100% Independent Analysis

Toshiba e-STUDIO520
52ppm Monochrome MFP
Copy-Print-Scan–Fax

Key Buyer Benefits

Designed with ease of use as a focal point from the bottom up for users at all technical levels.

Excellent image quality across both copy and print.

Sophisticated, yet easy to use web-based document management system.

Personal template folders allowing each user to store commonly used features, workflow routes and job attributes for quick retrieval.

Good range of document production capabilities for both walk up and desktop users.

Good paper handling options including four universal paper cassettes, one post process insertion units and heavy paper weight support from all trays.

BERTL 4-Star Award Winner

Product Dynamics

The Toshiba e-STUDIO520 is clearly positioned as a front-office/workgroup copier/printer/scan/fax MFP, with the central focus being on user-friendliness for the typical front office worker who just wants to be able to do lots of things quickly and easily without having to think too hard.

As a front-office machine, it is clearly one of the most capable in the marketplace in a variety of areas including, for example, paper handling, scanned and printed image quality, Scan To functionality, security, and administrative tools.

Features Overview:

Compared to its predecessor (as well as some of the competition), the e-STUDIO520 incorporates a number of new technologies and improvements.

Toshiba has taken some heat in the past for its image quality. With the e-STUDIO520 and other members of this device family, the company can now boast of monochrome image quality that is second to none. Various elements have been changed or redesigned, joining forces to vastly improve image quality. Such improvements include reduced toner and developer particle sizes, a redesigned imaging system dual-beam laser, serial filter with fine-line smoothing, a dual-speed paper handling system, and an 8-bit scanner to replace the previous 1-bit unit.

While not unique in this segment, Toshiba's e-STUDIO520 is one of only a few 50-60 ppm devices implementing an on-the-fly toner changing system.

A redesigned control panel features a large half VGA-level, touchscreen LCD which includes a virtual QWERTY keyboard for easier data entry. In terms of productivity, the same user interface is utilized on all e-STUDIO models rated from 23 to 85 ppm. Within an organization having several e-STUDIO machines, this is an important factor since interface consistency across models reducing training needs.

The company has also catapulted itself to a leading role in MFP security by incorporating into the e-STUDIO520 a range of strong password protected functions, Private Print for confidential documents, department code and usage limitation tools, Authentication (LDAP and SMTP) features, a Scrambler Board option with 128-bit encryption/decryption, a Data Overwrite Kit that erases (to DoD specification) latent image data on the device's hard drive. Along with its optional wireless printing option also comes the latest 802.11g, WPA (WiFi Protected Access) standards implementation.

BERTL analysts get their hands on the Toshiba e-STUDIO520.

Product Dynamics

It's All About the Controller

In the past, Toshiba offered an either-or path which forced users to select either the company's home-grown print/scan controller, or an alternative Fiery controller from EFI for higher-end print capabilities. This dual-path controller approach made upgrading from copier to MFP both expensive and confusing.

Toshiba no longer forces users to make the choice between non-Fiery and Fiery controllers, instead integrating both day-to-day and higher-end functions onto one controller board called e-BRIDGE. The e-STUDIO520 ships with copy and basic scan (which includes the ability to scan to an e-Filing box on the device) capabilities. Already integrated onto the e-BRIDGE controller, however, are many additional functions that are activated through special kits, usually consisting of USB 'enablers.'

Specifically, options include a Print Kit, Print/Scanner Kit, Scanner Kit and Fax Board (which can be combined with either the Printer Kit or the Print/Scanner Kit. The accompanying table presents specifically what's included standard and with various USB-enabler-based options.

The ability to so easily add such functionality via the USB enabling 'keys' is a very strong draw to the e-STUDIO520. The USB slots which accept these keys are behind a small, screw-attached panel so that it's not easy for someone to just walk off with an enabling key.

The e-STUDIO520's 'next-generation' e-BRIDGE controller itself uses an IBM PowerPC 750FX processor running at 600 MHz to quickly process jobs. A 64-bit/66 MHz PCI bus replaces the predecessor's 32-bit/33 MHz bus, creating a larger digital bandwidth channel to handle more data faster. Main memory of 256 MB is enhanced with additional page memory of 64 MB.

	STANDARD As Supplied	OPTIONAL					
		Printer Kit	Scanner Kit	Print/Scanner Kit (Equal to Printer Kit and Scanner Kit)	Fax Board	Printer Kit & Fax Board	Print/Scanner Kit & Fax Board
Copy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Print	No	Yes	No	Yes		Yes	Yes
Basic Scan (2)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fax (phone line)	No	No	No	No	Yes	Yes	Yes
Fax (Internet)	No	No	Yes	Yes			Yes
Network Fax (phone line)	No	No	No	No		Yes (1)	Yes
Network Fax (Internet)	No	No	No	Yes			Yes
Copy-to-Box	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Print-to-Box	No	Yes		Yes	No	Yes	Yes
Scan-to-Box	No	No	Yes	Yes	No	No	Yes
Scan-to-Email	No	No	Yes	Yes	No	No	Yes
Scan-to-File	No	No	Yes	Yes	No	No	Yes
Scan-to-Internet Fax	No	No	Yes	Yes	No	No	Yes
Internet Fax-to-Box	No	No	Yes	Yes	No	No	Yes
Fax-to-Box	No	No	No	No	Yes	Yes	Yes

(1) Available for PC fax transmission only.
(2) Basic Scan refers to scanning documents to an e-Filing box, then downloading these documents to a Windows PC using the included utility.

Product Dynamics

Speeds 'n' Feed Summary

While specifications alone do not make one device better than another, they are an easy starting point from which buyers can start to create a short list. The Toshiba's headline specifications listed below stand up well versus competing units.

- 2,400 x 600 dpi maximum output resolution
- Preventive Maintenance cycle of up to 600,000 pages before a scheduled engineer visit to renew the imaging unit and other components
- 3,600-sheet standard capacity (2 trays of 500 sheets each accommodating paper sizes up to ledger/A3 and a 2,500 sheets LCF for A4/letter sized paper, with 100-sheet multipurpose tray) which increases to a total of 6,100 sheets with the optional front-loading, large-capacity feeder
- Warm-up time of approximately 130 seconds
- First copy-out time of less than 3.5 seconds (letter-sized paper)
- 45-second recovery from standby
- Scanning resolutions of 150, 200, 400, and 600 dpi
- Scanning speed of up to 83 ppm @ 300 dpi, 71 ppm at 600 dpi

Construction

Devices destined to either crossover or be dedicated to back-office applications typically are of stronger build with more metal used in the chassis, drawers, sliding elements, etc.

The Toshiba e-STUDIO520 like most rival devices in this sector, has a high plastic content, reflected in, for example, light-duty paper drawers. While they slide and refill easily, the trays may struggle to withstand the rigors of a very high volume environment. However, as a general office workgroup device, the construction is more than adequate.

As a capable and substantial piece of equipment, the e-STUDIO520 will likely not be placed very close to users. Due to the amount of noise generated by most devices of this type, the e-STUDIO520 will be best placed in a hallway or separate copy room. Typical use of this machine will be for larger jobs or those with higher level finishing demands.

As is the case with most competitors, the e-STUDIO520 vents from the rear. This is generally not a good idea, since most users will not follow manufacturer guidelines for machine placement. Instead of keeping the device the manufacturer-specified distance away from a wall, users will most often push the unit right up against it. In testing, BERTL analysts noticed a fair amount of hot air from the vent areas—which could overheat various machine components unless the manufacturer's 'off the wall'

The engine of the e-STUDIO520 is of a modular design, and can be easily accessed as shown for replacement or refurbishing.

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Product Dynamics

Toner from the plastic cylinder cartridge shown is fed into a hopper within the unit. Thus, the toner cylinder can be replaced on-the-fly without interrupting the job that's currently in-process.

Opening the device to clear jams in the duplexer area (on the left side of the machine) requires that the finisher be unlatches and rolled-off.

Connectivity

The Toshiba e-STUDIO520 offers an extensive range of connectivity capability:

- Via the Printer Kit, it can be connected to either client-server or peer-to-peer networks so that any printer on the network can take advantage of the device's printing features. Suitable for the vast majority of applications, the Printer Kit supports Ethernet communications. Other supported networking protocols include IPX/SPX, TCP/IP, EtherTalk, LPR/LPD, IPP, WINS, SNMP, SMB, AppleTalk, NetBIOS, NetWare, and Port 9100 (bi-directional).

- Optional Wi-Fi (802.11g) and Bluetooth (HCRP) modules (installed by a service technician) allow walk-up and nearby users to access the e-STUDIO520 with notebook PCs, PDAs, Blackberry and other devices supporting these forms of data communication. WiFi Protected Access (WPA) standards are implemented which, according to the company, makes wireless printing and scanning as secure as traditional network printing.

- Built into the e-BRIDGE system controller is a software-based interface for handling connections to TCP/IP networks.

- The device's optional PCI-compatible slot accepts a fax board, scrambler board, or parallel interface kit.

Most network administration functions are easily handled through Toshiba's TopAccess browser-based toolset (See the Device Management section of this report.)
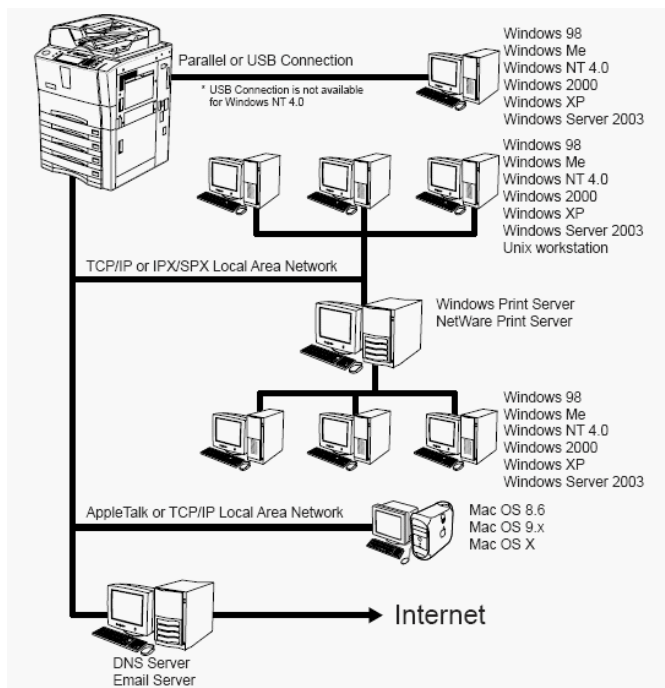
The Ethernet connection on the right side of the machine is easily accessible. Also shown just behind the square plastic cover are the USB ports (to the e-BRIDGE controller board) into which optional 'enablers' are inserted.

With options as described above, the e-STUDIO520 supports virtually every form of networking required for most office workgroups, as well as local connections via parallel or USB.

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Paper Handling

To maximize paper capacity within a small footprint, Toshiba has chosen to stay with the tandem tray design. This tandem tray, while having a high capacity of 2,500 sheets, is limited to A4/letter sized paper only. This may cause issues of increased user intervention where multiple supplies of paper sizes above letter/A4 are required, such as legal offices, real estate and print on demand environments.

Stocks from 17 lb. bond (64 gsm) to 110 lb index (163 gsm) are accepted. This is particularly noteworthy since the e-STUDIO520's predecessor supported only lighter stocks, relying instead on the low capacity bypass tray when heavier paper stock printing was required.

Finishing options for the e-STUDIO520 include:

- 4,000-sheet large-capacity feeder for letter/A4, 50 sheet-maximum, multi-position stapling unit with or without saddle-stitch
- 2- or 3-hole punching unit
- post-inserter unit

The optional post-inserter unit adds a high level of versatility to the e-STUDIO520, accepting pre-printed covers, heavier stock, and delicate materials which can be added to finished documents without damage since that path bypasses the device's fuser section. This function can be particularly useful when necessary pages to be inserted have been preprinted using other equipment in the same workgroup. Processing those pages without the heat of the fuser eliminates smearing as well as paper jams through the device's normal paper path.
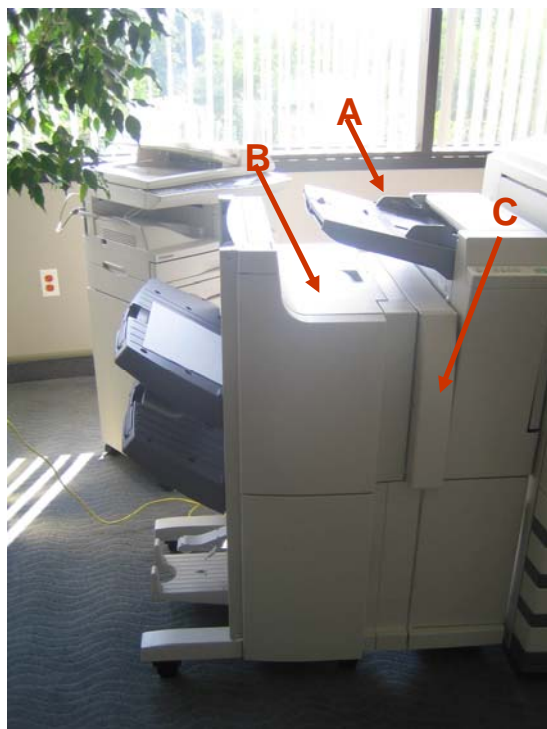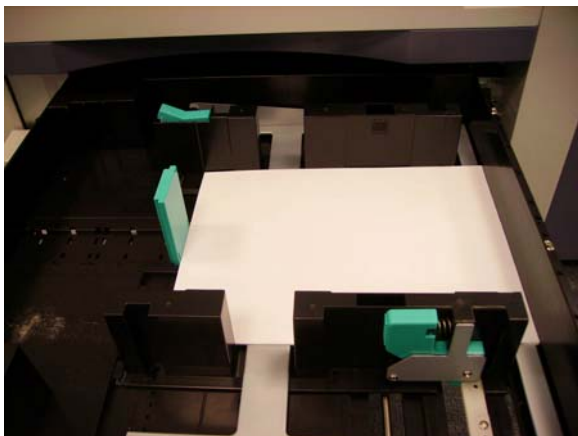

Finishing options of the tested e-STUDIO520 included:

A: Post Inserter
B: 2-Tray Sorting/Stapling Console with saddle-stitch
C: Hole Punch Unit

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Imaging at Work™

Print on Demand

The optional large-capacity feeder holds up to 4,000 sheets of letter/A4 stock.

Paper guides release and slide easily within the drawers to adjust for various paper sizes from 5.5" X 8.5" up to 11" x 17".

Toshiba e-STUDIO520

Device Management

Administration:

Users will find a comprehensive toolset to configure, manage and maintain the e-STUDIO520.

System Administrators (SAs) can setup up to 1,000, six-digit, private, preset department codes that give users full functionality at the device. While helping control access, department codes also provide data tracking and usage information. SAs can easily track and view the volume and type of jobs being produced by each department and user.

Usage limitations can be specified for both copy and print jobs. These limitations enable the SA to control and track output at the device for reasons of both document security and device cost tracking. The Job log feature helps enhance such tracking by capturing all completed job information.

Printed, faxed, and scanned jobs are tracked with detailed information about user, date, time, number of pages, type of paper, and type of job.

The email address book of the e-STUDIO520 is well laid-out, with good search facilities and integration between fax and email addresses.

The device is also LDAP-compatible so, in addition to storing addresses locally, can also access addresses stored on a central company database.

SMTP and Authentication features prevent sending of documents without authorization, while assuring the recipient of who sent the document.

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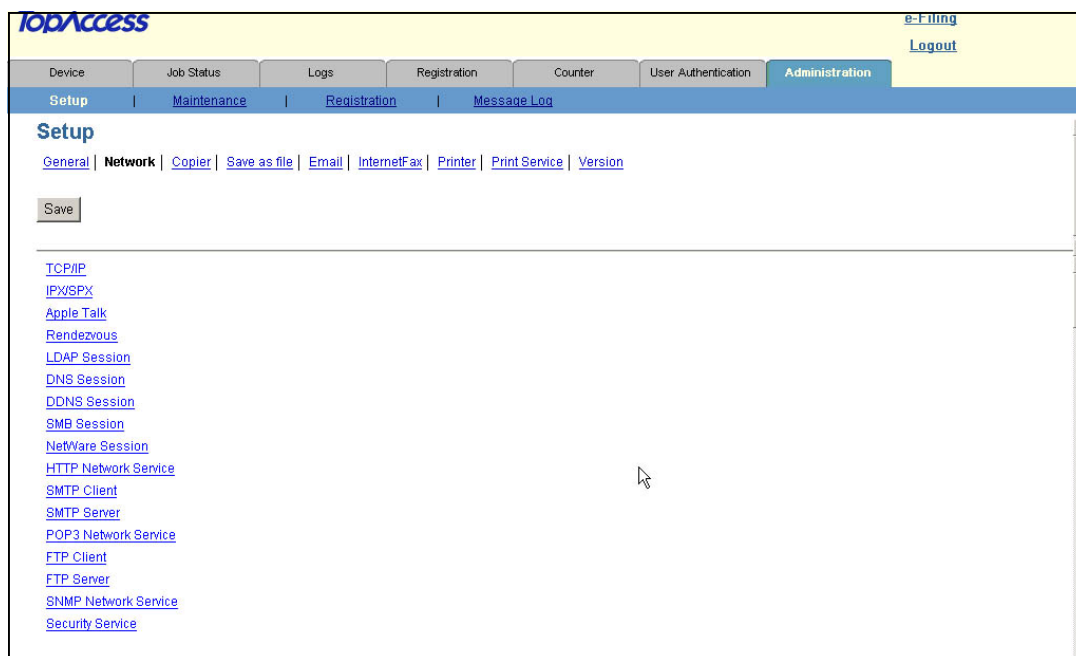
Device Administration

System Administrators has setup proper access through the related network's firewall. TopAccess works with two websites from its browser tools. One is for end-users to display equipment job status (see below), while enabling the creation and maintenance of private job templates template groups (see following pages).

The administrator site enables configuration of device settings, remote maintenance, address book updates, and maintenance of public job templates and private template groups. TopAccess can be used with Windows, Macintosh, or UNIX operating systems running with Netscape Navigator or Microsoft Internet Explorer.

With TopAccess, users can also:

- Display device status, drawer/accessory configuration, and paper supply information. Since the e-STUDIO520 will most likely be positioned at least a short distance away from users, device status is particularly valuable since a user can see what jobs, if any, are in-process—before taking the time to walk up to the machine.

- Display and manage the status of submitted print, internet fax transmit, and scan jobs. (As well as fax transmit jobs if the user has included the fax option.)

- Display logs for print, internet fax transmit and receive, and scan jobs. (As well as fax transmit/fax receive jobs if the user has included the fax option.)

- Register and modify templates.

- Add or modify address book contacts and groups.

- Register and modify mailboxes (Optional fax board, print-scan enablers required for related tasks.)

The first tab of the browser-based TopAccess utility shows the general ready-status of the device, paper supply status per tray, and detailed configuration information.

TopAccess

| Device | Job Status | Logs | Registration | Counter | User Authentication | Administration |

Device

REFRESH

Device Information

Status	ready
Name	MFP-00000000
Location	
Copier Model	TOSHIBA e-STUDIO850
Hard Disk Space Available	3997 MB
Contact Information	
Phone Number	
Message	
Alerts	

Options

Finisher	Saddle Stitch Finisher
Hole Punch Unit	2/3 Holes
Fax	Not Installed
Optional Function kit	Printer/Scanner kit
Inserter	Installed

Paper

Drawer	Size	Type	Capacity	Status
Drawer 1	LT	Plain	500	Empty
Drawer 2	LTR	Plain	500	Near Empty
Drawer 3	LG	Plain	500	Near Empty
Drawer 4	LD	Plain	500	Near Empty
External Large Capacity Feeder	LT	Plain	4000	Paper Available

| Install Software | | Top | Help | ©2003-2005 TOSHIBA TEC CORPORATION All Rights Reserved

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Toshiba e-STUDIO520

Device Management

On the first TopAccess web browser tab, fields are included to indicate device status, name, location, copier model, available hard disk space, contact information for the person responsible for managing the device, phone number for that person, administrative messages, and alerts in either red or yellow. Also shown are paper drawers in use, as well as the specific stock in each drawer and its status.

Within the second TopAccess tab, status information is available for print, fax, internet fax, and scan jobs, including date/time, and number of pages.

The third tab, Logs, presents job history information for print, transmission, reception and scan, including user name,

data/time, type, paper type, pages per job, and sets per job. Fax subscreens include department, mode, and status; scan subscreens show the type of job as well as status details.

The fourth tab, Registration, enables the user to manage templates (see next page for more details), address book, and mailboxes.

The fifth tab, Counter provides statistics consisting of the number of pages printed, copied, and scanned are maintained in the device and accessible through both TopAccess and the device's touchscreen panel. Statistics can be broken down in totals or by department.

TopAccess — e-Filing

| Device | Job Status | Logs | Registration | Counter | User Authentication | Administration |

Print | Fax/InternetFax | Scan

Print Job   REFRESH

Delete   Release

	User Name	Date Time	Type	Paper	Pages	Sets
○	COPY	06/02/2005 11:46:23	Print	LT	90	20
○	Owner	06/02/2005 11:45:54	Print	LT		1
○	COPY	06/02/2005 11:45:47	Print	LT	1	200

Go to top of this page

Above: Job status informing desktop user the workload already waiting at the device
Below: Information on the volume of work the job has completed, split into the various functions

TopAccess — e-Filing

| Device | Job Status | Logs | Registration | Counter | User Authentication | Administration |

Total Count | Department

Total Count

Print Counter

	Copy	Fax	Printer	List	Total
Small	3296	0	1128	2	4426
Large	24	0	0	0	24
Total	3320	0	1128	2	4450

Scan Counter

Copy	Fax	Network	Total
1366	0	4	1370

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Toshiba e-STUDIO520

Device Administration

Creating Templates for walk-up users:

First the user has to create a private Template Group. (Screenshot shows the content of group No. 002 named "david…")

Users secondly choose the template they wish to register a workflow to. These can be PIN-protected if required.

Users now choose the function/s they wish to include within the workflow template

...then personalize the template by including data for the icon label seen on the device touch-screen

Toshiba e-STUDIO520

Device Administration

Routing details for FTP, SMB, Internet fax, and default email settings can now be added

...now choose the default scanning settings, including simplex or duplex, rotation, original mode, resolution, exposure, background removal, sharpness, original size and compression.

These settings can be amended at the touchscreen panel by the user if required

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Device Administration

Through TopAccess, administrators may also:

- Setup device information
- Configure device, network, copier, email, internet fax, printer, and print service settings
- Specify energy save functions by minutes or seconds, including the auto-clear function that determines how long the device can remain inactive (after a job) before the touchscreen returns to the default display.
- Update or remove client software
- Create or restore from backup files
- Delete hard disk data (such as scan, transmission, and reception data) either as regular maintenance or when the hard drive is full
- Add or delete LDAP directory services

- Setup email notifications
- Import/export both address book and department code data
- Export and/or clear logs

A comprehensive selection of device– and status-related functions can be administered through ToPAccess, including department codes, notifications, power configuration, and more.

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Device Administration
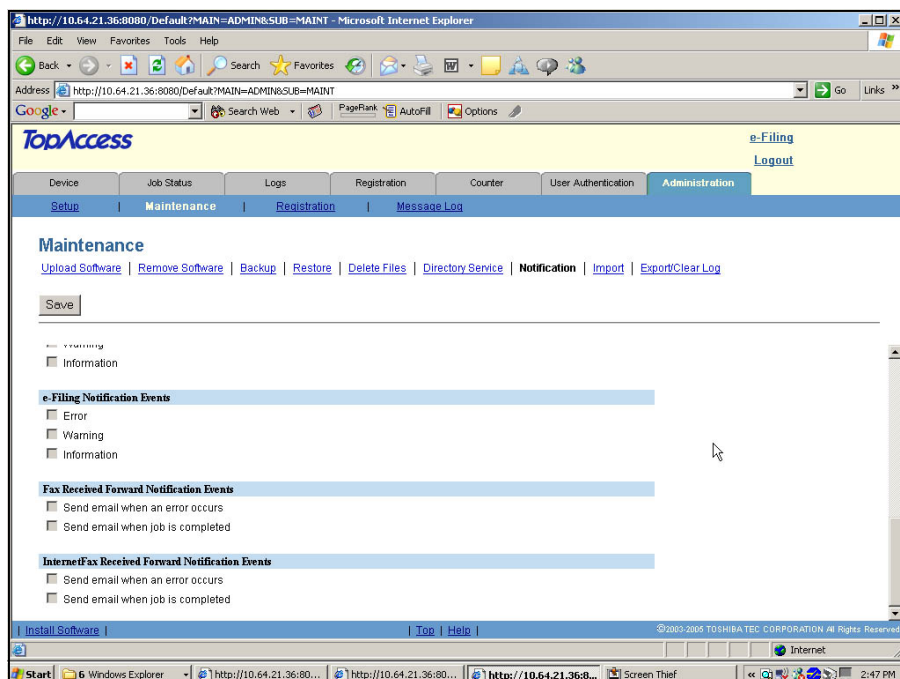
Notifications can be setup for device errors and job completion for copying, printing, e-Filing, fax, and other tasks.
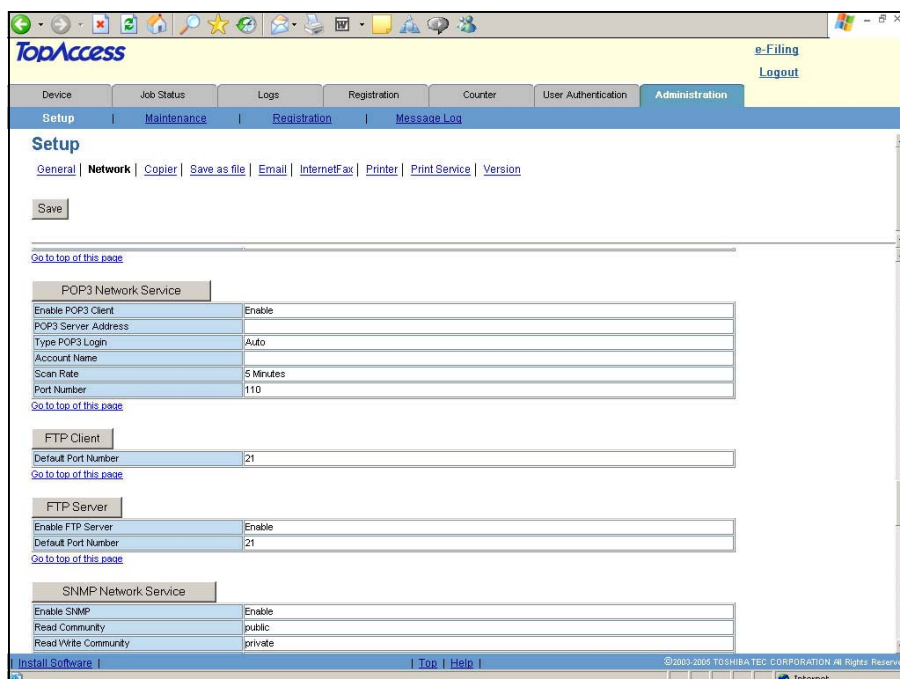
All networking parameters can be setup by the administrator, such as enabling/disabling various functions, specifying ports, and enabling public or private access.

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e-Filing

e-Filing Explained:

You will read the words e-Filing a lot throughout the report, so we have dedicated a page to simply explaining the idea behind Toshiba's e-Filing philosophy.

Users are able to store copy, print, fax and scan documents to the hard drive, retrieving them from either the touchscreen display of the copier, or from Toshiba's web-based desktop utility, TopAccess.

Documents are stored within the e-Filing system through a series of 'boxes'. There is one public e-Filing box which can be accessed by all members of the office. This is set up by the system administrator.

In addition to this shared box, up to 200 private e-Filing boxes can also be set up by individuals. These boxes can be password protected, adding a level of security for sensitive information. Each box can be further divided into a maximum of 100 folders, with storage for up to 400 documents per folder, up to a maximum of 1,000 pages per document.

Copy to Box:

Copy jobs are stored in an electronic box with or without creating a copy (it's your choice). Jobs are stored in the proprietary

RIP file format used by the Toshiba print engine. The document name can be entered using a QWERTY keypad on the copier touchscreen LCD. Some document copy setting features cannot be added to a copy job stored in a box. These include more than 200% enlargement/non-sort mode/magazine sort/magazine sort and saddle-stitch/image shift/Nin1/cover sheet/sheet insertion/date stamp/page numbering/non-standard size setting. Copy to box is the only scanning function that can be accessed without purchasing the optional print/scan or scan upgrade kits. Instead, users are able to access documents stored within a box using the standard TWAIN driver or File Downloader software that comes as part of the standard package.

Scan to Box:

This operates the same way as copy to box, with the difference being that 2-bit monochrome files are stored as TIFF or PDF files, which 8-bit greyscale files are stored as TIFF, JPEG or PDF files.

Print to Box:

From the printer driver, users can select the box into which they want to store the document. Documents are stored with the name of the application and document name. Documents are stored in the proprietary ripped file format.

Received Fax to Box:

If you have the fax option, received faxes can also be stored into a box without printing. Faxes with sub-addresses can be auto-routed directly into a specific user box. The system administrator can also set up a standard box for generic faxes with no sub-address information. This allows users to view and retrieve faxes from their PC desktop. Faxes are stored as MMR compressed TIFF files.

Imaging at Work™
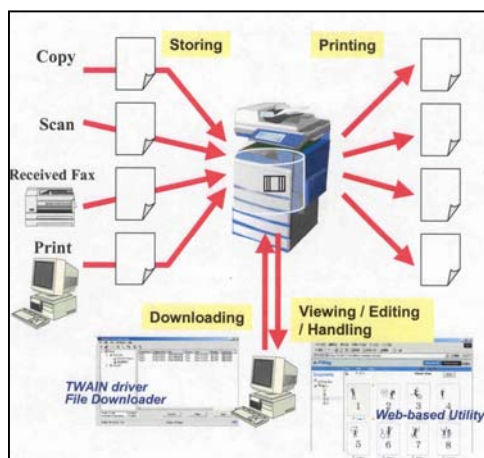
e-Filing at the Desktop

e-Filing functionality from the desktop was equally impressive. Within the same TopAccess web server users have a hyperlink to e-Filing in the top right corner of the web page.

Within the e-Filing web utility, users view, edit, reprint and copy documents stored in public and private folders.

Users can view thumbnail images of stored documents, delete out of date pages, inserting new pages in their place, even combine multiple documents created either electronically or from hard copy scan into a single file.

The ability to cut and paste pages is useful, especially in print on demand environments.

For example a human resources department store training guides and introduction packs on the device ready for printing whenever required, rather than stockpile copies and run the risk of wastage when pages become obsolete.

When contact lists do need replacing the human resource user can simply delete the old page, send the new page to the same folder either via printer driver or device scanner, inserting the new page into the main document.

This saves the user having to reRIP the entire document, a process which could take considerable time. Furthermore, this concept saves network traffic that would otherwise have been created if the users had to resend the complete document data to the printing device. Network traffic is a strong argument when discussing with Network Administrators.

While the e-Filing system is easy to use, there are plenty of areas in which Toshiba can add additional value. We would like to see the capability to forward documents directly to email/fax/internet fax addresses. We would also like to see an image editing function allowing users to insert text boxes, watermarks, block out areas, highlight other areas etc.

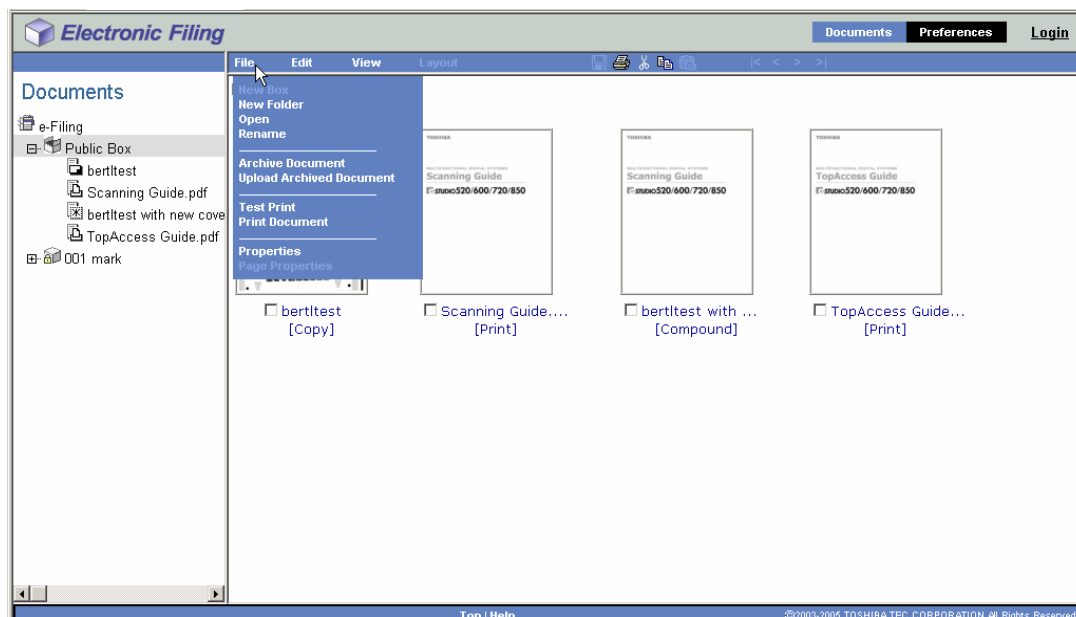**Stored documents within the public folder being accessed from the desktop**

Image Quality

Image/output quality of the e-STUDIO520 was generally excellent in both copy and print modes.

Copy Mode:

The default Text/Photo mode should deliver high quality output for most standard business tasks, with good greyscale reproduction, crisp fine line reproduction and good contrast, even in dark areas.

Photo mode delivered, as expected the best output for photographic samples, but also some printed sample reproduction where careful attention to subtle shades was imperative.

There was some Moire effect in photo mode when reproducing a 133 line screen printed image test document. This effect was limited to the Photo mode only, with Text/Photo delivering good quality output.

Print Mode:

Again, output was to a high standard in both PCL and PostScript PDLs. In both PCL (6) and PostScript (3), at default settings, text was clearly readable down to 4 pts in size. Small groups of thin lines reproduced well. Large groups of thin parallel lines, however, presented a slight problem. Banding was clearly shown in the printed output RIP'd from the PostScript driver, whereas that same area done from the PCL driver exhibited no discernable banding.

Grayscales reproduced very well from either driver, though those RIP'd through PostScript were slightly smoother. Various percentages of black were nicely distinguished in the output from both drivers.

As is the case with most monochrome devices, the e-STUDIO520 had a more difficult time producing black output from red, blue, green, and yellow shades in the original document, regardless of which driver was used.

The PostScript driver excelled in photo reproduction, even at the device's default settings, with more distinctive gradations, markedly better detail, and vastly better contrast.

The e-STUDIO520 itself produces excellent-quality monochrome overall. The equipment would be at home in any text, text/photo, or photo-predominant office. Considering the differences between PCL and PS drivers, however, BERTL analysts would of course recommend using the PostScript driver for photographic reproduction jobs.

High resolution photoshop image produced on the Toshiba eSTUDIO520 printout scanned at 600dpi. Good color to greyscale conversion maintains detail in this still life

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Copy

The Toshiba eSTUDIO520 has a warm up time of approximately 130 seconds, a 45 second recovery from standby and a FCOT of less than 3.5 seconds putting it above that of some of its peers but not at the top of its class.

Copying is facilitated via a 100-sheet reversing document feeder. We would have liked to have seen a single-pas feeder, a design feature that is becoming more commonplace at this end of the market, offering productivity advantages in duplex original modes, plus a less strenuous paper path which allows a wider range of originals to be fed through the feeder and reduces chances of paper jams. Having said that, after a prolonged test period designed to simulate a very heavy period of copying we did not experience a single jam in the document feeder unit.

As expected, the Toshiba e-STUDIO520 supports a wide variety of copy functions. While this is not unusual, the Toshiba's ability to make the device more user-friendly for the diverse range of users expect to use a departmental device of this sort was impressive.

The feature that makes this happen is Toshiba's template function. This is in essence a folder system where each user can store his or her own job settings, address lists etc. So, instead of having to menu mine through layer after layer of functions you can

save the job features you use on a day to day basis in your own template folder.

Having said that, compared to rival units, we liked the general layout of the copy control panel. The user interface is well implemented and organized, and icon-driven. Typical functions are placed at or near the top of the interface hierarchy— including, for example, stapling and hole punching—so that users needn't mine through several layers of the interface to find commonly-required functions. The interface is one of the best available, supporting everyone from a temporary employee through ease-of-use functions, to more sophisticated users with a wide breadth of functionality available at deeper levels.

Icons illustrating the features on the Toshiba eSTUDIO520

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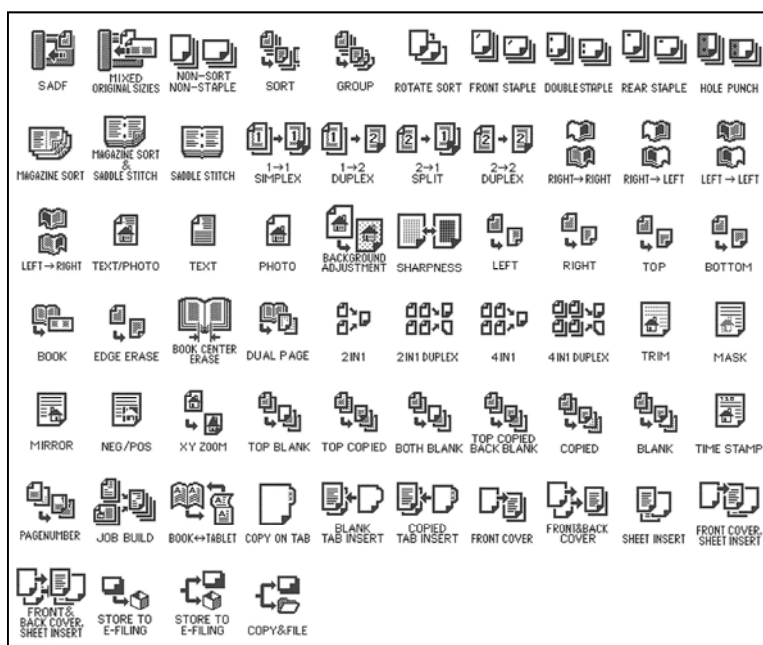
Users can store their commonly used device workflow needs within their own private template.

In the bottom screenshot you can see that a booklet creation copy feature, which usually resides several layers deep is available as a one touch button for the user, alongside a commonly-used fax and scan destination address.
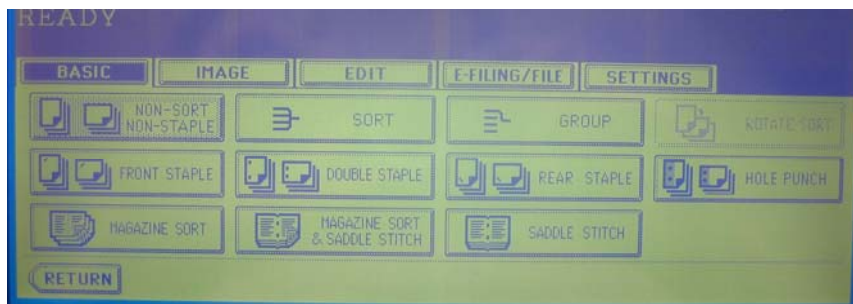
# Toshiba e-STUDIO520
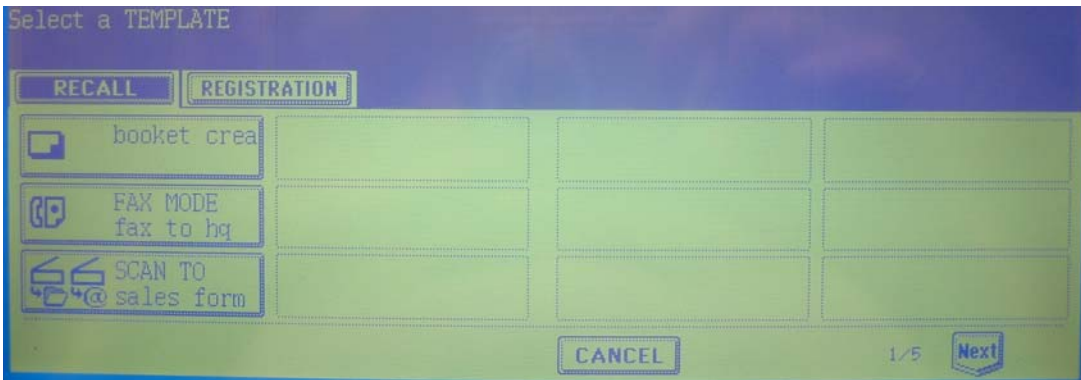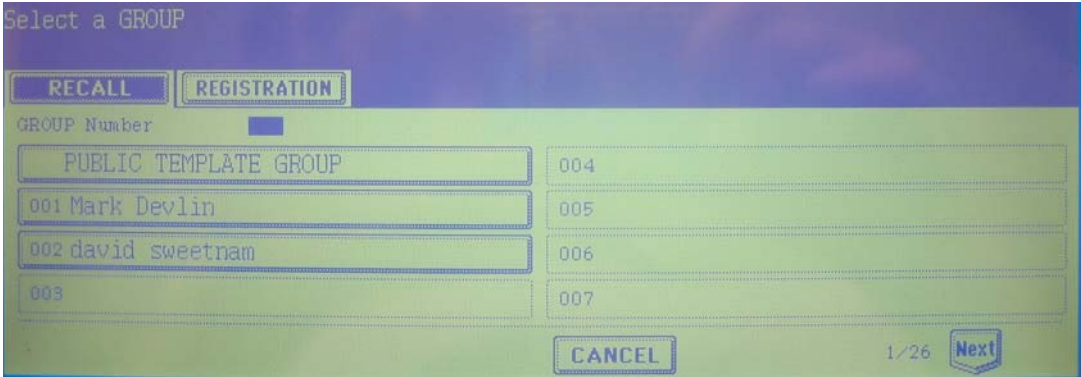
Copy
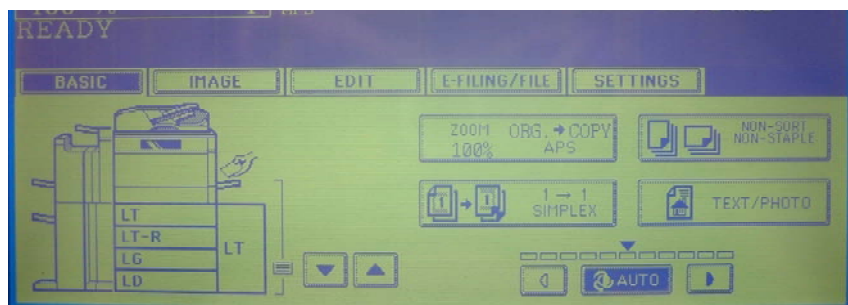
Under the Basic tab of the touchscreen, simplex/duplex, zoom level, paper supply, and type of original document. Stapling functions are also included at this level—a thoughtful alternative to mining through menus.
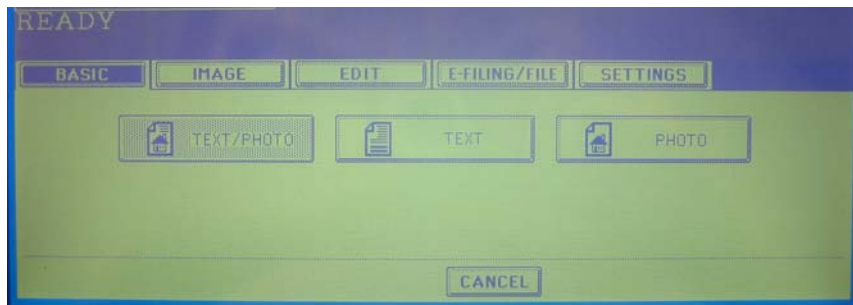
Text/photo was the default, with text and photo modes a single click away.

Only one level down from the stapling selection above, the user can specify a variety of stapling and hole punch parameters.
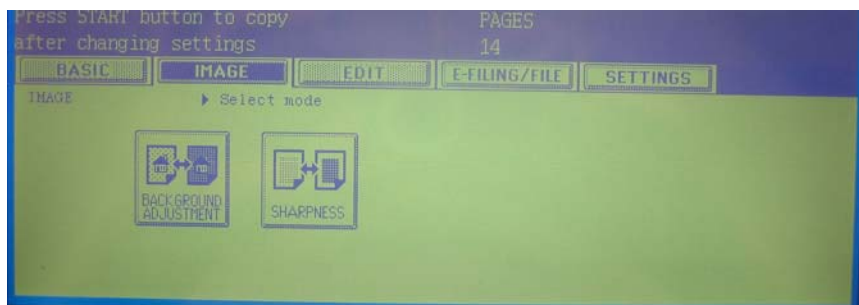
Various settings can be selected for background adjustments (for example, to reduce bleed-through from thin-stock publication pages) and sharpness.

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Imaging at Work™

Copy
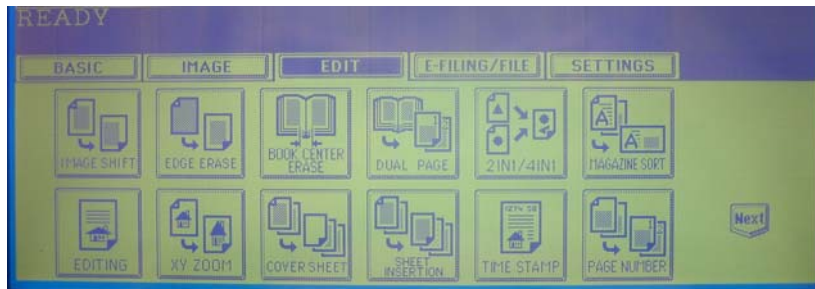
Many useful functions are provided under the Edit tab, such as edge erase, x-y zoom, 2-up/4-up, magazine sort, page numbering, and sheet insertion.
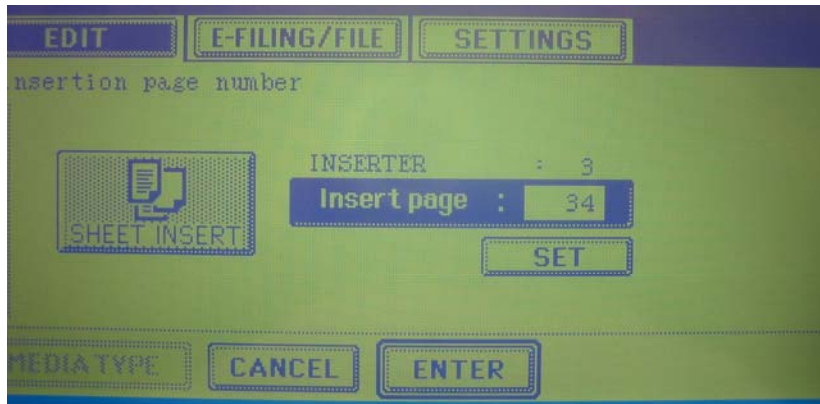
Inserting sheets at a given point in a document is easy, and allows the user to add, for example, heavier stock from a specified tray as a divider in a document.

Scrolling within the same Edit screen—without shifting to a deeper level of the interface—users will quickly find additional functions such as Job Build and document feeder parameters.
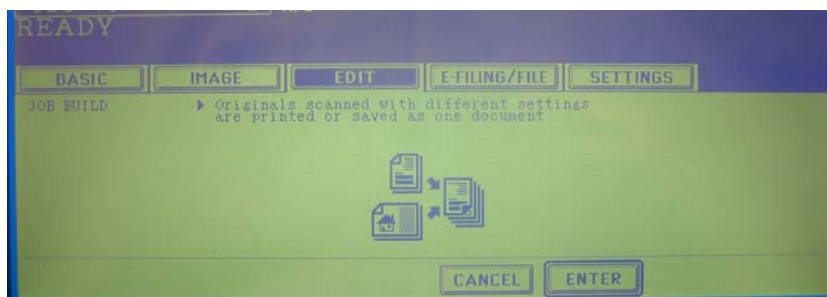
The Job Build function of the e-STUDIO520 works particularly well, helping users automate the combination of pages and documents of much different types into a single document.
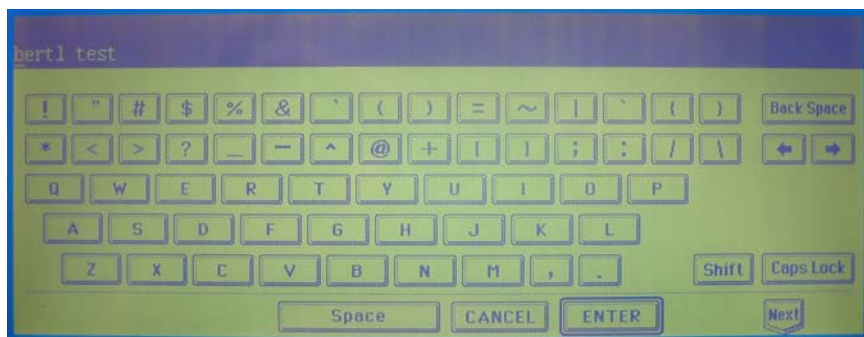
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Toshiba e-STUDIO520

Print on Demand

e-Filing is easily accessed from the fourth tab of the main interface, and gives user the option of either storing with or without creating a copy at the same time.
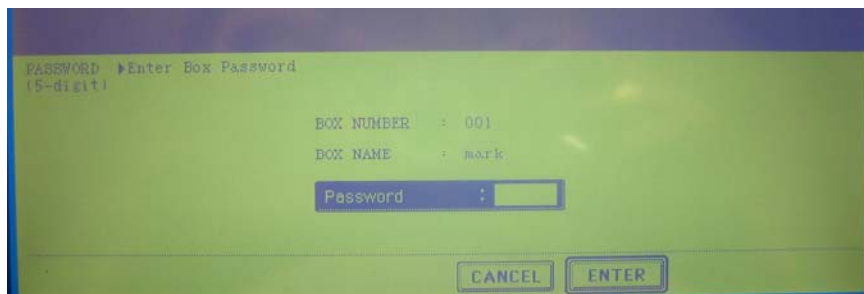
e-Filing boxes, which store data on the device's hard drive can be setup as either public or pass-word-protected.

The onscreen QWERTY key-board makes it easy to enter file and folder names.
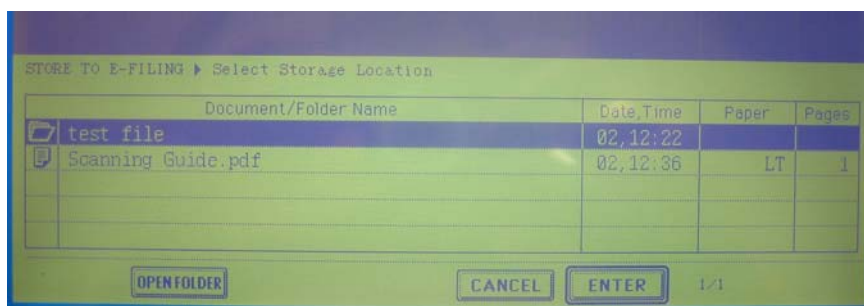
Jobs are stored where they can be quickly re-printed either from the walk-up touchscreen panel or from the desktop.

Imaging at Work™

Copy

Productivity:

Short run copy speeds were on a par with rivals on simplex original work but ran slower when double-sided originals were used.

The reason for this is due to the slower duplex scanning speed in duplex mode. BERTL measured the time taken to scan originals into memory in simplex and duplex original format.

As table 1 opposite illustrates, the time an operator must wait before they can return to their desk and leave the copy job to run its course is significantly faster when the job is carried out in simplex mode.

With the job in memory, the engine actually runs at 100% productivity in both simplex and duplex after job processing has completed.

Adding a single corner staple added less than half a second to each job while double stapling added nearly three seconds per set. Hole punch ran with no decrease in productivity at all.

The Toshiba eSTUDIO520 is well equipped to handle complex job production with extensive cover, chapter and sheet insertion capabilities. BERTL analysts measured only a very minor drop in productivity when multiple paper supplies were introduced into a job. This is in stark contrast to some competing units which drop in speed significantly.

The device's flexible paper supplies, user-friendly interface and personal template system should ensure that most users get good productive copy usage out of the device.

Table 1 Time taken to scan 50 originals into memory during copy function		
	50 simplex sheets	25 double-sided sheets
Time to scan into memory	42.53 seconds	62.49 seconds
Scanning Speed (opm)	70.53 opm	48.00 opm

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Print

Network printer is powered by the Toshiba eSTUDIO520's e-BRIDGE controller which uses an IBM PowerPC 750FX processor running at 600 MHz to quickly process jobs. A 64-bit/66 MHz PCI bus replaces the predecessor's 32-bit/33 MHz bus, creating a larger digital bandwidth channel to handle more data faster. Main memory of 256 MB is enhanced with additional page memory of 64 MB and a 40GB hard drive providing ample spooling capacity.

The print upgrade kit comes complete with both PCL and PostScript 3 printing, it is worth remembering that some competitors charge a premium for PostScript printing capability. An equal amount of user-friendly design has gone into the creation of the printer drivers as it did the walk-up user interface and web utilities.

The layout of both drivers is very similar which should make switching between the two PDLs for those who need this facility a simple process. Both drivers offer an impressive depth of functionality. combines with ease of use.

We were pleased to find that many of the commonly used functions were found on the first tab which the user is presented. Original paper size; a manual scaling option; print paper size, source, type of stock, and orientation are included on that first tab. As opposed to competitive devices and their accompanying software, Toshiba has also thoughtfully included on that first screen both stapling and hole punch parameters. (Competitive arrangements sometimes include stapling and punching in not-so-obvious areas on different tabs, and sometimes by selecting additional buttons from those tabbed screens.)
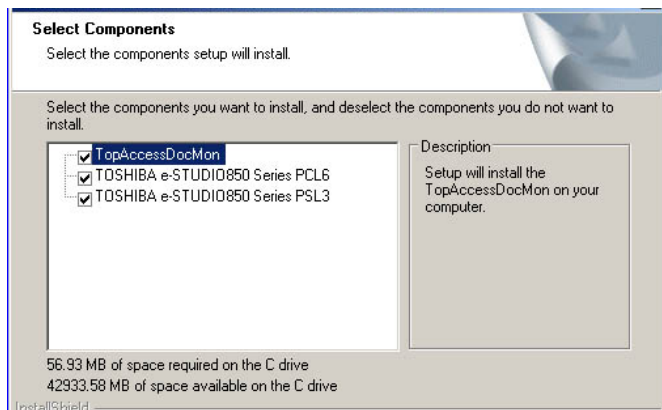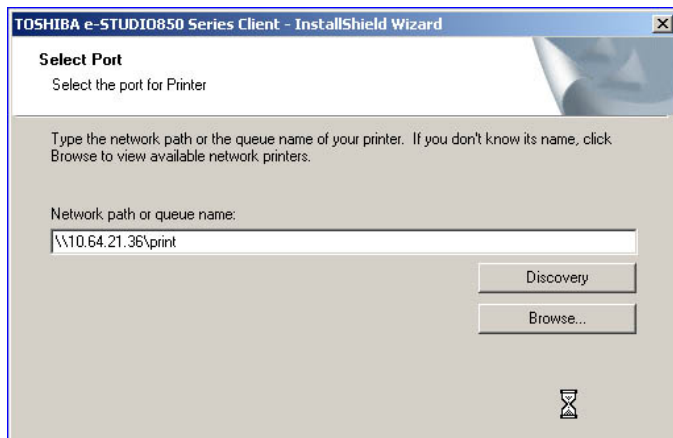
TOP
In testing, the print driver installation routine quickly auto-sensed the presence and network address of the e-STUDIO520. In situations in which automatic sensing doesn't work or is inappropriate, the auto-sensing has to be activated by pushing the "Discovery" button and the address can be specified manually.
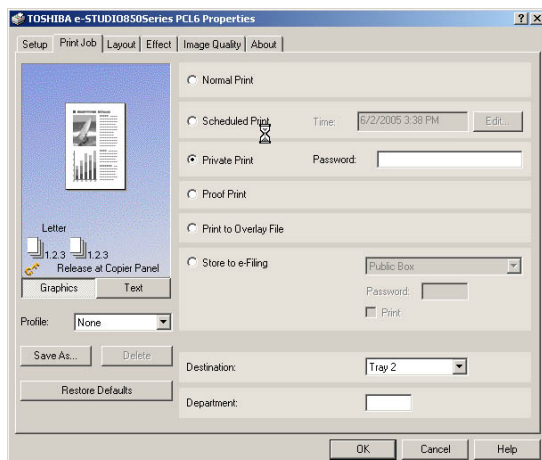
BOTTOM
During installation, users can select DocMon (to be notified of print status), as well as PCL and/or Postscript drivers.
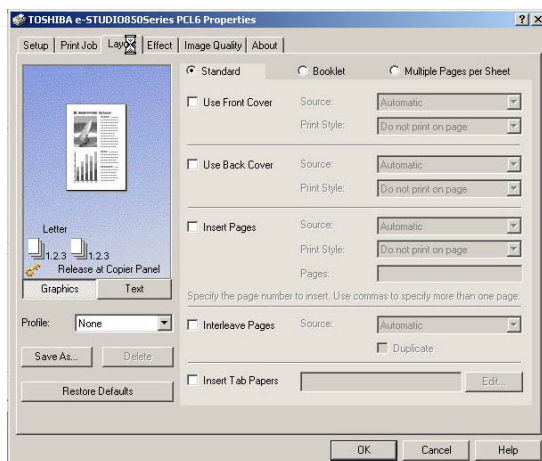
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Toshiba e-STUDIO520
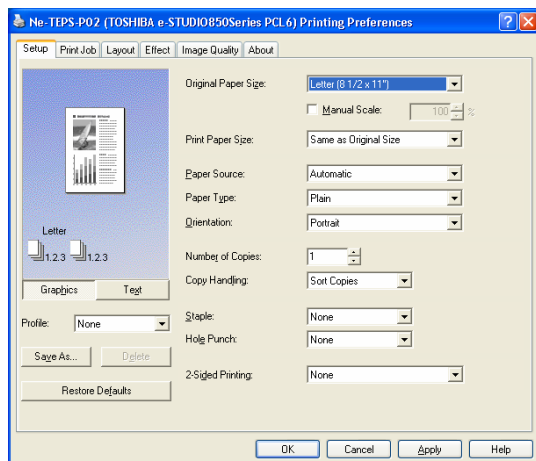
Print

The opening screen of the PCL driver.

Things get interesting on the second tab of the driver (in this case, PCL), with Normal, Scheduled, Private, Proof, Print to Overlay, and Store to e-Filing selections. Also, users can save printing profiles from here while specifying output tray destination and department code (for print audit uses).

The third tab is cleverly and conveniently subdivided into Standard, Booklet, and Multiple Pages per Sheet sections. In the Standard section, users can specify different tray sources for front and back covers, page insertions, interleaving, and tabbed stock insertion. We were disappointed to find that there is no ability to enter tab text within the driver. This is a feature available on several competing devices, and a valuable aid to user looking to include tab stock but don't want to get into the complicated process of creating pre-printed tab templates. There is a facility for entering tab text within e-Filing. Users must first send documents to e-Filing before their feature can be applied.

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Scan

The Toshiba e-STUDIO520 includes a range of network scanning utilities within its print/scanner or scanner kit. The company advertises scanning speed of up to 83 ppm @ 300 dpi, and 71 ppm at 600 dpi. The full range of resolutions includes 150, 200, 300, 400 and 600 dpi.

An eight-bit scanner replaces the single-bit version used by the previous model, improving image quality of scanned documents when either printed or viewed on-screen. The e-STUDIO520 uses single-scan head, duplexing scanning device as opposed to a single-pass, dual-head unit that's slowly becoming more common on other devices. While relatively efficient, the single-head design can't keep pace with a dual-head design in duplexing tasks.

During its tests on scanning speed BERTL analysts measured the time for 25 high coverage documents to be scanned in 150dpi through to 600dpi to a SMB network location using both PDF and TIFF file format submission.

We measured the scanner running at 77opm in 150dpi and 65opm at full 600dpi, with virtually no difference between PDF and TIFF submission types.

The time we measured is the time the operator would have to wait at the device


The automatic document feeder of the e-STUDIO 520 is convenient to use—and fast, scanning up to 71 ppm at 600 dpi resolution.

before they could return to their desk with their originals.

It should be pointed out that as the resolution went up the files took longer to reach the PC. The speed for this part of the equation will obviously depend largely upon the bandwidth efficiency of the network, and hence is not included in our evaluation.

The device does start transmitting the data as soon as scanning commences so the user should know whether or not the connection has been made before they leave the device.

Scanning options on the Toshiba eSTUDIO520

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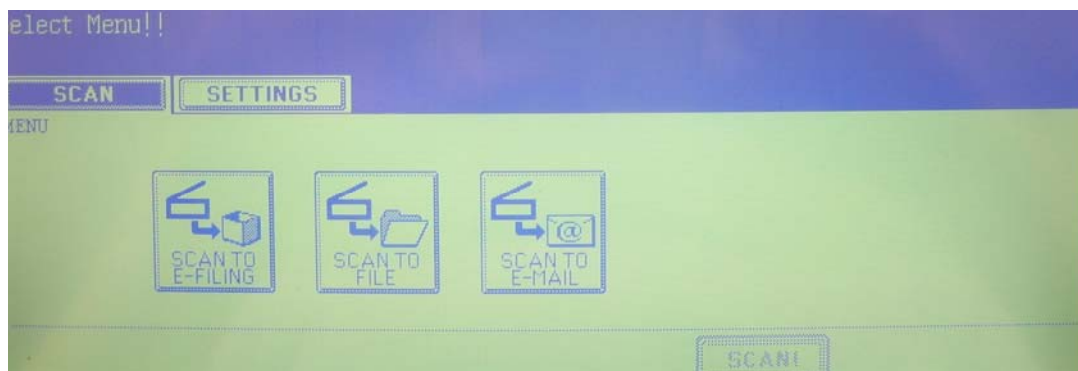
## Scan

Scanning Bandwidth:

The file size that will be transferred across the network depends upon both the resolution chosen and, just as importantly the content on the page.

BERTL measures scanner bandwidth and speeds using two test patterns, one with a low coverage text based design and one with high coverage across the page with graphics and other design features.

To put the effect of the page cover into perspective, look at the table opposite.

Both columns show, as expected that file sizes grow as resolution increases.

However, while the file size of the low coverage 600dpi file is over four times higher than that of the 150dpi file, it is still 15% below the file size of the 150dpi file created from the high coverage document, with the highest 600dpi resolution on the high cover document consuming over half a MB per page.
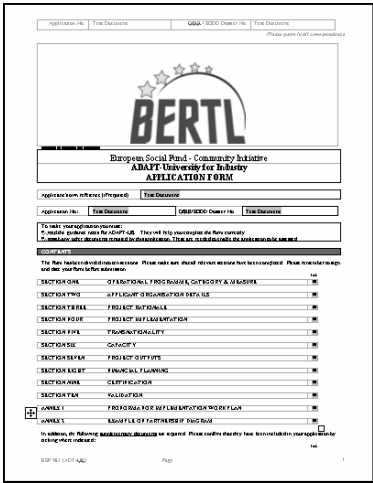
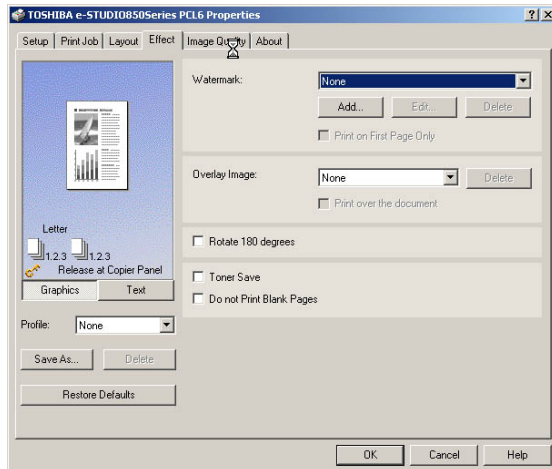**Left: Low cover document comprised mainly of text and tables**
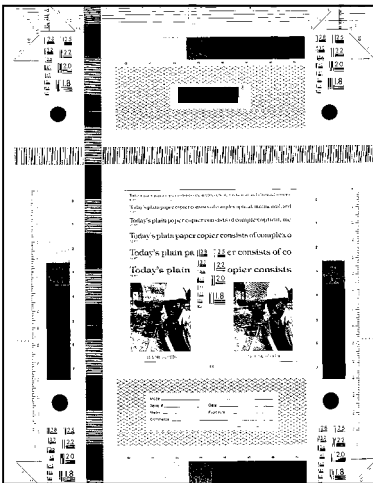
Right: High coverage document with data across all areas of page, graphics, large solid areas, multiple font sizes and images.

Below: Table illustrating the resulting file sizes from scanning 25 of each test pattern using different resolution settings.

Table Comparing Bandwidth Of Resulting PDF File Created Using Different Coverage Documents across multiple resolutions		
	Low Cover	High Cover
150 dpi	450 KB	2.14 MB
200 dpi	591 KB	3.36 MB
300 dpi	862 KB	5.53 MB
400dpi	1.16 MB	8.17 MB
600dpi	1.82 MB	12.80 MB

Toshiba e-STUDIO520

Print

Effect, the fourth tab of the driver interface, presents the user with options for watermarks, image overlays, rotation, toner save, and omitting blank pages.
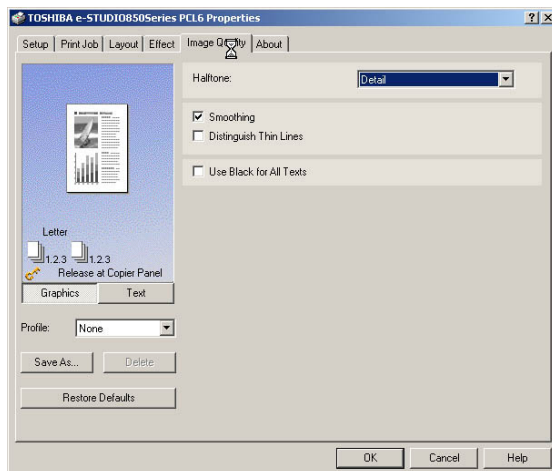
The Image Quality tab offers the user a variety of halftoning selections from a dropdown menu, along with smoothing, thin line-distinguish, and using black for all text.

Scan

e-Filing

Toshiba's e-Filing system provides a simple, user-friendly method of managing documents with a single platform.

For companies looking to move documents from paper to digital, the process of converting those documents then easily making them available to other users is a major concern. Some of Toshiba's competitors offer sophisticated scanning integration and document management applications. Complicated solutions, however, can leave the typical office worker confused and too nervous to make the transition, preferring instead to stay with paper filing methods. This can result in some users staying with paper while others go digital, resulting in an even more cumbersome, two-tier workflow.

Toshiba has apparently taken this concern seriously, making available within many newer e-STUDIO models a simple e-Filing system that can be used comfortably and confidently by a high percentage of users.

Toshiba's e-Filing system is a browser-based organizer enabling document display, editing, merging, and storing. Scanned originals can be stored in the on-board e-Filing system which uses the device's built-in hard drive. Assuming the device is equipped with the appropriate printing, scanning, and fax kits, documents can be stored to e-Filing boxes and subfolders via copying, scanning, and printing, faxing. Also, received fax/internet fax documents (including forwards) can be stored in boxes and subfolders.

Job parameters are saved with each e-Filed document. Once saved, those documents—with output settings intact—can be printed out at any time. If the Scanning Kit is installed, the scanned document and related parameters can also be stored. Documents can be downloaded to the client PC in JPEG, PDF, or TIFF formats.

As an example illustrating e-Filing's capabilities, a user can send two documents originating from different applications to the e-Filing web utility, merge them into a single document, and store the resulting document in either a public or user e-Filing box.

A public box is a document/image repository to which all users of the device have access. Public box names cannot be changed, though up to 100 folders—each named uniquely—within the parent user box.

Up to 200 User boxes can be created, managed either by administrators or users. Since they can be password-protected, they are appropriate for confidential documents or drafts that are not ready to be shared. As is the case with a public box, one level of up to 100 folders can be created within the parent user box. Up to 400 documents can be stored in each box or folder, and each document can contain up to 1,000 pages.

Print is driven from the desktop, but a user can send a print job with whatever settings they want and store it as an e-Filing job on the MFP.

Documents can be scanned directly from the e-STUDIO520 into the user's compatible software application using the TWAIN driver. e-Filed documents can also be brought into applications via the TWAIN driver and included file downloading utility.

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Scan

Scan to email:

As we discussed earlier, scan to email templates can be set up before hand using the TopAccess registration utility. This allows users to store within their template folder commonly used email destinations, including their own where they can initiate a scan process with a single touch.

For those needing to carry out scan to email tasks on the fly, the device also comes with a good range of personalization and security features.

The device comes with its own address book which is managed again by TopAccess. However, users are also able to dynamically link to the LDAP server where they can carry out a search against any name in the list by entering the first few letters of the name.

In these days of virus attack via email recipients are very nervous about receiving any email that looks like it has been generated automatically, with no human intervention. To alleviate these fears MFP manufacturers have included a wide range of personalized features that can be add to the scan to email. The Toshiba e-STUDIO520 includes the ability to include the sender's name, a subject line,

body text and a personalized name for the file attachment. (see below)

Scan to File:

The Toshiba eSTUDIO520 can scan across the network using both SMB and FTP protocols. We were disappointed to find that there was no ability to browse around the network using SMB protocol, with users having instead to enter the complex network path name via the touch screen interface (if the template has not already been programmed in via TopAccess.)

eCopy ScanStation:

For those wanting to add greater integration to the office document workflow Toshiba MFPs now integrate with eCopy ScanStation technology. This recent introduction now means that the scanning capabilities offered by the Toshiba eSTUDIO520 can be further enhanced through the versatile middleware eCopy application.

Personalized email message leaving the recipient in no doubt as to the authenticity of the message

Scan

The eCopy ScanStation is an additional piece of hardware that sits alongside the Toshiba MFP. The ScanStation comprises of a floorstanding PC and a large touchscreen interface which is mounted on a multi-pivoted swivel stand. This makes moving the touchscreen to any convenient position very easy.

The brains of the operation is an application called eCopy ShareScan OP.

The concept is simple. All the job workflow routes associated with email, fax, or scan to a document management system — which eCopy calls connectors— are set up on the central server PC. The administrator then specifies which of the connectors are available from each eCopy ScanStation around the building.

The Toshiba eSTUDIO520 actually pushes scanned data to the eCopy ScanStation via a pre-defined scan to FTP template. Once at the eCopy ScanStation users can view the scan file on the touchscreen interface, make edits to the document, before sending the file on its way to a final destination. Toshiba advise that a direct TWAIN access facility will be available via a firmware upgrade. The scan can then be initiated as a "pull" directly by the

Above: ScanStation touchscreen interface
Below: Swivel-mounted stand

ScanStation without any operation at the MFP panel.

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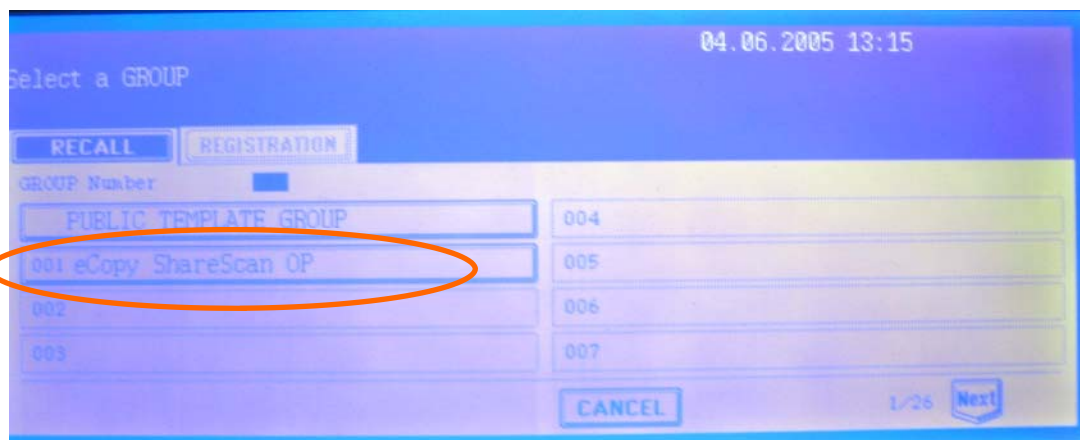
Scan

eCopy has developed a wide range of connectors to many of the most commonly used enterprise applications in the business world.

A selection of these connectors are include within the base price, including connections to Lotus Notes and Microsoft Exchange. Additional connectors can be purchased allowing users to tailor their spend to workflow routes they would require.

The eCopy ScanStation integrates at an API level with these third party applications, rendering the ScanStation to intensive purposes the same as a desktop interface.

eCopy ShareScan OP Administration allows administrators to set up quick connect one touch buttons from a single desktop and choose which eCopy Ready devices around the network will have access to the workflow feature
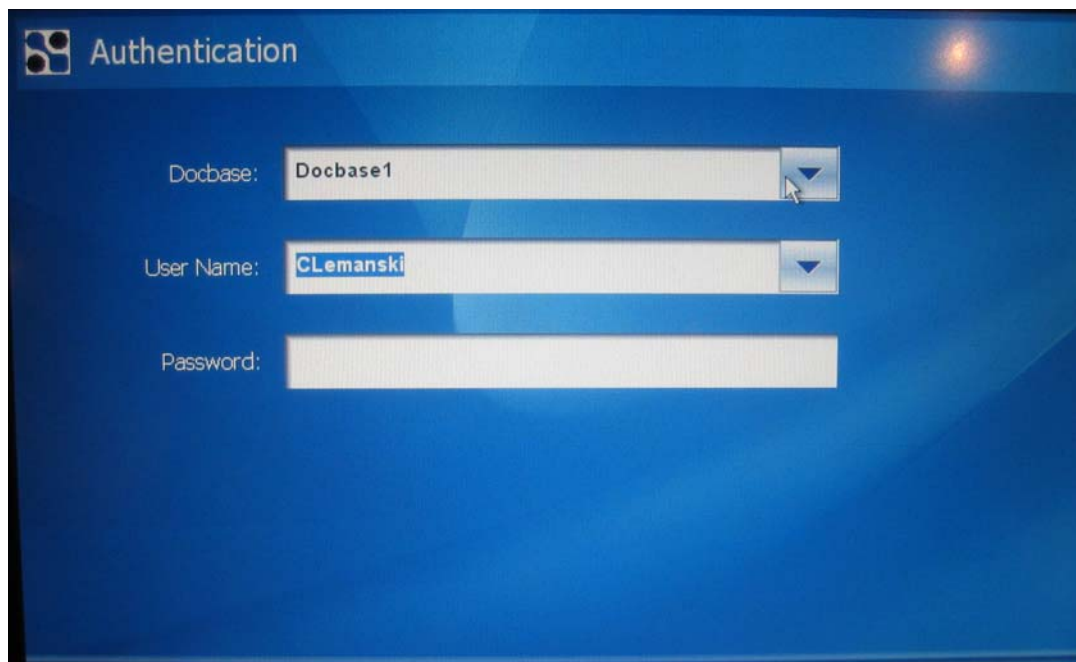
Page 32
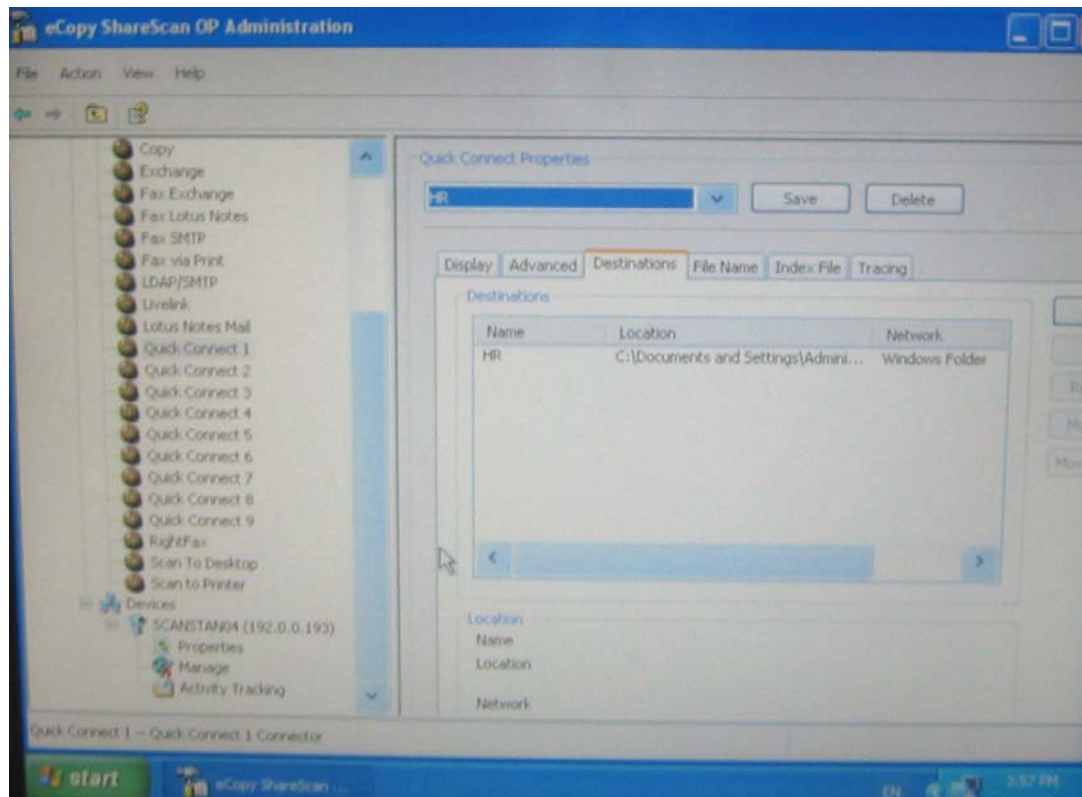
Scan

Before users can gain access to eCopy and its partner applications, they must first log in using their network login. One of the key strengths of eCopy is the level of integration offered to users when using their middleware software with other document management applications. Unlike some other workflow solutions, eCopy allows users to work within the third party application.

For example, eCopy users can browse within a filing system of a third-party document management application (such as Documentum, Interwoven, or Hummingbird) to the exact subfolder where the document is to be stored, as they would from a desktop PC. This offers faster and more accurate document storage than some competitors which, by not having the same level of interaction with the third-party application, require users to set up predefined storage routes, or manually type in folder details as XML data.
To safeguard core company data, this

added level of integration requires an additional level of security. While an administrator may be happy for users to have access to basic eCopy features like scan to email, he/she may be less inclined to offer free access to the central document repository.

eCopy controls access to third-party software by forcing users to log in to the application when the specified connector is selected (see below). This not only protects critical company information but also provides detailed audit information on who accesses company information, a requirement in many of the data security laws, such as, for example, the Sarbanes Oxley Act.

Network application security login required before access to Documentum database is granted to the user from the eCopy ScanStation
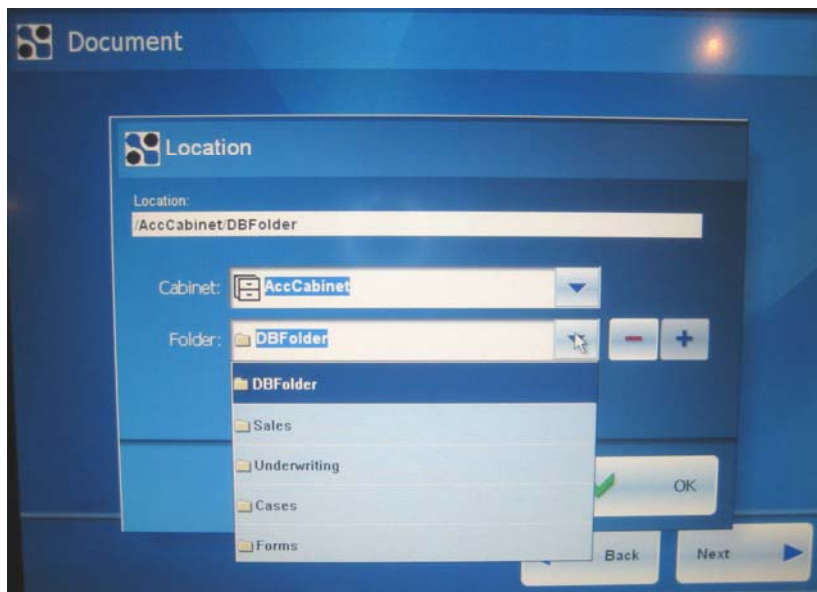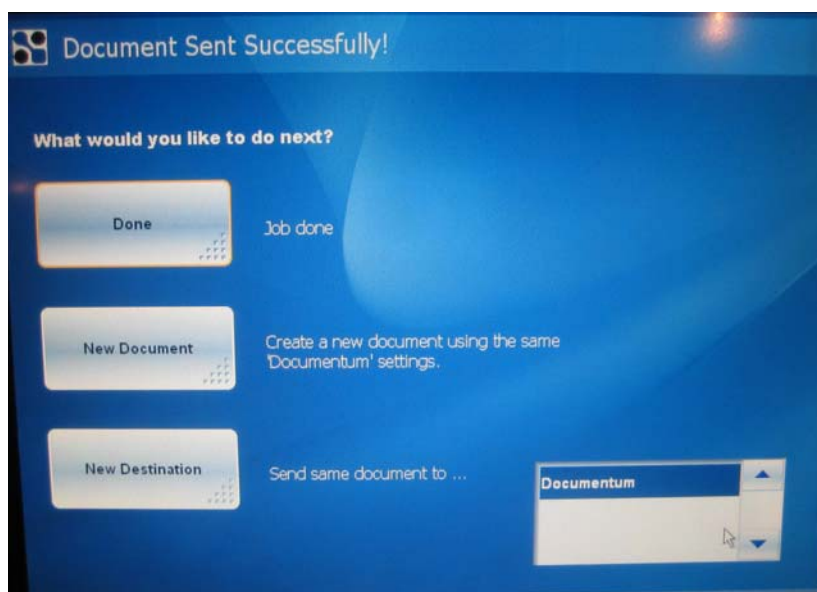
Toshiba e-STUDIO520

Scan

Once logged in, users can now browse to the folder into which they want to deposit a new document.

The scanned file is given a name directly from the eCopy Scan-Station keypad

Once deposited safely into the required folder, users can choose to exit the application (Job Done), scan a new document using the same settings into the same location (new Document) or stay within the application but choose new scan and destination settings (New Destination)

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fax. (1) 732-761-2312
BERTLinfo@BERTL.com

Scan

Summing Up

The e-STUDIO520 takes Toshiba's departmental MFP range to a new dimension in terms of ease of use, output quality, functionality, and paper handling capability and, in the process, has become a strong contender in higher-ppm, front-office market segments. Good, easy-to-understand and -use finishing options make the device even more attractive.

Single-board e-BRIDGE controller technology integrates both day-to-day and higher-end functions onto one controller board. While the device ships with copy and basic scan functions, built into the e-BRIDGE controller are many additional functions that are activated through special kits, usually consisting of USB 'enablers.' This makes it easy for users to upgrade their machines quickly and as-needed, without requiring an engineering technician visit.

Image quality is one of the e-STUDIO520's strong suits, producing clear, smooth, nicely defined images of text, photos, or both.

Another strong point of the device is Toshiba's e-Filing system which not only serves as a basic document management system but also supports higher editing functions while remaining easy to use.

Areas of the e-STUDIO520's feature set that could be improved include…

- Walk-up user can prioritize copy jobs, but not print jobs. So, a walk-up user who needs a job done in a hurry could be disappointed when a print job is already running.

- Drawers that could be stronger— with more metal and less plastic—

to better address back-office needs involving durability. As it is designed, however, the machine's durability will certainly meet or exceed the expectations of front-office users.

- Subset finishing (e.g., creating a 'kit' of materials with separate subsets that must be stapled or otherwise finished individually) in Job Build is not supported. This could be a major factor, if only for a limited number of buyers.

- No direct PDF printing capability

- Missing some advanced document production features like 'on the fly' tab printing from the printer driver.

Overall, Toshiba paid attention to the marketplace and more than effectively addressed the paper handling and imaging shortcomings of its predecessor, making the e-STUDIO520 a strong contender in this segment.