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You can read the recommendations in the user guide, the technical guide or the installation guide for COMPAQ TOUCHSMART TM2. You'll find the answers to all your questions on the COMPAQ TOUCHSMART TM2 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual COMPAQ TOUCHSMART TM2
User guide COMPAQ TOUCHSMART TM2
Operating instructions COMPAQ TOUCHSMART TM2
Instructions for use COMPAQ TOUCHSMART TM2
Instruction manual COMPAQ TOUCHSMART TM2



HP TouchSmart tm2 Notebook PC

Maintenance and Service Guide



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Manual abstract:

S. registered trademarks of Microsoft Corporation. SD Logo is a trademark of its proprietor. The information contained herein is subject to change without notice. @ Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. This guide is a troubleshooting reference used for maintaining and servicing the computer. It provides comprehensive information on identifying computer features, components, and spare parts; on troubleshooting computer problems; and on performing computer disassembly procedures. @@@@ Use the computer only on a hard, flat surface. @@@@ The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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Blinking amber: The battery has reached a low battery level, a critical battery level, or there is a battery error. Amber: A battery is charging. White: The computer is connected to external power and the battery is fully charged. (10) Power connector Connects an AC adapter. ENWW Right-side components 11 Bottom components Item (1) (2) Component Battery release latch Battery bay Function Releases the battery from the battery bay. Holds the battery and contains the SIM slot. NOTE: The battery is preinstalled in the battery bay at the factory. (3) Vents (4) Enable airflow to cool internal components. NOTE: The computer fan starts up automatically to cool internal components and prevent overheating.

It is normal for the internal fan to cycle on and off during routine operation. (4) (5) Hard drive bay Memory module compartment Holds the hard drive. Contains the memory module slots, WLAN module slot, and holds the RTC battery. 12 Chapter 2 External component identification ENWW 3 Illustrated parts catalog Service tag When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag.

(1) Product name: This is the product name affixed to the front of the computer.

(2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product. (3) Part number/Product number (p/n): This number provides specific information about the product's hardware components. The part number helps a service technician to determine what components and parts are needed. (4) Model description: This is the number used to locate documents, drivers, and support for the computer. (5) Warranty period: This number describes the duration of the warranty period for the computer.

ENWW Service tag 13 14 Chapter 3 Illustrated parts catalog ENWW Computer major components ENWW Computer major components 15 Item (1) Description 12.1-inch, WXGA, BrightView, LED touch-screen display assembly (includes Web camera and cable, microphones and cables, fingerprint reader and cable, WLAN antenna cables, and WWAN antenna cables) Display assembly subcomponents (not illustrated): Display bezel Web camera/microphone module (includes cable) Fingerprint reader board (includes cable) Reset board (includes cable) Speakers (include cable) Display enclosure Display Screw Kit Spare part number 611492-001 592956-001 592960-001 592959-001 611494-001 592958-001 592955-001 592962-001 (2) Keyboard (includes cable and 2 retention clips): For use in Belgium For use in Brazil For use in Canada For use in Denmark, Finland, and Norway For use in France For use in Germany For use in Greece For use in Israel For use in Italy For use in Latin America For use in the Netherlands For use in Portugal For use in Russia For use in Saudi Arabia For use in South Korea For use in Spain For use in Switzerland For use in Taiwan For use in Thailand For use in Turkey For use in the United Kingdom 584161-A41 584161-201 584161-121 584161-DH1 584161-051 584161-041 584161-DJ1 584161-BB1 584161-061 584161-161 584161-B31 584161-131 584161-251 584161-171 584161-AD1 584161-071 584161-BG1 584161-AB1 584161-281 584161-141 584161-031 16 Chapter 3 Illustrated parts catalog ENWW Item Description For use in the United States Spare part number 584161-001 592964-001 (3) Top cover (includes TouchPad and TouchPad cable, caps lock light board and cable, and top cover bumper pads) Plastics Kit, includes: 592971-001 (4a) (4b) (4c) (5) (6a) (6b) (7) Display hinge cover Memory module compartment cover (includes 2 captive screws, secured with C-clips) Hard drive cover (includes 2 captive screws, secured with C-clips) Pen Pen holder (includes pen eject assembly) Pen eject assembly Power switch board (includes cable) Cable Kit, includes: 611498-001 613451-001 593028-001 592972-001 (8) (9) (10) Bluetooth module cable Bluetooth module System board (includes replacement thermal material): Equipped with discrete graphics subsystem and Intel Core i5-430UM 1.20-GHz turbo processor (800-MHz FSB, 3-MB L2 cache, 18-W) Equipped with discrete graphics subsystem and Intel Core i3-330UM 1.20-GHz processor (800-MHz FSB, 3-MB L2 cache, 18-W) Equipped with discrete graphics subsystem and Intel Pentium U5400 1.20-GHz processor (800-MHz FSB, 2-MB L2 cache, 18-W) Equipped with UMA graphics subsystem and Intel Core i5-430UM 1.20-GHz turbo processor (800-MHz FSB, 3-MB L2 cache, 18-W) Equipped with UMA graphics subsystem and Intel Core i3-330UM 1.20-GHz processor (800-MHz FSB, 3-MB L2 cache, 18-W) Equipped with UMA graphics subsystem and Intel Pentium U5400 1.20-GHz processor (800-MHz FSB, 2-MB L2 cache, 18-W) 611491-001 537921-001 611489-001 611487-001 611490-001 611488-001 611486-001 (11) (12) Fan Heat sink (includes replacement thermal material): For use only on computer models equipped with discrete graphics subsystem For use only on computer models equipped with UMA graphics subsystem 592970-001 611499-001 611500-001 592967-001 611496-001 592966-001 592965-001 (13) (14) Power connector and cable Base enclosure (includes 2 battery release latches, and 4 rubber feet) Rubber Kit (not illustrated, includes 4 base enclosure rubber feet and pen cover) (15) RTC battery (includes cable and double-sided tape) ENWW Computer major components 17 Item (16) Description Memory modules (PC3, 1066-MHz): 4096-MB 248-MB 1024-MB Spare part number 599092-001 598856-001 598859-001 (17) WLAN module: Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S.

Virgin Islands, and the United States Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St.



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Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter Intel Centrino Wireless-N 1000 802.11b/g 1x2 WiFi Adapter Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter 580101-001 580101-002 593836-001 593530-001 602992-001 (18) Hard drive (includes hard drive bracket, hard drive connector, and Mylar cover): 640-GB, 5400-rpm 500-GB, 7200-rpm 320-GB, 7200-rpm 250-GB, 7200-rpm 611495-001 584381-001 584380-001 584379-001 18 Chapter 3 Illustrated parts catalog ENWW Item Description Hard Drive Hardware Kit (not illustrated; includes hard drive bracket and hard drive screws) Spare part number 584382-001 (19) 6-cell, 62-Wh, 2.8-Ah, Li-ion battery 586021-001 ENWW Computer major components 19 Plastics Kit Item Description Plastics Kit, includes: Spare part number 592971-001 (1) (2) (3) Display hinge cover Memory module compartment cover (includes 2 captive screws, secured with C-clips) Hard drive cover (includes 1 rubber foot and 2 captive screws, secured with C-clips) 20 Chapter 3 Illustrated parts catalog ENWW Mass storage devices Item (1) Description Hard drive (includes hard drive bracket and Mylar cover): 640-GB, 5400-rpm 500-GB, 7200-rpm 320-GB, 7200-rpm 250-GB, 7200-rpm Hard Drive Hardware Kit (not illustrated, includes hard drive bracket, Mylar cover, and hard drive screws) Spare part number 611495-001 584381-001 584380-001 584379-001 584382-001 (2) External optical drive (includes bezel, bracket, and cable): Blu-ray ROM DVD±RW SuperMulti Double-Layer Drive with LightScribe DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe 584384-001 584383-001 ENWW Mass storage devices 21 Miscellaneous parts Description AC adapter: 65-W RC/V HP Smart AC adapter 65-W RC/V EM HP Smart AC adapter HP protective sleeve Power cords: For use in Argentina For use in Australia For use in Brazil 490371-D01 490371-011 490371-201 and 490371-202 490371-081 490371-021 490371-D61 490371-BB1 490371-061 490371-001 490371-AA1 490371-AD1 490371-111 490371-AB1 490371-031 592973-001 371693-001 609939-001 609948-001 598207-001 Spare part number For use in Denmark For use in Europe, the Middle East, and Africa (excluding South Africa) For use in India For use in Israel For use in Italy For use in North America For use in the People's Republic of China For use in South Korea For use in Switzerland For use in Taiwan For use in the United Kingdom and Singapore Screw Kit Wired headset with volume control 22 Chapter 3 Illustrated parts catalog ENWW Sequential part number listing Spare part number 371693-001 490371-001 490371-011 490371-021 490371-031 490371-061 490371-081 490371-111 490371-201 490371-202 490371-AA1 490371-AB1 490371-AD1 490371-BB1 490371-D01 490371-D61 537921-001 Description Wired headset with volume control Power cord for use in North America Power cord for use in Australia Power cord for use in Europe, the Middle East, and Africa (excluding South Africa) Power cord for use in the United Kingdom and Singapore Power cord for use in Italy Power cord for use in Denmark Power cord for use in Australia Power cord for use in Brazil Power cord for use in Brazil Power cord for use in the People's Republic of China Power cord for use in Taiwan Power cord for use in South Korea Power cord for use in Israel Power cord for use in Argentina Power cord for use in India Bluetooth module NOTE: The Bluetooth module spare part kit does not include a Bluetooth module cable. The Bluetooth module cable is included in the Cable Kit, spare part number 613451-001. 580101-001 Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States ENWW Sequential part number listing 23 Spare part number 580101-002 Description Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe Keyboard for use in the United States (includes cable and 2 retention clips) Keyboard for use in the United Kingdom (includes cable and 2 retention clips) Keyboard for use in Germany (includes cable and 2 retention clips) Keyboard for use in France (includes cable and 2 retention clips) Keyboard for use in Italy (includes cable and 2 retention clips) Keyboard for use in Spain (includes cable and 2 retention clips) Keyboard for use in French Canada (includes cable and 2 retention clips) Keyboard for use in Portugal (includes cable and 2 retention clips) Keyboard for use in Turkey (includes cable and 2 retention clips) Keyboard for use in Latin America (includes cable and 2 retention clips) Keyboard for use in Saudi Arabia (includes cable and 2 retention clips) Keyboard for use in Brazil (includes cable and 2 retention clips) Keyboard for use in Russia (includes cable and 2 retention clips) Keyboard for use in Thailand (includes cable and 2 retention clips) Keyboard for use in Belgium (includes cable and 2 retention clips) Keyboard for use in Taiwan (includes cable and 2 retention clips) Keyboard for use in South Korea (includes cable and 2 retention clips) Keyboard for use in the Netherlands (includes cable and 2 retention clips) Keyboard for use in Israel (includes cable and 2 retention clips) 584161-001 584161-031 584161-041 584161-051 584161-061 584161-071 584161-121 584161-131 584161-141 584161-161 584161-171 584161-201 584161-251 584161-281 584161-A41 584161-AB1 584161-AD1 584161-B31 584161-BB1 24 Chapter 3 Illustrated parts catalog ENWW Spare part number 584161-BG1 584161-DH1 584161-DJ1 584379-001 584380-001 584381-001 584382-001 584383-001 Description Keyboard for use in Switzerland (includes cable and 2 retention clips) Keyboard for use in Denmark, Finland, and Norway (includes cable and 2 retention clips) Keyboard for use in Greece (includes cable and 2 retention clips) 320-GB, 7200-rpm hard drive (includes hard drive bracket and Mylar cover) 250-GB, 7200-rpm hard drive (includes hard drive bracket and Mylar cover) 160-GB, 7200-rpm hard drive (includes hard drive bracket and Mylar cover) Hard Drive Hardware Kit (includes hard drive bracket, Mylar cover, and hard drive screws) DVD±RW and CD-RW SuperMulti Double-Layer Combo Drive with LightScribe external drive (includes bezel, bracket, and cable) Blu-ray ROM DVD±RW SuperMulti Double-Layer Drive with LightScribe external drive (includes bezel, bracket, and cable) 6-cell, 62-Wh, 2.



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8-Ah, Li-ion battery Display enclosure Display bezel Speakers (include cable) 584384-001 586021-001 592955-001 592956-001 592958 -001 592959-001 592960-001 592962-001 592964-001 Fingerprint reader board (includes cable) Web camera/microphone module (includes cable) Display Screw Kit Top cover (includes TouchPad and TouchPad cable, caps lock light board and cable, and top cover bumper pads) RTC battery (includes cable and double-sided tape) Rubber Kit (includes 4 base enclosure rubber feet, pen cover, and RJ45 cover) Power connector and cable Fan Plastics Kit NOTE: See Plastics Kit on page 20 for more Plastics Kit information.

592965-001 592966-001 592967-001 592970-001 592971-001 592972-001 592973-001 593028-001 593530-001 593836-001 598207-001 Pen holder and pen eject assembly Screw Kit Pen Intel Centrino Wireless-N 1000 802.11b/g 1x2 WiFi Adapter for use in all countries and regions Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter HP protective sleeve ENWW Sequential part number listing 25 Spare part number 598856-001 598859-001 599092-001 602992-001 609939-001 609948-001 611486-001 Description 4096-MB memory module (PC3, 1066-MHz) 2048-MB memory module (PC3, 1066-MHz) 1024-MB memory module (PC3, 1066-MHz) Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter 65-W RC/IV HP Smart AC adapter 65-W RC/IV EM HP Smart AC adapter System board equipped with UMA graphics subsystem and Intel Pentium U5400 1.20-GHz processor (800MHz FSB, 2-MB L2 cache, 18-W; includes replacement thermal material) System board equipped with discrete graphics subsystem and Intel Pentium U5400 1.20-GHz processor (800-MHz FSB, 2-MB L2 cache, 18-W; includes replacement thermal material) System board equipped with UMA graphics subsystem and Intel Core i3-330UM 1.20-GHz processor (800MHz FSB, 3-MB L2 cache, 18-W; includes replacement thermal material) System board equipped with discrete graphics subsystem and Intel Core i3-330UM 1.20-GHz processor (800-MHz FSB, 3-MB L2 cache, 18-W; includes replacement thermal material) System board equipped with UMA graphics subsystem and Intel Core i5-430UM 1.20-GHz turbo processor (800-MHz FSB, 3-MB L2 cache, 18-W; includes replacement thermal material) System board equipped with discrete graphics subsystem and Intel Core i5-430UM 1.

20-GHz turbo processor (800-MHz FSB, 3-MB L2 cache, 18-W; includes replacement thermal material) 12.1-inch, WXGA, BrightView, LED touch-screen display assembly (includes Web camera and cable, microphones and cables, fingerprint reader and cable, WLAN antenna cables, and WWAN antenna cables) Reset board (includes cable) 160-GB, 7200-rpm hard drive (includes hard drive bracket and Mylar cover) Base enclosure (includes 2 battery release latches, and 4 rubber feet) Power switch board (includes cable) Heat sink for use only with computer models equipped with discrete graphics subsystem (includes replacement thermal material) Heat sink for use only with computer models equipped with UMA graphics subsystem (includes replacement thermal material)

Cable Kit (includes the Bluetooth module cable) 611487-001 611488-001 611489-001 611490-001 611491-001 611492-001 611494-001 611495-001 611496-001 611498-001 611499-001 611500-001 613451-001 26 Chapter 3 Illustrated parts catalog ENWW 4 Removal and replacement procedures Preliminary replacement requirements Tools required You will need the following tools to complete the removal and replacement procedures: Magnetic screwdriver Phillips P0 and P1 screwdrivers Flat-bladed screwdriver Service considerations The following sections include some of the considerations that you should keep in mind during disassembly and assembly procedures. NOTE: As you remove each subassembly from the computer, place the subassembly (and all accompanying screws) away from the work area to prevent damage. Plastic parts CAUTION: Using excessive force during disassembly and reassembly can damage plastic parts. Use care when handling the plastic parts. Apply pressure only at the points designated in the maintenance instructions. ENWW Preliminary replacement requirements 27 Cables and connectors CAUTION: When servicing the computer, be sure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer. Cables must be handled with extreme care to avoid damage. Apply only the tension required to unseat or seat the cables during removal and insertion.

Handle cables by the connector whenever possible. In all cases, avoid bending, twisting, or tearing cables. Be sure that cables are routed in such a way that they cannot be caught or snagged by parts being removed or replaced. Handle flex cables with extreme care; these cables tear easily. Drive handling CAUTION: Drives are fragile components that must be handled with care.

To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions: Before removing or inserting a hard drive, shut down the computer. @@Before handling a drive, be sure that you are discharged of static electricity. While handling a drive, avoid touching the connector. Before removing a diskette drive or optical drive, be sure that a diskette or disc is not in the drive and be sure that the optical drive tray is closed. Handle drives on surfaces covered with at least one inch of shock-proof foam.

Avoid dropping drives from any height onto any surface. After removing a hard drive, an optical drive, or a diskette drive, place it in a static-proof bag. Avoid exposing a hard drive to products that have magnetic fields, such as monitors or speakers. Avoid exposing a drive to temperature extremes or liquids. If a drive must be mailed, place the drive in a bubble pack mailer or other suitable form of protective packaging and label the package "FRAGILE." 28 Chapter 4 Removal and replacement procedures ENWW Grounding guidelines Electrostatic discharge damage Electronic components are sensitive to electrostatic discharge (ESD). Circuitry design and structure determine the degree of sensitivity. Networks built into many integrated circuits provide some protection, but in many cases, ESD contains enough power to alter device parameters or melt silicon junctions. A discharge of static electricity from a finger or other conductor can destroy static-sensitive devices or microcircuitry. Even if the spark is neither felt nor heard, damage may have occurred.

An electronic device exposed to ESD may not be affected at all and can work perfectly throughout a normal cycle. Or the device may function normally for a while, then degrade in the internal layers, reducing its life expectancy. CAUTION: To prevent damage to the computer when you are removing or installing internal components, observe these precautions: Keep components in their electrostatic-safe containers until you are ready to install them. Use nonmagnetic tools. Before touching an electronic component, discharge static electricity by using the guidelines described in this section.



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Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible. If you remove a component, place it in an electrostatic-safe container. The following table shows how humidity affects the electrostatic voltage levels generated by different activities. CAUTION: A product can be degraded by as little as 700 V.

Typical electrostatic voltage levels
Relative humidity Event Walking across carpet Walking across vinyl floor Motions of bench worker Removing DIPS from plastic tube Removing DIPS from vinyl tray Removing DIPS from Styrofoam Removing bubble pack from PCB Packing PCBs in foam-lined box
10% 35,000 V 12,000 V 6,000 V 2,000 V 11,500 V 14,500 V 26,500 V 21,000 V 40% 15,000 V 5,000 V 800 V 700 V 4,000 V 5,000 V 20,000 V 11,000 V 55% 7,500 V 3,000 V 400 V 400 V 2,000 V 3,500 V 7,000 V 5,000 V

ENWW Preliminary replacement requirements 29 Packaging and transporting guidelines Follow these grounding guidelines when packaging and transporting equipment: To avoid hand contact, transport products in static-safe tubes, bags, or boxes. Protect ESD-sensitive parts and assemblies with conductive or approved containers or packaging. Keep ESD-sensitive parts in their containers until the parts arrive at static-free workstations. Place items on a grounded surface before removing items from their containers. Always be properly grounded when touching a component or assembly.

Store reusable ESD-sensitive parts from assemblies in protective packaging or nonconductive foam. Use transporters and conveyors made of antistatic belts and roller bushings. Be sure that mechanized equipment used for moving materials is wired to ground and that proper materials are selected to avoid static charging. When grounding is not possible, use an ionizer to dissipate electric charges. Workstation guidelines Follow these grounding workstation guidelines: Cover the workstation with approved static-shielding material.

Use a wrist strap connected to a properly grounded work surface and use properly grounded tools and equipment. Use conductive field service tools, such as cutters, screwdrivers, and vacuums. When fixtures must directly contact dissipative surfaces, use fixtures made only of static-safe materials. Keep the work area free of nonconductive materials, such as ordinary plastic assembly aids and Styrofoam. Handle ESD-sensitive components, parts, and assemblies by the case or PCM laminate. Handle these items only at static-free workstations. Avoid contact with pins, leads, or circuitry. Turn off power and input signals before inserting or removing connectors or test equipment. 30 Chapter 4 Removal and replacement procedures ENWW Equipment guidelines Grounding equipment must include either a wrist strap or a foot strap at a grounded workstation. When seated, wear a wrist strap connected to a grounded system.

Wrist straps are flexible straps with a minimum of one megohm $\pm 10\%$ resistance in the ground cords. To provide proper ground, wear a strap snugly against the skin at all times. On grounded mats with banana-plug connectors, use alligator clips to connect a wrist strap. When standing, use foot straps and a grounded floor mat. Foot straps (heel, toe, or boot straps) can be used at standing workstations and are compatible with most types of shoes or boots. On conductive floors or dissipative floor mats, use foot straps on both feet with a minimum of one megohm resistance between the operator and ground. To be effective, the conductive strips must be worn in contact with the skin. The following grounding equipment is recommended to prevent electrostatic damage:

Antistatic tape Antistatic smocks, aprons, and sleeve protectors Conductive bins and other assembly or soldering aids Nonconductive foam Conductive tabletop workstations with ground cords of one megohm resistance Static-dissipative tables or floor mats with hard ties to the ground Field service kits Static awareness labels Material-handling packages Nonconductive plastic bags, tubes, or boxes Metal tote boxes Electrostatic voltage levels and protective materials The following table lists the shielding protection provided by antistatic bags and floor mats. Material Antistatic plastic Carbon-loaded plastic Metallized laminate Use Bags Floor mats Floor mats Voltage protection level 1,500 V 7,500 V 5,000 V ENWW Preliminary replacement requirements 31 Component replacement procedures This chapter provides removal and replacement procedures. There are as many as 56?? screws that must be removed, replaced, or loosened when servicing the computer.

Make special note of each screw size and location during removal and replacement. Service tag When ordering parts or requesting information, provide the computer serial number and model description provided on the service tag. (1) Product name: This is the product name affixed to the front of the computer.

(2) Serial number (s/n): This is an alphanumeric identifier that is unique to each product. (3) Part number/Product number (p/n): This number provides specific information about the product's hardware components.

The part number helps a service technician to determine what components and parts are needed. (4) Model description: This is the number used to locate documents, drivers, and support for the computer. (5) Warranty period: This number describes the duration of the warranty period for the computer. 32 Chapter 4 Removal and replacement procedures ENWW ENWW Component replacement procedures 33 Computer feet The computer feet are adhesive-backed rubber pads. There are four computer feet that adhere to the computer base enclosure.

The feet (1) on the front edge of the computer are round. The feet (2) on the rear edge of the computer are oblong and wedge-shaped. @@2. 3. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery: 1. 2. 3.

Turn the computer upside down, with the front toward you. Slide the battery lock latch (1), and then release it. @@2. 3. 4. Shut down the computer.

@@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the pen: 1.

2. 3. Position the computer with the left side toward you. Press in on the pen (1) to release it from the pen holder. @@2.

3. 4. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord.

@@2. Position the computer with the front toward you. @@@@2. 3. 4. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. @@2. Position the computer with the front toward you.

@@@(@The memory module tilts up.) CAUTION: To prevent damage to the memory module, hold it by the edges only. Do not touch the components on the memory module. ENWW Component replacement procedures 41 6. Grasp the edge of the memory module, and gently pull it out of the memory module slot.



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Reverse this procedure to install a memory module. 42 Chapter 4 Removal and replacement procedures ENWW WLAN module Description Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Canada, the Cayman Islands, Guam, Puerto Rico, the U.S. Virgin Islands, and the United States Atheros 9285G 802.11b/g/n 1x1 WiFi Adapter for use in Afghanistan, Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Austria, Azerbaijan, the Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bermuda, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, the British Virgin Islands, Brunei, Bulgaria, Burkina Faso, Burundi, Cameroon, Cape Verde, the Cayman Islands, the Central African Republic, Chad, Chile, Colombia, Comoros, the Congo, Costa Rica, Croatia, Cyprus, the Czech Republic, Denmark, Djibouti, Dominica, the Dominican Republic, East Timor, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, French Guiana, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Guadeloupe, Guam, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Ireland, Italy, the Ivory Coast, Jamaica, Jordan, Kenya, Kiribati, Kyrgyzstan, Laos, Latvia, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, the Maldives, Mali, Malta, the Marshall Islands, Martinique, Mauritania, Mauritius, Mexico, Micronesia, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, the Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, the People's Republic of China, Peru, the Philippines, Poland, Portugal, Puerto Rico, the Republic of Moldova, Romania, Russia, Rwanda, Samoa, San Marino, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, the Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, the Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Swaziland, Sweden, Switzerland, Taiwan, Tajikistan, Tanzania, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, the United Arab Emirates, the United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zaire, Zambia, and Zimbabwe Broadcom 4313 802.11b/g/n 1x1 WiFi Adapter Intel Centrino Wireless-N 1000 802.

11b/g 1x2 WiFi Adapter Ralink RT3090BC4 802.11b/g/n 1x1 WiFi and Bluetooth 2.1+EDR Combo Adapter Spare part number 580101-001 580101-002 593836-001 593530-001 602992-001 Before removing the WLAN module, follow these steps: 1. 2. 3.
4. 5. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). @@@@1. Disconnect the WLAN antenna cables from the WLAN module. @@@@2. 3.

4. 5. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). @@2. Disconnect the RTC battery cable (1) from the system board. Release the RTC battery (2) from the system board. @@2.
3. 4. 5. 6. Shut down the computer.

@@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the hard drive (see Hard drive on page 37). @@2.
Remove the two front rubber feet (1). @@@@5. 6. 7. Turn the computer right-side up, with the front toward you. Lift the front edge of the top cover (1) until it rests at an angle. @@@@2. 3. 4. 5.

6. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the hard drive (see Hard drive on page 37). @@2. Turn the top cover upside down, with the front toward you. @@5. 6.
7. Turn the top cover right-side up, with the front toward you. Lift the rear edge of the keyboard (1) until it rests at an angle. @@@@2. 3.
4. 5. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord.

Remove the battery (see Battery on page 35). Remove the following components: a. b. c. Hard drive (see Hard drive on page 37). Memory cover (see Memory module on page 40). @@2. @@Remove the pen holder (2) and eject assembly (3) from the base enclosure. Reverse this procedure to install the pen holder and eject assembly. 52 Chapter 4 Removal and replacement procedures ENWW Bluetooth module NOTE: The Bluetooth module spare part kit does not include a Bluetooth module cable.

The Bluetooth module cable is available using spare part number 613451-001. Description Bluetooth module Spare part number 537921-001 Before removing the Bluetooth module, follow these steps: 1. 2. 3. 4. 5. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35).

Remove the following components: a. b. c. Hard drive (see Hard drive on page 37). Memory cover (see Memory module on page 40). Top cover (see Top cover on page 48). Remove the Bluetooth module: 1. 2. Disconnect the Bluetooth module cable (1) from the system board. Release the Bluetooth module (2) from the slot built into the base enclosure.

Reverse this procedure to install the Bluetooth module. ENWW Component replacement procedures 53 Power switch board Description Power switch board (includes cable) Spare part number 611498-001 Before removing the power switch board, follow these steps: 1. 2. 3. 4. 5. Shut down the computer. @@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35).

Remove the following components: a. b. c. Hard drive (see Hard drive on page 37). Memory cover (see Memory module on page 40). Top cover (see Top cover on page 48). Remove the power switch board: 1. 2. Release the ZIF connector to which the power switch board cable is connected, and then disconnect the power switch board cable (1) from the system board. Remove the power switch board (2) from the slot built into the base enclosure.

Reverse this procedure to install the power switch board. 54 Chapter 4 Removal and replacement procedures ENWW Display assembly Description 12.1-inch, WXGA, BrightView, LED touch-screen display assembly (includes Web camera and cable, microphones and cables, fingerprint reader and cable, WLAN antenna cables, and WWAN antenna cables) Spare part number 611492-001 Before removing the display assembly, follow these steps: 1. 2. 3.
4. 5. 6. 7. Shut down the computer.

@@Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). @@Remove the hard drive (see Hard drive on page 37). Remove the top cover (see Top cover on page 48). Remove the display assembly: 1. 2. Close the computer and turn it upside down, with the rear panel toward you. Remove the two Phillips PM2.0x4.

0 screws that secure the display hinge cover to the computer.



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3. 4. Turn the computer display-side up, with the rear panel toward you. Open the computer display to the upright position and rotate the display (1) 90-degrees clockwise. ENWW Component replacement procedures 55 5. Remove the display hinge cover (2). NOTE: The display hinge cover is included in the Plastics Kit, spare part number 592971-001. 6. 7.

8. 9. Position the computer with the front toward you. Release the tape (1) that secures the WLAN antenna cables to the system board. Release the grounding tape (2) that grounds the WLAN antenna cables to the base enclosure. Release the WLAN antenna cables (3) from the opening in the system board. 10. Release the grounding tape (1) that grounds the webcam cable to the base enclosure. 56 Chapter 4 Removal and replacement procedures ENWW 11. Disconnect the webcam cable (2) from the system board. 12. @ @13. Disconnect the display panel cable (2) from the system board. 14. @ @15. @ @ @ @ @17. @ @18. @ @2. 3. 4.

5. 6. 7. Shut down the computer. @ @Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the hard drive (see Hard drive on page 37). @ @Remove the following components: a. b. c. Hard drive (see Hard drive on page 37). @ @2. Disconnect the Bluetooth module cable (1) from the system board. @ @4. @ @Remove the two Phillips PM2.5×4.0 screws (2) that secure the power connector to the base enclosure. Release the power connector (3) from the base enclosure. 6. Use the hard drive connector (1) to lift the right side of the system board (2) until it rests at an angle. 60 Chapter 4 Removal and replacement procedures ENWW 7. Remove the system board (3) by sliding it up and to the right. NOTE: After removing the system board, it may be necessary to replace the RJ-45 connector cover. The RJ-45 connector cover is included in the Plastics Kit, spare part number 592971-001. Reverse this procedure to install the system board. ENWW Component replacement procedures 61 Power connector and cable Description Power connector and cable Spare part number 592967-001 Before removing the power connector and cable, follow these steps: 1. 2. 3. 4.

5. Shut down the computer. @ @Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the following components: a. b. c. d. e. Hard drive (see Hard drive on page 37) Top cover (see Top cover on page 48) Keyboard (see Keyboard on page 50) Display assembly (see Display assembly on page 55) System board (see System board on page 59) Remove the power connector and cable: 1. 2. Turn the system board upside down, with the rear toward you. Disconnect the power connector and cable from the system board. 62 Chapter 4 Removal and replacement procedures ENWW Reverse this procedure to install the power connector and cable. Fan Description Fan Spare part number 592970-001 NOTE: To properly ventilate the computer, allow at least a 7.6-cm (3-inch) clearance on the right side and rear panel of the computer. The computer uses an electric fan for ventilation. The fan is controlled by a temperature sensor and is designed to turn on automatically when high temperature conditions exist. These conditions are affected by high external temperatures, system power consumption, power management/battery conservation configurations, battery fast charging, and software requirements. Exhaust air is displaced through the ventilation grill located on the left side of the computer. Before removing the fan, follow these steps: 1. 2. 3. 4. 5. Shut down the computer. @ @Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the following components: a. b. c. d. e. Hard drive (see Hard drive on page 37) Top cover (see Top cover on page 48) Keyboard (see Keyboard on page 50) Display assembly (see Display assembly on page 55) System board (see System board on page 59) Remove the fan: 1. 2. 3. Turn the system board upside down, with the rear toward you. Disconnect the fan cable (1) from the system board. Remove the two Phillips PM2.5×6.0 screws (2) that secure the fan to the system board. ENWW Component replacement procedures 63 4. Remove the fan (3). Reverse this procedure to install the fan. Heat sink NOTE: The heat sink spare part kit includes replacement thermal material. Description For use only on computer models equipped with discrete graphics subsystem For use only on computer models equipped with UMA graphics subsystem Spare part number 611499-001 611500-001 Before removing the heat sink, follow these steps: 1. 2. 3.

4. 5. Shut down the computer. @ @Disconnect all external devices connected to the computer. Disconnect the power cord. Remove the battery (see Battery on page 35). Remove the following components: a. b. c. Hard drive (see Hard drive on page 37) Top cover (see Top cover on page 48) Keyboard (see Keyboard on page 50) 64 Chapter 4 Removal and replacement procedures ENWW d. e. Display assembly (see Display assembly on page 55) System board (see System board on page 59) Remove the heat sink: 1. Turn the system board upside down, with the rear toward you. NOTE: Steps 2 and 3 apply only to computer models equipped with a discrete graphics subsystem. See steps 4 and 5 for heat sink removal instructions for computer models equipped with a UMA graphics subsystem. 2. 3. Following the 1, 2, 3, 4, 5, 6 sequence stamped into each section of the heat sink, loosen the six Phillips PM2.5×10.0 captive screws (1) that secure the heat sink to the system board. Remove the heat sink (2). NOTE: Steps 4 and 5 apply only to computer models equipped with a UMA graphics subsystem. See steps 2 and 3 for heat sink removal instructions for computer models equipped with a discrete graphics subsystem. 4. Following the 1, 2, 3, 4 sequence stamped into each section of the heat sink, loosen the four Phillips PM2.5×10.0 captive screws (1) that secure the heat sink to the system board. ENWW Component replacement procedures 65 5. Remove the heat sink (2). NOTE: Due to the adhesive quality of the thermal material located between the heat sink and system board components, it may be necessary to move the heat sink from side to side to detach the assembly. NOTE: The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board each time the heat sink is removed. Thermal pads are used on the video processor (1) and the heat sink section (2) that services it, and the PCH chip (3) and the heat sink section (4) that services it. Thermal paste is used on the processor (5) and the heat sink section (6) that services it. Replacement thermal material is included with all system board and heat sink spare part kits. 66 Chapter 4 Removal and replacement procedures ENWW NOTE: Due to the adhesive quality of the thermal material located between the heat sink and system board components, it may be necessary to move the heat sink from side to side to detach the assembly.



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NOTE: The thermal material must be thoroughly cleaned from the surfaces of the heat sink and the system board each time the heat sink is removed. Thermal pads are used on the PCH chip (1) and the heat sink section (2) that services it. Thermal paste is used on the processor (3) and the heat sink section (4) that services it. Replacement thermal material is included with all system board and heat sink spare part kits. Reverse this procedure to install the heat sink.

ENWW Component replacement procedures 67 5 Setup Utility (BIOS) Starting Setup Utility Setup Utility is a ROM-based information and customization utility that can be used even when your Windows operating system is not working. The utility reports information about the computer and provides settings for startup, security, and other preferences. To start Setup Utility: Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press f10. or 1. 2. Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10. 68 Chapter 5 Setup Utility (BIOS) ENWW Using Setup Utility Changing the language of Setup Utility The following procedure explains how to change the language of Setup Utility.

If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2. 1. Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press f10. or Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10. 2. 3.

4. 5. Use the arrow keys to select System Configuration > Language, and then press enter. Use the arrow keys to select a language, and then press enter. When a confirmation prompt with your language selected is displayed, press enter. To save your change and exit Setup Utility, use the arrow keys to select Exit > Exit Saving Changes, and then press enter. Your change goes into effect immediately. Navigating and selecting in Setup Utility Because Setup Utility is not Windows based, it does not support the TouchPad. Navigation and selection are by keystroke. To choose a menu or a menu item, use the arrow keys.

To choose an item in a list or to toggle a field, for example an Enable/Disable field, use either the arrow keys or f5 or f6. To select an item, press enter. To close a text box or return to the menu display, press esc. To display additional navigation and selection information while Setup Utility is open, press f1.

ENWW Using Setup Utility 69 Display system information The following procedure explains how to display system information in Setup Utility. If Setup Utility is not open, begin at step 1. If Setup Utility is open, begin at step 2. 1. Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press f10.

or Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10. 2. 3.

Select the Main menu. System information such as the system time and date, and identification information about the computer is displayed. To exit Setup Utility without changing any settings, use the arrow keys to select Exit > Exit Discarding Changes, and then press enter. Restoring default settings in Setup

Utility The following procedure explains how to restore the Setup Utility default settings. If Setup Utility is not already running, begin at step 1. If Setup Utility is already running, begin at step 2. 1. Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press f10. or Open Setup Utility by turning on or restarting the computer. While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10. 2. 3. 4.

Use the arrow keys to select Exit > Load Setup Defaults, and then press enter. When the Setup Confirmation is displayed, press enter. To save your change and exit Setup Utility, use the arrow keys to select Exit > Exit Saving Changes, and then press enter. The Setup Utility default settings go into effect when the computer restarts. NOTE: Your password, security, and language settings are not changed when you restore the factory default settings. 70 Chapter 5 Setup Utility (BIOS) ENWW Exiting Setup Utility You can exit Setup Utility with or without saving changes. To exit Setup Utility and save your changes from the current session: If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select Exit > Exit Saving Changes, and then press enter. To exit Setup Utility without saving your changes from the current session: If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select Exit > Exit Discarding Changes, and then press enter.

After either choice, the computer restarts in Windows. Setup Utility menus The menu tables in this section provide an overview of Setup Utility options. NOTE: Some of the Setup Utility menu items listed in this section may not be supported by your computer. Main menu Select System information To do this View and change the system time and date. View identification information about the computer.

View specification information, such as processor information, memory size, and system BIOS. Security menu Select Administrator password Power-On Password To do this Enter, change, or delete an administrator password. Enter, change, or delete a power-on password. ENWW Setup Utility menus 71 System Configuration menu Select Language Virtualization Technology (select models only) LAN Power Saving To do this Change the Setup Utility language. Enable/disable the processor Virtualization Technology.

Enable/disable the LAN power saving. Reduces the power consumption of the LAN controller. Enabled/disable Fan Always On. When enabled, the computer fan will always be on. Enable/disable the Action Keys. Set the following boot options: POST Hot Key Delay (sec.)Set the delay for the user to press hotkeys in intervals of 5 seconds each (0, 5, 10, 15, 20). Floppy BootEnable/disable boot from diskette.



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Internal Network Adapter BootEnable/disable boot from external Network Adapter. Boot OrderSet the boot order for: Notebook Hard Drive USB Diskette on Key/USB Hard Disk USB CD/DVD ROM Drive USB Floppy Network Adapter Fan Always On Action Keys Mode Boot Options Diagnostics menu Select Primary Hard Disk Self Test Memory Test To do this Run a comprehensive self-test on the hard drive.

Run a diagnostic test on the system memory. 72 Chapter 5 Setup Utility (BIOS) ENWW Updating the BIOS Updated versions of the BIOS may be available on the HP Web site. Most BIOS updates on the HP Web site are packaged in compressed files called SoftPaqs. Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file. Determining the BIOS To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed. BIOS version information (also known as ROM date and System BIOS) can be displayed by pressing fn +esc (if you are already in Windows) or by opening Setup Utility. To use Setup Utility for displaying BIOS information: 1. 2. Open Setup Utility by turning on or restarting the computer.

While the "Press the ESC key for Startup Menu" message is displayed in the lower-left corner of the screen, press f10. If Setup Utility does not open with the system information displayed, use the arrow keys to select the Main menu. When the Main menu is selected, BIOS and other system information is displayed. 3. To exit Setup Utility, use the arrow keys to select Exit > Exit Discarding Changes, and then press enter.

Downloading a BIOS update CAUTION: To prevent damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, docked in an optional docking device, or connected to an optional power source. During the download and installation, follow these instructions: Do not disconnect power from the computer by unplugging the power cord from the AC outlet. Do not shut down the computer or initiate Sleep or Hibernation. Do not insert, remove, connect, or disconnect any device, cable, or cord.

ENWW Updating the BIOS 73 To download a BIOS update: 1. Access the page on the HP Web site that provides software for your computer: Select Start > Help and Support > Maintain. 2. 3. Follow the instructions on the screen to identify your computer and access the BIOS update you want to download. At the download area, follow these steps: a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive. Follow the instructions on the screen to download your selection to the hard drive.

Make a note of the path to the location on your hard drive where the BIOS update will be downloaded. You will need to access this path when you are ready to install the update. NOTE: If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates. BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete. If no instructions are displayed, follow these steps: 1. 2. 3. 4. Open Windows Explorer by selecting Start > Computer.

Double-click your hard drive designation. The hard drive designation is typically Local Disk (C:). Using the hard drive path you recorded earlier, open the folder on your hard drive that contains the update. Double-click the file that has an .exe extension (for example, filename.exe). The BIOS installation begins. 5. Complete the installation by following the instructions on the screen. b.

NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive. 74 Chapter 5 Setup Utility (BIOS) ENWW 6 Specifications Computer specifications Metric Dimensions Width Depth Height (front to back) Weight Input power Operating voltage Operating current Temperature Operating (writing to optical disc) Nonoperating Relative humidity Operating Nonoperating Maximum altitude (unpressurized) Operating Nonoperating -15 m to 3,048 m -15 m to 12,192 m -50 ft to 10,000 ft -50 ft to 40,000 ft 10% to 90 5% to 95% 5°C to 35°C -20°C to 60°C 41°F to 95°F -4°F to 140°F 18.5 V dc @ 3.5 A - 65W 3.5 A 30.40 cm 22.30 cm 2.63 to 3.96 mm 2.15 kg 11.

97 in 8.76 in 1.04 to 1.56 in 4.72 lbs U.S. NOTE: Applicable product safety standards specify thermal limits for plastic surfaces. The computer operates well within this range of temperatures. ENWW Computer specifications 75 12.1-inch display specifications Metric Dimensions Height Width Diagonal Number of colors Contrast ratio Brightness Pixel resolution Pitch Format Configuration Backlight Character display Total power consumption Viewing angle 0. 279 × 0.279 mm 1366 × 768 RGB vertical stripe LED 80 × 25 4.0 W ±40° horizontal, +120°/-40° vertical (typical) 16.9 cm 26.2 cm 30.

8 cm Up to 16.8 million 250:1 (typical) 200 nits (typical) 6.7 in 10.3 in 12.1 in U.

S. 76 Chapter 6 Specifications ENWW Hard drive specifications 640-GB* Dimensions Height Width Weight Interface type Transfer rate Security Seek times (typical read, including setting) Single track Average Maximum Logical blocks Disc rotational speed Operating temperature 1.5 ms 12.0 ms 22.0 ms 1,250,291,258 5400 rpm 1.5 ms 12.0 ms 22.0 ms 976,785,075 7200 rpm 1.5 ms 12.0 ms 22.

0 ms 625,142,448 7200 rpm 1.5 ms 12.0 ms 22.0 ms 488,397,168 7200 rpm 9.5 mm 70 mm 101 g SATA 100 MB/sec ATA security 9.5 mm 70 mm 101 g SATA 100 MB/sec ATA security 9.5 mm 70 mm 101 g SATA 100 MB/sec ATA security 9.5 mm 70 mm 101 g SATA 100 MB/sec ATA security 500-GB* 320-GB* 250-GB* 5°C to 55°C (41°F to 131°F) *1 GB = 1 billion bytes when referring to hard drive storage capacity. Actual accessible capacity is less. Actual drive specifications may differ slightly.

NOTE: Certain restrictions and exclusions apply. Contact technical support for details. ENWW Hard drive specifications 77 Blu-ray ROM DVD±RW SuperMulti Double-Layer Drive specifications Applicable disc Read BD-ROM, BD-ROM-DL, BD-R, BDR-DL, BD-RE, BD-RE-DL, DVDROM, DVD+R, DVD+R-DL, DVD +RW, DVD-R, DVD-R-DL, DVDRW, DVD-RAM (Ver.2), CD-DA, CD-ROM (mode 1 and mode 2), CD-ROM XA (mode 2, form 1 and form 2), Photo CD (single and multiple sessions), CD Extra, CD-R, CD-RW, and CD-TEXT Access time Random Cache buffer Data transfer rate 2X BD-RAM 8X DVD 16X CD-R 16X CD-RW 9 MB/sec 2,400 KB/sec 2,400 KB/sec 2,400 KB/sec BD < 230 ms 4.



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