

MSALATO THEOLOGICAL COLLEGE

Information Technology Grant Request

Goal: To setup forty new Ubuntu client computers for the use of the staff and students of Msalato Theological College. Twenty of these would go in the staff and administrative offices of the college and the remaining twenty would supplement the existing computer labs used by students (currently there are about sixteen functional machines). The price per computer including monitor is \$614; however, that does not include shipping or transportation costs. We are also seeking to gain some spare parts so that computers can be repaired more easily and quickly.

To accommodate these new clients we must upgrade our existing server with a second processor, more RAM, and an extra hard drive and power supply. Two additional hard drives for the server are included because server parts pricing increases and availability decreases exponentially once the model is no longer manufactured.

Another clear need for the computer network here is a reliable and independent method for creating backups of the data of our students and staff. We need the ability to backup this data so that it is free from the failure of operating systems and free from accidental deletion. A relatively new product with very good reviews will provide us with reliable data protection and the hard drives can be replaced easily in case of failure.

Also, we are requesting funds to purchase a printer designed for a network of our size and print management software (and a computer to run the software). Our current printing system is hugely expensive and inefficient and there are no viable options using our existing software and hardware to control costs. We currently use a personal laser printer, which uses toner cartridges that last 2,000 pages and costs \$130 when purchased here in Tanzania or \$75 when purchased in the USA. Based on toner purchased in the USA that is a price of 3.75 cents per page. The new printer is one that is sold in Dar es Salaam and also provides the ability to copy documents and also prints in color. The cartridge for that printer is rated at 5,000 pages and costs \$88 in the USA, which equates to 1.76 cents per page. That is a much more viable rate. The ability to print in color would be limited by the new software because of the higher costs involved. We are requesting money to purchase some toner cartridges from the USA so that we can have spares on hand and because the price for toner is much cheaper there than in Tanzania.

Finally, two items are included to protect and secure the computers and other sensitive information technology equipment here at Msalato. The first are asset tags that are designed to label equipment as school property and deter theft. Four hundred metal tags are included in the grant request because there is a significant cost savings for ordering three or four hundred tags. Second, we have included security cables that will secure monitors and computer towers to furniture and thereby further deter anyone from attempting to steal equipment. We have included seventy-five so that we can secure our new computers along with the existing computers.

This grant has been written so that it can be funded in stages or in part. These are clear needs here, but we recognize that this is a large amount of money. Thank you for your consideration and time.

Thin Client Computers

Parts from Dodoma

Computer case, power supply, mouse and keyboard	60,000 TSh
Per unit price multiplied by forty clients	2,400,000 TSh

Parts from Dar

LGA 775 Motherboard with 800 MHz FSB	75,000 TSh
Internal CD/DVD Writer	50,000 TSh
Floppy Drive	10,000 TSh
17" LCD Monitor – Dell	380,000 TSh
Subtotal per computer	515,000 TSh
Total for forty clients	20,600,000 TSh

Parts from USA

Intel Pentium E2180 Allendale 2.0GHz LGA 775 65W Dual-Core Processor	\$70
http://www.newegg.com/Product/Product.aspx?Item=N82E16819116052	
1 GB of DDR2 – 800 RAM	\$21
http://www.crucial.com/store/partspecs.aspx?IMODULE=CT12864AA800	
Subtotal per computer	\$91
Total for forty clients	\$3,640

Total for parts from Dodoma 2,400,000 TSh (divided by 1,100 to convert to US)	\$2,182
Total for parts from Dar 20,600,000 TSh	\$18,727
Total for parts from USA	\$3,640
Shipping for parts from USA	\$300
Transportation of parts from Dar to Dodoma	\$500
Housing and food in Dar	\$150
 Total for forty client computers	 \$25,499

Spare parts from Dar

Internal CD/DVD Writer	50,000 TSh x 5	250,000 TSh
Floppy Drive	10,000 TSh x 5	50,000 TSh
17" LCD Monitor – Dell	380,000 TSh x 3	1,140,000 TSh
Keyboards PS/2	15,000 TSh x 15	225,000 TSh
Mouse USB Optical	10,000 TSh x 15	150,000 TSh
ATX Power Supply Unit	15,000 TSh x 5	75,000 TSh
Total for spare parts	2,115,000 TSh	or \$1,923

Server Upgrades

These are needed to improve the usability and life of the server that we are using at Msalato and will better enable it to service twice the number of thin clients. Moving from thirty-five to seventy-five.

RAM for server upgrade from 7 GB to 12 GB	
Two pairs of 2 GB chips \$422 each	\$844 plus shipping
	\$860
http://crucial.com/store/mpartspecs.aspx?mtbpoid=30738A2BA5CA7304	
Hard drives – Three (one for additional storage and two hot spares)	
286716-B22 CPQ 146-GB U320 (2 Pack)	\$650
http://www.harddrivesdirect.com/product_info.php?products_id=142802	
286716-B22 CPQ 146-GB U320 SCSI HP 10K	\$328
http://www.harddrivesdirect.com/product_info.php?products_id=8691	
Power supply for server	\$245
http://www.harddrivesdirect.com/product_info.php?cPath=125&products_id=142413	
ML350 G4 Redundant Power Supply, 725 Watt Hot-Pluggable, Part# 406413-001	
Processor - 382180-B21 HP X3.4 GHz 800MHz 2MB CPU	\$650
http://www.harddrivesdirect.com/product_info.php?&products_id=141574	
Total for server upgrades and parts	\$2,733

Storage and Backup “Server”

One of the significant network problems faced by Msalato relates to a lack of an independent backup of the operating system and user files. To accomplish this, we are seeking to establish a “server” that will backup information and also host shared files.

<p>Data Robotics Drobo Enclosure/Array http://www.newegg.com/Product/Product.aspx?Item=N82E16822240010</p> <ul style="list-style-type: none"> - Holds up to four SATA II hard drives (varying sizes accepted) - Hardware “RAID-like” performance 	<p>\$490</p>
<p>Data Robotics Droboshare http://www.newegg.com/Product/Product.aspx?Item=N82E16822240007</p> <ul style="list-style-type: none"> - Network interface for Drobo - Supports up to two Drobo units via 10/100/1000 MB Ethernet port 	<p>\$185</p>
<p>Four Seagate ES.2 1TB SATA II Hard Drives (@ \$220 each)</p> <ul style="list-style-type: none"> - Enterprise class hard drives, designed for use 24 hours a day, seven days a week with a mean time to failure of 1.2 million hours (that is 136 years). - Will provide 2.7 TB of protected storage in a Drobo array, meaning that all of the data will be save even if one of the four hard drives fails. 	<p>\$880</p>
<p>Total for Storage and Backup “Server”</p>	<p>\$1,555</p>

Printing Equipment

Management Software

Print Manager Plus 2008 Standard Academic \$1,000

http://www.softwareshef.co.uk/products/print_manager_plus_academic.htm

Software manages print jobs on network and reduces costs. Designed for academic institutions and is used around the world.

Computer to act as print server

Computer case, power supply, mouse and keyboard <i>Purchased in Dodoma</i>	\$55
Internal CD/DVD Writer <i>Purchased in Dar</i>	\$50
Floppy Drive <i>Purchased in Dar</i>	\$10
17" LCD Monitor <i>Purchased in Dar</i>	\$350
ASUS P5BV-C LGA 775 Intel 3200 ATX Server Motherboard	\$145
http://www.newegg.com/Product/Product.aspx?Item=N82E16813131242	
Intel Xeon E3110 Wolfdale 3.0GHz 65W Dual-Core Processor	\$180
http://www.newegg.com/Product/Product.aspx?Item=N82E16819117165	
4GB kit (2GBx2), 240-pin DIMM, DDR2 PC2-8500 memory module	\$230
http://crucial.com/store/mpartspecs.aspx?mtbpoid=B639CF6FA5CA7304	
Microsoft Vista Business 64-Bit OEM	\$140
http://www.newegg.com/Product/Product.aspx?Item=N82E16832116478	
Antivirus and firewall software	\$60
Case fans	\$30
Two Seagate ES.2 250 GB SATA II hard drives (for a RAID 1 array)	\$150
Total for printer server computer	\$1,400

Printer

HP LaserJet 2840 \$1,300 in Dar (add \$200 for transportation) \$1,500

Printer supplies

Four	Q3960A Black cartridge (up to 5,000 pgs)	\$88 from HP USA	\$352
One	Q3961A Cyan cartridge (up to 4,000 pgs)	\$105 from HP USA	\$105
One	Q3962A Yellow cartridge (up to 4,000 pgs)	\$105 from HP USA	\$105
One	Q3963A Magenta cartridge (up to 4,000 pgs)	\$105 from HP USA	\$105

Total for toner \$667

Total for printing system **\$4,567**

Security Equipment

Asset Tags

400 Aluminum Tags \$460
<http://myassettag.com>

Security Cables and Locks

Kensington Desktop MicroSaver® Computer Security Lock \$27 each
http://www.newegg.com/Product/Product.aspx?Item=N82E16834997409&nm_mc=OTC-RSS

- System includes strong cable, three adhesive patches that the cable goes through and a secure keyed lock at the end

Seventy-five lock systems \$2,025

Total for security equipment **\$2,485**

Summary of Grant Request

Total for forty thin client computers	\$25,499
Total for spare parts from Dar	\$1,923
Total for server upgrades and parts	\$2,733
Total for Storage and Backup “Server”	\$1,555
Total for printing system	\$4,567
Total for security equipment	\$2,485
 Grand Total	 \$ 38,762

HP Color LaserJet 2800 All-in-One series

2820 • 2840



Experience the ultimate HP Color LaserJet with network printing, faxing, and scanning, plus walk up copying and direct digital photo printing in one space-saving design—you'll save time, space, and money and enjoy the simplicity and reliability you expect from HP LaserJet printers.

Versatile color laser all-in-one

- **Communicate effectively.** The power, precision, and extensive capabilities of HP's Color LaserJet print, fax, scan, copy, and direct digital photo printing All-in-One allow more effective and efficient communication than ever before.¹
- **Maximize productivity.** Featuring robust print and copy speeds of up to 20 pages per minute (ppm) letter black and up to 4 ppm color, the HP Color LaserJet 2800 AiO series lets your business produce professional documents with little time and effort.
- **Consolidate and share.** Built-in HP Jetdirect 10/100 Fast Ethernet wired networking lets your office workteam share all-in-one capabilities. For personal use or hosted sharing, connect directly via the Hi-Speed USB 2.0 port.

Greater efficiency

- **Focus on business rather than waiting for output.** Instant-on Technology saves time and energy, delivering your print job's first page in 18 seconds for black-and-white documents (29 seconds for color documents). Small jobs finish before most competitors' products have warmed up.
- **Employ business-class faxing.** HP innovation and Super G3 fax technology provides professional and efficient faxing at up to 33.6 kbps (approximately 3 seconds per page) and fax memory storage for up to 250 pages.¹
- **Scan, send, and archive at high resolution.** Integrate, store, or send brilliant images with up to 19,200 dpi enhanced scan resolution. Use the automatic document feeder (ADF) for unattended faxing, copying, and scanning of documents up to legal (8.5 by 14 inches) size, or use the flatbed scanner for bound and single sheet originals. Enjoy greater versatility with the ability to scan-to e-mail, scan-to PC desktop, scan-to PC folder, or scan-to network folder.
- **Count on HP printing technology.** A suite of image enhancement technologies is integrated into the all-in-one and its HP printing supplies: HP ImageREt 2400 ensures exceptional-quality color output, while HP Smart Printing Technology² monitors and makes automatic adjustments to cartridges to ensure consistent quality throughout cartridge life. Special fuser modes virtually eliminate print defects and provide optimal color printing on a variety of HP papers.

Easy to use

- **Be assured of compatibility.** Depend on industry-standard HP PCL 6 and HP postscript level 3 emulation to yield the most precise, reliable, and consistent results.
- **Manage with confidence.** Access device and supplies information from the control panel, featuring a 16 character, two-line back-lit display. And with one-handed removal and replacement for the five supplies, management is quick and effortless. HP Toolbox, the HP Embedded Web Server, and HP Web Jetadmin remote management software lets you adjust settings, receive alerts, check status, and manage network and memory card slot access settings.³

More for your money

- **Simplify digital imaging.** Capitalize on the convenience of integrated photo memory card slots featuring support for seven popular card types and formats. HP Image Zone for Windows® offers tools to view, enhance, manage, and share digital photos and scanned images. Conveniently print digital photos directly from the control panel with the card slots.¹
- **Invest in versatility.** Get the multipurpose, easy-to-use HP Color LaserJet 2800 AiO series at an exceptional price. Reduce costs by printing strategic, high-quality color documents in-house. Increase efficiency by producing only what you need, when you need it.
- **Conveniently make precise copies.** Easily produce high-quality, color or black-and-white copies of bound documents, single sheets, or objects such as placards with the flatbed scanner. Use the ADF to quickly process multi-page documents.
- **Handle a variety of business needs.** Spend less time loading paper with an input capacity of up to 375 sheets. A 125-sheet multipurpose tray and a 250-sheet paper tray offer easy access to a variety of paper finishes, sizes, and types, including labels and envelopes, at weights of up to 47 lb (177 g/m²) and HP laser glossy and photo papers up to 70 lb (220 g/m²).¹

HP printing and imaging systems help you create powerful, professional communications easily. All-in-one products, supplies, accessories, and services are designed together to work together and are invented to meet your business needs.

¹ Faxing, the 250-sheet paper input tray, and the photo memory card slots come standard with the HP Color LaserJet 2840 AiO.

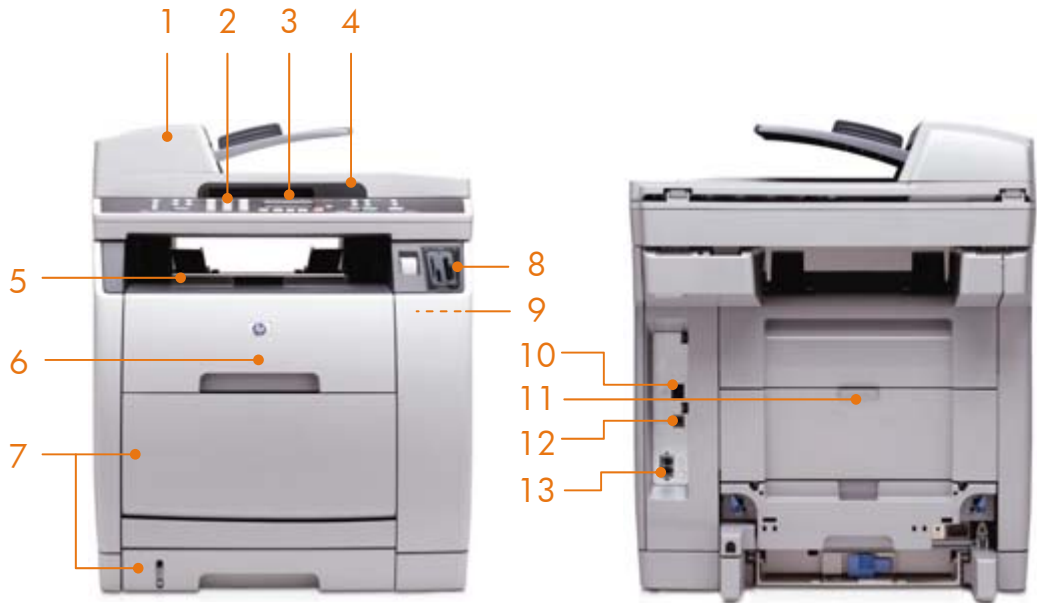
The 250 sheet paper input tray (Q3952A) is an optional accessory for the HP Color LaserJet 2820 AiO only.

² Using genuine HP supplies ensures availability of all HP printing features.

³ Photo memory card slot access settings are available via HP Toolbox and the HP Embedded Web Server only.

HP Color LaserJet 2800 All-in-One series

- 1 50-sheet automatic document feeder (ADF) enables unattended faxing, scanning, and copying
- 2 Easy-to-use control panel provides instant access to the product's different modes
- 3 Easy-to-read, back-lit, two-line LCD screen displays helpful device status and configuration messages
- 4 Up to 1200 dpi optical, 19,200 enhanced dpi flatbed CCD scanner enables precise, easy copying and scanning of bound materials or single sheets
- 5 125-sheet output bin
- 6 One-door access to the imaging drum and four easy-to-install print cartridges
- 7 125-sheet multipurpose tray and 250-sheet paper tray 2 for a 375-sheet total input capacity
- 8 Photo memory card slots for direct photo printing, archiving, or easy integration into business documents
- 9 96 MB of standard memory and a powerful 264 MHz processor perform complex tasks quickly
- 10 Built-in HP Jetdirect Fast Ethernet wired networking
- 11 Rear door for straight-through paper path
- 12 Hi-Speed USB 2.0 port
- 13 Super G3 V.34 fax modem—up to 33.6 kilobytes per second—with 4 MB of fax flash memory



HP Color LaserJet 2840 AiO shown

Series at a glance



HP Color LaserJet 2820 AiO

- 125-sheet multipurpose tray
- HP Color LaserJet Black Print Cartridge (estimated 5,000 pages)⁴
- HP Color LaserJet Cyan, Magenta, and Yellow Print Cartridges (estimated 2,000 pages)⁴



HP Color LaserJet 2840 AiO

- 125-sheet multipurpose tray
- 250-sheet paper input tray 2
- HP Color LaserJet Black Print Cartridge (estimated 5,000 pages)⁴
- HP Color LaserJet Cyan, Magenta, and Yellow Print Cartridges (estimated 4,000 pages)⁴
- V.34 fax modem
- Photo memory card slots

⁴ Approximate page yield based on five percent page coverage.

Enhance workteam productivity with this robust, reliable, easy-to-use color laser All-in-One.

Easily scan and capture documents and images

Scan to e-mail, application, desktop, or computer or network folder with ease.

With the HP Color LaserJet 2800 AiO series, archiving, editing, and sending documents and images electronically is a fast, simple, and reliable way to capture paper-based documents in digital format, so you can better manage valuable information.

Use the ADF or flatbed scanner to easily scan business material—such as documents, manuals, and reports—directly to your computer's e-mail application, software application, or to a folder on your computer or network drive for easy archiving.

Business imaging

With support for Compact Flash, xD, Secure Digital, Memory Stick, Memory Stick Pro, MultiMedia Card, and SmartMedia photo memory cards, the HP Color LaserJet 2840 AiO simplifies image management. Print images directly from supported memory cards via the control panel or transfer images and files to or from memory cards to supported and connected computer or network drives for archiving, editing, sharing, or integration into business documents.

Powerful device management

Manage your networked All-in-One remotely with HP Toolbox, the HP Embedded Web Server, and HP Web Jetadmin software. Configure the device settings, photo memory card slot access, speed-dial buttons, and an authorized Network Administrator password to protect device network and memory card access settings.⁵ These tasks and others can be conveniently performed directly from any networked computer with a standard Web browser, saving time and effort.

⁵ Faxing and the photo memory card slots come standard with the HP Color LaserJet 2840 AiO. Photo memory card slot access settings are available via HP Toolbox and the HP Embedded Web Server only.

⁶ Using genuine HP supplies ensures availability of all HP printing features.

⁷ To learn more about HP SureSupply™, visit www.hp.com/go/SureSupply.com.

HP Smart printing supplies advantage⁶

HP papers and HP Color LaserJet print cartridges are designed to work together with HP printing devices, so you can depend on consistent, high-quality results.

HP designs its print cartridges to continually adjust toner properties to ensure high-quality output over the life of the cartridge, which enables the precise printing needed for halftone images, smooth grayscales, and fine details.

HP Smart printing technology is activated every time you put an HP print cartridge into your product, allowing you to monitor your current supplies, and conveniently order new supplies with HP SureSupply™.⁷

Award-winning HP support

HP offers a variety of support options to assist you in the setup and maintenance of the HP Color LaserJet 2800 All-in-One series. HP's expert knowledge will help you make the most of your AiO and ensure your equipment is running at peak efficiency. Start with a one-year, limited hardware, onsite HP warranty, backed by free telephone and Web support from the award-winning HP Customer Care (warranty and availability vary according to region). To further guarantee trouble-free operation and maximize the potential of your HP Color LaserJet AiO, consider upgrading service and support options such as installation, network installation, advanced maintenance, and post-warranty support.

HP Color LaserJet 2800 All-in-One series

Technical specifications	HP Color LaserJet 2820 AiO (Q3948A)	HP Color LaserJet 2840 AiO (Q3950A)
Print speed⁹	Black-and-white: up to 20 ppm letter; full page color: up to 4 ppm	
First page out	Black-and-white: 18 seconds; color: 29 seconds	
Print quality	Black-and-white: up to FastRes 1200 print quality (600 by 600 dpi); Color: up to ImageREt 2400 print quality (600 by 600 dpi)	
Copy quality	Black-and-white: up to 600 by 600 dpi; Color: up to ImageREt 2400 print quality (600 by 600 dpi)	
Copy speed	Black-and-white: up to 20 copies per minute (cpm) letter; color: up to 4 cpm letter; first black-and-white copy out : 19 seconds	
Copy settings	Contrast (lighter/darker), Quality (copy quality), reduce/enlarge 25 to 400%, 2-up, 4-up, copy collation, number of copies, paper size	
Scanning	Color scanning supported; resolution: up to 1200 by 1200 dpi optical or up to 19,200 by 19,200 dpi enhanced resolution	
Walkup initiated scanning	Via front control panel with Scan-to button (preconfiguration via software required)	
Remote initiated scanning	Via HP Director, TWAIN-compliant or WIA-compliant software, HP Image Zone Software	
File formats	BMP, FFX, GIF, JPG (JPEG format, standard and progressive), JPG (EXIF 2.1 and 2.2), PCX, PNG, TIFF, PDF, TXT, RTF, HTML	
Maximum size	Flatbed: 8.5 by 11.7 in (216 by 297 mm); ADF: 8.5 by 15 in (216 by 381 mm)	
Faxing	Not available	Super G3 V.34 fax modem (up to 33 kbps) and 2 RJ-11 ports; Fax-send software for PC and Mac over both USB and network connectivity included with Typical/full install ⁹
Speed ¹⁰	Not available	3 seconds per page (Slerex page, standard resolution)
Features	Not available	Up to 300 by 300 dpi, forwarding, quick dialing (120 locations), 4 MB fax memory (up to 250 pages), polling (receive only), delayed sending, distinctive ring detection, auto reduction, auto redial, phone TAM interface, telephone mode, junk barrier
Photo memory card support¹¹	Not available	Compact Flash [®] Type I and Type II, xD-Picture card [™] , Secure Digital, Memory Stick [®] , Memory Stick Pro [®] , SmartMedia, MultiMedia Card
Processor	264 MHz	
Device memory	96 MB RAM (upgradeable to 224 MB with one industry standard 100-pin SDRAM DIMM slot) with Memory Enhancement technology (MET)	
Duty cycle	Up to 30,000 pages per month	
Paper¹²		
Input capacity	125-sheet multipurpose tray (up to 10 envelopes, 50 transparencies); 50-sheet ADF	125-sheet multipurpose tray (up to 10 envelopes, 50 transparencies), 250-sheet paper tray; 50-sheet ADF
Output capacity	125-sheet face down bin, rear output door for specialty paper	
Sizes	Multipurpose tray: 4.1 by 5.8 to 8.5 by 14 in (105 by 148 to 216 by 356 mm); letter, executive, legal, envelopes (No. 10, Monarch); 250-sheet paper tray: 5.8 by 8.3 to 8.5 by 14 in (148 by 210 to 216 by 356 mm); letter, executive, 8.5 by 13 inches, legal; ADF: 5 by 5 to 8.5 by 14 in (127 by 127 to 216 by 356 mm); letter, legal, executive	
Weights	Multipurpose tray: 16 to 47 lb (60 to 177 g/m ²), up to 70 lb (220 g/m ²) for HP laser photo papers and HP laser glossy papers only; 250-sheet paper tray: 16 to 28 lb (60 to 105 g/m ²); ADF: 16 to 24 lb (60 to 90 g/m ²)	
Types	Multipurpose tray: Paper ¹² (plain, letterhead, prepunched, bond, color, rough, preprinted, recycled) HP Color Laser Glossy Photo Paper, HP Color Laser Glossy Brochure Paper, HP Color Laser Matte Photo Paper, HP Color Laser Soft Gloss Presentation Paper, HP Color LaserJet transparencies, HP Laser Tough Paper, labels, envelopes, and card stock; 250 sheet paper tray 2: Paper ¹² (plain, letterhead, prepunched, bond, color, rough, preprinted, recycled); ADF: paper (plain, bond, recycled), HP transparencies, envelopes, labels, postcards, document carrier	
Connectivity	Hi-Speed USB 2.0 port, built-in HP Jetdirect Fast Ethernet wired networking	
Printer language and fonts	HP PCL 6, HP postscript level 3 emulation; Postscript Printer Description (PPD); 80 TrueType internal scalable fonts for both HP PCL 6 and HP postscript emulation	
Operating systems	Microsoft [®] Windows [®] 2000, XP (Typical/full PC install); Mac OS v10.2.8, 10.3, 10.4 or higher (full Mac install) Latest supported operating systems and print drivers available at www.hp.com/support/cj2800	
Network protocols	TCP/IP, Direct Mode IP, LPD; Configuration and management protocols: SLP, IGMP, BOOTP/DHCP, WINS, SNMP v1 and v2c, and HTTP	
Software included	HP Toolbox, HP LaserJet scan, TWAIN 1.9 or WIA scanner drivers, HP LaserJet fax, installer/uninstaller, HP Director, HP Image Zone, HP Document Viewer, HP All-in-One Setup Assistant (Mac); Readiris PRO Text Recognition software (not installed with device software, separate installation required)	
Dimensions (w by d by h)	19.6 by 20.9 by 20.6 in (497 by 532 by 523 mm)	19.6 by 20.9 by 22.4 in (497 by 532 by 573 mm)
Weight	Device: 69.6 lb (31.6 kg); As packaged approximately 89lb (36.8 kg)	Device: 75.3 lb (34.2 kg); As packaged approximately 95lb (40.5 kg)
What's in the box	HP Color LaserJet 2800 AiO series, HP imaging drum, HP Color LaserJet 5,000-page ¹³ Black Print Cartridge, power cord, Getting Started Guide, support flyer, software CDs, ADF	
Also includes	HP Color LaserJet 2,000-page ¹³ Cyan, Magenta, and Yellow Print Cartridges	HP Color LaserJet 4,000-page ¹³ Cyan, Magenta, and Yellow Print Cartridges, Super G3 V.34 fax modem, 250-sheet paper tray, photo memory card slots

Environmental ranges	
Operating temperature	59 to 90.5 degrees F (15 to 32.5 degrees C)
Storage temperature	-4 to 104 degrees F (-20 to 40 degrees C)
Relative humidity	20 to 70 percent RH, non-condensing
Max operating altitude	10,000 ft (3048 m)
Acoustic power emissions	
Active	6.6 B(A); Standby: not audible
Power specifications ¹⁴	
Input requirements	110 to 127 VAC (+/- 10%), 50/60 Hz (+/- 3 Hz); 220 to 240 VAC (+/- 10%), 50/60 Hz (+/- 3 Hz)
Consumption	Active: 398 watts; Ready: 26 watts; Sleep: 20 watts; Off: 0 watts Typical Electricity Consumption (TEC): 3.394 kWh/Week
Certifications	
Safety	IEC 60950-1 compliant; safety UL listed; EU LVD & EN60950-1 compliant; countries: Canada (cUL-CAN/CSA C22.2 No. 60950-1-03), Mexico (NOM NYCE-NOM 019 SCFI), USA (UL-LUL 60950-1; FDA-21 CFR Chapter 1 Subchapter J for lasers); class 1 laser/LED product
EMC	CISPR 22: 1997/EN 55022: 1998 Class B; EN 61000-3-2:2000; EN 61000-3-3: 1995\A1; EN 55024:1998\A1; FCC Title 47 CFR, Part 15 Class B; ICES-003, Issue 4; GB9254-1998; EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC, and carries the CE-Marking accordingly (in addition, Fax version meets R&TTE Directive 1999/5/EC (Annex II)), list of countries: Canada (Industry Canada ICES 003-CISPR 22), USA (FCC Title 47 CFR Part 15 Class B); CISPR 22 Class B
Telecom (HP Color LaserJet 2840 AiO)	TBR-21:1998; EG 201 121: 1998, FCC Part 68, Industry Canada CS03, NOM-151-SCTI-1999 (Mexico)
Warranty	
HP SureSupply [™] enabled	One-year limited hardware onsite HP warranty, telephone and Web support (varies according to region) To learn more about HP SureSupply [™] , please visit www.hp.com/go/SureSupply

⁹ Exact speed varies depending on the system configuration, software application, driver, and document complexity.
¹⁰ Fax send software for supported Windows XP and 2000 based systems and Mac OS v 10.2.8, 10.3 based systems; Receive Fax to PC capability via USB connection only available for Windows 2000 and XP.
¹¹ Based on standard ITU-T test image #1 at standard resolution. More complicated pages or higher resolution will take longer and use more memory.
¹² Memory card support for storage capacities up to 2 GB; Direct Photo Printing capability for .jpg image files.
¹³ Papers featuring coatings and finishes designed specifically for use in ink printing devices are not compatible.
¹⁴ All print cartridge page yields are based at five percent page coverage.
¹⁵ Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This will damage the printer and void the product warranty.



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Printed in the U.S.A.

Ordering information

Product	HP Color LaserJet 2820 AiO	Q3948A
	HP Color LaserJet 2840 AiO	Q3950A
Paper handling	250-sheet paper input tray (accessory for 2820 only)	Q3952A
HP Color LaserJet 2800 Printing Supplies with Smart Printing Technology		
	HP Color LaserJet Black Print Cartridge (5K pages) ¹³	Q3960A
	HP Color LaserJet Cyan Print Cartridge (4K pages) ¹³	Q3961A
	HP Color LaserJet Yellow Print Cartridge (4K pages) ¹³	Q3962A
	HP Color LaserJet Magenta Print Cartridge (4K pages) ¹³	Q3963A
	HP Color LaserJet Cyan Print Cartridge (2K pages) ¹³	Q3971A
	HP Color LaserJet Yellow Print Cartridge (2K pages) ¹³	Q3972A
	HP Color LaserJet Magenta Print Cartridge (2K pages) ¹³	Q3973A
	HP Color LaserJet Imaging Drum (20K pages black, 5K pages color, average 6-8K pages) ¹³	Q3964A
Connectivity	HP Jetdirect en1700 USB 2.0 Print Server	J7988G
Cables		
	HP network cable 7 feet	C7535A
	HP network cable 14 feet	C7536A
	USB cable (a-b) 2 meter	Q6264A
Memory		
	HP 128 MB 100 MHz Synchronous DRAM DIMM	Q7709A
	HP 64 MB 100 MHz Synchronous DRAM DIMM	Q7708A
	HP 32 MB 100 MHz Synchronous DRAM DIMM	Q7707A
HP Care Packs		
	HP Care Pack, network installation	H3110E
	HP Care Pack 3-year, next business day, onsite	UA337E
Paper	www.hp.com/go/everydaypaper	
	HP Color Laser Glossy Photo Paper, letter, 58 lb bond (220 g/m ²), 100 sheets	Q6607A
	HP Color Laser Glossy Brochure Paper, letter, 44 lb bond (160 g/m ²), 150-sheets	Q6610A
	HP Color Laser Glossy Photo Paper, letter, 32 lb bond (120 g/m ²), 200 sheets	Q6545A
	HP Color Laser Soft Gloss Presentation Paper, letter, 32 lb bond (120 g/m ²), 200 sheets	Q6541A

For more information, visit our website at www.hp.com

5983-0800ENUC, November 2007, Rev. 3.2



Print Manager Plus[®] 2008 Standard

Academic Edition

Track, Control, Quota and Restrict Student printing across your network. Academic Pricing Available for K12 Higher Education and Non-Profit.

K12/Secondary/Higher Education

Dissuade students from printing all of their emails, pictures, texts, and web pages. Irresponsible printing puts a strain on your school's budget and Print Manager Plus can eliminate wasted printing by up to 50% or more on a single network. Print Manager Plus 2008 Standard Academic Edition for Windows Server allows full setting of printing quotas, restrictions, and detailed tracking of all printing history.

If your printing environment is a network using Active Directory, or just a simple WorkGroup setup Print Manager Plus is the product for you. The efficacy and speed of the product is transparent to the user. The product can track any Operating System and uses Windows Server or Workstation to run from. Once the product is installed it changes nothing in Windows and its Ease of Use has made it the #1 Print Management software on the market today.

Features at a Glance

- Reduces Printing by 50% or more.
- Complete Ease-of-Use.
- Runs on Windows Server or Workstation NT/2000/XP/Vista.
- Tracks printing from any Operating System.
- Active Directory and WorkGroup Integration.
- Printing Verification Pop-Up.
- Free Workstation based End User Inquiry Tool.

What Customers Say

“ PMP has helped save us money from our IT budget by being able to select different printing costs for individual printers. This has enabled us to better control our higher cost printers.”

– East Devon College

“ We couldn't afford technology upgrades for our school. After installing Print Manager Plus we cut our printing costs in half - from £24,000 to around £12,000 and are now able to afford upgrades.”

– The King's Academy

What Reviews Say

“ Overall, I found Print Manager Plus very easy to install and manage. ...for schools, universities or facilities houses which charge for a service it could be a real boon. Recommendation is mandatory.”

– PC-PRO Magazine

Track and Audit Printing

Print Jobs being routed through a print server will all be audited no matter what operating system the print job is originating from. Once the print job has spooled through the print driver Print Manager Plus will audit data from Network Sources such as Workgroups, Active Directory, and LDAP.

Network data collected is: User Name, User Group, Organization Unit, Workstation Name, Server Name, Printer Name, Printer Group, and Network Bandwidth.

Print Job data collected is: Time/Date Printed, Document Title, Document Type, Page Count, Copy Count, Page Size, Print Job Size, Black & White Output, Color Output, Duplex, N-Up, Large Format Printing by Inches and Centimeters.

Printers Audited includes: Dot Matrix, Inkjets, LaserJets, Multifunctional devices, Large Format Printers, and Plotters.

Control Printing

Print Manager Plus can set Quotas and Restrictions. Quotas and Restrictions can be set on a single or multiple users, user groups, and organizational units. Restrictions can be set directly on a printer or group of printers. Default settings can be turned on for new Users, and Printers added to the Active Directory.

If a print job has been denied because of a restriction or a quota has been met, Print Manager Plus can automatically be set to Pause the print job or Delete the print job. Pop-Up messages can then be automatically sent to the user's workstation explaining why the print job was denied. Low balance pop up messages can also be sent when a user gets close to his quota.

Hard Quotas

- Set printing account balance by all printers.
- Set multiple printing balances per a group of printers.
- Supports all currencies.
- Set page balance.
- Balances can be deducted by set page costs and deductions with factors such as; B/W, Color, Page Size, Duplex, and N-Up printing.
- Set Quotas to reset by day, week, month, or year.
- Set Quotas to accumulate by day, week, month, or year.
- Supports Negative balances.

Restrictions

- Set multiple restrictions on a User, User Group, Organization Unit, and Printer.
- Deny printing for print jobs over X number of pages.
- Deny printing if document size is over X amount of Bytes, Kilobytes, or Megabytes.
- Only Deny or Only Allow printing based on strings or words in the document title.
- Deny printing if the print job is color.
- Deny printing if the print job is Black and White.
- Deny printing if the number of copies of a print job exceeds X amount.
- Deny printing if the document is reprinted within so many seconds. This handles accidental duplicate printing.
- Deny printing based on time of day. This allows you to set a Black Out time when all printing is denied.

Security

- Deny or Allow printing by users who are not recognized by Active Directory.
- Enforce Print Job Verification at Workstation.
- Enforce Print Job Verification at Release Station (optional).
- Supports Sarbanes-Oxley compliancy.
- Supports HIPAA compliancy.
- Supports Data Protection Acts compliancy.

Messaging

Print Manager Plus uses two different ways to send messages back to end users when a quota, restriction, or security rule has been met. First the product will try to use the Windows Messenger service. If this is unavailable then messaging can be used in conjunction with the Print Manager Plus End User Inquiry Tool.

- Automatically Delete a Print Job when a Quota, Restriction, or Security rule has been met.
- Automatically Pause a Print Job when a Quota, Restriction, or Security rule has been met.
- Quota low balance warning message
- Quota has been met message.
- Individual Restrictions have been met message.
- User not recognized by Active Directory message.

Reports and Graphs

Print Manager Plus uses a built in Crystal Reports viewer. The Standard Edition of Print Manager Plus has over 111 built in pre-made reports and graphs.

- Over 111 pre-made reports and graphs.
- Date and Time Value Range.
- Reports by String Search.
- Add Report Title.
- Detailed and Summary Reports with drill down capabilities.
- Print Reports or Graphs
- Zoom In or Out of Reports and Graphs.
- Over 17 export options including: PDF, Html, Rpt, Word, Excel, RTF, CSV, TXT.
- File destinations include: Disk File, Application, Lotus Domino, Exchange, MAPI.

And much much more.

Software Shelf strives to provide each customer with high quality sales assistance, customer service and technical support. In addition to our own line of printer management software, we distribute other "best of breed" Windows Server & Workstation products.

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#1 (Text)">

Asset Tags > 0.75" x 2" > #1 (Text)

Select Material and Order Quantity

Select a material, color scheme and quantity. For material specs, click on (?) buttons below. Click **Next Step** button when done. You may take advantage of our **Quantity Discount Program**. This means that if you order more, you'll get better price.

Material

Price per Tag
(100 Tags/Pack)

Ship by date
Best Seller
Outdoor
Tamper Proof
Chemical Resistance
Abrasion Resistance
Maximum Temp. (°F)

Compare Prices at Different Quantities
(Prices shown below are per Tag)



PROPERTY OF
Msalato Theological College
Box 264, Dodoma, Tanzania

0001

Durable Metal Asset Tags

	AlumiGuard™ Metal Tag		9/23				400	\$3.45	\$1.84	\$1.41	\$1.15
--	-----------------------	--	------	--	--	--	-----	--------	--------	--------	--------

Economy Plastic Asset Tags

	Destructible SecuriGuard™		9/23			185	\$2.20	\$1.70	\$1.20	77¢
	"VOID" if Removed StealGuard™		9/23			385	\$2.20	\$1.70	\$1.20	77¢
	Embedded PermaGuard™		9/23			385°F	\$2.74	\$1.58	\$1.22	\$1.04

[more >](#)

Order Quantity



Minimum order quantity is 1 Pack. There are 100 Tags per Pack. Subsequent quantity should be a multiple of 1 Pack.

Quantity Packs (Total: 400 Tags)

[Recalculate](#)

Total Cost

\$460.00



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Zoom

Part# EG100
Size 10.5" x 1.5" (H x W)/Label Size: 0.875" x 1.125"

Property Tag - 3/4" x 1-1/2", AlumiGuard Stock Labels

100 AlumiGuard Aluminium asset tags, numbered and barcoded

Our strongest, most durable tag provides quality with speed.

- Simply peel off your E-Guard label and apply.
- Scratch and chemical resistant aluminium tag.
- Ships same business day if ordered before 2PM EST.
- Many shipping options available.
- We choose the starting number.

Quantity : Pack

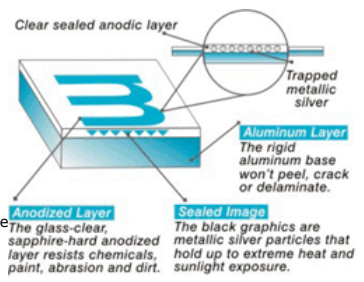
Package : 100 Labels/Pack • Price per Pack

1	5	10
\$84.95	\$74.95	\$69.95

[Hide Specifications](#)

Part#	EG100
Size	10.5" x 1.5" (H x W)/Label Size: 0.875" x 1.125"
Package	100 Labels/Pack
Weight	0.20 lbs / Pack
Material	AlumiGuard™ Metal Asset Tag [SS-LC]
Color	White
Material Features	

- Anodized aluminum asset tags are the industry's quality leader and are, in fact, our best selling asset tag material choice.
- AlumiGuard™ tags offer a high resolution, photographically produced print that reproduces your design or logo beautifully.
- The legend and the bar-code serial numbers are sealed into the aluminum, as shown by the illustration.
- For serialized tags (with numbers only), the numbers are deeply indented into the aluminum.
- Metal asset tags are incredibly durable. The adhesive sticks to most every surface, including both plastics and metal assets.



Printing Technique

Anodized Printing [What is this?](#)

Contents

100 labels.

Product Overview

Barracuda® ES.2

The highest-capacity drives in Tier 2 nearline, business-critical storage

1-TB, 750-GB, 500-GB and 250-GB capacities • SAS 3Gb/s, SATA 3Gb/s and SATA 1.5Gb/s

Key Features and Benefits

- Specifically designed for Tier 2 nearline applications, with one terabyte of second-generation perpendicular recording available on a single, four-platter drive
- The industry's highest-reliability 7200-RPM drive, designed for 24x7 operation
- Seagate® PowerTrim™ technology dynamically optimizes power consumption by improving GB/watt by 55 percent over prior generation of Barracuda ES drives.
- Best-in-class rotational vibration tolerance provides unrivalled performance in high spindle-density systems.
- Available with SATA or SAS interfaces
- Full internal IOEDC/IOECC* data integrity protection on SAS models
- Dual-ported, multi-initiator SAS provides full-duplex compatibility and a 135 percent average** performance improvement over SATA.

Best-Fit Applications

- Storage-hungry business applications
- Network attached storage (NAS)
- Storage area networks (SAN)
- Maximum capacity servers
- Rich media content storage—audio, video, image
- Reference and compliance data storage
- Enterprise backup and restore—D2D, virtual tape
- Collaboration—email, messaging
- Infrastructure—Web, print, file



*IOEDC/IOECC on SATA (writes only), IOEDC/IOECC on SAS (both reads and writes)
**Averaged from random/sequential, read/write activities with write cache off

Barracuda® ES.2

The highest-capacity drives in Tier 2 nearline, business-critical storage



Product Description

The Seagate® Barracuda® ES.2 drive uses second-generation Seagate perpendicular recording technology to provide up to one terabyte of storage in a single, 4-platter hard drive. This 7200-RPM drive with best-in-class reliability and rotational vibration tolerance was developed for 24x7 availability in high-density, Tier 2 storage applications. The drive's integrated workload management feature aids in drive cooling during periods of prolonged activity. The integrated PowerTrim™ technology optimizes power consumption during operation and idle without any host interaction or performance loss. The Barracuda ES.2 drive comes with in-drive data integrity protection guaranteed through Seagate IOEDC/IOECC* technology and is available with a choice of either SATA or SAS interfaces for convenient system initiators. SAS offers improved performance over SATA due in part to the dual processors, hardware sequential streaming, the 2.4 GHz SAS ASIC data rate and the SAS clock rate of 75 MHz.

The SAS interface allows Barracuda ES.2 drives to be freely attached to any SAS host in single- or dual-ported configurations and provides

full-duplex support, with two active data channels, to as many as 16 concurrent initiators.

The Seagate Advantage

- 1-TB capacity and second-generation perpendicular recording technology provide 33 percent more storage than the previous highest-capacity nearline drive while substantially improving value in \$/GB and GB/W.
- Highest-reliability 7200-RPM drive with best-in-class rotational vibration tolerance to maintain performance in densely packed, multi-drive system designs.
- Proprietary Seagate internal data protection features from a trusted source, backed by a 5-year limited warranty
- Industry's only nearline SAS drive provides 135 percent average* power boost over SATA drives and superior data integrity with full IOECC/IOEDC.

Enabling New Opportunities

- Seagate has applied its unparalleled enterprise technology and manufacturing expertise to deliver a 7200-RPM drive that meets the needs of 24x7, multi-drive, nearline applications.
- The Barracuda ES.2 drive now makes SAS available for seamless migration of aging Tier 1 transactional data to Tier 2 nearline storage.
- With breakthrough capacity enabled by perpendicular recording technology, Barracuda ES.2 drives ensure maximum cost-effectiveness for capacity-intensive storage applications.

*Averaged from random/sequential, read/write activities with write cache off

Specifications	
Capacity	
SATA 3Gb/s, 1.5Gb/s	1 TB, 750 GB, 500 GB, 250 GB
SAS 3Gb/s	1 TB, 750 GB, 500 GB
Spindle Speed (RPM)	7200
Cache, Multisegmented (MB)	
SATA 3Gb/s, 1.5Gb/s	32
SAS 3Gb/s	16
Seek Time, Read/Write (average, msec)	8.5/9.5
Mean Time Between Failures (MTBF) (hours)	1.2 million
Reliability Rating at Full 24x7 Operation (AFR)	0.73%
Transfer Rate, Sustained (MB/s)	105 (SATA), 116 (SAS)
Power Consumption (W, idle)	
SATA 3Gb/s, 1.5Gb/s	8.0
SAS 3Gb/s	10.2
Rotational Vibration @ 1500 Hz max (rad/sec ²)	12.5
Limited Warranty (years)	5

www.seagate.com
1-800-SEAGATE (1-800-732-4283)

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ASIA/PACIFIC Seagate Technology International Ltd. 7000 Ang Mo Kio Avenue 5, Singapore 569877, 65-6485-3888
EUROPE, MIDDLE EAST AND AFRICA Seagate Technology SAS 130-136, rue de Sully, 92773 Boulogne-Billancourt Cedex, France, 33 1-4186 10 00

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The New Drobo has Arrived.

FireWire 800 and Enhanced Performance.



drobo

Products

Drobo

DroboShare

Resources

Drobo in Action

DroboLator

Case Studies

Drobo + Time Machine

BeyondRAID

FAQs

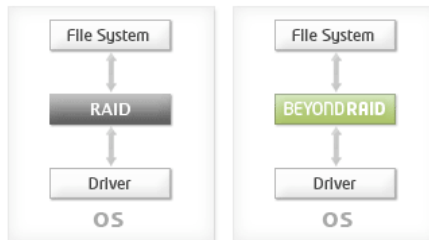
What's BeyondRAID? Storage without limitations.

What does it mean to go BeyondRAID? Going beyond traditional RAID means leaving behind choices between striping and mirroring, limitations on expandability, drive sizing, and drive ordering, among others. BeyondRAID™ technology is the next generation of storage that brings together safety, reliability, expandability, efficiency, and of course ease-of-use. It fits in the same place in the stack as traditional RAID between the file system and the driver. BeyondRAID can be adopted without any change in infrastructure, allowing you to maintain your current file system and operating system and eliminating the friction costs typically associated with moving to a new technology platform. It is RAID in the sense that the technology utilizes a redundant array of independent disks but not in the usual meaning of the acronym.

BEYONDRAID™ Standard RAID levels are full of compromises. Do you want striping or mirroring? A two-disk or four-disk set? BeyondRAID is able to solve these issues because it is built on an advanced virtualization platform that allows simultaneous utilization of both striping and mirroring methodologies. BeyondRAID is also adaptive allowing it to respond to different scenarios, such as moving from two disks to three disks, by simply switching from mirroring to both mirroring and striping with parity. Since the technology works at the block level, it can contiguously write blocks of data that alternate between methodologies.

Comparison to RAID

Feature by feature, BeyondRAID consistently beats traditional RAID. BeyondRAID has all the benefits of proven, venerable traditional RAID levels without the limitations. If you already understand how RAID 0, 1, or 5 operates, you understand the fundamentals of BeyondRAID since it relies on the precisely the same underlying data protection methodologies, namely mirroring and striping with parity. The difference is in how BeyondRAID interacts with the storage itself. Applying these protection methods on top of a robust storage virtualization platform removes many of the limitations normally associated with RAID, such as an inability to grow in total capacity or disk set size or the need to keep disks in a particular order.



	RAID	BeyondRAID™	Why BeyondRAID Technology Wins...
Drive Failure	Yes	Yes	BeyondRAID has all of the data protection benefits of RAID
Management	Complex	Zero	No skill is required to manage, repair or upgrade storage
Utilize Mix Capacity	No	Yes	Customer chooses entry and upgrade price points, upgrade forever
Self-Healing	No	Yes	Array heals without waiting for maintenance windows, reduced support burden, no need for hot spare
Proportional Rebuilds	No	Yes	Fast rebuilds, fast addition of storage
Drive Reordering	Not really	Yes	Drives can easily be moved between devices
Upgrade Time	Many Hours	Seconds	Storage can be added with zero load or downtime
Virtualization Engine	No	Yes	Built for flexibility and easily accommodates future enhancements
Thin Provisioning	Poor	Complete	Freed space is returned to general pool and can be reallocated
Number of Drives in RAID Group	Less than 12	Unlimited	Any number of disks can be grouped into the same redundant pool, simplest provisioning and management

Drobo Demo Video



Questions About Drobo?



Desktop MicroSaver® Computer Security Lock



Safeguards your whole desktop system

How much money did you put into building your computer system? You can protect that investment by locking together all your components with one easy cable. Look for corporate custom-keyed solutions for your whole team.



Register your key code in case of key loss.

How do I order a replacement key?

Model number: 64162

Price: \$34.99

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Features

- Cable and lock secure desktop computers and other valuable office hardware.
- Dome-shaped plates adhere to existing office equipment.
- Plates resist wrenching, hammering and prying; withstands 750 lbs of pull strength.
- Custom keying options available in a Master access, Shared access, or Supervisor-only access
- 6-ft steel cable daisy chains individual items together.

Specifications

- Cable and lock device to secure desktop computers and other valuable office hardware.
- Strong, light, 6 foot steel cable.
- Universal security product.
- Attractive and functional adhesive plates (3).

Dimensions

Cable length 72.0"L

Dome security plates 2.469"L

Warranty

Desktop MicroSaver® Computer Security Lock is backed by the Kensington Limited Lifetime Warranty.

[View warranty details.](#) ▶