

# Toshiba e-Studio4520c



45-ppm Monochrome; 45-ppm Color

Print • Copy • Scan • Fax

# 100% INDEPENDENT ANALYSIS

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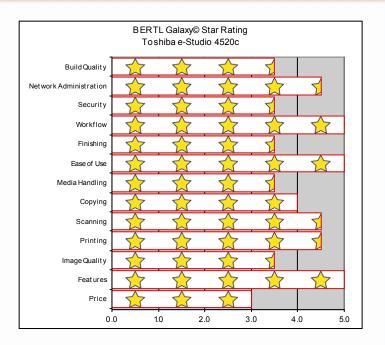
## What's Inside

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OFFICE





### ABOUT BERTL'S GALAXY© STAR RATING

BERTL understands how difficult it is to choose one officeimaging device over another and exists to make this an easier choice for the consumer. That said, how does a consumer decide between two or more devices that carry the same BERTL 3-, 4- or 5-star rating?

#### Category-Criteria

<u>Build Quality</u> - An analysis of the construction quality of the major components that the user must interact with on a regular basis (e.g.: paper trays, access covers, supplies, etc.).

<u>Network Administration</u> - The quality of administrative and management utilities (both executable and Web-based) when compared to that of a sliding scale benchmark based on the network administration feature set of other vendors.

<u>Security</u> - A security feature-set analysis (removable hard disk, hard-disk overwrite, encryption, IP filtering, Microsoft Windows NT Authentication and LDAP lookup) when compared to a sliding scale benchmark based on the security feature set found on other devices.

<u>Workflow</u> - The quality of the network scanning, job submission, document management, sharpening and enhancement, file conversion and job layout tools based on a sliding scale benchmark when compared to the workflow tools employed by other devices.

<u>Finishing</u> - The productivity penalty (punch, staple, booklets) based on tests and finishing specifications and effectiveness based on a sliding scale benchmark when compared to that of other finishing systems found on other devices.

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<u>Ease of Use</u> - Ease of maintenance (adding paper, toner, misfeeds, cleaning) and ease of using the documentation, help, control panel, print drivers and client utilities when compared to a sliding scale benchmark based on of the ease of use of other devices.

<u>Media Handling</u> - Throughput specifications and evaluations based on a sliding scale benchmark when compared with the handling of special media (e.g.: oversize, thick or coated stock) found on other devices.

<u>Copying</u> - Copy productivity based on tests and a featureset analysis when compared to a sliding scale benchmark based on the feature set found on other devices.

<u>Scanning</u> - Simplex and duplex scan productivity and quality based on tests and a comparison of the overall scan and send feature set when compared to a sliding scale benchmark based on the feature set found on other devices.

<u>Printing</u> - Duplex and simplex print productivity based on tests and a printing feature set analysis when compared to a sliding scale benchmark based on the feature set found on other devices.

<u>Image Quality</u> - The quality of business color images (text, dot, line, halftone and solid quality) based on tests and a subjective rating on the quality of continuous tones (photos) when compared to a sliding scale benchmark based on the continuous tone quality produced by other devices.

<u>Features</u> - The feature set compared to a sliding scale benchmark based on the feature set found on other devices.

<u>Price</u> - MSRP of a system configured with network printing, copying, scanning, and two media trays/rolls (wide format) configuration.



As part of Toshiba's e-STUDIO 4520c/3530c/2830c family, the e-STUDIO4520C is the high-range unit in this office color MFP large-format family, and is designed for multiuser offices and mid-sized workgroups. Introduced in July 2008, the e-STUDIO4520C series is among Toshiba's newest and fastest products that print, copy, scan and fax while incorporating the company's next generation e-BRIDGE controller which is designed to provide more multi-tasking. efficient processing and The e-STUDIO4520C also offers a new Replaceable Unit design, which is intended to keep maintenance downtime to an absolute minimum.

BERTL recently tested the e-STUDIO4520C which was developed completely in-house by Toshiba with a list price of \$20,999 (as a digital copier/network printer). The e-Studio4520C is the high-end system in the series and is rated at 45 ppm monochrome and 45 ppm color, with a maximum paper capacity of up to 3,700 sheets.

The new Toshiba high-volume color line features a large, adjustable 8.5" Super WVGA touch screen for quick and easy access to copying, printing, scanning, faxing and e-filing features, and a new two-part developer delivery system that automatically replenishes developer into the system as new toner is introduced, eliminating the need to install or maintain developer for the projected life of the MFP.

Toshiba's next generation e-BRIDGE controller offers enhanced document security with its Advanced Encryption Standard (AES) hard disk encryption, IPv6, IPSec, SNMPv3 and 802.1x network authentication, protecting the document workflow all the way to the network. The e-STUDIO4520c series includes Secure PDF, enabling users to password-protect documents when creating scanned PDFs, to prevent unauthorized viewing or printing. In addition, the new color MFP series support printing from and scanning to a USB flash storage drive, and support full-color banner printing of sizes as large as 47 inches wide and 12 feet long.

It's also important to note that while the Toshiba e-STUDIO4520C features standard network printing, it may be equipped with an optional EFI Fiery controller (Fiery Image Controller System 8e). This controller which is suitable for customers with more demanding printing applications, such as graphic-intensive applications will be available early next year.

In the following test report, BERTL takes an in-depth look at the E-Studio 4520C, testing and evaluating its productivity, image quality and ease-of-use. August 2008 www.bertl.com

Toshiba e-Studio4520C Features Summary	
List Price	\$20,999
Imaging Technology	Laser, electrostatic
Standard Functions	Digital Copying, Network Printer / Printer
Optional Functions	Network Scanning, LAN Fax
Maximum Monthly Print Volume	70,000 pages
Mono Print Speed	45 ppm
Color Print Speed	45 ppm
Mono First Page Out Time	5.2 sec.
Color First Page Out Time	7.0 sec.
Automatic Duplex	Yes
Network Scanning	Yes
Color Scanning	Yes
NT Authentication	Yes
LDAP Compatibility	Yes
Hard Disk Overwrite	Optional



The Toshiba e-STUDIO4520C as tested by BERTL.



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### PRICING

Toshiba e-Studio 4520C		
List Price	\$20,999	
Print Controller Options	Toshiba (Standard), EFI Controller (Not available at launch)	
Network Interface Options	GN-1050 Wireless LAN Adapter, GN- 2010 Bluetooth Adapter, GN-3010 Wireless Antenna, GS-1010 Meta Scan Enabler, GP-1080 IPSec Enabler	
Media Input Options	Standard: Two Paper Drawers (2 x 550 – 11'x17"); Bypass Tray (100-Sheet - 12"x47'); Optional: KD-1023 - Paper Feed Pedestal (1 x 550-Sheets - 11"x17"); MY-1032 - Cassette Module (1 x 550 Sheet – 11"X17"); KD-1024LT - Large Capacity Feeder (1 x 2,500 Sheet – 8.5"x11"); MR-3018 - RADF (100 Sheets – 8.5"x11")	
Finishing Options	MJ-1101 - Multi-Position Finisher (Stationary Tray - (250 Sheets – 8.5"x11"; Tray 1 with 2000 Sheets Stacking Capacity, 50 Sheet Staple Capacity); MJ-1030 - Saddle-Stitch Finisher (Tray 1 with 1000 Sheets Stacking Capacity, Tray 2 with 1000 Sheets Stacking Capacity, 50 Sheet Staple Capacity), 60 pages (15 sheets) Saddle Stitch Booklets; MJ-1031 - Hanging Finisher (Tray 1 with 1000 Sheets Stacking Capacity, 50 Sheet Staple Capacity)	
Software Options	TopAccess, e-Bridge Fleet Management System	
Print/Copy Management Options	Network Accounting Enablement	
Other Options	MJ-6101N - Multi-Position Hole Punch Unit (for MJ-1101), MJ-6004N - Multi- Position Hole Punch Unit (for MJ-1030), KN-4520 - Bridge Kit Required with MJ- 1101, MJ-1030, MJ-1031, GA-1211 - EFI Controller (not available at launch), GD- 1250 - NA Fax Board, GD-1260 - NA 2nd Line Fax, GN-1050 - Wireless LAN Adapter, GN-2010 - Bluetooth Adapter, GN-3010 - Wireless Antenna, GP-1070 - Data Overwrite Kit, GS-1010 - Meta Scan Enabler, GP-1080 - IPSec Enabler, KP- 2004 - HID Card Reader, KP-2005 - Mifare Card Reader, ST-4520 - Plain Stand	

### SPECIFICATIONS

Print		
Black Print Speed	45 ppm	
Color Print Speed	45 ppm	
Black First Page Out Time	5.2 sec.	
Color First Page Out Time	7.0 sec.	
Print Controller	Toshiba, EFI (Optional)	
CPU	866 MHz (Shared)	
RAM and Hard Drive	1.5 GB (1.0 GB Memory / 512 MB Page Memory Shared), 80+GB hard drive	
Operating Platforms	MS Win: 2000, XP, Server XP, Server 2003, Apple Mac OS: 10.1 and higher, UNIX, Linux, SCO, AS400 via iData & Port 9100, SAP R/3	
Standard Print Drivers	PCL 6, PostScript 3, and XPS	
Optional Print Drivers	Adobe PostScript 3 (With EFI Controller)	
Standard Interfaces	10BaseT/100BaseTX Ethernet, 802.11b/g Wireless LAN, USB, Bluetooth	

Сору		
Black Copy Speed	45 ppm	
Color Copy Speed	45 ppm	
Black First Copy Out Time (Platen/DF)	5.2 sec.	
Color First Copy Out Time (Platen/DF)	6.8 sec.	
Job Build	Yes	
Scan Ahead Copy	Yes	
Copy Job Programs	Yes	
Customizable Menus	No	
Max/Min Zoom Ratio	25/400	
Cover Insertion	Yes	
Sheet Insertion	Yes	
Page Stamp Options	Yes	



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Scan		
Scan		
Maximum Scan Speed (B/W)	Up to 57 spm	
Maximum Scan Speed (Color)	Up to 57 spm	
Connectivity Options	LDAP, SMTP, Windows Domain	
Scan to e-mail	Yes	
Scan to SMB	Yes	
Scan to FTP	Yes	
Scan to HDD	Yes	
Scan to URL	Yes	
Scan to Internet Fax	Yes	
TWAIN Scanning	Yes	
Scan to External Memory Source (Optical Drive/USB/SD card)	Yes	
Network Authentication	Yes	
LDAP Lookup	Yes	
File Formats Supported	TIFF, PDF, Secure PDF, Slim PDF, JPEG, XPS	
Encrypted PDF Format	Yes	
Ad hoc Subject Line Entry	Yes	
Ad hoc Message Line Entry	Yes	
Ad hoc File Name Entry	Yes	
QWERTY-Style Input Keypad	Yes	

Maintenance		
Black Toner Yield*	29,000 pages	
Color Toner Yield*	24,000 pages *	
Fuser Life	Information Not Published	
User Replaceable Drum?	No	
User Replaceable Waste Container?	No	
User Replaceable Original/Paper Feed Rollers?	No	

\*Manufacturer's stated yield based on 5% page coverage.

Media Handling: Input/Output		
Standard Media Capacity	1200 sheets: 2 x 550-sheet drawers, 100-sheet bypass tray	
Optional Media Supplies	550-Sheets - Paper Feed Pedestal (11"x17"); 550 Sheet - Cassette Module (11'X17");	

Media Handling: Input/Output		
	2,500 Sheet - Large Capacity Feeder (8.5"x11"); 100 Sheets - RADF (8.5"x11")	
Maximum Media Capacity	3,700 sheets	
Maximum Media Size (main trays)	11"x17"	
Minimum/Maximum Media Weight (main trays)	Tray 1 - 17 lb. Bond to 140 lb Index (64 - 253 gsm)	
Maximum Media Size (bypass)	12"x47"	
Minimum/Maximum Media Weight (bypass)	17 lb. Bond - 100 lb. Cover (64 to 270 gsm)	
Minimum/Maximum Media Weight (duplex)	Tray 1 - 17 lb. Bond to 140 lb Index (64 - 253 gsm)	
Standard Output Tray Capacity	500 sheets	

#### **FEATURES**

Security		
Hard-Drive Overwrite	Yes	
Removable Hard Drive	No	
Private Print	Yes	
Encrypted Printing	Yes	
Secure Fax	Yes	
Encrypted PDF Send	Yes	
Network Authentication	Yes	
LDAP Authentication	Yes	
Kerberos Authentication	Yes	
SNMP	Yes	
IPv6	Yes	
SSL/TLS	Yes	
IP Filtering	Yes	
MAC Filtering	Yes	
Other Security Features	Yes*	

\*Data Overwrite – Overwrites all data on the hard drive after every job up to 5 times exceeding the Department of Defense Standard.



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#### SOFTWARE

Client Software		
Print Drivers	PCL 6, PostScript 3, and XPS	
Client Software	TopAccess Internet Service	
Desktop Software	Toshiba e-Bridge Device Manager, Toshiba e-Studio File Downloader, Toshiba e- Studio Twain Driver	
Other Software	Toshiba e-Studio Remote Scan Driver, Toshiba e-Studio WIA Driver, Toshiba e-Studio N/W- Fax, Toshiba e-Studio AddressBook Viewer	

Device-Management Software		
Web-based device monitoring	TopAccess, HP Web Jetadmin Plug-in, Address Book Viewer,	
Executable-based device monitoring	No	
Group management of network devices	*Yes	
Monitor 3rd-party MIB- compliant network devices	Yes	
HP Web JetAdmin compatible	Yes	
Other Software	Document Management (e-BRIDGE Re-Search, DocRecord, DocuWare, Questys Pro); Document Output Management: (e-BRIDGE Job Build, e-BRIDGE Job Separator, BarCodeJet, DocForm, DocSystem, DocTransform, EFI Balance, EFI Digital StoreFront, ExcelliPrint, Ringdale FollowMe, iDriver, Print Audit, RPM Remote Print Manager, QDirect, WebCRD); Document Capture/Workflow (e-BRIDGE Re-Rite, eCopy, FineReader, FormReader, QDirect.SCAN).	

\*With e-Bridge Fleet Management System Software.



#### PRINTING BACKGROUND

Printing passed copying as the primary method of reproducing documents years ago. Today, printing is just as important-if not more important-than copying.

#### Connectivity

Most devices include Ethernet and USB connectivity outof-the-box. Some devices also include a parallel interface. In addition, many devices provide a selection of optional connectivity choices such as Wireless 802.11b or a (a is the faster, preferred standard), Bluetooth for cell phone or PDA connectivity, PictBridge photo printing for printing directly from a digital camera, and FireWire for high-speed local connectivity.

#### Page Description Languages (PDLs)

PCL is the page description language (PDL) provided by most printer and MFP suppliers. Some manufacturers charge for a PostScript upgrade or provide a PostScript Level 3 emulation (clone). Still other manufacturers provide genuine Adobe PostScript Level 3 and bundle in PCL. A few manufacturers also include their own PDL. which are typically loosely based on the Microsoft Windows/GDI printing technology of old. These Windows or GDI drivers often offer significant productivity advantages over traditional PCL and PostScript print drivers, since the bulk of the processing is handled by the more powerful desktop PC, rather than by the less wellequipped printer processor itself.

Network-Bandwidth/Print File Sizes									
	Native File Size	PCL	PS						
1-page digital photo PDF	4.48 MB	13.0 MB	5.78 MB						
4 page Passport Form PDF	0.08 MB	0.27 MB	0.49 MB						
16-page Magazine in PDF	1.78 MB	10.8 MB	3.39 MB						
22-page Excel Worksheet	0.12 MB	0.25 MB	0.14 MB						
32-page Text-Based PowerPoint	0.23 MB	0.27 MB	1.48 MB						
32-page Graphic Intensive PowerPoint	4.20 MB	20.1 MB	2.38 MB						
38-page Form Word Document	0.91 MB	8.26 MB	1.14 MB						
50-page Text-Based PDF	0.17 MB	0.69 MB	1.71 MB						

#### PRODUCTIVITY

Evaluating print productivity is not as simple as timing copy jobs. The printing process involves several steps and can be affected by a variety of factors along the way.

The document must first be spooled by the print driver into a PCL or PostScript file. The PCL or PostScript file is then sent to the printer where it is raster image processed (RIPped) into image data by the device processor. The image data is then sent to the marking engine and output as printed pages.

There are three obvious factors highlighted above (spool time, RIP time, and print engine speed), which can all make or break a device's overall productivity. Other factors include concurrency and contention; for instance, print speed may slow down when the device is being used for other functions, such as scanning.

However, it is possible to time and compare these factors through the use of careful preparation, conditioning and Following are charts that show printing testina. performance when tested under controlled conditions.

First Page Out Time (seconds)									
Job List	Job List Media Size PCL PS*								
1-page photo print	Letter	30.53	26.25						
4-page passport form PDF	Letter	17.97	19.97						
16-page Magazine PDF	Letter	18.28	20.06						
22-page Excel Worksheet	Letter	17.75	17.72						
32-page text-based PowerPoint	Letter	16.90	15.28						
32-page graphic- intensive PowerPoint	Letter	17.22	19.41						
38-page Word form	Letter	14.57	19.59						
50-page text-based PDF	Letter	17.82	19.35						
50-page text-based PDF (duplex)	Letter	21.57	22.59						

\* Visual PostScript driver.



Job Time (seconds)									
Job List Media Size Mode PCL P									
1-page digital photo print original	Letter	1:1	30.53	26.25					
4-page passport form PDF	Letter	1:1	23.44	25.41					
16-page Magazine PDF	Letter	1:1	48.59	43.94					
22-page Excel Worksheet	Letter	1:1	54.28	70.10					
32-page text-based PowerPoint	Letter	1:1	60.88	63.53					
32-page graphic- intensive PowerPoint	Letter	1:1	107.59	70.75					
38-page simplex Word form	Letter	1:1	80.66	80.44					
50-page text-based PDF	Letter	1:1	84.16	86.44					
50-page duplex text- based Adobe PDF	Letter	1:2	91.85	92.50					

(Pages Per Minute)											
	SETS										
PAGES	1	3	5	10	20	30	40	50			
1	3.4	8.8	12.9	20.0	27.6	31.5	34.0	35.6			
2	6.3	14.6	20.0	27.6	34.0	36.8	38.5	39.5			
3	8.8	18.8	24.5	31.5	36.8	39.0	40.2	41.0			
4	11.0	22.0	27.6	34.0	38.5	40.2	41.2	41.8			
5	12.9	24.5	29.8	35.6	39.5	41.0	41.8	42.3			
6	14.6	26.4	31.5	36.8	40.2	41.5	42.2	42.6			
7	16.2	28.1	32.9	37.8	40.8	41.9	42.5	42.8			
8	17.6	29.4	34.0	38.5	41.2	42.2	42.7	43.0			
9	18.8	30.6	34.9	39.0	41.5	42.4	42.9	43.2			
10	20.0	31.5	35.6	39.5	41.8	42.6	43.0	43.3			
20	27.6	36.8	39.5	41.8	43.0	43.4	43.7	43.8			
30	31.5	39.0	41.0	42.6	43.4	43.7	43.9	44.0			
40	34.0	40.2	41.8	43.0	43.7	43.9	44.0	44.0			
50	35.6	41.0	42.3	43.3	43.8	44.0	44.0	44.1			

#### Simplex PCL Print Productivity Black-and-White Text (Pages Per Minute)

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Duplex PCL Print Productivity Black-and-White Text (Pages Per Minute)										
			S	ETS						
PAGES	1	3	5	10	20	30	40	50		
1	2.8	7.3	10.9	17.3	24.3	28.1	30.5	32.1		
2	5.2	12.5	17.3	24.3	30.5	33.3	35.0	36.0		
3	7.3	16.2	21.4	28.1	33.3	35.6	36.8	37.5		
4	9.2	19.1	24.3	30.5	35.0	36.8	37.7	38.3		
5	10.9	21.4	26.5	32.1	36.0	37.5	38.3	38.8		
6	12.5	23.2	28.1	33.3	36.8	38.1	38.8	39.2		
7	13.8	24.8	29.4	34.3	37.3	38.5	39.1	39.4		
8	15.1	26.1	30.5	35.0	37.7	38.8	39.3	39.6		
9	16.2	27.2	31.4	35.6	38.1	39.0	39.5	39.8		
10	17.3	28.1	32.1	36.0	38.3	39.2	39.6	39.9		
20	24.3	33.3	36.0	38.3	39.6	40.1	40.3	40.4		
30	28.1	35.6	37.5	39.2	40.1	40.4	40.5	40.6		
40	30.5	36.8	38.3	39.6	40.3	40.5	40.6	40.7		
50	32.1	37.5	38.8	39.9	40.4	40.6	40.7	40.8		

#### Simplex PostScript Print Productivity Black-and-White Text (Pages Per Minute)

	SETS									
PAGES	1	3	5	10	20	30	40	50		
1	3.1	8.1	12.1	18.9	26.5	30.5	33.0	34.7		
2	5.8	13.7	18.9	26.5	33.0	36.0	37.6	38.7		
3	8.1	17.8	23.4	30.5	36.0	38.2	39.5	40.3		
4	10.2	20.9	26.5	33.0	37.6	39.5	40.5	41.1		
5	12.1	23.4	28.7	34.7	38.7	40.3	41.1	41.6		
6	13.7	25.3	30.5	36.0	39.5	40.8	41.5	42.0		
7	15.2	27.0	31.9	36.9	40.1	41.2	41.9	42.2		
8	16.6	28.3	33.0	37.6	40.5	41.5	42.1	42.4		
9	17.8	29.5	33.9	38.2	40.8	41.8	42.3	42.6		
10	18.9	30.5	34.7	38.7	41.1	42.0	42.4	42.7		
20	26.5	36.0	38.7	41.1	42.4	42.9	43.1	43.3		
30	30.5	38.2	40.3	42.0	42.9	43.2	43.3	43.4		
40	33.0	39.5	41.1	42.4	43.1	43.3	43.5	43.5		
50	34.7	40.3	41.6	42.7	43.3	43.4	43.5	43.6		



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Duplex PostScript Print Productivity Black-and-White Text (Pages Per Minute)									
			S	BETS					
PAGES	1	3	5	10	20	30	40	50	
1	2.7	7.1	10.6	16.8	23.9	27.8	30.2	31.9	
2	5.0	12.1	16.8	23.9	30.2	33.2	34.9	36.0	
3	7.1	15.8	20.9	27.8	33.2	35.5	36.8	37.6	
4	8.9	18.6	23.9	30.2	34.9	36.8	37.8	38.4	
5	10.6	20.9	26.1	31.9	36.0	37.6	38.4	38.9	
6	12.1	22.8	27.8	33.2	36.8	38.1	38.8	39.3	
7	13.4	24.4	29.1	34.1	37.3	38.5	39.2	39.6	
8	14.6	25.7	30.2	34.9	37.8	38.8	39.4	39.8	
9	15.8	26.8	31.2	35.5	38.1	39.1	39.6	39.9	
10	16.8	27.8	31.9	36.0	38.4	39.3	39.8	40.0	
20	23.9	33.2	36.0	38.4	39.8	40.2	40.5	40.6	
30	27.8	35.5	37.6	39.3	40.2	40.5	40.7	40.8	
40	30.2	36.8	38.4	39.8	40.5	40.7	40.8	40.9	
50	31.9	37.6	38.9	40.0	40.6	40.8	40.9	41.0	

Simplex PCL Print Productivity
Color Microsoft PowerPoint Presentation
(Pages Per Minute)

	SETS								
PAGES	1	3	5	10	20	30	40	50	
1	3.5	7.8	10.4	13.8	16.5	17.7	18.3	18.7	
2	6.0	11.3	13.8	16.5	18.3	19.0	19.4	19.6	
3	7.8	13.3	15.5	17.7	19.0	19.5	19.8	19.9	
4	9.2	14.6	16.5	18.3	19.4	19.8	20.0	20.1	
5	10.4	15.5	17.2	18.7	19.6	19.9	20.1	20.2	
6	11.3	16.2	17.7	19.0	19.8	20.0	20.2	20.3	
7	12.1	16.7	18.1	19.2	19.9	20.1	20.2	20.3	
8	12.8	17.1	18.3	19.4	20.0	20.2	20.3	20.3	
9	13.3	17.4	18.6	19.5	20.0	20.2	20.3	20.4	
10	13.8	17.7	18.7	19.6	20.1	20.3	20.3	20.4	
20	16.5	19.0	19.6	20.1	20.3	20.4	20.5	20.5	
30	17.7	19.5	19.9	20.3	20.4	20.5	20.5	20.5	
40	18.3	19.8	20.1	20.3	20.5	20.5	20.5	20.5	
50	18.7	19.9	20.2	20.4	20.5	20.5	20.5	20.5	

#### Simplex PostScript Print Productivity Color Microsoft PowerPoint Presentation (Pages Per Minute)

	SETS									
PAGES	1	3	5	10	20	30	40	50		
1	3.1	7.9	11.5	17.5	23.6	26.7	28.6	29.8		
2	5.7	13.0	17.5	23.6	28.6	30.7	31.9	32.7		
3	7.9	16.5	21.1	26.7	30.7	32.4	33.3	33.8		
4	9.8	19.1	23.6	28.6	31.9	33.3	34.0	34.4		
5	11.5	21.1	25.4	29.8	32.7	33.8	34.4	34.7		
6	13.0	22.7	26.7	30.7	33.3	34.2	34.7	35.0		
7	14.3	24.0	27.7	31.4	33.7	34.5	34.9	35.2		
8	15.5	25.0	28.6	31.9	34.0	34.7	35.1	35.3		
9	16.5	25.9	29.3	32.4	34.2	34.8	35.2	35.4		
10	17.5	26.7	29.8	32.7	34.4	35.0	35.3	35.5		
20	23.6	30.7	32.7	34.4	35.3	35.6	35.8	35.8		
30	26.7	32.4	33.8	35.0	35.6	35.8	35.9	36.0		
40	28.6	33.3	34.4	35.3	35.8	35.9	36.0	36.0		
50	29.8	33.8	34.7	35.5	35.8	36.0	36.0	36.1		

#### WHAT WE LIKED

- Tested black-and-white simplex and duplex networkprinter speeds in both PCL and PostScript modes were up to approximately 45 ppm, matching Toshiba's rated print speed of up to 45 ppm.
- Tested color network print speed was up to 20.5 ppm in PCL and 36.1 ppm in PostScript mode.
- Tested network-printer First Page Out Time (FPOT) was as fast as 17.82 seconds in PostScript mode and up to 19.35 seconds in PCL mode.

#### WHAT WE WOULD LIKE TO SEE

• Overall, BERTL was very satisfied with the E-Studio 4520C's printing capabilities.



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#### COPY BACKGROUND

Nearly all MFPs on the market today provide digital copying, while many desktop printers offer it as an option. Despite the fact that many devices provide a wide range of digital-copying capabilities, from image manipulation to page insertion, most typical copy jobs actually consist of a single set of a simplex document that is five pages or less, with no finishing, and no image-quality manipulation.

#### Small Simple Jobs

Although most MFPs provide a wide range of copying features, most users are not willing to navigate through countless screen menus in order to get to the point where they can actually press the Start key. There are two components of copy-job productivity: 1) user productivity, and 2) device productivity. BERTL encourages enterprises to also consider the impact of user productivity, along with device productivity. Device productivity only includes the time it takes from the press of the Start key until the final copy exits the device, and does not take into account the time that it takes a user to program and start the copy job. However, the easier the job, the easier it is to program: users will also take less time to program jobs as they acclimate to the controls and/or create job programs. And, of course, some users are more astute and capable than others. Consequently, these uncontrolled factors introduce a high degree of variability. However, of course, a device that takes twice as long to produce the first copy affects the job productivity of each and every user and job.

#### Large, Complex Jobs

Even with large copy jobs—where it seems engine speed plays the largest role—user productivity should be taken into account. For example, the user is less likely to wait at the copier for larger and more complex jobs. Factors that enhance user productivity include such features as easy job programming; a scan-ahead feature so that users can program and scan jobs while other jobs are printing; fast original scanning so that users can more quickly return to their desks with their originals; the ability to build a job using a mix of different-size originals scanned from both the document feeder and platen; and job notification at the computer desktop when the copy job is completed (thus eliminating the guesswork of when to return to the copier to collect the job).



**Above and below:** The E-Studio 4520C's platen (above) and document feeder (below), with the document feeder's cover opened in order to expose the feeder's misfeed-access area.





#### **COPIER PRODUCTIVITY**

Advertised speeds are always quoted using the simplest route—in-and-out of a device. Of course, users often apply finishing options, incorporate different media sizes and types into the document, print in duplex, and add other elements that can affect speed. In the chart below, BERTL tests how different modes—mixed-size original mode and duplex mode—affect document-feeder productivity.

In order to assess copier productivity, BERTL ran a series of copy jobs in order to determine document-feeder scanning speed, the affect of the first set out on overall engine speed, and whether specific job attributes affect engine throughput capability. Each job was set up by feeding media from the shortest media route to the shortest available output destination. A separate test examines how adding finishing/output destinations affects productivity.

First Copy Out Time*							
Black-and-White Color Mode Mode Seconds Seconds							
Number of Originals							
1 Simplex Original	14.78	16.55					
2 Simplex Original (Duplex Model)	18.20	19.47					

\*Using the automatic document feeder.

Copy Job Time								
# of originals	MONOCHROME MODE	Time In Seconds	СРМ					
10	1 sided to 1 sided	26.32	22.8					
10	1 sided to 2 sided	35.88	16.7					
10	2 sided to 1 sided	62.19	9.6					
10	2 sided to 2 sided	64.84	9.3					
	COLOR MODE							
10	1 sided to 1 sided	28.31	21.2					
10	1 sided to 2 sided	37.40	16.0					
	AUTO COLOR MODE							
10	1 sided to 1 sided	27.78	21.6					

	Simplex Black-and-White Copier Productivity (Pages Per Minute)							
			:	SETS				
Pages	1	3	5	10	20	30	40	50
1	4.1	10.4	15.1	22.8	30.7	34.6	37.0	38.7
2	7.5	17.0	22.8	30.7	37.0	39.8	41.4	42.3
3	10.4	21.6	27.5	34.6	39.8	41.9	43.0	43.7
4	12.9	24.9	30.7	37.0	41.4	43.0	43.9	44.5
5	15.1	27.5	32.9	38.7	42.3	43.7	44.5	44.9
6	17.0	29.5	34.6	39.8	43.0	44.2	44.8	45.2
7	18.7	31.2	36.0	40.7	43.5	44.6	45.1	45.4
8	20.2	32.5	37.0	41.4	43.9	44.8	45.3	45.6
9	21.6	33.7	37.9	41.9	44.2	45.0	45.5	45.7
10	22.8	34.6	38.7	42.3	44.5	45.2	45.6	45.8
20	30.7	39.8	42.3	44.5	45.6	46.0	46.2	46.3
30	34.6	41.9	43.7	45.2	46.0	46.3	46.4	46.5
40	37.0	43.0	44.5	45.6	46.2	46.4	46.5	46.5
50	38.7	43.7	44.9	45.8	46.3	46.5	46.5	46.6

#### Duplex Black-and-White Copier Productivity (Pages Per Minute)

SETS

Pages	1	3	5	10	20	30	40	50
1	3.3	8.0	11.1	15.8	19.9	21.9	23.0	23.7
2	5.6	12.3	15.8	19.9	23.0	24.2	24.9	25.3
3	7.6	15.1	18.3	21.9	24.2	25.1	25.6	25.9
4	9.2	16.9	19.9	23.0	24.9	25.6	26.0	26.2
5	10.6	18.3	21.1	23.7	25.3	25.9	26.2	26.4
6	11.8	19.4	21.9	24.2	25.6	26.1	26.4	26.5
7	12.9	20.2	22.5	24.6	25.8	26.2	26.5	26.6
8	13.8	20.9	23.0	24.9	26.0	26.4	26.5	26.7
9	14.6	21.4	23.4	25.1	26.1	26.4	26.6	26.7
10	15.3	21.9	23.7	25.3	26.2	26.5	26.7	26.8
20	19.5	24.2	25.3	26.2	26.7	26.8	26.9	27.0
30	21.6	25.1	25.9	26.5	26.8	26.9	27.0	27.0
40	22.7	25.6	26.2	26.7	26.9	27.0	27.0	27.1
50	23.5	25.9	26.4	26.8	27.0	27.0	27.1	27.1



	Simplex Color Copier Productivity (Pages Per Minute)							
			;	SETS				
Pages	1	3	5	10	20	30	40	50
1	3.6	9.4	13.8	21.2	29.0	33.1	35.6	37.2
2	6.7	15.6	21.2	29.0	35.6	38.4	40.1	41.1
3	9.4	20.0	25.8	33.1	38.4	40.6	41.8	42.6
4	11.7	23.3	29.0	35.6	40.1	41.8	42.8	43.4
5	13.8	25.8	31.3	37.2	41.1	42.6	43.4	43.9
6	15.6	27.9	33.1	38.4	41.8	43.1	43.8	44.2
7	17.2	29.5	34.4	39.4	42.4	43.5	44.1	44.4
8	18.7	30.9	35.6	40.1	42.8	43.8	44.3	44.6
9	20.0	32.1	36.5	40.6	43.1	44.0	44.5	44.8
10	21.2	33.1	37.2	41.1	43.4	44.2	44.6	44.9
20	29.0	38.4	41.1	43.4	44.6	45.0	45.3	45.4
30	33.1	40.6	42.6	44.2	45.0	45.3	45.5	45.6
40	35.6	41.8	43.4	44.6	45.3	45.5	45.6	45.7
50	37.2	42.6	43.9	44.9	45.4	45.6	45.7	45.7

	(Pages Per Minute)							
				SETS				
Pages	1	3	5	10	20	30	40	50
1	3.1	7.5	10.6	15.1	19.3	21.3	22.5	23.2
2	5.5	11.7	15.1	19.3	22.5	23.7	24.4	24.9
3	7.5	14.4	17.7	21.3	23.7	24.7	25.2	25.5
4	9.2	16.3	19.3	22.5	24.4	25.2	25.5	25.8
5	10.6	17.7	20.5	23.2	24.9	25.5	25.8	26.0
6	11.7	18.8	21.3	23.7	25.2	25.7	25.9	26.1
7	12.8	19.6	21.9	24.1	25.4	25.8	26.1	26.2
8	13.7	20.3	22.5	24.4	25.5	25.9	26.1	26.3
9	14.4	20.8	22.9	24.7	25.7	26.0	26.2	26.3
10	15.1	21.3	23.2	24.9	25.8	26.1	26.3	26.4
20	19.3	23.7	24.9	25.8	26.3	26.4	26.5	26.6
30	21.3	24.7	25.5	26.1	26.4	26.5	26.6	26.6
40	22.5	25.2	25.8	26.3	26.5	26.6	26.6	26.7
50	23.2	25.5	26.0	26.4	26.6	26.6	26.7	26.7

Duplex Color Copier Productivity

#### **Document Feeder Productivity**

BERTL also takes the user into account and looks at how document-feeder productivity affects the amount of time a user has to wait at the device before they can walk away with their originals.

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	Document Feed Speed				
# of originals	MONOCHROME MODE	Time In Seconds	OPM*		
10	Simplex Originals	16.72	35.9		
5	Duplex Originals	31.94	9.4		
10	Mixed-Size Originals	24.53	24.5		
	COLOR MODE				
10	Simplex Originals	16.97	35.4		
5	Duplex Originals	32.06	18.7		

\*Originals per minute.

Document-Finishing Penalty					
# of originals	Finishing Selection	Time In Secs	1 Set Time (Secs)	Penalty Per Set (Secs)	
10/5	Corner Staple	85.69	27.11	-0.95	
10/5	Side Staples	91.75	28.32	-0.36	
8/5	Saddle-Stitch Booklet	116.81	33.33	0.15	
10/5	Covers and Inserts	*	*	*	

\* Covers and Inserts option could not be evaluated during testing.

#### WHAT WE LIKED

- Tested black-and-white FPOT as fast as 14.78 seconds in simplex copier mode, and as fast as 18.20 seconds in duplex copier mode.
- Tested black-and-white copier productivity was up to 46.6 ppm in simplex mode and up to 27.1 ppm in duplex mode.
- Tested color copier productivity was up to 45.7 ppm in simplex mode and up to 26.7 ppm in duplex mode.
- Minimal document-finishing penalty when applying document finishing options to copy jobs.
- Fast document-feeder speeds of up to 35.9 opm in monochrome simplex mode and up to 35.4 opm in color simplex mode.
- Users can copy and store files as a digital image via the e-Studio 4520C's standard USB flash memory drive.

#### WHAT WE WOULD LIKE TO SEE

• While overall, BERTL was very satisfied with the E-Studio 4520C's copying capabilities, we would like to see faster document-feed speeds.



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#### SCANNING BACKGROUND

In just a few years, network scanning has changed from being a "luxury" function to one that is virtually essential.

Indeed, today, nearly all MFPs provide standard or optional network scanning, including scan-to-e-mail. This makes document-feeder design even more critical, with users looking for document feeders with higher feeding speeds, low–resolution capabilities, as well as for MFPs with more versatile scanning, and color-scanning capability.

#### Address Book Integration

MFPs' ability to integrate their scanning addresses book with central corporate address book located on LDAP or Microsoft Windows NT network servers is the current *de facto* standard. The ability to force-populate outgoing email from the MFP with sender information through an enforced login process is also required (i.e., senders must enter their network password before they can use the MFP's scan-to-e-mail).

#### Destinations

Most MFPs' network-scanning capabilities include the ability to scan-and-send to e-mail addresses, SMB destinations (Windows desktop locations), FTP (File Transfer Protocol) sites, and Internet fax destinations. In some instances, the scanned document goes directly to the MFP's hard drive, and an e-mail is sent to the recipient with a URL link. By navigating to the URL link, the recipient can quickly access the scanned file from the device's hard drive. Also of note is that a growing number of devices are beginning to include external media ports to allow users to scan and send documents to USB flash memory devices and digital-camera SD chips. We expect this to become more common over the next year.

#### Security

Security is another critical aspect of scanning. Several MFPs now include the ability to send scanned messages using encrypted PFD or other secure-transfer formats. This is an important capability in industries and sectors where data must be kept secure and confidential. Most devices also support network authentication, so that users must log into their device (usually with their network password) before they scan.

#### Integration with Third-Party Applications

The big buzz in the office digital-imaging industry is the move toward open architecture, with the MFP's firmware backbone based on an industry standard such as Java or .NET rather than on a proprietary system.

Device Contention			
Print slowdown when scanning	No		

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copy job?	
Print slowdown when scanning in scan job?	No
Print slowdown when scan-data transfer underway?	No



Users can scan hard-copy originals, converting them into electronic files, and then send them e-mail addresses or network folders.

#### WHAT WE LIKED

- Images can be scanned, printed and faxed directly to the device's hard drive and stored in e-Filling boxes. Scanned images stored in the e-Filling boxes can then be printed at any time (print-on-demand) e-mailed, sent via fax, sent via Internet fax, routed to a computer workstation, an FTP or SMB server, etc.
- No print slowdown when scanning in jobs or when scan-date transfer is underway
- Support for several file formats that include TIFF Multi/Single Page, PDF Multi/Single Page, Secure PDF, Slim PDF, JPEG, and XPS Multi/Single Page. Support for additional formats can be expanded up to 17 file formats with e-Bridge Re-Rite.
- LDAP compatibility enables users to access the network address book, making destinationmanagement chores easier for network administrators.
- Once authenticated with the device, users can easily automate routine scan-and-distribute workflows by recalling a set of preferred scan settings saved as a scan template right from the control panel.
- Users can scan hardcopy originals, converting it into electronic format, and then send the files to a USB flash memory device for storage via the device's standard USB flash memory drive.

#### WHAT WE WOULD LIKE TO SEE

 Overall, BERTL was very satisfied with the E-Studio 4520C's network-scanning capabilities.



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#### **IMAGE QUALITY**

BERTL evaluates the output of several "test targets" in order to determine image quality. Following are descriptions of key elements of image quality. Note the numbered examples on each of the test targets shown in the right column.

#### **Office Color Image Quality**

- Density of Solid Areas Better contrast; more vivid overall images 1.
- 2. Line Work - Better production of lines and text
- 3. Halftones - Better production of photographic and screened images
- Negative/Positive Better production of fine detail 4.

## Photographic Color Image Quality5. Flesh tones - Better production of portraits

- Banding Better solid and dithered fill 6.
- Low Contrast Better production of dark images 7.
- 8. Saturation - Better production of bright colors
- 9. Caste - Better color fidelity
- 10. Fine Detail Better reproduction of fine details

Density of Solid Areas*					
	Copy Density Print Density				
Black	1.54	1.53			
Cyan	1.09	0.90			
Magenta	0.91	0.99			
Yellow	1.12	1.14			

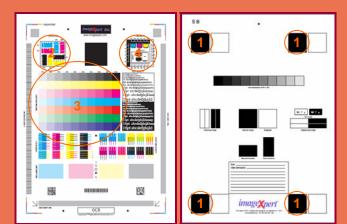
\*Density is on a scale of 0 to 2.5, with 2.5 being the best possible.

Copy & Print Resolution*						
	Copy Re	solution	Print Resolution			
	Vertical	Horizontal	Vertical	Horizontal		
Black	4.5	4.0	2	2		
Cyan			2	2		
Magenta			2	2		
Yellow			3	3		

\*Line Pairs per Millimeter. For copy resolution, higher is better (range, 2.0-8.0); for printer resolution, lower is better (range, 1.0-5.0).

Print Halftones					
	Min. Gradation* Max. Gradation**				
Black	10	100			
Cyan	10	70			
Magenta	10	80			
Yellow	10	100			

\*Minimum gradation is on a scale of 10 - 100 percent in 10 percent The best possible minimum gradation is 10 percent. increments. \*\*Maximum gradation is on a scale of 10 - 100 percent in 10 percent increments. The best possible maximum gradation is 100 percent.



BERTL uses ImageExpert printer test targets for the evaluation of printed image quality. BERTL technicians' measure image density and evaluate the device's ability to produce a full range of halftones and various sizes of negative/positive text, dots and lines in each primary printing color (CYMK).





BERTL uses synthetic (photographic) test images obtained from ISO International Standard 12640--Graphic Technology—Prepress digital data exchange-CYMK Standard Color Image Data (CYMK/SCID) in order to evaluate the ability to print photographic images.



#### **IMAGE QUALITY**

Copy Halftones					
Min. Gradation* Max. Gradation**					
Black	20	90			
Cyan	10	80			
Magenta	20	80			
Yellow	10	90			

\*Minimum gradation is on a scale of 10 – 100 percent in 10 percent increments. The best possible minimum gradation is 10 percent. \*\*Maximum gradation is on a scale of 10 – 100 percent in 10 percent increments. The best possible maximum gradation is 100 percent.

Negative/Positive Lines*						
Line Width (points)	Nega	ative	Positive			
	Vertical	Horizontal	Vertical	Horizontal		
1	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		
2	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		
3	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		
4			$\checkmark$	$\checkmark$		
5	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		
6	$\checkmark$					

A " $\sqrt{}^{n}$  mark indicates the device was able to print the line width correctly. \*Chart cells containing an "x" indicate that the printer was not able to print the line width correctly. Overall, the fewer "x's," the better the image quality. If no cells are marked with an "x," then the device was able to print all line widths correctly.

Negative/Positive Dots*				
Line Width (points)	% of Dots Printed			
1 pixel Black	100			
1 pixel Black Neg	100			
1 pixel Cyan	100			
1 pixel Magenta	100			
1 pixel Yellow	100			
2x2 pixel Black	100			
2x2 pixel Black Neg	100			
Checkerboard apparent?	No			

\*On a scale of 0 – 100%. The higher the percentage, the better.

Photo Quality				
	Ranking (1-5)*			
Fleshtones	4.0			
Banding	3.5			
Low Contrast	3.5			
Saturation	4.0			
Caste	3.5			
Fine Detail	4.0			

\*Based on a scale of 1 - 5, with 5 being the best.

#### WHAT WE LIKED

- Very good print and copy density in all four colors.
- Good resolution in both copy and printer modes.
- Very good halftone reproduction in printer mode when printing all four colors (black, cyan, yellow and magenta).
- Good halftone reproduction in copier mode when printing all four colors.
- The device displayed very good line control and aboveaverage dot control
- Very good production of photographic images.

#### WHAT WE WOULD LIKE TO SEE

• Overall, BERTL was satisfied with the E-Studio 4520C's image quality.



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#### **PROGRAMMING THE CONTROL PANEL**

Visit a few MFP manufacturers' showrooms, and you will see a wide range of control panels and touch screens. The most rudimentary consist of a selection of hard keys and an LCD screen that can often be challenging to navigate. On the other hand, some control panels that utilize hard keys and LCD screens can actually be easier to use than touch screens. However, hard-key/LCD panel systems that require users to scroll through various settings and make a selection can also often be challenging to use.

Among touch screens, some utilize a menu-driven system, while others utilize an icon-based system. Some menudriven touch screens can involve many complicated submenus that can be difficult to navigate.

Most manufacturers try to keep their control panels and touch screens consistent across their MFPs and printers, so that users do not have to spend time learning how to use a new control panel when moving from device to device.

A control panel's ease of use—or lack of—can often have a significant affect on user productivity. The harder it is to select frequently used options such as duplexing, document finishing, etc., the more time the user has to spend programming the device and the less productive they are. In the chart to the right, BERTL assesses how many steps are required to make these commonplace settings.

Selections Required for Frequently Used Copy Functions				
Corner Staple	3			
1:2	2			
2:2	3			
Photo Mode	2			
Copied Front and Rear Covers	6			



The E-Studio 4520C's Control Panel consists of a touch screen and hard keys.

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The Control Panel can be tilted in order to eliminate any glare, as well as to make it easier for wheelchair users to view and operate.



The right side of the control panel contains various hard keys, including keys for "Function Clear", "Stop", "Start," etc. as well as a numerical keypad for entering number of copies and fax numbers, keys for switching between different functions (copy, e-filing, scan, print, fax, etc.), and hard keys for displaying job status and machine status.

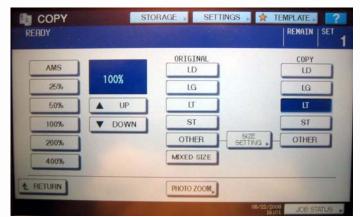


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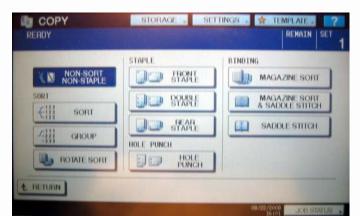
To access the different device options, the user must first select the corresponding hard key on the control panel.



The touch screen's main copy menu provides users with the most common copying choices. The text with the blue background on the touch screen display currently selected settings.



The touch screen displaying several zoom options along with original and copy size options.

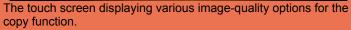


Users can choose several different Output Formats for their copy jobs from this touch screen. Options include Booklet Creation, Covers, Transparency Options, Page Layout, Posters and Annotations.



The 2-Sided tab provides options for simplex, duplex, book, 1 to 2 Duplex, and 2 to 1 Split.

COPY	STORAGE SETTIN	GS 🕫 😭 TEMPLATE 🔹 📿
READY		REMAIN
🚺 ТЕХТ/РНОТО	TEXT	РНОТО
	мар	
-		
		CANCEL
		08/22/2008 JOB STATUS





The touch screen's Job Build options provide users with the ability to scan several originals whose settings are individually different and then copy or store them as a single document.



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**Above and Below**: The touch screen's Edit tab provides the user with a multitude of image editing options.





The touch screen displaying several image-quality options for the copy function.

#### PCL AND POSTSCRIPT DRIVERS

As with control panels and touch screens, print-driver design can vary enormously from manufacturer-tomanufacturer. And, as with control panels and touch screens, how easy it is—or isn't—to make selections in the print driver and navigate through it can significantly affect user productivity.

Most vendors provide an emulation of PCL (printer control language) developed by the Hewlett-Packard Company. Some may also provide an emulation of PostScript, developed by Adobe Systems Incorporated, or they may license PostScript directly from Adobe. While the Adobe PostScript driver is not the most user-friendly of print drivers, the advantage is that many users are already familiar with it. Alternately, some manufacturers may use an emulation of PostScript and design their own print-driver user interface, or may license PostScript from Adobe and also design their own print-driver interface.

Print-Driver Checklist	
Do print drivers have identical user interfaces?	Yes
Are print drivers interfaces identical to other vendor models?	Yes
Bidirectional communication within print drivers?	Yes
Auto device configuration from within print driver?	Yes
Does print-driver installation require rebooting of the workstation?	No
Are print-driver deployment processes included?	Yes
Are print-driver deployment guidelines and procedures included?	Yes



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PCI DRINT DRIVER

Restore Defaults

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eneral Sharing Ports Advance	d Color Management Security Fonts Configuration
	Model Selection: Potion Drawers: LCF Finisher: Saddle Stitch Finisher Hole Punch Unit: 2/3 Holes
<ul> <li>Enable SNMP Communication</li> <li>Update Automatically</li> </ul>	Drawer Settings

In order to specify which options have been installed, as well as specify system defaults, administrators first access the "Printers and Faxes" folder via the Microsoft Windows' Start menu, and then select the E-Studio 4520C's PCL driver. Administrators can "manually" specify which options are installed, or they may simply enable "SNMP Communication" between the device, and the driver automatically indicating the options shown above are available for use.

Version Information

Drawer Settings						×
	Paper Size:		Paper Type:		Attribute:	
<u>D</u> rawer 1:	Letter-R	•	Plain	-	None	•
Dra <u>w</u> er 2:	Ledger	•	Plain	•	None	•
Drawer 3:	Letter	Ŧ	Plain	~	None	~
Draw <u>e</u> r 4:	Letter	Ŧ	Plain	-	None	<b>v</b>
L <u>C</u> F	Letter	•	Plain	•	None	•
Bypass Tray:	Automatic	•	Plain	•	None	•
🔲 Override Application	Paper Source Settings					
Restore De <u>f</u> aul	ts					
				0		Cancel

The Drawer Setting button allows users to modify the paper drawer's paper size, paper type, and attribute (Cover, Sheet 1, Sheet 2, Fax, etc.) directly from the print driver.

🗳 TOSHIBA e-STUDIO4520CSe	riesPCL6 Properties	? 🗙
Basic Finishing Paper Handling	Image Quality Effect Others	
Print Job: Normal Print	Original Paper Size:	
	▶     Print Paper Sjze:     Manual Scale:       Same as Original Size     100 ± %(25-400)	_
	Paper Source:	
	Paper Type: Plain	
Letter	Number of Copies:	-
Grap <u>h</u> ics Te <u>x</u> t	Orientation:	-
Save Profile Dejete Restore De <u>f</u> aults	Color:	
[]	OK Cancel	Help

The PCL driver's first tab, Basic, contains basic print operation settings, such as original paper size, print paper size, paper source, paper type, orientation, and number of copies. The Image on the on the left side indicates the currently selected options.

🗳 TOSHIBA e-STUDIO4520CS	eriesPCL6 Properties	? 🗙
Basic Finishing Paper Handling	Image Quality Effect Others	
Print <u>J</u> ob:	Copy Handling:	
Normal Print	12-3 1.1.1 1.2.3	
	2-Sided Printing:	
	Details	
	Number of pages per Sheet:           2         4         6         9         16	
Letter	Direction of Print:	
1.2.3 1.2.3	→ <b>←</b>	
Grap <u>h</u> ics Te <u>x</u> t	Draw Borders Around Pages	
Profile:	Staple: Hole Punch:	_
None		
Save Profile Dejete		
Restore De <u>f</u> aults	Use Custom <u>M</u> argin: Detail <u>s</u>	
	OK Cancel	Help

The PCL drivers Finishing tab allows you to enable sort printing, 2-sided printing, N-up printing, stapling and punching.



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#### TOSHIBA e-STUDI04520CSeriesPCL6 Properties ?× Basic Finishing Paper Handling Image Quality Effect Others Print <u>J</u>ob: Destination: Normal Print ▼ ... Tray 2 Use Front Cover Do not print on page Auto -Ş Use Back Cover: Auto Do not print on page Insert Pages: E djt... Letter Interleave Pages: 1.2.3 Auto Grap<u>h</u>ics Te<u>x</u>t Duplicate Profile: None Save Profile Restore Defaults OK Cancel Help

The Paper Handling tab on the 4520C provides several options to enable Front Cover printing, Back Cover printing, Inserting Pages, and Interleaving Pages.

Insert Pages						X
Page:	Print Style:		Paper Source:		Paper Type:	<b>_</b>
	Blank	Ŧ	Auto	-	Plain	
	Blank	~	Auto	~	Plain	-
	Blank	-	Auto	~	Plain	-
	Blank	-	Auto	-	Plain	-
	Blank	7	Auto	-	Plain	-
	Blank	7	Auto	-	Plain	-
	Blank	7	Auto	-	Plain	-
	Blank	Ŧ	Auto	-	Plain	
Use Tab Paper Tab Manufacturer: Blanks USA copy Tabs	5Banks) LT + 1/2'' Ta	ab	<u>N</u>		of tabs per Bank	
Tab Extension/Image Shift Width     Tab Extension:       Image Shift     0.500       Width     0.500       Image Shift     0.0.1.181 inches)       Units:     inch						
					ОК	Cancel

The Insert Pages option allows users to insert a sheet between pages, or print a specific page on a sheet fed from a tray other than the Paper Source option selected on the Basic tab. This option is useful when inserting blank sheets between chapters, or when printing chapter cover pages on the different paper.

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🗳 TOSHIBA e-STUDI04520CSeri	iesPCL6 Properties	?×
Basic Finishing Paper Handling	mage Quality Effect Others	
Print Job:		
Normal Print 🖃 📖	Image Quality Type:	
	Profile Name	1 I
	General	
	Photograph	
	Presentation	
Letter	Line Art	
-1.2.3 -1.2.3	Setting 1	
Grap <u>h</u> ics Te <u>x</u> t	Setting 2	
None	Setting 3	
Save Profile Dejete	Setting Delete	
Restore De <u>f</u> aults		
	OK Cancel	Help

The PCL drivers Image Quality Tab allows users to select how images are printed. Users can easily select the appropriate image quality depending on the type of document being printed out.

Setting	? 🛽
Basic Color Balance Image Attribute	
Custom Color Settings Save Current Settings as Name: Setting 1 Original Image Quality Type: General	1
Haltgne:	Resolution:
Use Black for All <u>T</u> ext	
l▼ Pure Blac <u>k</u>	Apply to:
🔽 Pure Gray	Auto
Restore Defaults	
	OK Cancel Help

In the Basic Tab of the Setting dialog box, you can specify the following functions; Custom Color Settings, Halftones, Resolution, Use Black for All Text, Distinguish Thin Lines, Pure Black, and Pure Gray.



Page 21 and the resonance of the resonac

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Setting					? 🛛
Basic Color Balance Image	e Attribute				1
All Colors: Each Color	-4	0 ,	4 +		
<u>C</u> yan:	-4 •		4 ▶		
Magenta:	-4 •		4 ▶		
Yellow:	-4 •		4 ►		
Bļack:	-4		4		
☐ <u>D</u> etail:	Edjt	]			
Restore Defaults					
			ОК	Cancel	Help

In the Color Balance tab of the Setting dialog box, users can specify the following functions; All Colors, Each Color, and Detail. These options are all used to adjust the density of colors.

Setting	?×
Basic Color Balance Image Attribute	
Contrast:	
4	
Brightness:	
Background Adjustment	
Saturation: .4 4	
Ive Sharpness Filter	
Restore Defaults	
OK Cancel H	lelp

In the Image Attribute tab of the Setting dialog box, users can specify the following functions; Adjust the density level by moving the scroll bar, pressing buttons on the right and left of the scroll bar, or keying in the desired density value directly. TOSHIBA e-STUDIO4520CSeriesPCL6 Properties ? 🗙 Basic Finishing Paper Handling Image Quality Effect Others Print <u>J</u>ob: Normal Print • ... Watermar<u>k</u>: A<u>d</u>d... Fint on First Page Only None Overlay Image: -Erint Over the Document 🔲 <u>R</u>otate 180 Degrees Letter J<sub>1.2.3</sub> J<sub>1.2.3</sub> Grap<u>h</u>ics Te<u>x</u>t Profile: None Save Profile Restore Defaults OK Cancel Help

The Effect Tab contains print options that add effects to your print jobs such as Watermarks, Overlay Image printing, and Rotate printing.

TOSHIBA e-STUDIO4520CSet	riesPCL6 Properties	? 🗙
	Image Quality Effect Others Default Menu Setting: Basic Toger Save Do not Print Blank Pages Letterhead Print Mode Quatom Paper Size	
1.2.3 1.2.3 Graphics Text	<u>≻TopAc</u> Depart <u>m</u> ent:	Cess
Profile:	Custom Settings File:	
Save Profile Dejete	Version Information	
Restore De <u>f</u> aults	Restore All Defaults	
	OK Cancel	Help

The PCL drivers' Others tab contains print options such as Toner Saving, Do not Print Blank Pages, Letterhead Print Mode and custom paper sizes.



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Watermark	
<u> </u>	Caption: BERTL
	Font Na <u>m</u> e: <u>S</u> tyle:  Arial ▼ Regular ▼
	Font Size:
	Color: ☐ Gray    Browse
X 0	Aurola
×	Angle:
0.000 • inch Y	-90 0 90
0.000 inch	Print Style
Units:	Solid
	C <u>D</u> raw as Outline
Ce <u>n</u> ter Watermark	C Iransparency:
Restore Defaults	0 50 100
	OK Cancel

Users can also add, edit or adjust watermark selections.



#### POSTSCRIPT PRINT DRIVER

🗳 TOSHIBA e-STUDIO4520CSe	eries PS3 Properties	? 🗙
Basic Finishing Paper Handling	Image Quality Effect Others	
Print <u>J</u> ob:	👝 Original Paper Size:	
Normal Print 🗨 🛄	Letter (8 1/2 x 11")	
	Print Paper Size:     Same as Original Size     Same as Original Size     Same as Original Size	
	Paper Source:	
	Paper Type: Plain	
Letter 1.2.3 Graphics Text	Number of Copies:	_
Profile:	Orientation:	
Save Profile Dejete	Color:	
Restore De <u>f</u> aults		
	OK Cancel	Help

The E-Studio 4520C's PCL and PostScript drivers have very similar user interfaces. The PostScript driver's Basic tab provides the same basic options as the PCL driver's Basic tab. Note that the Profile dropdown list on the bottom left side provides several pre-configured options whereby users can select specifically configured settings for a particular job. Some of the options include Color Booklet, Duplex and Staple, Duplex, and Staple and Punch.

STOSHIBA e-STUDI04520CSer	ies PS3 Properties	? 🗙
Basic Finishing Paper Handling	Image Quality Effect Others	
Print <u>J</u> ob:	Copy Handling:	
Normal Print 🔹		
	✓ 2-Sided Printing	_
1 2 3		
4 5 6	✓ Number of pages per Sheet:	
	2 4 6 6 9 16	
⊖ Letter	Direction of <u>P</u> rint:	
1.2.3 1.2.3	<b>Z</b>	
	Draw Borders Around Pages	
Grap <u>hics Text</u>	Staple: V Hole Punch:	
None		
Sa <u>v</u> e Profile Delete		-
Restore Defaults	Use Custom Margin: Details	
	OK Cancel	Help

The Post Script driver's Finishing tab allows you to enable sort printing, 2-sided printing, N-up printing, stapling and punching. The options selected by the user are highlighted in blue and the image on the left displays a graphic representation of the chosen options.



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#### TOSHIBA e-STUDIO4520CSeries PS3 Properties ?× Basic Finishing Paper Handling Image Quality Effect Others Print <u>J</u>ob: Destination: Normal Print -Tray 2 -Use Front Cover: Do not print on page -Ş Use Back Cover: Auto Do not print on page Insert Pages: E djt... Letter Interleave Pages: 1.2.3 Auto Grap<u>h</u>ics Te<u>x</u>t Duplicate Profile: None • Save Profile Restore Defaults OK Cancel Help

The PostScript drivers Paper Handling tab provides several options to enable Front Cover printing, Back Cover printing, Inserting Pages, and Interleaving Pages.

STOSHIBA e-STUDI04520CSer	ies PS3 Properties	? 🛛
Basic Finishing Paper Handling	mage Quality Effect Others	
Print Job:		
Normal Print 💽 📖	Image <u>Q</u> uality Type:	
	Profile Name	
	General	
	Photograph	
	Presentation	
Letter	Line Art	
-1.2.3 -1.2.3	Advanced	
Grap <u>hics</u> Te <u>x</u> t	Setting 1	
None	Setting 2	~
Save Profile Dejete	Setting Delete	
Restore De <u>f</u> aults		
	OK Cancel	Help

The PostScript driver's Image Quality tab allows users to select how images are printed. Users can easily select the appropriate image quality depending on the type of document being printed out.

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STOSHIBA e-STUDI04520CS	eries PS3 Properties	?×
Basic Finishing Paper Handling	Image Quality Effect Others	
Print <u>J</u> ob:		
Normal Print 🗾 🔜	Watermark:	
	None	
	A <u>dd</u> Edjt Deletje	
	Print on First Page Only	
	Overlay Image:	_
	Print Over the Document	
	☐ <u>R</u> otate 180 Degrees	
Letter	Mirror	
1.2.3	☐ Negative/P <u>o</u> sitive	
		-
Grap <u>h</u> ics Te <u>x</u> t		
Profile:		
None		
Save Profile Delete		
Restore De <u>f</u> aults		
	OK Cancel	Help

The PostScript driver's Effect Tab contains print options that add effects to your print jobs such as Watermarks, Overlay Image printing, Rotate printing, Mirror Printing, and Negative Printing.

STOSHIBA e-STUDI04520CSe	ries PS3 Properties	? 🗙
Basic Finishing Paper Handling	Image Quality Effect Others	
Print Job: Normal Print	Default Menu Setting:	
I REFERE DATA	└─ Tonjer Save └─ Do not Print Blank Pages	
	Letterhead Print Mode	
	<u> </u> _ustom Paper Size	
	PostScript S <u>e</u> ttings	
Letter	> TopAccess	
Grap <u>h</u> ics Te <u>x</u> t	Department:	
Profile:	Custom Settings File: Import Export	
Save Profile Dejete	Version Information	
Restore Defaults	Restore All Defaults	
	OK Cancel Hel	p

The PostScript drivers' Others tab contains print options such as Toner Saving, Do not Print Blank Pages, Letterhead Print Mode and custom paper sizes.



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Version Information	
TOSHIB	A
e-STUDIO4520CSerie	s Printer Driver
Version Localize Version	5.11.68.0 022.000
Copyright (c) 1996 Hev Copyright (c) 2001-200	18 TOSHIBA TEC CORPORATION All Rights Reserved. wlett-Packard Company 15 Jochen Katz, Frank Fock 17 Monotype Imaging Inc. All Rights Reserved.
	[]
This tab provides P	ostScript print-driver version information.

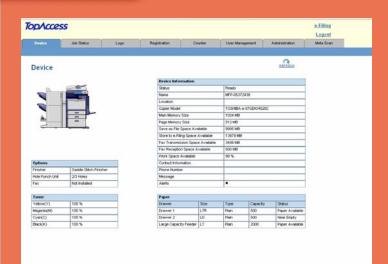
#### **CLIENT UTILITIES**

In order to take the best and most efficient advantage of a device and its capabilities, as well as ensure maximum uptime, clients need an efficient way to access and monitor the device. This is true whether the device is an MFP, printer, or scanner.

Most general users want to know first if a device is capable of handling a particular job—for instance, if it has duplexing, color capability; supports specific media sizes, or provides certain document finishing, such as stapling or saddle-stitch booklet making.

Second, users want to know a device's current status—if it is ready to print or is offline, for instance. Third, they may also wish to know whether it is equipped with sufficient supplies, such as ink and media, to be able to produce their job. Fourth, when the device is shared, they may wish to know how many other jobs may be lined up ahead of them.

Manufacturers typically provide the user with this information either via a client software utility that is installed on the client's workstation, or via a printer Web page that is accessed via the Web and a Web browser. Some manufacturers may also provide software that automatically indicates (via a pop-up window) when the user's job is completed or if there is a problem with the device, such as depleted media.



Users and administrators can view device settings and manage jobs using Toshiba's Web-based TopAccess management system. TopAccess provides a quick view of current device status, toner levels, installed paper sizes and media tray conditions and availability.

Device	Job Status	Logs	Registration	Counter	User Management	Administration	Logout Meta Scan
of all Count		Logo		- Network		NICAND VICE HIS	
	Department						
otal Cour	nt						
Print Counter							
Sec.	Copy	Fax	Preter	Liet	Total		
Full Color	76	×	124		200		
Twin Calor	40	-	0	+	40		
Disck	0	0	9	13	22		
	0.0	100		0.0	1.1.1.1.1		
Print Counter(on	uall paper)						
	12	Fai	Printer	List	Total		
	Copy						
	76	-	114	-	190		
Twin Color	76 40	-	114	•	190		
Twin Color	76		114		190		
Full Color Twith Color Black	76 40	-	114	•	190		
Twin Color Black	76 40 0	-	114	•	190		
Twin Color Black	76 40 0	-	114	•	190		
Twin Color Black Print Counter(lar Full Color	76 40 0	-	114 0 0	- - 10	190 40 22		
Twin Color Block Print Counter(Dar Full Color Twin Color	76 40 0 tgp paper) Copy 0 0	- - 0	114 0 9 Printer 10 0	- - 13	190 40 22 Total 10 0		
Twin Color Black Print Counter(lar Full Color	76 40 0 ter project) 0	- - 0	114 0 9 Printer 10	- - 13	190 40 22 Total 10		
Twin Color Block Print Counter(Dar Full Color Twin Color	76 40 0 tgp paper) Copy 0 0	- - 0 Fax. -	114 0 9 Printer 10 0	- - 13	190 40 22 Total 10 0		
Twin Color Black Print Counter(Jaz Full Color Twin Color Black	76 40 0 tgp paper) Copy 0 0	- - 0 Fax. -	114 0 9 Printer 10 0	- - 13	190 40 22 Total 10 0		
Twin Color Black Print Counter(Jaz Full Color Twin Color Black	76 40 0 tgp paper) Copy 0 0	- - 0 Fax. -	114 0 9 Printer 10 0 0	- - 13	190 40 22 Total 10 0		
Twin Color Black Print Counter(laz Full Color Twin Color Black Sean Counter Full Color	76 40 0 Copy 0 0 0	- - 0 - - - 0	114 0 9 Printer 10 0 0	- - 13 - - - 0	190 40 22 Total 10 0 0		
Twin Color Black Print Counter(Jaz Full Color Twin Color Black Scan Counter	76 40 0 Copy 0 0 0 0 0 0 0	0 0 0 0 0  Netwo	114 0 9 Printer 10 0 0	0	1990 400 222 Total 10 0 0 0		

TopAccess Internet Services provides detailed billing information and total impression counts.



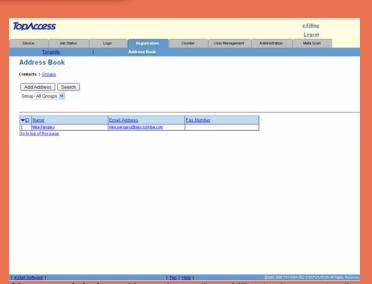
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Device	SS Status	Loss	Registration	Courte		User Management	6.000	dration	e Eiling Legeut	
						Contra and Contra a	in Bildeneye			
Print Log	I Transmission	I Receptor	1. I.	Ecan			and a second			-
User Name		Document Name		Date Time	Lype	Paper	Pages	Sets		
Hugo		Test Page	00	22/2008 10:33:48	Print	LT	1	1		
Hugo		Text Page	00	22/2008 10:33:35	Print	LT	1.	1	1	
REPORT		- 20 C C C	00	22/2008 10:25 49	1000		1	1		
Mke Gehring		EVX: tyl	00	22/2008 07:04:39	Print	LT	1	1		
Mile Gehring		08/18/2008 05:54:24 PM	08	20/2008 14:20:32	Frint.	LT	1.	1	1	
Mike Gehring		Https://reservations.ntzcar	ton 08	20/2008 14:03:02	Pret	LT	1	1		
Mke Getring		https://www.deta.com/co	Voervie 00	20/2006 12:31:29	Pret	LT	2	1	1	
COPY:			00	20/2008121819	Copy	LTR	1	1		
COPY.			00	20/2008 12:15:29	Copy	LTR	1	1		
<b>Blue Chair - Brick</b>	Wal JPG	Blue Cheir - Brick Wall JPG	00	20/2008 12 13:08	Print	LD	1	1		
Bue Cher - Brick	Wal PO	Dive Chair - Brick Wal JPG	00	20/2008 12:12:21	Frint	LT	1	1		
rig pill		mg pdł	00	20/2008 12:11:24	Frint.	LT	1	1		
COPY;			08	20/2008 10 43:06	Copy	LT	12	1.		
COPY:			00	20/2008 10:39:09	Copy	LTR	12	1	1	
TABS		Mcrosoft Word - 4520c lo	kout F 00	20/2008 10:32:04	Print	LT	1.	1		
Mike Gehring		DTA East Event Room Bloc	k Closi 00	20/2008 09 25 43	Print	LT	1	1		
COPV:			00	20/2008 09:21:46	Copy	LT	3	1		
LIST		and the second	00	19/2008 15:21:02	200	1.1	1	1		
Mile Gehring		Full page photo print	00	19/2008 14 49 53	Print	LD	1	1		
Max Getring		Full page photo print	08	19/2008 14 47.18	Fret	LD	1	1		
Mike Gehring		Full page photo print	08	19/2008 14:43:02	Print	LT	1	1		
Mike Gehring		Full page photo print	08	19/2008 14:39:31	Pret	LT	5	1		
COPY: A221			00	19/2008 14:08:25	Copy	LTR	16	1		
COPY,			00	19/2008 14 04 59	Copy	LTR	8	1		
TABS		Full page photo print	00	19/2008 13:41:22	Print	LT	3	1		
COPY.			08	19/2008 13 38 48	Copy	LT	1	1		
COPY:			00	19/2008 13 36:05	Copy	LT	1	1		
COPY:			08	19/2008 13:35:29	Copy	LT	0	1		
TABC AND AND A SOUTHING		00.18e.001200001015660	100	100001101020	Divine	17	4	4	BATEC CORPORATION 44	

With TopAccess administrators can display logs of print jobs, fax transmissions, and Scan Job Logs performed on the 4520C. The log can be exported to the desktop for further evaluation by Excel or other cost accounting applications.

pAcce	255						e.Eiling Logout	
Device	Sob Shellon	Logs	Registration	Courter	User Management	Administration	Meta Scan	
Temp	Auto I	Address Doo						
Group Info		tetate Groups>						
No	Name	Uper Name	P					
001	Utenu Tempinte							
Jump to	a template picture to edit.							
	1-16	37-42 43-48 43-5	4 55-50					
1-6 2-12 13	1-16	37-42 43-48 43-5		96%Copy ACS				
1-6 7-12 13 Templates	1-6			Reduction				
1-6 7-12 13 Templates	16         201 5-5           ACS         Start Street			Reduction Stof D Text				
141 7412 13 Templates 1 3	1-6 2nt 5-5 ACS 2nd 5-5 ACS 2nd 5-5 ACS			Reduction StoF D Text Color sPDF				
1-6 7-12 13 Templates	16         201 5-5           ACS         Start Street	2		Reduction Stof D Text				
141 7412 13 Templates 1 3	18         19-24         25-30         21-36           1-6         2nt 5-5         AC5         39-75           39-75         Text         Color stOr         Color stOr           0-00         AC5         TAP 5-5         AC5			Reduction StoF D Text Color sPDF Col0				
1-6 7-12 13 Templates 1 3 50 6 5	1-18         19-24         25-30         21-36           1-6         2mt 5-5         AC5         AC5           394° 5 Test         Galer sPOF         Galer sPOF           AC5 TAP 5-5         MIL BASE         AC5 TAP 5-5			Reduction StoF D Text Color sPDF Col0				
1-6 7-12 13 Templates 1 3 6 6 9 90 to tee of T Templates	1-18         19-24         25-30         21-36           1-6         2mt 5-5         AC5         AC5           394° 5 Test         Galer sPOF         Galer sPOF           AC5 TAP 5-5         MIL BASE         AC5 TAP 5-5	2 4 6	2000 900	Reduction Stof D field Color sPDF Color ACS T&P D-S Twin Color				
1-5 Z-12 13 Templates 1 3 90 5 90 10 100 01T	16         201 5-5           ACS         200 5-5           Color ST Set Color STOP         200 5-5           MILERAR         ACS SUP 5-5           MILERAR         ACS APS 5-5           MILERAR         ACS APS 5-5           MILERAR         ACS APS 5-5		2090 90	Reduction Stof D Text Color sPDF Color ACS T&P D-S Twin Color Black & Red				
1-6 7-12 13 Templates 1 3 6 6 9 90 to tee of T Templates	18:18:24:25:30:21:36           14:           20:15:5           ACS           0:00'S Text           0:00'D           0:00'D           0:00'D           0:00'D           7:12	2 4 6 6	2000 900	Reduction Stof D field Color sPDF Color ACS T&P D-S Twin Color				

With TopAccess, users can easily set up job scan templates from the desktop. These templates will translate to a one-touch scan button on the unit's control panel. Instructions walk users through the process. Even multi-step functions were relatively simple to follow without a manual or online help. Templates can be stored in a public or private folder. Each user can have a private folder locked with a PIN so they can store scan to e-mail, fax, or folder templates in their own folder for fast retrieval rather than filtering through the shared address book.



**Above and below:** Users have the ability to log on to the TopAccess Internet Services, register a new contact, and enter their e-mail address, fax number, company name, and department code directly from the web interface. Once created, users can easily lookup and select the contact from the address book so they can conveniently send a fax, e-mail or a scan.

	SS						e.Filing
_							Logout
Device	Job Status	Logs	Registration	Counter	User Management	Administration	Meta Scan
	emplate	- D	Address Book				
Contact	Property	Address Book >					
Save	Cancel Reset	Delete					
Fax Setting							
Either							
"Either Visut Name		Mike					
						-	
Last Name		Pangaro				_	
Truel Address		mike pangaro	@tabs to shiba.com				
"Yax Number							
2nd Fax Numbe	r.						
Company							
Department						_	

Users can log on to the TopAccess Internet Services Scan to Mailbox interface and download the stored scan jobs right to their desktop. Users must select the template that contains the destination and other required settings from the template list found on the control panel. Once the job is scanned, users will be able to access the electronic version of the document at their workstations.



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#### **ROUTINE MAINTENANCE**

Workgroup devices sold through retail and traditional IT distribution outlets usually are maintained by office workers who change the all-in-one cartridge units that encase the entire imaging system, including the toner cartridge (or the ink cartridges employed by ink-jet imaging systems). Units sold through resellers and dealers are usually maintained by office workers and/or trained service engineers. While separate long-life parts are more complex to install (i.e., separate toner cartridges, imaging drums, transfer belts), they tend to cost less than low- yield, all-in-one alternatives.

#### **Toner or Ink Replacement**

Changing the toner, imaging cartridge or ink cartridge is a necessary task that is traditionally is avoided by some for fear of toner dust or ink leaking on clothing or hands, or the fear that it might be too complicated. However, most units today offer clean replacement of toner or ink supplies, and there is very little risk of toner or ink leakage. Usually the replacement process is typically easy.

#### **Clearing Media Misfeeds**

The main issue that office users attempt to avoid is the removal of an occasional media misfeed. As a general rule, the faster a device engine, and the more media handling and finishing options it has, the more complex is the process of removing media misfeeds.

Common media-misfeed sources involve the duplex unit and poor loading of media supplies. The position of the duplex unit may be a major factor in the removal of many media misfeeds. How easy or difficult it is to load media supplies can also be a factor in the overall number of misfeeds that may occur.

#### Loading Media

It goes without saying that loading media should be as easy as possible, but sometimes that is not the case. Among the factors that affect ease-of-use are:

- The user should be able to load an entire ream (500 sheets) in a single step.
- Mechanisms such as corner separators and ramps in the media drawer can impede loading media.

The most critical factor involved in ease-of-loading media is automatic media-size detection. Ultimately, the device should be able to recognize the new media size and reflect it on its control panel/touch screen and across the network in print drivers and printer-management software. Without automatic media-size detection, users must remember to program-in the new media size—something they often neglect to do, or do incorrectly. This can result in jobs printed on the wrong media size, backed-up job logs, etc.

#### LOADING MEDIA

Paper Loading Checklist						
Maximum media weight from all media sources?	No					
Drop-in loading of a full ream of paper?	Yes					
Corner separators in paper trays?	No					
Spring-loaded ramps in paper trays?	No					
Geared media size side guides?	No					
Captured rear media guide?	Yes					
Automatic paper size detection?	No					



Both tray 1 and tray 2 can each hold 550 sheets of 20 lb. Bond /80 gsm or 500 sheets (105 gsm or 28 lbs bond media (in from 5.5"x8.5"/A5-R up to 11"X17"/A3).



In order to adjust the paper drawers, the user must unlock the drawer by squeezing the lock on the top left. Once unlocked, the user squeezes the green lever on the bottom right and then slides the guide into place.



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This paper tray is equipped with an end stop that the user must remove by squeezing the sides in order to adjust the paper drawer to accommodate the desired paper size. Overall, BERTL found adding paper and adjusting paper drawers to be relatively easy.



The Large Capacity tray can hold up to 2,500 sheets (89 gsm or 20 lb. Bond or 2000 sheets (90 gsm or 28 lb. Bond) from 8.5"x11" up to 11"x17' paper.

#### **ROUTINE MAINTENANCE-REPLACING TONER**

Maintenance Checklist						
Load ink/toner while running?	No					
Requires rear access for access to maintenance items?	No					
Requires side access for access to maintenance items?	Yes					
All-in-one imaging units?	No					
User-disposable waste item(s)?	No					



BERTL Analyst found replacing the E-Studio 4520C's toner cartridge to be easy.



The user must first open the front cover of the machine and then lowers the door as shown above.



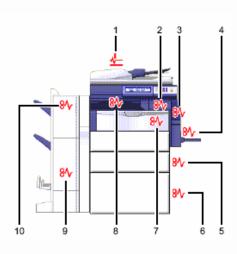
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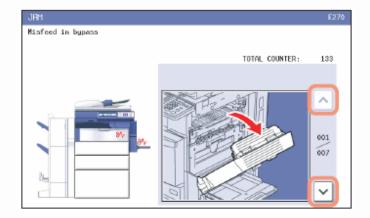


The user then simply slides out and removes the old cartridge, and slides in the new replacement cartridge.

#### **MISFEED ACCESS**



Above and below: The e-Studio 4520C's designated papermisfeed access areas are highlighted in the above figure. If a misfeed occurs, it is indicated on the touch screen, which displays each step necessary to locate and correct the misfeed.





In order to access any misfeeds that may occur in the automatic document feeder, the user lifts up this cover and removes the jammed paper from under the guide plate.



To access the fuser and side misfeed-access area, the user first opens the automatic duplexing unit.



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To remove a paper jam in the fuser unit the user must open both the automatic duplexing unit and the jam releasing cover.



If the paper jam occurs in the Reversing Automatic Document Feeder, the user must open the reverse cover and remove the original.



When the optional finisher is installed, the Bridge Unit cover can be lowered to remove any paper jammed between the fuser and the finisher.



Paper jams can occur in the large capacity feeder. When this occurs, users can simply open the large capacity paper feed cover and remove the jammed paper.



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When a paper jam occurs in the Hole Punch unit, the user must open the front cover and turn the green knob so the punches are up and the paper can be released.



Above is the Saddle Stitch Finisher's misfeed-access area which can be accessed by opening the top cover and removing the jammed paper.

#### **DEVICE MANAGEMENT**

An efficient device-management software system is critical in order to take maximum advantage of a device's feature set, be it a printer, fax, scanner or multifunctional peripheral (MFP).

Device management is typically provided via a Web server on the device controller. This Web server is accessed using any desktop Web browser. The user simply enters the device's IP address into the address line of their Web browser. Note that administrators and office users have different management and monitoring needs.

#### **General Office Users**

As noted previously, end users want to know if a device is capable of handling a particular job, current status (such as "Ready"), and current supply levels (media, toner, ink), as well as if there are any other jobs waiting to be printed.

#### **Administrators**

The aim of most network administrators is to obtain greater control over networked devices without having to leave their own desk. From their computer desktop, they would like to be able to set up the device on the network, establish security for IP filter ranges, apply cost-control measures, check supply levels, and set up automated email alerts for different staff members when problems occur or maintenance needs must be met.

Due to the nature of a device's Web server, this capability is usually limited to an individual device. However, many manufacturers also include a network device- management fleet tool, which allows for the concurrent monitoring and management of multiple devices connected to the network. Many also provide plug-ins for the most popular IT devicemanagement utilities in order to ensure that the maximum amount of information can be relayed from their device to the third-party application.

COFTWARE     Device Management     TopAccess	DEVICE N.	evice Hanagement	
Device Management		LNAGEMENT.	
HP Web Jetadmin Plug-in	Administer mult	tiple e-STUDIO devices and	
Document Management		be efficiency and productivity	
e-BRIDGE Re-Search	of your oral		Company of the local division of the local d
DocRecord	or your orga		Broch
DocuWare	- DEVICE MANAGEN		
Questus Pro	<ul> <li>DEVICE MANAGEM</li> </ul>	LNI	
Document Output Management			
e-881DQE Job Build		web jetadmin certified	
e-BRIDGE Job Separator	TopAccess	Commod .	
BarCodeJet	Contraction in the second	(Up)	
DocForm			
DocSystem	TopAccess	HP Web Jetadmin	
DocTransform	Top-coerr	Plug-in	
EFI Balance			
EPI Digital StoreFront	Includes software-based	solutions and services focused on reducing	the cost and improving the return on investment for utomated device management-based services and
ExcelliPrint	simplify the process of n	nanaging and servicing network-based outp	utomated device management-based services and ut devices.
Ringdale FollovMe			
Driver			
Print Audit			
RDN Remote Print Manager			
QDirect			
WebCRD			
Document Capture/vorkflov			
e-BRID-GE R.s. Rite			
*Copy			
FineReader			
FormReader			
QDired.SCAN			

Toshiba provides a couple of solutions for monitoring the device and jobs. Among them is TopAccess, a web-based solution that enables clients to view device status and configuration, and enables administrators to manage and configure system and network settings.



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Toshiba also provides plug-ins for Web JetAdmin, which is considered a simple; print and imaging peripheral management software tool that helps optimize device utilization, control color costs, secure devices, and streamline supplies management by enabling remote configuration, proactive monitoring, security, troubleshooting, and reporting of printing and imaging devices.

pAcce.	SS						e.Filing
-			10 APR 10			C	Legent
Device	Job Status	Logs	Registration	Courter	User Management	Administration	Meta Scan
Selup	I Maintenance	I Bes	istration I	Message Log			
Setup							
Openeral   Net	work   Copier   Save	as file   Email	InternetFax   Printer	Print Service   ICC.	Profile   Version		
	ncel						
Printer Setting General Settin							
	to save Private, Proof a	and investige to be		14Dex			
LT->A4/LD		and means Jobs		Enabl			
Wide A4 Mode				Disab			
Print Startup P				Disab			
Default Raw Jo				Diseb			
Raw Jobs - Du				Disab			
	Hault Paper Size			Letter	~		
Raw Jobs - De	Hault Paper Type			Plain	~		
Raw Jobs - De	fault Orientation			Portra	t 💌		
Raw Jobs - De	Hault Stapling			OFF			
	Hault Output Trav			Inner	rey ×		
PCL Form Line				12.0			
PCL Font Pitch				10.0	1		
PCL Fort Poin				12.0	-		
PCL Fort Num				0 ~	-		
PCL Line Term				Auto			
Symbol set				Bome	n A	~	
				Auto	~	100	
Paper Source							
Paper Source Do not Print Bi	ank Pages			OFF			

Administrators can modify the device's printer default settings and enable or disable the device to automatically print duplex mode, print startup pages, and set other basic print defaults.

op/cce	55						n Eiling Logout
Device	Job Status	Logs	Registration	Courter	Uper Monagoment	Administration	Meta Scan
Setup	i Maintenance	I Regis	tation I Me	saue Log			
	work   Cooler   Bave as incel	fie   Email   Is	ternetFax   Erinter   E	nnt Service   ICC.	Profile   Version		
General Settin							
Device Inform	ation		FP-05372438				
Name Copier Model			PP-05372438 DSHIBA e-STUDIO4526	IC .			
	ipace Available	9	995 MB				
	ig Space Available sion Space Available		3979 MB				
	sion space Available		100 MB				
Work Space A			3 %				
Department C	ode	1	Disable 🐱				
Department C	ode Enforcement						
e-Filing		1	Inable 💌				
Data Cloning	Function	1	Disable 💌				
Save to USB M	fedia	1	Enable 💌				
USB Direct Pr	int	1	Enable 💌				
Queue name		P	int				
Location							
Contact Inform	nation						
Service Phone	Number	6					
Administrative	Message						
Administrator	Password						
Confirm Pass	word						
e-Filing Notific	ation Events						
	matic delete notification	(1	Davs				

Administrators can also change the device's general default settings and enable or disable the Department Code tracking, e-Filing, Save to USB Media, and USB Direct Print functions.

pAccess						e.Filing	
L'EUSERERER						Logout	
Device Job Status	Logs	Registration	Courter L	leer Management	Advantation	Meta Scan	
Setup   Maintenan		and the second s	age Log		A CONTRACTOR OF A CONTRACTOR OFONTO OFONTA CONTRACTOR OFONTO OFONTO OFONTO OFONTO OFONTO OFONT		-
	OF I CERTIFIC	on i Mess	Ide Lon				
Setup							
General   Network   Copier   S	non an file I. Franki I. Inter	and the second free	A Province 1, 1976 Broker	T thening			
	sustantianti entre i com	merrie i create i cr	CLARING   ILS. FIGHT	1 Intanto			
Save							
SMTP Client							
Enable SMTP Client	Enable					E .	
Enable SSL	Disable						
SSUTUS							
SMTP Server Address	10.8.87						
POP Before SMTP	Disable						
Authentication	Disable						
Login Name	Contract of						
Maximum Estal / InternetFax Size	30 MB						
Port Number	25						
SMTP Client Connection Timeout(1-180	<li>30 Seconds</li>						
to top of this poor							
SMTP Server							
Enable SMTP Server	Enable						
Port Number	25						
Enal Address							
Enable OffRamp Gateway	Disable						
Offfiamp Security	Enolde						
OffRiamp Print	Enable						
eees sint to set of color							
POP3 Network Service							
Enable POP3 Client	Evalue						
Enable SSL	Diseble						
POP3 Server Address Authentication	Daatile						

From TopAccess, administrators can set up authorized user lists and IP filters to limit access to the device from specific PC address ranges. They also can establish automatic routing of incoming faxes to lockable mailboxes or folder destinations. Administrators also have the ability of setting up the Simple Mail Transfer Protocol (SMTP) Service so that e-mail can be sent from the device.

TopAcce	ss						e.Eiling
		12.22	1				Legent
Device	Job Status	Logs	Registration	Counter	Uper Management	Administration	Meta Scan
Setup	I Maintenance	I Bea	stration I Me	ssage Log			
Mainten Upload Softw	and the second second second	e   Backwe   B	astore   Delete.Eiles	Directory Service	NetRication   Import	ExportCitearLog   E	interest
Save							
Notification S Email Setting							
	ministrator at Email Add	Area 1					
	ministrator at Email Add						
	ninistrator at Email Add						
The second and							
General Notif	ication Events						
Paper Ja	m						
Drawer C	ut of Paper						
Door/Ora	wer Open						
Print Job	Needs Attention						
Print Nee	ds Attention						
Toner En	uty.						
Used ton	er container is Full						
Authentic	ation error						
Network	elated Error						
Received Fax	InternetFax Notification	Events					
Send em	all when an error occurs	5					
Send em	all when job is complet	be					
Error							
Warning							

An administrator can set up to three e-mail addresses to route specific notifications. Some other advanced systems offer unlimited e-mail addresses, but the TopAccess option is probably more than adequate for most environments. The administrator can set up a local office contact for easy fixes such as media and toner refill. More complex technical issues can be routed to tech support. E-mails automatically can be sent to the dealer for tasks like imaging drum replacement.



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Toshiba also provides several document management software solutions some of which include e-BRIDGE Re-Search, DocRecord, DocuWare, and Questys Pro.

Some of these document management solutions are used as workgroup document repositories with searching, indexing, retrieval, and other baseline document management and records management capabilities.

E PRODUCTS E SOFTWARE E P	>Home >Software >De			1	About Us Careers Site
- SOFTWARE		OUTPUT MA		10 - 20	
Device Management	DOCUMENT	OUTPUT MA	NAGEMENT		
TopAccess					
HP Web Jetadmin Plug-in	Produce the best		hadred use 1		
Document Management		tect against unaut nd charge-backs,		1	2
e-BRIDGE Re-Search	track usage a	and control			Downl
DocRecord		and corre	01 00313.	The state of the s	• Broch
DocuWare	- DOCUMENT OUTPUT	HANAGEMENT			
Questys Pro					
<ul> <li>Document Output Management</li> </ul>		-			
e-BRIDGE Job Build	$\sim$	ARRING Jab Security	RerCode.lat "	DocForm.	Deebude
e-BRIDGE Job Separator	C.BRIDGE Job Build	Construct All Separator	Par Doublott M	Doctorm.	DocSystem.
BarCodeJet	-				
Dedform	Combine multiple				
DocBystem	formats for printing and finishing	Separate batch-print jobs for distribution	Bar code printing from ERP systems	Variable Data Printing	Distributed printing an workflow tool
DocTransform	nnaning				
EFI Balance				5	
EFI Digital StoreFront		-		ExcelliPrint	A
ExcelliPrint	DocTransform.	Cfi Balance resolvementum Soutone	Cfi Digital StoreFront webscrewwww.webscrewww.webscrewww.webscrewww.webscrewww.webscrewww.webscrewww.webscreww		FollowMe*
Ringdale FollovMe					
iDriver	Fix and manage		Web-based print job	Software solution for	A
Print Audit	production printing	EFI Balance	ordering and	IPDS printing to Non-IBM	Secure Printing, Roam Printing and Job
RPM Remote Print Manager	problems		management	printers	Accounting
QDirect WebCRD					
WebCRD			3		
Document Capture/vorkflov	iDriver	PRINT QUDIT	RPM	R S A	R S A
Finalizadar		0.0000000000000000000000000000000000000		Centralized printing	
FormReader	IPDS Printing	Job accounting and management	Mainframe printing to e-STUDIO preducts	management and	Print job submission an management
QDirect.SCAN					
COMMITMENT	Includes colutions for the adding experiment, as well output deverses and relations of the experiment of the experimen	ntly process and format workgroup environment	legacy and database-driv	en dreams of 0.00 (vanced 4.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	vernment Micare

Toshiba provides a host of solutions for document output management, as well as solutions for tracking, measuring, and monitoring document output from the 4520C. Some of the solutions also provide security features and functions that prevent unauthorized access.



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Toshiba offers several integration options with many of today's most popular document capture / workflow solution providers. Sample products include eCopy's ShareScan Suite, ABBY FineReader, and RSA Qdirect. Scan.

#### WHAT WE LIKED

- The control panel's hard keys are large, well-organized and clearly labeled, while the touch screen features large text for easy viewing, as well as a simple design for easy navigation. The touch screen is virtually the same as other Toshiba E-Studio devices' touch screens, which will make it especially easy for E-Studio users to quickly acclimate to it.
- The e-Studio 4520C's LCD-color touch screen provides easy access to several common and frequently used copier settings on the Basic Copying screen. This enables copy users to quickly and easily make typical settings without having to navigate through to many sub-menus, and significantly reduces the time to make copy-job settings. BERTL was able to make frequently used copier settings in a matter of only 2 or 3 key presses (see "Selections Required for Frequently Used Copy Functions" chart on page 18).
- For network and device management, Toshiba provides its TopAccess Web Software Suite. TopAccess Internet Services provides an easy-to-use Web-based interface, and can be used to view detailed system and consumables' status. It also enables administrators to manage and configure device and network settings. This Web-based solution enables

administrators to monitor and manage a fleet of devices from any workstation on the network.

- TopAccess Internet Services provides automatic e-mail alerts when the system requires attention.
- Both PCL and PostScript drivers are relatively easy to use and logically organized. Both drivers have nearly the same exact user interface. This will enable users to quickly and easily switch between drivers and allow them to find the settings they need from one driver to another with ease.
- Very easy toner and paper replacement. Ability to change paper while in use.
- Misfeed-access areas are easy to locate and access. Correcting paper jams can be easily accomplished by following the step by step guide displayed on the control panel.

#### WHAT WE WOULD LIKE TO SEE

- Overall, BERTL found the e-STUDIO4520C very easy to use and maintain, we would have liked to have seen device status and consumable levels communicated using the print driver.
- Despite the fact that the e-STUDIO4520C offers users the ability to print to Front and Rear Covers, the e-STUDIO4520C only allows users to copy to the Front Cover and not the Rear Cover.



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#### **MEDIA INPUT**

Substrate (media) handling is a core requirement of every device. If a device cannot print a file on specific media desired by the user, it hardly matters how fast the print engine is, or how many pages it can produce.

A device's media-handling capability basically concerns how it can handle two key criteria: the media size and media weight it can feed, as well as the maximum number of pages that can be loaded in the device's drawers, trays, etc. The greater the media capacity, the less time users will spend reloading media.



The e-STUDIO4520C shown above equipped with two standard 550-sheet paper drawer, 100-sheet bypass tray, and optional 2,500-sheet tandem large–capacity feeder.

Media Handling Checklist						
Minimum Media Weight	17 lb. bond (64 gsm)					
Maximum Media Weight	100 lb. cover (280 gsm)					
Feeds maximum media weight from all sources?	No					
Offset Stacker	Optional					
Finisher	Optional					
Hole Punch	Optional					

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Saddle-Stitch Finisher	Optional	
Post-Process Insertion (PPI)	No	
Trimmer	No	
Folder	No	
Mail Bins	No	
Booklet Maker	Optional	

#### **MEDIA OUTPUT AND FINISHING**

Office workgroup devices' media-output handling options range from duplex printing to saddle-stitch booklet making. Many devices offer a choice of finisher/staplers, which provide a low-cost, minimum footprint solution, or a highcapacity, fully featured solution such as multi-position stapling, saddle-stitch booklet maker and/or document hole puncher.

BERTL evaluates these functions looking at how the same job outputs at different speeds when different finishing options are specified. The impact of the finishing selection is determined by timing jobs that are sent to a device with various finishing settings.

#### Stapling

Lower-cost finisher/stapler units often have a 15- to 30sheet maximum stapling capability and are often limited to corner stapling. Floor-standing, higher-cost finishers typically provide 50-sheet capability and provide both corner and double stapling.

Saddle-stitch booklet making allows users to create folded, center-stapled booklets. Some saddle-stitch finishers only handle 10 sheets (for producing 40-page booklets), while others handle up to 15 sheets (for producing 60-page booklets).

#### Mail Bin Units and Offset Output

Many workgroup devices provide offset stacking (each set is offset from the next) to make it easier to separate jobs. Some also provide physical mailbox units that allow each user to send jobs to their own mailbox tray. However, most mailbox units do not accept finished (such as stapled) jobs. A multi-tray finisher can also offer some form of job separation typically used to separate different types of jobs (fax, print, copy) for easier identification.

#### **Post-Process Insertion (PPI)**

A post-process insertion unit can be used to automatically insert pages into completed print or copy jobs. These inserts can include chapter covers, color pages and heatsensitive media.



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#### **ORIGINAL HANDLING**

While scanning speeds and duty volumes may be based on perfect, standard letter/A4 size office-grade laser printer media, a much wider range of media substrates is commonly used and handled in the office world every day.

#### **Scanning Speed**

Obviously, the faster a scanner can scan originals, the faster the user can retrieve those originals and return to their desk, the sooner the device is available for someone else to use. Slower scanning means diminished productivity.

Document Feed Speed			
# of originals	MONOCHROME MODE	Time In Seconds	OPM*
10	Simplex Originals	16.72	35.9
5	Duplex Originals	31.94	9.4
10	Mixed-Size Originals	24.53	24.5
	COLOR MODE		
10	Simplex Originals	16.97	35.4
5	Duplex Originals	32.06	18.7

\*Originals per minute.

#### WHAT WE LIKED.

- Versatile media handling, as all paper drawers accept up to 11"x117" paper, while the bypass tray accepts 3"x5" index cards up to 12" x 47" banner size. Banners can be used for signage and promotional materials.
- The multipurpose tray can also be used to print on heavy stock up to 100 lb. cover (280 gsm).
- Paper capacity can be expanded to a substantial 3,700 sheets.
- Optional Multi-Position Finisher: 2000-sheet stacker with 50 sheets stapling capacity and with optional Multi-Position Hole punch;
- Saddle-Stitch Finisher: 2000-sheet stacker (1,000 per tray), 50 sheets stapling capacity and optional Multi-Position Hole punch.

#### WHAT WE WOULD LIKE TO SEE

 Overall, BERTL was very satisfied with the E-Studio 4520C's paper-handling capabilities.



## Summing Up

Positioned very near the top of Toshiba's office-color MFP lineup, the e-STUDIO4520C is designed for businesses with less demanding print volume needs, multi-user offices and mid-sized workgroups and enterprises. Toshiba rates the e-STUDIO4520C at a substantial 45/45 (monochrome/color) ppm and in testing the system was able to match these speeds:

As with all devices, customers should note that BERTL has found that PostScript emulations, such as the one employed by the e-Studio 4520C, may not provide the same degree of precision and predictability when printing very complicated data as a genuine Adobe PostScript print driver.

- Reflecting the efficiency of its e-Bridge controller architecture, the e-STUDIO4520C proved very
  productive in network-printer mode:
  - Tested FPOT was fast as 17.82 seconds in network-printer mode.
  - Tested simplex network-print speed was fast as up to 44.1 ppm, matching Konica's rated print speed of up to 45 ppm, while tested duplex network-print speed was fast as up to 40.8 ppm.
- Productivity in copier mode was also good. Tested copier FPOT was fast as14.78 seconds while tested copier speed was as fast as up to 46.6 ppm.
- Overall, the e-STUDIO4520C produced good image quality in testing. In both print and copy modes, output displayed very good print density and good halftones. It also produced output that displayed very good resolution in copy mode and very good resolution in printer mode. Its output also displayed excellent line and dot control, which is essential for producing fine detail.
- The e-STUDIO4520C was exceptionally easy to use and maintain, from the large and easy-tonavigate touch screen to using the print drivers and device-management software. The system's control panel can also be tilted and rotated to eliminate glare and make it easier for wheelchair users to access.
- Paper and toner were easy to replenish.
- Toshiba's TopAccess Internet Services, which provides detailed device and consumables' status, and provides network configuration, job template management, access management and accounting controls for administrators, is easy to use and very capable. Toshiba also provides compatibility with Hewlett-Packard's Web JetAdmin network-management solution.
- Toshiba's Job Scanning Templates offer users an easy way to automate routine scan-and-distribute workflows by recalling a set of preferred scan settings right from the control panel.

At it's list price of \$20,999 (which includes standard copier and printer controller), the E-STUDIO4520C is economically priced for a mid-size workgroup office color MFP. No device is perfect, document feed speeds could be better as, competitive units routinely scan at or near manufacturer's rated speed. Despite the fact that the e-STUDIO4520C offers users the ability to print to Front and Rear Covers, the e-STUDIO4520C only allows users to copy to the Front Cover and not the Rear Cover. Additionally, we would have liked to have seen device status and consumable levels communicated using the print driver.

Overall, the e-STUDIO4520C proved to be a highly-competitive workgroup office-color system in testing. BERTL found the e-STUDIO4520C consistently productive no matter the application and feels that it will make short work of mid-volume business-color workloads, while not sacrificing usability, ease-of-use, versatility or image quality. Therefore, BERTL highly recommends the e-STUDIO4520C for offices, mid-size workgroups and enterprises that require a fast and reliable business color and black-and-white digital imaging system.



#### WHAT WE LIKED

- Tested black-and-white simplex and duplex networkprinter speeds in both PCL and PostScript modes were up to approximately 45 ppm, matching Toshiba's rated print speed of up to 45 ppm.
- Tested color network print speed was up to 20.5 ppm in PCL and 36.1 ppm in PostScript mode.
- Tested network-printer First Page Out Time (FPOT) was as fast as 17.82 seconds in PostScript mode and up to 19.35 seconds in PCL mode.
- Tested black-and-white FPOT as fast as 14.78 seconds in simplex copier mode, and as fast as 18.20 seconds in duplex copier mode.
- Tested black-and-white copier productivity was up to 46.6 ppm in simplex mode and up to 27.1 ppm in duplex mode.
- Tested color copier productivity was up to 45.7 ppm in simplex mode and up to 26.7 ppm in duplex mode.
- Minimal document-finishing penalty when applying document finishing options to copy jobs.
- Fast document-feeder speeds of up to 35.9 opm in monochrome simplex mode and up to 35.4 opm in color simplex mode.
- Users can copy and store files as a digital image via the e-Studio 4520C's standard USB flash memory drive.
- Images can be scanned, printed and faxed directly to the device's hard drive and stored in e-Filling boxes. Scanned images stored in the e-Filling boxes can then be printed at any time (print-on-demand) e-mailed, sent via fax, sent via Internet fax, routed to a computer workstation, an FTP or SMB server, etc.
- Support for several file formats that include TIFF Multi/Single Page, PDF Multi/Single Page, Secure PDF, Slim PDF, JPEG, and XPS Multi/Single Page. Support for additional formats can be expanded up to 17 file formats with e-Bridge Re-Rite.
- LDAP compatibility enables users to access the network address book, making destinationmanagement chores easier for network administrators.
- Users can scan hardcopy documents, converting it into electronic format, and then send the files to a USB flash memory device for storage via the device's standard USB flash memory drive.
- The control panel's hard keys are large, well-organized and clearly labeled, while the touch screen features large text for easy viewing, as well as a simple design for easy navigation. The touch screen is virtually the same as other Toshiba E-Studio devices' touch screens, which will make it especially easy for E-Studio users to quickly acclimate to it.
- The e-Studio 4520C's LCD-color touch screen provides easy access to several common and frequently used copier settings on the Basic Copying

screen. This enables copy users to quickly and easily make typical settings without having to navigate through to many sub-menus, and significantly reduces the time to make copy-job settings. BERTL was able to make frequently used copier settings in a matter of only 2 or 3 key presses (see "Selections Required for Frequently Used Copy Functions" chart on page 18).

- For network and device management, Toshiba provides its TopAccess Internet Services Suite. TopAccess provides an easy-to-use Web-based interface, and can be used to view detailed system and consumables' status. It also enables administrators to manage and configure device and network settings. This Web-based solution enables administrators to monitor and manage a fleet of devices from any workstation on the network.
- TopAccess Internet Services provides automatic e-mail alerts when the system requires attention.
- Both PCL and PostScript drivers are relatively easy to use and logically organized. Both drivers have nearly the same exact user interface. This will enable users to quickly and easily switch between drivers and allow them to find the settings they need from one driver to another with ease.
- Very easy toner and paper replacement. Ability to change paper while in use.
- Misfeed-access areas are easy to locate and access. Correcting paper jams can be easily accomplished by following the step by step guide displayed on the control panel.
- Versatile media handling, as all paper drawers accept up to 11"x117" paper, while the bypass tray accepts 3"x5" index cards up to 12" x 47" banner size. Banners can be used for signage and promotional materials.
- The multipurpose tray can also be used to print on heavy stock up to 100 lb. cover (280 gsm).
- Paper capacity can be expanded to a substantial 3,700 sheets.

#### WHAT WE WOULD LIKE TO SEE

- Overall, BERTL found the e-STUDIO4520C very easy to use and maintain, we would have liked to have seen device status and consumable levels communicated using the print driver.
- Despite the fact that the e-STUDIO4520C offers users the ability to print to Front and Rear Covers, the e-STUDIO4520C only allows users to copy to the Front Cover and not the Rear Cover.
- We would like to see faster document-feed speeds.

### About BERTL



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The success of an organization depends on its ability to manage its information and assets. An effective workflow process requires the complex integration of information, devices, software and people.

IT managers, office managers, and other knowledge-management professionals need to know what digital imaging devices would best serve their specialized workflow processes.

BERTL's services are designed around this real-world framework, delivering business consumers the independent analysis and insight needed to make critical decisions about digital imaging's role in their organization.

### Independent Analysis and Insight

BERTL's reports, comparative data, and strategic guides look at digital imaging through the eyes of the business user. The research examines not only the technical features, but also vertical market applications, and business benefits. The impact on worker productivity is a primary concern.

BERTL is 100 percent independent. It receives no funding from manufacturers and all product evaluations and reports are published at BERTL's own expense for its subscribers. Business users worldwide trust BERTL for objective, unbiased analysis of digital imaging systems.

**BERTL Services** 

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BERTL analysts provide detailed reports on the technical and practical benefits of thousands of color and monochrome workgroup, office, graphic arts, and production devices.

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BERTL analysts recognize the leading devices and software solutions in the annual BERTL's Best awards. BERTL also honors the performance of manufacturers in the annual Readers' Choice selections.

### **Contact BERTL**

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