computer, the chipset is the most important computer component to choose wisely.

There are two types of desktop chipsets: 1.) AMD desktop chipsets, which support AMD desktop processors; and 2.) Intel desktop chipsets, which support Intel desktop processors. The current Intel desktop chipset manufacturer is Intel, which has a virtual monopoly on the Intel desktop chipset market. Past Intel desktop chipset manufacturers included ATI, Intel, NVIDIA, SiS, and VIA.

A motherboard is an implementation of a chipset. Motherboard manufacturers currently incorporating Intel desktop chipsets into their motherboards include ASRock, ASUS, BIOSTAR, ECS, EVGA, Foxconn, GIGABYTE, Intel, and MSI.

Based on chipset/processor, desktop computers are divided into two types (a.k.a., platforms): 1.) AMD desktop computers, which have an AMD desktop chipset/processor; and 2.) Intel desktop computers, which have an Intel desktop chipset/processor. Therefore, when building a desktop computer you must decide to build either an AMD desktop computer or an Intel desktop computer. This page describes Intel desktop computer builds based on user need.

1.1. Component Overlay

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

i For information on desktop computer components, see Builder's Guide To Desktop Computer Components (stevestechresource.com).

- Motherboard
  - Latest Intel desktop chipsets required:
    - Intel 5 Series Chipsets: Intel H55 Express Chipset (socket LGA1156), Intel H57 Express Chipset (socket LGA1156), Intel Q57 Express Chipset (socket LGA1156), Intel P55 Express Chipset (socket LGA1156), and Intel X58 Express Chipset (socket LGA1366).
    - Intel 6 Series Chipsets: Intel H61 Express Chipset (socket LGA1155), Intel B65 Express Chipset (socket LGA1155), Intel H67 Express Chipset (socket LGA1155), Intel Q67 Express Chipset (socket LGA1155), and Intel P67 Express Chipset (socket LGA1155).

! On January 31, 2011 Intel announced that an issue had been identified with the Intel Series 6 Chipset, that shipment of the affected chipset had been stopped, and that newly manufactured, corrected versions of the chipset will start shipping in late February. For additional information, see Chipset Circuit Design Issue Identified: Update February 7, 2011 (intel.com).

The newly manufactured, corrected versions of the Intel Series 6 Chipset also include B3 stepping. Therefore, to distinguish motherboards with the corrected chipset from those with the affected chipset, motherboard manufacturers have adopted a convention of adding "B3" and/or "<REV 3.0>" to the name and packaging of motherboards with the corrected chipset. For additional information, see Quickly And Easily Identify ASUS New

B3 Revision Motherboards (event.asus.com), GIGABYTE Ships All New B3 6 Series Motherboards (gigabyte.com), and Chipset Stepping (B2/B3) Identification Of MSI's 6 Series Mainboards (event.msi.com).

- microATX form factor required for Intel Desktop Computer 1 eMachine and 2 Mainstream. microATX or ATX form factor required for Intel Desktop Computer 3 Performance/Gaming Low. ATX form factor required for Intel Desktop 4 Gaming Mid and 5 Gaming High.
- SATA 6.0Gb/s not required for Intel Desktop Computer 1 eMachine. SATA 6.0Gb/s required for Intel Desktop Computer 2 Mainstream, 3 Performance/Gaming Low, 4 Gaming Mid, and 5 Gaming High.
- USB 3.0 not required for Intel Desktop Computer 1 eMachine. USB 3.0 required for Intel Desktop Computer 2 Mainstream, 3 Performance/Gaming Low, 4 Gaming Mid, and 5 Gaming High.
- Front USB and audio required. Front USB does not need to be USB 3.0.
- Manufacturers considered: ASUS, GIGABYTE, Intel, and MSI.

- Processor
  - Latest Intel desktop processors required: Intel Pentium Processor G6950 (socket LGA1156), Intel Core i3 Processor (socket LGA1156 or LGA1155-2nd Gen), Intel Core i5 Processor (socket LGA1156 or LGA1155-2nd Gen), Intel Core i7 Processor (socket LGA1156, LGA1366, or LGA1155-2nd Gen), and Intel Core i7 Processor Extreme Edition (socket LGA1366).
  - No overclocking. Therefore, no fancy processor cooling system required. Get boxed processor and use factory heat sink/fan.
- Memory
  - No overclocking. Therefore, no fancy memory cooling system required. Get value memory that passed motherboard testing.
  - Manufacturers considered: Kingston.
- GPU
  - Intel HD Graphics is latest Intel integrated graphics solution. Intel HD Graphics is built into the latest Intel processors, not the motherboard chipset. The latest Intel desktop processors code named Clarkdale and Sandy Bridge include Intel HD Graphics. The latest Intel desktop processors code named Lynnfield, Bloomfield, and Gulftown do not include Intel HD Graphics. Motherboard support for Intel HD Graphics is simply providing video out connectors and an interface to the processor integrated GPU. The Intel H55 Express Chipset, Intel H57 Express Chipset, Intel Q57 Express Chipset, Intel H61 Express Chipset, Intel B65 Express Chipset, Intel H67 Express Chipset, and Intel Q67 Express Chipset support Intel HD Graphics. The Intel P55 Express Chipset, Intel X58 Express Chipset, and Intel P67 Express Chipset do not support Intel HD Graphics.
  - Intel HD Graphics required for Intel Desktop Computer 1 eMachine and 2 Mainstream. Add-in GPU required for Intel Desktop Computer 3 Performance/Gaming Low, 4 Gaming Mid, and 5 Gaming High.
  - Follow Tom's Hardware recommendations.
  - ATI add-in GPU manufacturers considered: Sapphire.
- Hard Drive
  - SATA 6.0Gb/s not required for Intel Desktop Computer 1 eMachine. SATA 6.0Gb/s required for Intel Desktop Computer 2 Mainstream, 3 Performance/Gaming Low, 4 Gaming Mid, and 5 Gaming High.
  - Manufacturers considered: Western Digital.
- CD/DVD Burner
  - Not interested in Blu-ray support.
  - Issues with Pioneer DRV-112D and Plextor PX-740A have me interested in trying a CD/DVD burner manufacturer other than Pioneer or Plextor. That 4x Newegg Customer Choice Award Winner - CD/DVD burner is an ASUS model made the decision easy.
- USB
  - USB 3.0 not required for Intel Desktop Computer 1 eMachine. USB 3.0 required for Intel Desktop Computer 2 Mainstream, 3 Performance/Gaming Low, 4 Gaming Mid, and 5 Gaming High.
  - Front USB required. Front USB does not need to be USB 3.0.
- Firewire (a.k.a., IEEE 1394) and eSATA
  - Not required.
- Audio
  - Integrated audio is sufficient.
  - Front audio required.
- 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 case cooling system required and one case mounted fan is sufficient.
  - Mini tower required for Intel Desktop Computer 1 eMachine and 2 Mainstream. Mid tower or larger required for Intel Desktop Computer 3 Performance/Gaming Low, 4 Gaming Mid, and 5 Gaming High.

    - Front USB and audio required.
    - Manufacturers considered: Antec, Cooler Master, Lian Li, and Thermaltake.
- Power Supply
    - ATX12V v2.2 compliant or above required.
    - Must provide all required connectors. No mismatched connectors. No adapters.
    - Manufacturers considered: Antec, Cooler Master, and Thermaltake.
- Legacy Devices
    - VGA, IDE, FDD, PCI, serial (COM) port/internal header, parallel port/internal header, PS2 keyboard, and PS2 mouse support not required.

1.2. Changes From Intel Desktop Builds: February 2011 (stevestechresource.com)

- Intel Desktop Computer 1 eMachine (Model: IDC1-EMA):
    - Hard Drive: Western Digital WD5000AAKS (wdc.com) $55 to $50.
    - CD/DVD Burner: ASUS DRW-24B1ST $25 to $30.
- Intel Desktop Computer 2 Basic renamed Intel Desktop Computer 2 Mainstream (Model: IDC2-MAI):
    - Motherboard: Socket LGA1156 MSI H55M-ED55 (us.msi.com) $100 to socket LGA1155 MSI H67MA-E35 (B3) (msi.com) $100.
    - Processor: Socket LGA1156 Intel Core i3-550 Processor (ark.intel.com) $130 to socket LGA1155 Intel Core i3-2100 Processor (ark.intel.com) $140.
    - GPU: Add-in Sapphire ATI Radeon HD 4650 (Model: 100254HDMI) $70 to integrated Intel HD Graphics 2000 $0.
    - Hard Drive: 500GB SATA 3.0Gb/s 16MB cache Western Digital WD5000AAKS (wdc.com) $55 to 1.0TB SATA 6.0 Gb/s 32MB cache Western Digital WD10EALX (wdc.com) $80.
    - CD/DVD Burner: ASUS DRW-24B1ST $25 to $30.
    - Case/Power Supply: Cooler Master Sileo 500 case with Cooler Master eXtreme Power Plus 500W power supply (coolermaster-usa.com) $110 to Cooler Master Elite 342 case with Cooler Master Elite Power 400W power supply (coolermaster-usa.com) $70.
    - Build Retail Price: $545 to $475.
- Intel Desktop Computer 3 Intermediate renamed Intel Desktop Computer 3 Performance/Gaming Low (Model: IDC3-GA1):
    - Motherboard: Socket LGA1156 MSI P55M-GD45 (us.msi.com) $135 to socket LGA1155 Intel DQ67SWB3 (intel.com) $140.
    - Processor: Socket LGA1156 Intel Core i5-650 Processor (ark.intel.com) $185 to socket LGA1155 Intel Core i5-2400 Processor (ark.intel.com) $200.
    - Memory: Kingston KVR1333D3N9K2/8G (shop.kingston.com) $120 to $105.
    - GPU: Sapphire ATI Radeon HD 5670 (Model: 100289L) $120 to Sapphire ATI Radeon HD 6850 (Model: 100315L) $185.
    - Hard Drive: SATA 3.0Gb/s 32MB cache Western Digital WD10EALS (wdc.com) $80 to SATA 6.0 Gb/s 64MB cache Western Digital WD1002FAEX (wdc.com) $95.
    - CD/DVD Burner: ASUS DRW-24B1ST $25 to $30.
    - Case/Power Supply: Cooler Master Sileo 500 case with Cooler Master eXtreme Power Plus 500W power supply (coolermaster-usa.com) $110 to Antec Two Hundred (antec.com) case $70 and Antec High Current Gamer HCG-520 (antec.com) power supply $90.
    - Build Retail Price: $775 to $915.
- Intel Desktop Computer 4 Performance renamed Intel Desktop Computer 4 Gaming Mid (Model: IDC4-GA2):
    - Motherboard: Socket LGA1366 supporting dual PCIe Gen2 add-in GPU in 2-way CrossFireX and/or 2-way SLI at x16/x16 mode ASUS SABERTOOTH X58 (usa.asus.com) $210 to socket LGA1155 supporting dual PCIe Gen2 add-in GPU in 2-way CrossFireX and/or 2-way SLI at x8/x8 mode GIGABYTE GA-P67X-UD3-B3 (rev. 1.0) (gigabyte.com) $160.
    - Processor: Socket LGA1366 Intel Core i7-950 Processor (ark.intel.com) $300 to socket LGA1155 Intel Core i7-2600 Processor (ark.intel.com) $300.
    - Memory: 12GB triple channel kit 3 x 4GB Kingston KVR1066D3N7K3/12G (shop.kingston.com) $180 to 8GB dual channel kit 2 x 4GB Kingston KVR1333D3N9K2/8G (shop.kingston.com) $105.
    - GPU: 1 x Sapphire ATI Radeon HD 5770 (Model: 100283-3L) $175 to 2 x Sapphire ATI Radeon HD 6850 (Model: 100315L) 2 x $185.
    - Hard Drive: Western Digital WD1002FAEX (wdc.com) $100 to $95.
    - CD/DVD Burner: 2 x ASUS DRW-24B1ST 2 x $25 to 1 x ASUS DRW-24B1ST $30.
    - Case: Large size mid tower Lian Li PC-9F (lian-li.com) $140 to extended size mid tower Antec P193 V3 (antec.com) $200.
    - Power Supply: 500W+ Thermaltake Toughpower XT 575W (TPX-575M) (thermaltakeusa.com) $110 to 625W+ Thermaltake Toughpower XT 675W (TPX-675M) (thermaltakeusa.com) $130.
    - Build Retail Price: $1265 to $1390.
- Intel Desktop Computer 5 Gaming High (Model: IDC5-GA3):
    - New build.

---

2. Intel Desktop Computer 1 eMachine (Model: IDC1-EMA)

Intended For:

- Casual/budget user wanting a modern computer with the minimum required for a satisfactory Internet, Microsoft Office, and multimedia viewing experience.

Specification Parameters:

- Lowest or near lowest price combination of:
  - Intel 5 or 6 Series Chipset supporting Intel HD Graphics: Intel H55 Express Chipset (LGA1156), Intel H61 Express Chipset (LGA1155), or Intel B65 Express Chipset (LGA1155).
  - Intel socket LGA1156 or LGA1155 processor with Intel HD Graphics: Intel Pentium Processor G6950 (LGA1156) or Intel Core i3 Processor (socket LGA1156 or LGA1155-2nd Gen).
- Memory: 2GB.
- GPU: Integrated Intel HD Graphics.

Intel Desktop Computer 1 eMachine (Model: IDC1-EMA)			
Comp	**Spec**	**Note**	**Retail**
Mother-board	GIGABYTE GA-H55M-S2V (rev. 1.4) (gigabyte.com): • Intel H55 Express Chipset / LGA1156 / microATX. • 1 x 24 pin motherboard main / 1 x 4 pin ATX 12V CPU. • Dual channel memory / 2 DIMMs / 16GB max / DDR3-800/1066/1333 SDRAM / 1.5V / Non-ECC. • Supports Intel HD Graphics. 1 x DVI-D / 1 x VGA. • 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe x1 / 2 x PCI. Supports single PCIe Gen2 add-in GPU (single or double slot) at x16 mode. No CrossFireX/SLI support. • 6 x internal SATA 3.0Gb/s. • 12 x USB 2.0 (8 x back + 4 x front). Front audio. • 1 x gigabit (10/100/1000Mb/s) ethernet.	• microATX. • SATA 3.0Gb/s. USB 2.0. • Selected GIGABYTE GA-H55M-S2V over alternates based on outstanding Newegg customer feedback rating. • Alternate: MSI H55M-E23 (us.msi.com) $80 and ASUS P7H55-M LX (usa.asus.com) $85.	$85
Processor	Intel Pentium Processor G6950 (ark.intel.com): • 3MB cache / 2.8GHz / 2.5GT/s / LGA1156 / 32nm / Max TDP 73W / Clarkdale. • Dual core no Intel Hyper-Threading Technology (2C/2T). • Dual channel memory / 16GB max / DDR3-1066 SDRAM / 17.1GB/s max memory bandwidth. • Intel 64 / Intel VT-x / No Intel Turbo Boost / Intel HD Graphics.		$100
Memory	KVR1066D3N7K2/2G (shop.kingston.com): • 2GB DDR3-1066 SDRAM / CL7 / 1.5V / Non-ECC / Kit 2 x 1GB.	• 1066MT/s x 8B/T x 2 channels = 17.1GB/s, which equals the Pentium Processor G6950 max memory bandwidth.	$30
GPU	Intel HD Graphics (intel.com): • 1 x DVI-D / 1 x VGA.		$0
Hard Drive	Western Digital WD5000AAKS (wdc.com): • Caviar Blue / 500GB / SATA 3.0Gb/s / 16MB cache / 7200rpm.	• SATA 3.0Gb/s.	$50
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.	$30
Case/ Power Supply	Cooler Master Elite 342 case with Cooler Master Elite Power 400W power supply (coolermaster-usa.com): • 352 x 180 x 440mm (H x W x D). 4kg. • Supports microATX, not ATX motherboards. • 2 x external 5.25" / 1 x external 3.5" / 5 x internal 3.5". Removable hard drive tray. • 4 x expansion. • I/O panel: Mid front / 2 x USB 2.0 / Audio. • Fans included: 1 x front 120mm 1200rpm. • Cooler Master Elite Power 400W power supply. 2 year warranty.	• Mini tower.	$70

	• 400W / 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 4 pin peripheral / 1 x floppy.		
Intel Desktop Computer 1 eMachine (Model: IDC1-EMA)			$365

3. Intel Desktop Computer 2 Mainstream (Model: IDC2-MAI)

Intended For:

- Typical home/office user.
- User who occasionally executes multiple system resource intensive applications simultaneously.

Specification Parameters:

- Inexpensive combination of:
  - Intel 6 Series Chipset supporting Intel HD Graphics 2000/3000: Intel H67 Express Chipset (LGA1155).
  - Intel socket LGA1155 processor with Intel HD Graphics 2000/3000: Second Generation Intel Core i3 Processor.
- Memory: 4GB.
- GPU: Integrated Intel HD Graphics 2000/3000.

Intel Desktop Computer 2 Mainstream (Model: IDC2-MAI)			
Comp	**Spec**	**Note**	**Retail**
Mother-board	MSI H67MA-E35 (B3) (msi.com): • Intel H67 Express Chipset / LGA1155 / microATX. • 1 x 24 pin motherboard main / 1 x 4 pin ATX 12V CPU. • Dual channel memory / 2 DIMMs / 16GB max / DDR3-1066/1333 SDRAM / 1.5V / Non-ECC. • Supports Intel HD Graphics. 1 x HDMI / 1 x DVI-D / 1 x VGA. • 1 x PCIe Gen2 x16 (x16 mode) / 2 x PCIe Gen2 x1 / 1 x PCI. Supports single PCIe Gen2 add-in GPU (single or double slot) at x16 mode. No CrossFireX/SLI support. • 2 x internal SATA 6.0Gb/s / 4 x internal SATA 3.0Gb/s. RAID. • 2 x USB 3.0 (2 x back) / 10 x USB 2.0 (4 x back + 6 x front). Front audio. • 1 x gigabit (10/100/1000Mb/s) ethernet.	• microATX. • SATA 6.0Gb/s. USB 3.0. • Alternate: ASUS P8H67-M LE (usa.asus.com) $110. For 1 x back eSATA 3.0Gb/s but only 3 x internal SATA 3.0Gb/s, GIGABYTE GA-H67MA-D2H-B3 (rev. 1.1) (gigabyte.com) $110. • Awaiting release/price for similarly spec'd (i.e, with back USB 3.0) GIGABYTE GA-H67MA-USB3-B3 (gigabyte.com), Intel DH67VRB3 (intel.com), and Intel DH67BLB3 (intel.com).	$100
Processor	Intel Core i3-2100 Processor (ark.intel.com): • 3MB cache / 3.10GHz / 5.0GT/s / LGA1155 / 32nm / Max TDP 65W / Sandy Bridge. • Dual core with Intel Hyper-Threading Technology (2C/4T). • Dual channel memory / 32GB max / DDR3-1066/1333 SDRAM / 21.3GB/s max memory bandwidth. • Intel 64 / Intel VT-x / No Intel Turbo Boost / Intel HD Graphics 2000.		$140
Memory	Kingston KVR1333D3N9K2/4G (shop.kingston.com): • 4GB DDR3-1333 SDRAM / CL9 / 1.5V / Non-ECC / Kit 2 x 2GB.	• 1333MT/s x 8B/T x 2 channels = 21.3GB/s, which equals the Intel Core i3-2100 Processor max memory bandwidth.	$55
GPU	Intel HD Graphics 2000 (intel.com): • 1 x HDMI / 1 x DVI-D / 1 x VGA.		$0
Hard Drive	Western Digital WD10EALX (wdc.com): • Caviar Blue / 1.0TB / SATA 6.0Gb/s / 32MB cache / 7200rpm.	• SATA 6.0Gb/s.	$80
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.	$30

Case/ Power Supply	Cooler Master Elite 342 case with Cooler Master Elite Power 400W power supply (coolermaster-usa.com): • 352 x 180 x 440mm (H x W x D). 4kg. • Supports microATX, not ATX motherboards. • 2 x external 5.25" / 1 x external 3.5" / 5 x internal 3.5". Removable hard drive tray. • 4 x expansion. • I/O panel: Mid front / 2 x USB 2.0 / Audio. • Fans included: 1 x front 120mm 1200rpm. • Cooler Master Elite Power 400W power supply. 2 year warranty. • 400W / 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 4 pin peripheral / 1 x floppy.	• Mini tower.	$70
Intel Desktop Computer 2 Mainstream (Model: IDC2-MAI)			$475

4. Intel Desktop Computer 3 Performance/Gaming Low (Model: IDC3-GA1)

Intended For:

- Power user.
- User who frequently executes multiple system resource intensive applications simultaneously.
- Entry level gaming.

Specification Parameters:

- Mid level Intel 5 or 6 Series Chipset: Intel H57 Express Chipset (LGA1156), Intel Q57 Express Chipset (LGA1156), Intel H67 Express Chipset (LGA1155), or Intel Q67 Express Chipset.
- Mid level Intel Core processor: Intel Core i5 Processor (socket LGA1156 or LGA1155-2nd Gen).
- Memory: 8GB.
- GPU: 1 x mid/high end PCIe Gen2 add-in GPU.

Intel Desktop Computer 3 Performance/Gaming Low (Model: IDC3-GA1)			
Comp	**Spec**	**Note**	**Retail**
Mother-board	Intel DQ67SWB3 (intel.com): • Intel Q67 Express Chipset / LGA1155 / microATX. • 1 x 24 pin motherboard main / 1 x 4 pin ATX 12V CPU. • Dual channel memory / 4 DIMMs / 32GB max / DDR3-1066/1333 SDRAM / 1.5V / Non-ECC. • Supports Intel HD Graphics. 1 x DisplayPort / 1 x DVI-D / 1 x DVI-I. • 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen2 x4 / 1 x PCIe Gen2 x1 / 1 x PCI. Supports single PCIe Gen2 add-in GPU (single or double slot) at x16 mode. No CrossFireX/SLI support. • 2 x internal SATA 6.0Gb/s / 2 x internal SATA 3.0Gb/s / 2 x back eSATA 3.0Gb/s. RAID. • 2 x USB 3.0 (2 x back) / 12 x USB 2.0 (4 x back + 8 x front. Front audio. • 1 x gigabit (10/100/1000Mb/s) ethernet.	• microATX. • SATA 6.0Gb/s. USB 3.0. • Many P55/P67 chipset motherboards are 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen1/Gen2 x16 (x4 mode), which is an inferior implementation of the P55/P67 chipset that does not support 2-way CrossFireX/SLI at x8/x8 mode. Apart from possibly better overclocking features, a 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen1/Gen2 x16 (x4 mode) P55/P67 chipset motherboard is essentially an overpriced H55/H57 /Q57/H67/Q67 chipset motherboard minus the support for Intel HD Graphics. In other words, apart from possibly better overclocking features, there is no reason to select a 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen1/Gen2 x16 (x4 mode) P55/P67 chipset motherboard over an H55/H57/Q57/H67/Q67 chipset motherboard.	$140
Processor	Intel Core i5-2400 Processor (ark.intel.com): • 6MB cache / 3.10GHz / 5.0GT/s / LGA1155 / 32nm / Max TDP 95W / Sandy Bridge. • Quad core no Intel Hyper-Threading Technology (4C/4T). • Dual channel memory / 32GB max / DDR3-1066/1333 SDRAM / 21.3GB/s max memory bandwidth.	• Alternate: For 8MB cache, 3.40GHz, and 4C/8T, Intel Core i7-2600 Processor (ark.intel.com) $300.	$200

	• Intel 64 / Intel VT-x / Intel Turbo Boost 2.0 / Intel HD Graphics.		
Memory	Kingston KVR1333D3N9K2/8G (shop.kingston.com): • 8GB DDR3-1333 SDRAM / CL9 / 1.5V / Non-ECC / Kit 2 x 4GB.	• 1333MT/s x 8B/T x 2 channels = 21.3GB/s, which equals the Intel Core i5-2400 Processor max memory bandwidth.	$105
GPU	Sapphire ATI Radeon HD 6850 (Model: 100315L): • PCIe Gen2 x16. • 1GB DDR5 / 256-bit / 775MHz core / 4000MHz effective memory. • 1 x DisplayPort / 1 x HDMI / 1 x dual link DVI / 1 x single link DVI-D. • DX11 / SM5.0 / ATI Eyefinity. Supports 2-Way CrossFireX. • Length ~240mm. Double slot (i.e., installs in single expansion slot, but, due to width, effectively occupies two adjacent expansion slots). • Max TDP 127W. 1 x 6 pin PCIe power connector required. 500W power supply required.	• Tom's Hardware Best Graphics Cards For the Money: March 2011 (tomshardware.com). • Alternate: To cut cost or if not a gamer, Sapphire ATI Radeon HD 5770 (Model: 100283-3L): $140	$185
Hard Drive	Western Digital WD1002FAEX (wdc.com): • Caviar Black / 1.0TB / SATA 6.0Gb/s / 64MB cache / 7200rpm.	• SATA 6.0Gb/s. 64MB cache. • Difficult to justify ~$0.50/GB for 10,000rpm SATA 6.0Gb/s Western Digital VelociRaptor or ~$2/GB for SATA 3.0Gb/s or 6.0Gb/s SSD.	$95
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.	$30
Case	Antec Two Hundred (antec.com): • 450 x 200 x 470mm (H x W x D). 6.3kg. • Supports microATX and ATX motherboards. • 3 x external 5.25" / 6 x internal 3.5". • 7 x expansion. • I/O panel: Top front / 2 x USB 2.0 / Audio. • Fans included: 1 x top 140mm TwoCool / 1 x back 120mm TwoCool. • Max add-in card length 292mm.	• Medium size mid tower. • Power supply is bottom mounted, double slot add-in GPU lines up with top edge of top internal 3.5" bay, and, therefore, bottom five internal 3.5" bays are unobstructed for 3.5" hard drive installation/removal. • Alternate: For slightly larger and nicer case, Lian Li PC-9F (lian-li.com) $140.	$70
Power Supply	Antec High Current Gamer HCG-520 (antec.com): • 520W / ATX 12V v2.3 / EPS 12V v2.91. • 80 PLUS Bronze Certified / Active PFC / 3 year warranty. • 1 x 20+4 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 2 x 6+2 pin PCIe / 1 x 6 pin PCIe / 6 x SATA / 6 x 4 pin peripheral / 1 x floppy. • 150 x 86 x 160mm (W x H x D). 2.0kg.		$90
Intel Desktop Computer 3 Performance/Gaming Low (Model: IDC3-GA1)			$915

5. Intel Desktop Computer 4 Gaming Mid (Model: IDC4-GA2)

Intended For:

- Mid level gaming.

> *i* The Intel Desktop Computer 4 Gaming Mid is designed to support dual add-in GPU in 2-way CrossFireX/SLI, and, therefore, many of its components are exorbitant if dual add-in GPU are not installed. In other words, if you are interested in building a high performance Intel desktop computer with a single add-in GPU, the Intel Desktop Computer 3 Performance/Gaming Low (above) is more appropriate and likely more than sufficient.

Specification Parameters:

- Intel 5 or 6 Series Chipset supporting dual PCIe Gen2 add-in GPU in 2-way CrossFireX and/or 2-way SLI at x8/x8 mode or x16/x16 mode: Intel P55 Express Chipset (LGA1156), Intel X58 Express Chipset (LGA1366), or Intel P67 Express Chipset (LGA1155).
- High end Intel Core processor: Intel Core i7 Processor (socket LGA1156, LGA1366, or LGA1155-2nd Gen).

- Memory: 8GB.
- GPU: 2 x mid/high end PCIe Gen2 add-in GPU.

Intel Desktop Computer 4 Gaming Mid (Model: IDC4-GA2)			
Comp	**Spec**	**Note**	**Retail**
Mother-board	GIGABYTE GA-P67X-UD3-B3 (rev. 1.0) (gigabyte.com): • Intel P67 Express Chipset / LGA1155 / ATX. • 1 x 24 pin motherboard main / 1 x 8 pin EPS 12V CPU. • Dual channel memory / 4 DIMMs / 32GB max / DDR3-1066/1333 SDRAM / 1.5V / Non-ECC. • No Intel HD Graphics support. Add-in GPU required. • 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen2 x16 (x8 mode) / 3 x PCIe Gen2 x1 / 2 x PCI. Supports single PCIe Gen2 add-in GPU (single or double slot) at x16 mode. Supports dual PCIe Gen2 add-in GPU (single or double slot) in 2-way CrossFireX and 2-way SLI at x8/x8 mode. Installing two double slot add-in GPUs does not require a case with 8 expansion slots. • 4 x internal SATA 6.0Gb/s / 4 x internal SATA 3.0Gb/s. RAID. • 4 x USB 3.0 (2 x back + 2 x front) / 14 x USB 2.0 (8 x back + 6 x front). Front audio. • 1 x gigabit (10/100/1000Mb/s) ethernet.	• ATX. • SATA 6.0Gb/s. USB 3.0. • Many P55/P67 chipset motherboards are 1 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen1/Gen2 x16 (x4 mode), which is an inferior implementation of the P55/P67 chipset that does not support 2-way CrossFireX/SLI at x8/x8 mode. • X58 chipset (LGA1366) motherboards supporting dual PCIe Gen2 add-in GPU in 2-way CrossFireX/SLI at x16/x16 start at ~$200. • Awaiting release of more P67 chipset (socket LGA1155) motherboards modified for 2-way CrossFireX/SLI at x16/x16 mode. • Awaiting release of Intel Z68 Express Chipset (socket LGA1155) ~May11.	$160
Processor	Intel Core i7-2600 Processor (ark.intel.com): • 8MB cache / 3.40GHz / 5.0GT/s / LGA1155 / 32nm / Max TDP 95W / Sandy Bridge. • Quad core with Intel Hyper-Threading Technology (4C/8T). • Dual channel memory / 32GB max / DDR3-1066/1333 SDRAM / 21.3GB/s max memory bandwidth. • Intel 64 / Intel VT-x / Intel Turbo Boost 2.0 / Intel HD Graphics.	• Alternate: To cut cost, Intel Core i5-2400 Processor (ark.intel.com) $200.	$300
Memory	Kingston KVR1333D3N9K2/8G (shop.kingston.com): • 8GB DDR3-1333 SDRAM / CL9 / 1.5V / Non-ECC / Kit 2 x 4GB.	• 1333MT/s x 8B/T x 2 channels = 21.3GB/s, which equals the Intel Core i7-2600 Processor max memory bandwidth.	$105
GPU	2 x Sapphire ATI Radeon HD 6850 (Model: 100315L): • PCIe Gen2 x16. • 1GB DDR5 / 256-bit / 775MHz core / 4000MHz effective memory. • 1 x DisplayPort / 1 x HDMI / 1 x dual link DVI / 1 x single link DVI-D. • DX11 / SM5.0 / ATI Eyefinity. Supports 2-Way CrossFireX. • Length ~240mm. Double slot (i.e., installs in single expansion slot, but, due to width, effectively occupies two adjacent expansion slots). • Max TDP 127W each. 1 x 6 pin PCIe power connector required each.	• Tom's Hardware Best Graphics Cards For the Money: March 2011 (tomshardware.com). • Alternate: To cut cost, 2 x Sapphire ATI Radeon HD 5770 (Model: 100283-3L): 2 x $140	2 x $185
Hard Drive	Western Digital WD1002FAEX (wdc.com): • Caviar Black / 1.0TB / SATA 6.0Gb/s / 64MB cache / 7200rpm.	• SATA 6.0Gb/s. 64MB cache. • Difficult to justify ~$0.50/GB for 10,000rpm SATA 6.0Gb/s Western Digital VelociRaptor or ~$2/GB for SATA 3.0Gb/s or 6.0Gb/s SSD.	$95
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.	$30
Case	Antec P193 V3 (antec.com): • 514 x 205 x 590mm (H x W x D). 19.6kg.	• Extended size mid tower.	$200

	• Supports microATX, ATX, and extended ATX motherboards. • 4 x external 5.25" / 1 x external 3.5" / 6 x internal 3.5" / 2 x internal 2.5". Two removable hard drive trays. • 7 x expansion. • I/O panel: Mid front / 1 x USB 3.0 / 2 x USB 2.0 / Audio. • Fans included: 2 x top 140mm TriCool / 1 x back 120mm TriCool / 1 x side 200mm. • More than sufficient space for 2 x Sapphire ATI Radeon HD 6850.		
Power Supply	Thermaltake Toughpower XT 675W (TPX-675M) (thermaltakeusa.com): • 675W / ATX 12V v2.3 / EPS 12V v2.91. • 80 PLUS Bronze Certified / CrossFireX Certified / SLI Certified / Active PFC / 5 year warranty. • 1 x 24 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 1 x 8 pin EPS 12V CPU / 2 x 6+2 pin PCIe / 2 x 6 pin PCIe / 8 x SATA / 6 x 4 pin peripheral / 1 x floppy. Modular cable management. • 150 x 86 x 160mm (W x H x D).		$130
Intel Desktop Computer 4 Gaming Mid (Model: IDC4-GA2)			$1390

6. Intel Desktop Computer 5 Gaming High (Model: IDC5-GA3)

Intended For:

- High end, not extreme, gaming.

i The Intel Desktop Computer 5 Gaming High is designed to support triple add-in GPU in 3-way CrossFireX/SLI, and, therefore, many of its components are exorbitant if multiple add-in GPU are not installed. In other words, if you are interested in building a high performance Intel desktop computer with a single add-in GPU, the Intel Desktop Computer 3 Performance/Gaming Low (above) is more appropriate and likely more than sufficient.

Specification Parameters:

- Intel 5 or 6 Series Chipset supporting triple PCIe Gen2 add-in GPU in 3-way CrossFireX and/or 3-way SLI at x16/x8/x8 mode: Intel X58 Express Chipset (LGA1366), Intel X58 Express Chipset (LGA1366) plus NVIDIA NF200 chip, Intel P67 Express Chipset (LGA1155) plus NVIDIA NF200 chip, or Intel P67 Express Chipset (LGA1155) plus Lucid LT22102 chip.
- High end Intel Core processor: Intel Core i7 Processor (socket LGA1156, LGA1366, or LGA1155-2nd Gen).
- Memory: 12GB.
- GPU: 3 x high end PCIe Gen2 add-in GPU.

Intel Desktop Computer 5 Gaming High (Model: IDC5-GA3)			
Comp	**Spec**	**Note**	**Retail**
Mother-board	ASUS Rampage III Formula (usa.asus.com): • Intel X58 Express Chipset / LGA1366 / ATX. • 1 x 24 pin motherboard main / 1 x 8 pin EPS 12V CPU. • Triple channel memory / 6 DIMMs / 24GB max / DDR3-1066/1333 SDRAM / < 1.65V / Non-ECC. • No Intel HD Graphics support. Add-in GPU required. • 2 x PCIe Gen2 x16 (x16 mode) / 1 x PCIe Gen2 x16 (x8 mode) / 2 x PCIe x1 / 1 x PCI. Supports single PCIe Gen2 add-in GPU (single or double slot) at x16 mode. Supports dual PCIe Gen2 add-in GPU (single or double slot) in 2-way CrossFireX and 2-way SLI at x16/x16 mode. Supports triple PCIe Gen2 add-in GPU (single or double slot) in 3-way CrossFireX and 3-way SLI at x16/x8/x8 mode. Installing three double slot add-in GPUs does not require a case with 8 expansion slots. • 2 x internal SATA 6.0Gb/s / 6 x internal SATA 3.0Gb/s / 2 x back eSATA 3.0Gb/s. RAID. • 2 x USB 3.0 (2 x back) / 12 x USB 2.0 (6 x back + 4 x front + 1 x back reserved + 1 x internal reserved). Front audio.	• ATX. • SATA 6.0Gb/s. USB 3.0. • Awaiting release of more P67 chipset (socket LGA1155) motherboards modified for 3-way CrossFireX/SLI at x16/x8/x8 mode. • Awaiting release of Intel Z68 Express Chipset (socket LGA1155) ~May11.	$305

	• 1 x gigabit (10/100/1000Mb/s) ethernet.		
Processor	Intel Core i7-960 Processor (ark.intel.com): • 8MB cache / 3.20GHz / 4.8GT/s / LGA1366 / 45nm / Max TDP 130W / Bloomfield. • Four core with Intel Hyper-Threading Technology (4C/8T). • Triple channel memory / 24GB max / DDR3-800/1066 SDRAM / 25.6GB/s max memory bandwidth. • Intel 64 / Intel VT-x / Intel Turbo Boost / No Intel HD Graphics.		$300
Memory	Kingston KVR1066D3N7K3/12G (shop.kingston.com): • 12GB DDR3-1066 SDRAM / CL7 / 1.5V / Non-ECC / Kit 3 x 4GB.	• 1066MT/s x 8B/T x 3 channels = 25.6GB/s, which equals the Intel Core i7-970 Processor max memory bandwidth.	$160
GPU	3 x Sapphire ATI Radeon HD 6950 (Model: 100312SR): • PCIe Gen2 x16. • 2GB DDR5 / 256-bit / 800MHz core / 5000MHz effective memory. • 2 x mini DisplayPort / 1 x HDMI / 1 x dual link DVI / 1 x single link DVI-D. • DX11 / SM5.0 / ATI Eyefinity. Supports 2-Way and 3-Way CrossFireX. • Length ~280mm. Double slot (i.e., installs in single expansion slot, but, due to width, effectively occupies two adjacent expansion slots). • Max TDP 200W each. 2 x 6 pin PCIe power connector required each.	• Tom's Hardware Best Graphics Cards For the Money: March 2011 (tomshardware.com).	3 x $300
Hard Drive	Western Digital WD1002FAEX (wdc.com): • Caviar Black / 1.0TB / SATA 6.0Gb/s / 64MB cache / 7200rpm.	• SATA 6.0Gb/s. 64MB cache. • Difficult to justify ~$0.50/GB for 10,000rpm SATA 6.0Gb/s Western Digital VelociRaptor or ~$2/GB for SATA 3.0Gb/s or 6.0Gb/s SSD.	$95
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.	$30
Case	Antec P193 V3 (antec.com): • 514 x 205 x 590mm (H x W x D). 19.6kg. • Supports microATX, ATX, and extended ATX motherboards. • 4 x external 5.25" / 1 x external 3.5" / 6 x internal 3.5" / 2 x internal 2.5". Two removable hard drive trays. • 7 x expansion. • I/O panel: Mid front / 1 x USB 3.0 / 2 x USB 2.0 / Audio. • Fans included: 2 x top 140mm TriCool / 1 x back 120mm TriCool / 1 x side 200mm. • More than sufficient space for 3 x Sapphire ATI Radeon HD 6950.	• Extended size mid tower.	$200
Power Supply	Thermaltake Toughpower Grand 1050W (TPG-1050M) (thermaltakeusa.com): • 1050W / ATX 12V v2.3 / EPS 12V v2.92. • 80 PLUS Gold Certified / CrossFireX Certified / SLI Certified / Active PFC / 7 year warranty. • 1 x 24 pin motherboard main / 1 x 4+4 pin ATX/EPS 12V CPU / 1 x 8 pin EPS 12V CPU / 8 x 6+2 pin PCIe / 12 x SATA / 8 x 4 pin peripheral / 1 x floppy. Modular cable management. • 150 x 86 x 180mm (W x H x D).		$270
Intel Desktop Computer 5 Gaming High (Model: IDC5-GA3)			$2260

7. Additional Reading

- Intel Technologies Demonstrated (intel.com).
- Intel Graphics Technology (intel.com).
- Intel HD Graphics (intel.com).
- Quick Reference Guide To Intel HD Graphics (software.intel.com).
- Intel Core i3 Desktop Processors That Contain Intel HD Graphics (intel.com).
- Intel Core i5 Desktop Processors That Contain Intel HD Graphics (intel.com).
- Intel Core i7 Desktop Processors That Contain Intel HD Graphics (intel.com).
- Intel Chipsets (intel.com).
- Intel Desktop Chipsets (intel.com).
- Intel 5 Series Chipset (intel.com).
- Intel H55 Express Chipset (intel.com).
- Intel H57 Express Chipset (intel.com).
- Intel Q57 Express Chipset (intel.com).
- Intel P55 Express Chipset (intel.com).
- Intel X58 Express Chipset (intel.com).
- Intel 6 Series Chipset (intel.com).
- Intel H61 Express Chipset (intel.com).
- Intel B65 Express Chipset (intel.com).
- Intel H67 Express Chipset (intel.com).
- Intel Q67 Express Chipset (intel.com).
- Intel P67 Express Chipset (intel.com).
- Intel Processors (intel.com).
- Intel Desktop Processors (intel.com).
- Intel Pentium Processor (intel.com).
- Intel Pentium Processor G6950 (ark.intel.com).
- Intel Core i3 Processor (intel.com).
- Intel Core i5 Processor (intel.com).
- Intel Core i7 Processor (intel.com).
- Intel Core i7 Processor Extreme Edition (intel.com).
- Intel Motherboards (intel.com).
- Intel Desktop Boards (intel.com).
- ASUS Motherboards (usa.asus.com).
- Gigabyte Motherboards (gigabyte.com).
- MSI Motherboards (us.msi.com).
- Kingston (kingston.com).
- Tom's Hardware Best Graphics Cards For The Money: December 2010 (tomshardware.com).
- ATI Radeon and ATI FirePro Graphics Cards from AMD (amd.com).
- Sapphire (sapphiretech.com).
- Sapphire: Radeon Specifications Matrix (sapphiretech.com) (.xls).
- Western Digital: Desktop Hard Drives: WD Caviar Blue (wdc.com).
- Western Digital: Desktop Hard Drives: WD Caviar Black (wdc.com).
- Newegg (newegg.com).
- Antec (antec.com).
- Cooler Master (coolermaster.com).
- Lian Li (lian-li.com).
- Thermaltake (thermaltakeusa.com).

Steve's Tech Resource
The Web Development, Internet, Software, Hardware, and Multimedia Resource