

# CompTIA A+ Essentials (2009 Edition) Objectives

## Exam Number: 220-701

### Introduction

In order to receive CompTIA A+ certification a candidate must pass two exams. The first exam is CompTIA A+ Essentials, exam number 220-701. The CompTIA A+ Essentials examination measures necessary competencies for an entry-level IT professional with the equivalent knowledge of at least 500 hours of hands-on experience in the lab or field. Successful candidates will have the knowledge required to understand the fundamentals of computer technology, networking, and security, and will have the skills required to identify hardware, peripheral, networking, and security components. Successful candidates will understand the basic functionality of the operating system and basic troubleshooting methodology, practice proper safety procedures, and will effectively interact with customers and peers.

CompTIA A+ is ISO 17024 Accredited (Personnel Certification Accreditation) and, as such, undergoes regular reviews and updates to the exam objectives. The following CompTIA A+ Essentials objectives reflect the subject areas in the 2009 Edition of the exam and result from subject matter expert workshops and industry-wide survey results regarding the skills and knowledge required of an entry-level IT professional. The percentages in this document represent the relative importance of the subject areas (domains) in the associated body of knowledge, and together establish the foundation of an entry-level IT professional.

This examination blueprint includes domain weighting, test objectives, and example content. Example topics and concepts are included to clarify the test objectives and should not be construed as a comprehensive listing of all the content of this examination.

Candidates are encouraged to use this document to guide their studies. The contents of the examination blueprint help prioritize topics and provide a guide of what to expect on the CompTIA A+ Essentials exam. The table below lists the domains measured by this examination and the extent to which they are represented. The CompTIA A+ Essentials (2009 Edition) exam is based on these objectives.

Domain	Percentage of Examination
1.0 Hardware	27%
2.0 Troubleshooting, Repair & Maintenance	20%
3.0 Operating System and Software	20%
4.0 Networking	15%
5.0 Security	8%
6.0 Operational Procedure	10%
Total	100%

**\*\*Note:** The lists of examples provided in bulleted format below each objective are not exhaustive lists. Other examples of technologies, processes or tasks pertaining to each objective may also be included on the exam although not listed or covered in this objectives document.

*CompTIA is constantly reviewing the content of exams and updating test questions to be sure exams are current and the security of the questions is protected. When necessary, they will publish updated exams based on existing exam objectives. Please know that all related exam preparation materials will still be valid.*

# 1.0 Hardware

## 1.1 Categorize storage devices and backup media

- **FDD**
- **HDD**
  - Solid state vs. magnetic
- **Optical drives**
  - CD / DVD / RW / Blu-Ray
- **Removable storage**
  - Tape drive
  - Solid state (e.g. thumb drive, flash, SD cards, USB)
  - External CD-RW and hard drive
  - Hot swappable devices and non-hot swappable devices

## 1.2 Explain motherboard components, types and features

- **Form Factor**
  - ATX / BTX,
  - micro ATX
  - NLX
- **I/O interfaces**
  - Sound
  - Video
  - USB 1.1 and 2.0
  - Serial
  - IEEE 1394 / Firewire
  - Parallel
  - NIC
  - Modem
  - PS/2
- **Memory slots**
  - RIMM
  - DIMM
  - SODIMM
  - SIMM
- **Processor sockets**
- **Bus architecture**
- **Bus slots**
  - PCI
  - AGP
  - PCIe
  - AMR
  - CNR
  - PCMCIA
- **PATA**
  - IDE
  - EIDE
- **SATA, eSATA**
- **Contrast RAID (levels 0, 1, 5)**
- **Chipsets**
- **BIOS / CMOS / Firmware**
  - POST
  - CMOS battery

- Riser card / daughterboard

**1.3 Classify power supplies types and characteristics**

- AC adapter
- ATX proprietary
- Voltage, wattage and capacity
- Voltage selector switch
- Pins (20, 24)

**1.4 Explain the purpose and characteristics of CPUs and their features**

- Identify CPU types
  - AMD
  - Intel
- Hyper threading
- Multi core
  - Dual core
  - Triple core
  - Quad core
- Onchip cache
  - L1
  - L2
- Speed (real vs. actual)
- 32bit vs. 64 bit

**1.5 Explain cooling methods and devices**

- Heat sinks
- CPU and case fans
- Liquid cooling systems
- Thermal compound

**1.6 Compare and contrast memory types, characteristics and their purpose**

- Types
  - DRAM
  - SRAM
  - SDRAM
  - DDR / DDR2 / DDR3
  - RAMBUS
- Parity vs. Non-parity
- ECC vs. non-ECC
- Single sided vs. double sided
- Single channel vs. dual channel
- Speed
  - PC100
  - PC133
  - PC2700
  - PC3200
  - DDR3-1600
  - DDR2-667

**1.7 Distinguish between the different display devices and their characteristics**

- Projectors, CRT and LCD
- LCD technologies
  - Resolution (e.g. XGA, SXGA+, UXGA, WUXGA)
  - Contrast ratio
  - Native resolution
- Connector types
  - VGA

- **HDMI**
- **S-Video**
- **Component / RGB**
- **DVI pin compatibility**
- **Settings**
  - **Refresh rate**
  - **Resolution**
  - **Multi-monitor**
  - **Degauss**

#### **1.8 Install and configure peripherals and input devices**

- **Mouse**
- **Keyboard**
- **Bar code reader**
- **Multimedia (e.g. web and digital cameras, MIDI, microphones)**
- **Biometric devices**
- **Touch screen**
- **KVM switch**

#### **1.9 Summarize the function and types of adapter cards**

- **Video**
  - **PCI**
  - **PCIe**
  - **AGP**
- **Multimedia**
  - **Sound card**
  - **TV tuner cards**
  - **Capture cards**
- **I/O**
  - **SCSI**
  - **Serial**
  - **USB**
  - **Parallel**
- **Communications**
  - **NIC**
  - **Modem**

#### **1.10 Install, configure and optimize laptop components and features**

- **Expansion devices**
  - **PCMCIA cards**
  - **PCI Express cards**
  - **Docking station**
- **Communication connections**
  - **Bluetooth**
  - **Infrared**
  - **Cellular WAN**
  - **Ethernet**
  - **Modem**
- **Power and electrical input devices**
  - **Auto-switching**
  - **Fixed input power supplies**
  - **Batteries**
- **Input devices**
  - **Stylus / digitizer**
  - **Function keys**
  - **Point devices (e.g. touch pad, point stick / track point)**

### 1.11 Install and configure printers

- Differentiate between printer types
  - Laser
  - Inkjet
  - Thermal
  - Impact
- Local vs. network printers
- Printer drivers (compatibility)
- Consumables

## 2.0 Troubleshooting, Repair and Maintenance

### 2.1 Given a scenario, explain the troubleshooting theory

- Identify the problem
  - Question the user and identify user changes to computer and perform backups before making changes
- Establish a theory of probable cause (question the obvious)
- Test the theory to determine cause
  - Once theory is confirmed determine next steps to resolve problem
  - If theory is not confirmed re-establish new theory or escalate
- Establish a plan of action to resolve the problem and implement the solution
- Verify full system functionality and if applicable implement preventative measures
- Document findings, actions and outcomes

### 2.2 Given a scenario, explain and interpret common hardware and operating system symptoms and their causes

- OS related symptoms
  - Bluescreen
  - System lock-up
  - Input/output device
  - Application install
  - Start or load
  - Windows specific printing problems
  - Print spool stalled
  - Incorrect / incompatible driver
- Hardware related symptoms
  - Excessive heat
  - Noise ○ Odors
  - Status light indicators
  - Alerts
  - Visible damage (e.g. cable, plastic)
- Use documentation and resources
  - User / installation manuals
  - Internet / web based
  - Training materials

### 2.3 Given a scenario, determine the troubleshooting methods and tools for printers

- Manage Print Jobs
- Print spooler
- Printer properties and settings
- Print a test page

### 2.4 Given a scenario, explain and interpret common laptop issues and determine the appropriate basic troubleshooting method

- Issues
  - Power conditions
  - Video

- Keyboard
- Pointer
- Stylus
- Wireless card issues
- **Methods**
  - Verify power (e.g. LEDs, swap AC adapter)
  - Remove unneeded peripherals
  - Plug in external monitor
  - Toggle Fn keys or hardware switches
  - Check LCD cutoff switch
  - Verify backlight functionality and pixilation
  - Check switch for built-in WIFI antennas or external antennas

### 2.5 Given a scenario, integrate common preventative maintenance techniques

- **Physical inspection**
- **Updates**
  - Driver
  - Firmware
  - OS
  - Security
- **Scheduling preventative maintenance**
  - Defrag
  - Scandisk ○
  - Check disk
  - Startup programs
- **Use of appropriate repair tools and cleaning materials**
  - Compressed air
  - Lint free cloth
  - Computer vacuum and compressors
- **Power devices**
  - Appropriate source such as power strip, surge protector or UPS
- **Ensuring proper environment**
- **Backup procedures**

## 3.0 Operating Systems and Software - Unless otherwise noted, operating systems referred to within include Microsoft Windows 2000, Windows XP Professional, XP Home, XP MediaCenter, Windows Vista Home, Home Premium, Business and Ultimate.

### 3.1 Compare and contrast the different Windows Operating Systems and their features

- **Windows 2000, Windows XP 32bit vs. 64bit, Windows Vista 32 bit vs. 64bit**
  - Side bar, Aero, UAC, minimum system requirements, system limits
  - Windows 2000 and newer – upgrade paths and requirements
  - Terminology (32bit vs. 64bit – x86 vs. x64)
  - Application compatibility, installed program locations (32bit vs. 64bit), Windows compatibility mode
  - User interface, start bar layout

### 3.2 Given a scenario, demonstrate proper use of user interfaces

- **Windows Explorer**
- **My Computer**
- **Control Panel**
- **Command prompt utilities**
  - telnet
  - ping
  - ipconfig
- **Run line utilities**
  - msconfig

- msinfo32
- DxDiag
- Cmd
- REGEDIT
- My Network Places
- Task bar / systray
- Administrative tools ○ Performance monitor, Event Viewer, Services, Computer Management
- MMC
- Task Manager
- Start Menu

### 3.3 Explain the process and steps to install and configure the Windows OS

- File systems
  - FAT32 vs. NTFS
- Directory structures ○ Create folders ○ Navigate directory structures
- Files
  - Creation
  - Extensions
  - Attributes
  - Permissions
- Verification of hardware compatibility and minimum requirements
- Installation methods ○ Boot media such as
  - CD, floppy or USB
  - Network installation
  - Install from image
  - Recover CD
  - Factory recovery partition
- Operating system installation options
  - File system type
  - Network configuration
  - Repair install
- Disk preparation order
  - Format drive ○ Partition ○ Start installation
- Device Manager
  - Verify
  - Install and update devices drivers
  - Driver signing
- User data migration – User State Migration Tool (USMT)
- Virtual memory
- Configure power management
  - Suspend
  - Wake on LAN
  - Sleep timers
  - Hibernate
  - Standby
- Demonstrate safe removal of peripherals

### 3.4 Explain the basics of boot sequences, methods and startup utilities

- Disk boot order / device priority
  - Types of boot devices (disk, network, USB, other)
- Boot options
  - Safe mode

- Boot to restore point
- Recovery options
  - Automated System Recovery (ASR)
  - Emergency Repair Disk (ERD)
  - Recovery console

## 4.0 Networking

### 4.1 Summarize the basics of networking fundamentals, including technologies, devices and protocols

- Basics of configuring IP addressing and TCP/IP properties (DHCP, DNS)
- Bandwidth and latency
- Status indicators
- Protocols (TCP/IP, NETBIOS)
- Full-duplex, half-duplex
- Basics of workgroups and domains
- Common ports: HTTP, FTP, POP, SMTP, TELNET, HTTPS
- LAN / WAN
- Hub, switch and router
- Identify Virtual Private Networks (VPN)
- Basics class identification

### 4.2 Categorize network cables and connectors and their implementations

- Cables
  - Plenum / PVC
  - UTP (e.g. CAT3, CAT5 / 5e, CAT6)
  - STP
  - Fiber
  - Coaxial cable
- Connectors
  - RJ45
  - RJ11

### 4.3 Compare and contrast the different network types

- Broadband
  - DSL
  - Cable
  - Satellite
  - Fiber
- Dial-up
- Wireless
  - All 802.11 types
    - WEP
    - WPA
    - SSID
    - MAC filtering
    - DHCP settings
- Bluetooth
- Cellular

## 5.0 Security

### 5.1 Explain the basic principles of security concepts and technologies

- Encryption technologies
- Data wiping / hard drive destruction / hard drive recycling
- Software firewall

- Port security
- Exceptions
  - Authentication technologies
  - Basics of data sensitivity and data security
  - Compliance
    - Classifications
    - Social engineering

#### 5.2 Summarize the following security features

- Wireless encryption
  - WEPx and WPAx
  - Client configuration (SSID)
- Malicious software protection
  - Viruses
  - Trojans
  - Worms
  - Spam
  - Spyware
  - Adware
  - Grayware
- BIOS Security
  - Drive lock
  - Passwords
  - Intrusion detection
    - TPM
- Password management / password complexity
- Locking workstation
  - Hardware
  - Operating system
- Biometrics
  - Fingerprint scanner

## 6.0 Operational Procedure

### 6.1 Outline the purpose of appropriate safety and environmental procedures and given a scenario apply them

- ESD
- EMI
  - Network interference
  - Magnets
- RFI
  - Cordless phone interference
  - Microwaves
- Electrical safety
  - CRT
  - Power supply
  - Inverter
  - Laser printers
  - Matching power requirements of equipment with power distribution and UPSs
- Material Safety Data Sheets (MSDS)
- Cable management
  - Avoiding trip hazards
- Physical safety
  - Heavy devices
  - Hot components
- Environmental – consider proper disposal procedures

**6.2 Given a scenario, demonstrate the appropriate use of communication skills and professionalism in the workplace**

- **Use proper language – avoid jargon, acronyms, slang**
- **Maintain a positive attitude**
- **Listen and do not interrupt a customer**
- **Be culturally sensitive**
- **Be on time**
  - **If late contact the customer**
- **Avoid distractions**
  - **Personal calls**
  - **Talking to co-workers while interacting with customers**
  - **Personal interruptions**
- **Dealing with a difficult customer or situation**
  - **Avoid arguing with customers and/or being defensive**
  - **Do not minimize customers' problems**
  - **Avoid being judgmental**
  - **Clarify customer statements**
    - **Ask open-ended questions to narrow the scope of the problem**
    - **Restate the issue or question to verify understanding**
- **Set and meet expectations / timeline and communicate status with the customer**
  - **Offer different repair / replacement options if applicable**
  - **Provide proper documentation on the services provided**
  - **Follow up with customer / user at a later date to verify satisfaction**
- **Deal appropriately with customers confidential materials**
  - **Located on computer, desktop, printer, etc.**

# CompTIA A+ Acronyms

## Introduction

The following is a list of acronyms which appear on the CompTIA A+ exams. Candidates are encouraged to review the complete list and attain a working knowledge of all listed acronyms as a part of a comprehensive exam preparation program.

<b>ACRONYM</b>	<b>SPELLED OUT</b>
AC	alternating current
ACL	access control list
ACPI	advanced configuration and power interface
ACT	activity
ADSL	asymmetrical digital subscriber line
AGP	accelerated graphics port
AMD	advanced micro devices
APIPA	automatic private internet protocol addressing
APM	advanced power management
ARP	address resolution protocol
ASR	automated system recovery
AT	advanced technology
ATA	advanced technology attachment
ATAPI	advanced technology attachment packet interface
ATM	asynchronous transfer mode
ATX	advanced technology extended
BIOS	basic input/output system
BNC	Bayonet-Neill-Concelman or British Naval Connector
BTX	balanced technology extended
CD	compact disc
CD-ROM	compact disc-read-only memory
CD-RW	compact disc-rewritable
CDFS	compact disc file system
CFS	Central File System, Common File System, Command File System
CMOS	complementary metal-oxide semiconductor
COMx	communication port (x=port number)
CPU	central processing unit
CRT	cathode-ray tube
DAC	discretionary access control
DB-25	serial communications D-shell connector, 25 pins
DB-9	9 pin D shell connector
DC	direct current
DDOS	distributed denial of service
DDR	double data-rate
DDR RAM	double data-rate random access memory

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<b>DDR SDRAM</b>	<b>double data-rate synchronous dynamic random access memory</b>
<b>DFS</b>	<b>distributed file system</b>
<b>DHCP</b>	<b>dynamic host configuration protocol</b>
<b>DIMM</b>	<b>dual inline memory module</b>
<b>DIN</b>	<b>Deutsche Industrie Norm</b>
<b>DIP</b>	<b>dual inline package</b>
<b>DLT</b>	<b>digital linear tape</b>
<b>DLP</b>	<b>digital light processing</b>
<b>DMA</b>	<b>direct memory access</b>
<b>DMZ</b>	<b>demilitarized zone</b>
<b>DNS</b>	<b>domain name service or domain name server</b>
<b>DOS</b>	<b>denial of service</b>
<b>DPMS</b>	<b>display power management signaling</b>
<b>DRAM</b>	<b>dynamic random access memory</b>
<b>DSL</b>	<b>digital subscriber line</b>
<b>DVD</b>	<b>digital video disc or digital versatile disc</b>
<b>DVD-RAM</b>	<b>digital video disc-random access memory</b>
<b>DVD-ROM</b>	<b>digital video disc-read only memory</b>
<b>DVD-R</b>	<b>digital video disc-recordable</b>
<b>DVD-RW</b>	<b>digital video disc-rewritable</b>
<b>DVI</b>	<b>digital visual interface</b>
<b>ECC</b>	<b>error correction code</b>
<b>ECP</b>	<b>extended capabilities port</b>
<b>EEPROM</b>	<b>electrically erasable programmable read-only memory</b>
<b>EFS</b>	<b>encrypting file system</b>
<b>EIDE</b>	<b>enhanced integrated drive electronics</b>
<b>EMI</b>	<b>electromagnetic interference</b>
<b>EMP</b>	<b>electromagnetic pulse</b>
<b>EPROM</b>	<b>erasable programmable read-only memory</b>
<b>EPP</b>	<b>enhanced parallel port</b>
<b>ERD</b>	<b>emergency repair disk</b>
<b>ESD</b>	<b>electrostatic discharge</b>
<b>EVGA</b>	<b>extended video graphics adapter/array</b>
<b>EVDO</b>	<b>evolution data optimized or evolution data only</b>
<b>FAT</b>	<b>file allocation table</b>
<b>FAT12</b>	<b>12-bit file allocation table</b>
<b>FAT16</b>	<b>16-bit file allocation table</b>
<b>FAT32</b>	<b>32-bit file allocation table</b>
<b>FDD</b>	<b>floppy disk drive</b>
<b>Fn</b>	<b>Function (referring to the function key on a laptop)</b>
<b>FPM</b>	<b>fast page-mode</b>
<b>FRU</b>	<b>field replaceable unit</b>
<b>FSB</b>	<b>Front Side Bus</b>
<b>FTP</b>	<b>file transfer protocol</b>

<b>Gb</b>	<b>gigabit</b>
<b>GB</b>	<b>gigabyte</b>
<b>GDI</b>	<b>graphics device interface</b>
<b>GHz</b>	<b>gigahertz</b>
<b>GUI</b>	<b>graphical user interface</b>
<b>GPS</b>	<b>global positioning system</b>
<b>GSM</b>	<b>global system for mobile communications</b>
<b>HAL</b>	<b>hardware abstraction layer</b>
<b>HCL</b>	<b>hardware compatibility list</b>
<b>HDD</b>	<b>hard disk drive</b>
<b>HDMI</b>	<b>high definition media interface</b>
<b>HPFS</b>	<b>high performance file system</b>
<b>HTML</b>	<b>hypertext markup language</b>
<b>HTTP</b>	<b>hypertext transfer protocol</b>
<b>HTTPS</b>	<b>hypertext transfer protocol over secure sockets layer</b>
<b>I/O</b>	<b>input/output</b>
<b>ICMP</b>	<b>internet control message protocol</b>
<b>ICR</b>	<b>intelligent character recognition</b>
<b>IDE</b>	<b>integrated drive electronics</b>
<b>IDS</b>	<b>Intrusion Detection System</b>
<b>IEEE</b>	<b>Institute of Electrical and Electronics Engineers</b>
<b>IIS</b>	<b>Internet Information Services</b>
<b>IMAP</b>	<b>internet mail access protocol</b>
<b>IP</b>	<b>internet protocol</b>
<b>IPCONFIG</b>	<b>internet protocol configuration</b>
<b>IPP</b>	<b>internet printing protocol</b>
<b>IPSEC</b>	<b>internet protocol security</b>
<b>IPX</b>	<b>internetwork packet exchange</b>
<b>IPX/SPX</b>	<b>internetwork packet exchange/sequenced packet exchange</b>
<b>IR</b>	<b>infrared</b>
<b>IrDA</b>	<b>Infrared Data Association</b>
<b>IRQ</b>	<b>interrupt request</b>
<b>ISA</b>	<b>industry standard architecture</b>
<b>ISDN</b>	<b>integrated services digital network</b>
<b>ISO</b>	<b>Industry Standards Organization</b>
<b>ISP</b>	<b>internet service provider</b>
<b>JBOD</b>	<b>just a bunch of disks</b>
<b>Kb</b>	<b>kilobit</b>
<b>KB</b>	<b>Kilobyte or knowledge base</b>
<b>LAN</b>	<b>local area network</b>
<b>LBA</b>	<b>logical block addressing</b>
<b>LC</b>	<b>Lucent connector</b>
<b>LCD</b>	<b>liquid crystal display</b>

<b>LDAP</b>	<b>lightweight directory access protocol</b>
<b>LED</b>	<b>light emitting diode</b>

<b>Li-on</b>	<b>lithium-ion</b>
<b>LPD/LPR</b>	<b>line printer daemon / line printer remote</b>
<b>LPT</b>	<b>line printer terminal</b>
<b>LPT 1</b>	<b>line printer terminal 1</b>
<b>LVD</b>	<b>low voltage differential</b>
<b>MAC</b>	<b>media access control / mandatory access control</b>
<b>MAPI</b>	<b>messaging application programming interface</b>
<b>MAU</b>	<b>media access unit, media attachment unit</b>
<b>Mb</b>	<b>megabit</b>
<b>MB</b>	<b>megabyte</b>
<b>MBR</b>	<b>master boot record</b>
<b>MBSA</b>	<b>Microsoft Baseline Security Analyzer</b>
<b>MFD</b>	<b>multi-function device</b>
<b>MFP</b>	<b>multi-function product</b>
<b>MHz</b>	<b>megahertz</b>
<b>MicroDIMM</b>	<b>micro dual inline memory module</b>
<b>MIDI</b>	<b>musical instrument digital interface</b>
<b>MIME</b>	<b>multipurpose internet mail extension</b>
<b>MLI</b>	<b>multiple link interface</b>
<b>MMC</b>	<b>Microsoft management console</b>
<b>MMX</b>	<b>multimedia extensions</b>
<b>MP3</b>	<b>Moving Picture Experts Group Layer 3 Audio</b>
<b>MP4</b>	<b>Moving Picture Experts Group Layer 4</b>
<b>MPEG</b>	<b>Moving Picture Experts Group</b>
<b>MSCONFIG</b>	<b>Microsoft configuration</b>
<b>MSDS</b>	<b>material safety data sheet</b>
<b>MUI</b>	<b>multilingual user interface</b>
<b>NAC</b>	<b>network access control</b>
<b>NAS</b>	<b>network-attached storage</b>
<b>NAT</b>	<b>network address translation</b>
<b>NetBIOS</b>	<b>networked basic input/output system</b>
<b>NetBEUI</b>	<b>networked basic input/output system extended user interface</b>
<b>NFS</b>	<b>network file system</b>
<b>NIC</b>	<b>network interface card</b>
<b>NiCd</b>	<b>nickel cadmium</b>
<b>NiMH</b>	<b>nickel metal hydride</b>
<b>NLX</b>	<b>new low-profile extended</b>
<b>NNTP</b>	<b>network news transfer protocol</b>
<b>NTFS</b>	<b>new technology file system</b>
<b>NTLDR</b>	<b>new technology loader</b>
<b>NTP</b>	<b>Network Time Protocol</b>
<b>OCR</b>	<b>optical character recognition</b>

<b>OEM</b>	<b>original equipment manufacturer</b>
<b>OS</b>	<b>operating system</b>
<b>PAN</b>	<b>personal area network</b>

<b>PATA</b>	<b>parallel advanced technology attachment</b>
<b>PC</b>	<b>personal computer</b>
<b>PCI</b>	<b>peripheral component interconnect</b>
<b>PCIe</b>	<b>peripheral component interconnect express</b>
<b>PCIX</b>	<b>peripheral component interconnect extended</b>
<b>PCL</b>	<b>printer control language</b>
<b>PCMCIA</b>	<b>Personal Computer Memory Card International Association</b>
<b>PDA</b>	<b>personal digital assistant</b>
<b>PGA</b>	<b>pin grid array</b>
<b>PGA2</b>	<b>pin grid array 2</b>
<b>PIN</b>	<b>personal identification number</b>
<b>PKI</b>	<b>public key infrastructure</b>
<b>PnP</b>	<b>plug and play</b>
<b>POP3</b>	<b>post office protocol 3</b>
<b>POST</b>	<b>power-on self test</b>
<b>POTS</b>	<b>plain old telephone service</b>
<b>PPP</b>	<b>point-to-point protocol</b>
<b>PPTP</b>	<b>point-to-point tunneling protocol</b>
<b>PRI</b>	<b>primary rate interface</b>
<b>PROM</b>	<b>programmable read-only memory</b>
<b>PS/2</b>	<b>personal system/2 connector</b>
<b>PSTN</b>	<b>public switched telephone network</b>
<b>PSU</b>	<b>power supply unit</b>
<b>PVC</b>	<b>permanent virtual circuit</b>
<b>PXE</b>	<b>preboot execution environment</b>
<b>QoS</b>	<b>quality of service</b>
<b>RAID</b>	<b>redundant array of independent (or inexpensive) discs</b>
<b>RAM</b>	<b>random access memory</b>
<b>RAS</b>	<b>remote access service</b>
<b>RDRAM</b>	<b>RAMBUS<sup>®</sup> dynamic random access memory</b>
<b>RDP</b>	<b>Remote Desktop Protocol</b>
<b>RF</b>	<b>radio frequency</b>
<b>RFI</b>	<b>radio frequency interference</b>
<b>RGB</b>	<b>red green blue</b>
<b>RIMM</b>	<b>RAMBUS<sup>®</sup> inline memory module</b>
<b>RIP</b>	<b>routing information protocol</b>
<b>RIS</b>	<b>remote installation service</b>
<b>RISC</b>	<b>reduced instruction set computer</b>
<b>RJ</b>	<b>registered jack</b>
<b>RJ-11</b>	<b>registered jack function 11</b>
<b>RJ-45</b>	<b>registered jack function 45</b>

<b>RMA</b>	<b>returned materials authorization</b>
<b>ROM</b>	<b>read only memory</b>
<b>RS-232 or RS-232C</b>	<b>recommended standard 232</b>
<b>RTC</b>	<b>real-time clock</b>

<b>SAN</b>	<b>storage area network</b>
<b>SATA</b>	<b>serial advanced technology attachment</b>
<b>SC</b>	<b>subscription channel</b>
<b>SCP</b>	<b>secure copy protection</b>
<b>SCSI</b>	<b>small computer system interface</b>
<b>SCSI ID</b>	<b>small computer system interface identifier</b>
<b>SD card</b>	<b>secure digital card</b>
<b>SDRAM</b>	<b>synchronous dynamic random access memory</b>
<b>SEC</b>	<b>single edge connector</b>
<b>SFC</b>	<b>system file checker</b>
<b>SGRAM</b>	<b>synchronous graphics random access memory</b>
<b>SIMM</b>	<b>single inline memory module</b>
<b>SLI</b>	<b>scalable link interface or system level integration or scanline interleave mode</b>
<b>S.M.A.R.T.</b>	<b>self-monitoring, analysis, and reporting technology</b>
<b>SMB</b>	<b>server message block or small to midsize business</b>
<b>SMTP</b>	<b>simple mail transport protocol</b>
<b>SNMP</b>	<b>simple network management protocol</b>
<b>SoDIMM</b>	<b>small outline dual inline memory module</b>
<b>SOHO</b>	<b>small office/home office</b>
<b>SP</b>	<b>service pack</b>
<b>SP1</b>	<b>service pack 1</b>
<b>SP2</b>	<b>service pack 2</b>
<b>SP3</b>	<b>service pack 3</b>
<b>SP4</b>	<b>service pack 4</b>
<b>SPDIF</b>	<b>Sony-Philips digital interface format</b>
<b>SPGA</b>	<b>staggered pin grid array</b>
<b>SPX</b>	<b>sequenced package exchange</b>
<b>SRAM</b>	<b>static random access memory</b>
<b>SSH</b>	<b>secure shell</b>
<b>SSID</b>	<b>service set identifier</b>
<b>SSL</b>	<b>secure sockets layer</b>
<b>ST</b>	<b>straight tip</b>
<b>STP</b>	<b>shielded twisted pair</b>
<b>SVGA</b>	<b>super video graphics array</b>
<b>SXGA</b>	<b>super extended graphics array</b>
<b>TB</b>	<b>terabyte</b>
<b>TCP</b>	<b>transmission control protocol</b>
<b>TCP/IP</b>	<b>transmission control protocol/internet protocol</b>
<b>TDR</b>	<b>time domain reflectometer</b>
<b>TFTP</b>	<b>trivial file transfer protocol</b>

<b>TPM</b>	<b>trusted platform module</b>
<b>UAC</b>	<b>user account control</b>
<b>UART</b>	<b>universal asynchronous receiver transmitter</b>
<b>UDF</b>	<b>user defined functions or universal disk format or universal data format</b>
<b>UDMA</b>	<b>ultra direct memory access</b>

<b>UDP</b>	<b>user datagram protocol</b>
<b>UNC</b>	<b>universal naming convention</b>
<b>UPS</b>	<b>uninterruptible power supply</b>
<b>URL</b>	<b>uniform resource locator</b>
<b>USB</b>	<b>universal serial bus</b>
<b>USMT</b>	<b>user state migration tool</b>
<b>UTP</b>	<b>unshielded twisted pair</b>
<b>UXGA</b>	<b>ultra extended graphics array</b>
<b>VESA</b>	<b>Video Electronics Standards Association</b>
<b>VFAT</b>	<b>virtual file allocation table</b>
<b>VGA</b>	<b>video graphics array</b>
<b>VoIP</b>	<b>voice over internet protocol</b>
<b>VPN</b>	<b>virtual private network</b>
<b>VRAM</b>	<b>video random access memory</b>
<b>WAN</b>	<b>wide area network</b>
<b>WAP</b>	<b>wireless application protocol</b>
<b>WEP</b>	<b>wired equivalent privacy</b>
<b>WIFI</b>	<b>wireless fidelity</b>
<b>WINS</b>	<b>windows internet name service</b>
<b>WLAN</b>	<b>wireless local area network</b>
<b>WPA</b>	<b>wireless protected access</b>
<b>WUXGA</b>	<b>wide ultra extended graphics array</b>
<b>XGA</b>	<b>extended graphics array</b>
<b>ZIF</b>	<b>zero-insertion-force</b>
<b>ZIP</b>	<b>zigzag inline package</b>