BERTL®
Highly Recommended
★★★★

Toshiba e-STUDIO 4511

PROS

- Color copy, print and scan included within entry-level price.
- 45ppm office copier with 11ppm color.
- Faster warm-up time than similar competing devices.
- Extensive network scanning.
- Saddle-stitch booklet finishing.
- Hole punch finishing.
- High monthly duty cycle.
- Easy to use for physically challenged
- 999 copy capability.
- 3,700 sheet maximum paper supply

CONS

- Restrictions apply when reprinting documents on demand.
- Limited color management capability in PCL driver.
- Slow printing of monochrome pages in automatic print mode setting

45ppm Black/11ppm Color Copier-Printer-Fax-Scanner

Product Overview

The Toshiba e-STUDIO 4511 is a 45ppm monochrome digital office device, offering the added benefit of 11ppm convenience color.

Color copying, printing, network scanning and i-Fax are included within the entry-level price, with fax available as an optional purchase.

The Toshiba e-STUDIO 4511 comes with two 550-sheet paper drawers and a 100-sheet bypass tray, with the option of adding either up to two additional 550-sheet drawers or a high capacity 2,500-sheet unit to take maximum paper input capacity to 3,700 sheets.

A 100-sheet reversing document feeder is an optional extra, as is a second fax line and a choice of finishers offers stapling, hole punch and saddle-stitch booklet production.

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Color at Work™

Product Dynamics

Color capable black copier-printer MFP's have been around for several years but Toshiba's e-STUDIO 4511 is the fastest and most integrated unit to hit the market at the time of this report.

While alternative offerings deliver reasonable functionality, the Toshiba e-STUDIO 4511 is the first to convert a fully loaded monochrome MFP into a color capable system. For example, the device offers:

- Monochrome style warm up speed(s).
- Mid range office speed (45ppm).
- Monochrome MFP friendly cost(s).
- Saddle stitch finishing.
- In-line hole punching.
- Monochrome MFP volume capabilities.
- Standard print and scan.
- Automatic booklet making.
- Section 508/Disabled access features.
- Store print and copy jobs for re-print on demand.
- And more….

The Toshiba e-STUDIO 4511 will be sold alongside Toshiba's monochrome-only 45ppm digital MFP, offering buyers the added capability of color for a fraction of traditional color costs.

The good news is that the Toshiba e-STUDIO 4511 does not force buyers to sacrifice monthly volume capability or functionality to gain color capability.

The Toshiba e-STUDIO 4511 is sold as a multifunctional unit, delivering copy, print and network scanning capabilities within its entry-level price. This means that to compare prices you must add these options to competing units or monochrome devices.

Four Color Pass Output:

The Toshiba e-STUDIO 4511 prints via a four-pass system. This means that the transfer belt makes four passes over the imaging drums to create a full-color page.

Main internal system

Colour toner and developer — Transfer belt — Drum — Black developer — Black toner

Diagram showing how the Toshiba e-Studio 4511 creates a four color image

Hence, the speed of the Toshiba e-STUDIO 4511 is faster in monochrome than color. In monochrome, the transfer belt is passed once over the drum to deposit the black image, versus having to make four revolutions to create color output.

150,000 Page Per Month Maximum Volume?

Good news for office buyers, the Toshiba e-STUDIO 4511 delivers the same maximum monthly volume as its monochrome counterpart.

As a mainly monochrome device, the Toshiba e-STUDIO 4511 comes with a much higher black than color toner capacity (in fact it is nearly three times higher). The black toner bottle sits on the right side of the unit, while the three color toner bottles are in a rotating carousel which lets you replace toner bottles, one at a time. (See image Page 2.)

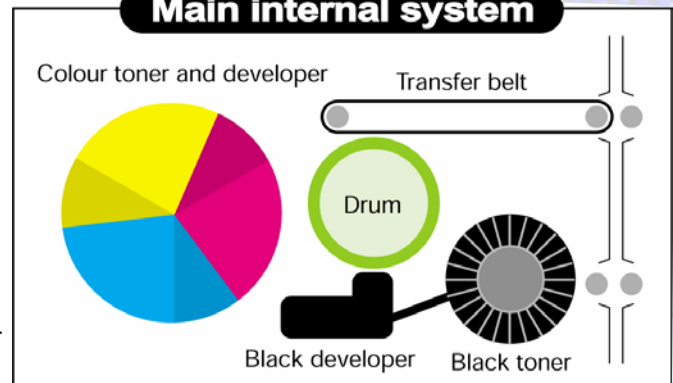*BERTL analyst with Toshiba e-STUDIO 4511*

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Product Dynamics

The photoconductor drum is advertised at 200,000 developments, and the transfer roller (which takes the image from the drum to the paper) is rated at 300,000 developments. Remember that a full-color page requires four developments. To put this into perspective, if your split is 75% black to 25% color, the maximum page volume before the drum would need replacing is 100,000 pages (75,000 monochrome developments plus 25,000 x 3 color developments totaling 150,000 developments).

As the split between monochrome and color decreases, so will the maximum volume capacity of the consumable items. The one exception is the fuser unit, which is rated at 150,000 black or color pages.

Paper Handling:

The Toshiba e-STUDIO 4511 includes two 550-sheet universal paper drawers which can handle paper sizes up to ledger/A3 and weights up to 28lb./105gsm. A 100-sheet bypass unit is also provided, allowing thicker paper stocks up to 110lb./209gsm to be used. Paper input can be upgraded via one or two additional 550-sheet universal paper drawers, or a 2,500 sheet letter/A4 capable large capacity unit.

We liked the fact that duplex printing is included as standard. The duplex unit is right side-mounted. We found that accessibility to paper jam areas around the duplex unit was difficult with some access areas hidden. The side mounting also means that the unit can not be placed flush to a wall, in case the duplex unit needs to be opened. There is no feed roller provided within the fuser unit for the removal of paper, users must get their hands close to the hot fuser rollers.

Toshiba have opted to deliver color network printing with full copy, print and scan capability in the base unit, but you must buy a document feeder if you want one. We felt Toshiba's approach is better than some

alternatives which deliver a 'copy only' device (albeit with document feeder included) and require you to buy printing, network and scanning separately. Our reason is simple; in 20 years, there has never been a large demand for color copying. The reality is that most people will find color printing and scanning more useful than color copying. [It is illegal to color copy third party material; so you have to produce your own documents, and that needs a scanner and color printer].

Document Feeder:

A 100-sheet reversing document feeder is an optional extra. This is twice the capacity offered by the device's closest competitor.

Output/Finishing Options:

Toshiba offers a choice of two finishers for the e-STUDIO 4511;

1. Floor-standing multi-position 50-sheet stapler with two bins stacking up to 2,000 sheets. An optional hole-punch kit can be added*.
2. Floor-standing saddle-stitch finisher, offering 50-sheet multi-position stapling, saddle-stitch bookletmaking up to 15 pages (60 page booklet). A hole punch unit can be added at additional cost*.

  *Toshiba offers a choice of hole punch kits allowing 2 or 3 hole punching.

The finishing capabilities for the Toshiba e-STUDIO 4511 are significantly better than those offered by its major competition. Toshiba delivers with higher output stacking capacity, hole punching and, most importantly, saddle-stitch bookletmaking being key advantages.

Black toner bottle

Cyan toner bottle being removed from carousel

Toshiba e-STUDIO 4511 with dual 550-sheet paper drawers, 2,500 sheet LCT and saddle-stitch finisher

Page Number 2

Product Dynamics

E-BRIDGE™ Technology:

Traditionally, digital copiers have employed separate controller boards to control the copy, print, fax and scan functionality.

This has made the upgrade path from copier to fully-featured multifunctional product an expensive process. Toshiba, like some other manufacturers, has moved away from a separate controller board and now uses an integrated board for all functions. This offers cost savings due to the sharing of common processor components such as processor power, RAM and hard drive storage.

Toshiba markets this new design under the brand name e-BRIDGE™. Some other manufacturers (using a single integrated processor board) maintain an upgrade path cost from copier to fully featured MFP by charging users to simply switch on the additional function components of the board. Toshiba goes one step further and includes full functionality on Day 1.
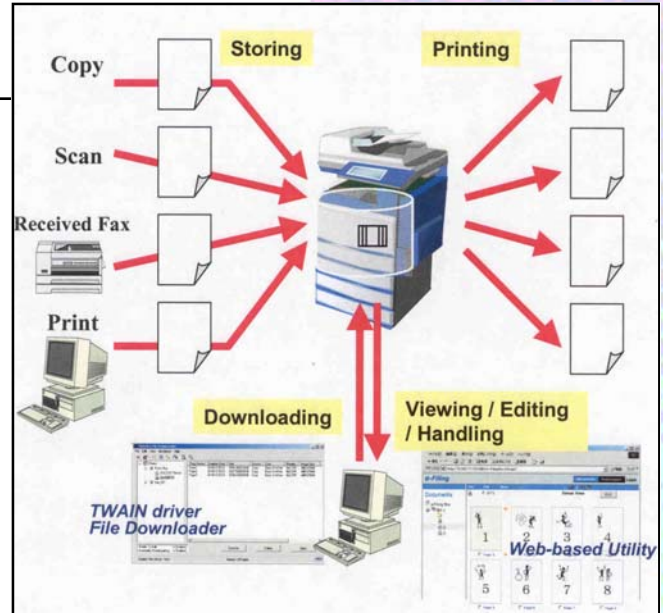
The one exception to this is fax, which is still available as a separate option upgrade item.

E-FILING System:

A major new feature within the design of the Toshiba e-STUDIO 4511 is its e-FILING system. In essence, e-FILING stores documents on the 60GB hard disk.

For buyers worried about storing sensitive information on the hard drive, Toshiba offers an optional scrambler. The scrambler sits between the e-BRIDGE™ controller and the HDD for everyday use. Data stored on the hard drive is encrypted and worthless, should the hard drive be stolen out of the device.

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

which is an enhanced version of its TopAccessComposer.

Documents are stored within the e-File 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 200 pages per document.

How e-FILING Works

Toshiba scrambler board for e-STUDIO 4511

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Product Dynamics

Copy to Box:

Copy jobs are stored in a box with or without creating a copy. 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. 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/twin color.

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 used by the Toshiba.

Received Fax to Box:

If you have the fax option, received faxes can be stored into a box without printing. Faxes with sub-addresses can be 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.

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 files, which 8-bit monochrome and color files are stored as JPEG or PDF files.

What Can I Do With the Stored Files?

Documents can be reprinted from either the copier control panel or from a PC desktop, using a browser. From the web-based browser, users can merge multiple documents, including different functions (print/fax and scan) into a single document for printing. Copy jobs stored cannot be merged with fax, scan and print files due to their different compression formats. Users looking to merge hard copy documents with fax/print documents must use the scan to box function.
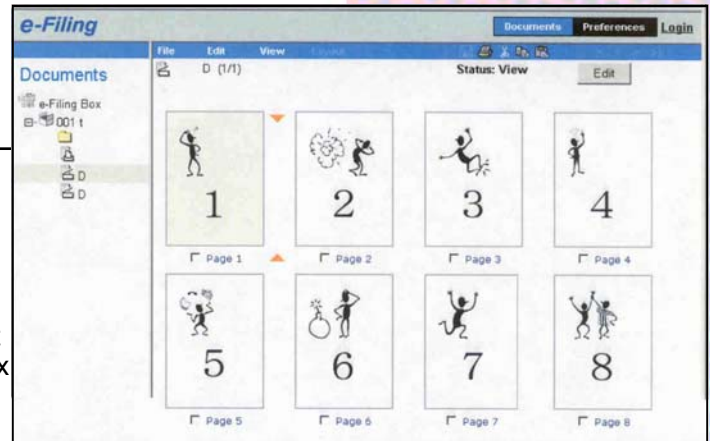
When printing documents from a box, some features are restricted. These include Nin1/ magazine sort/cover sheet/sheet insertion/ image rotation/paper size. Since one of the proposed uses for this technology is in the sharing and compilation of large reports from multiple users, the inability to print Nin1 for thumbnail viewing of the project to date, plus the inability to add cover or chapter/sheet inserts could be a limitation.

While the e-FILING utility was reasonably flexible, we did not find it to be as user-friendly as some competing document storage solutions, with document editing and merging being more time consuming.

TWAIN Driver and File Downloader:

For users wanting to pull files stored on the copier hard drive, Toshiba includes a TWAIN driver and file downloading utility within the standard bundle.

These allow desktop users to browse to their box on the hard drive, select the file they wish to retrieve and the file format into which they want the file to be stored (TIFF or PDF) on their desktop. The TWAIN utility via electronic mailbox may have an advantage over traditional direct TWAIN scanning utilities which require the user to leave documents on the scanner (with the TWAIN application triggering the scan process.)

Browser-based e-FILING utility

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Scan

The Toshiba e-STUDIO 4511 includes a range of network scanning utilities within its entry-level price. Scanning can be done in both monochrome and color. Toshiba advertises scanning speed as being up to 50opm (400dpi)/45opm (600dpi) and 20opm (300dpi)/14opm (600dpi) in color. Scanning resolution ranges from 100dpi to 600dpi in JPEG, TIFF and PDF file formats.

Scanning options are good, they include:

- Scan to email
- Scan to file
- Scan to e-FILING
- Scan to FTP
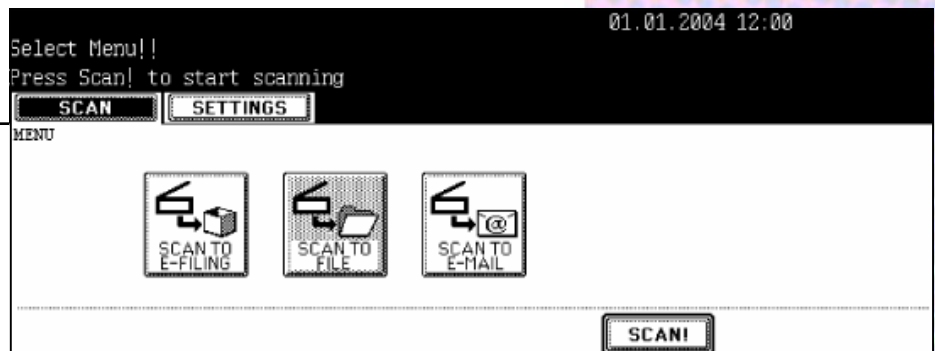- Scan to internet fax
- Scan to network fax

All of the scanning functions can be carried out (1) 'on the fly' using the QWERTY keypad and number pad or (2) by creating a predefined template using the TopAccess browser-based management utility.

Templates are stored under two filing systems. A Public folder is a shared template resource that is available to all users, and is created and maintained by the administrator.
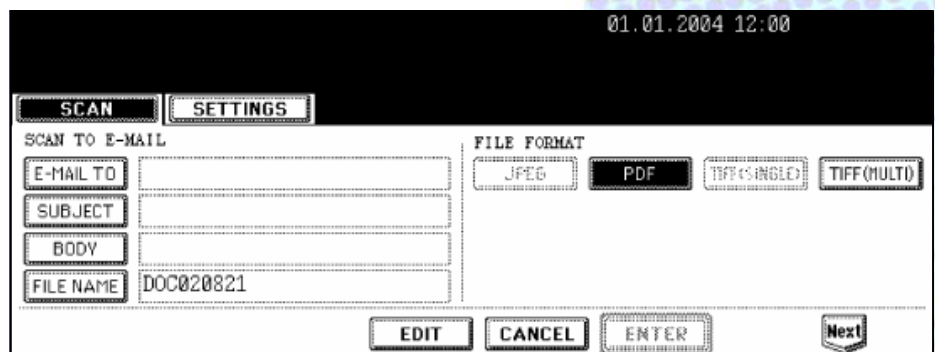
Up to 200 private template folders can be created. These can be password-protected, and allow each office user to store up to 60 of their own scanning filing templates.

There is a good degree of personalization within the scan to email function, which means that users will feel at ease receiving emails with attachments. Settings include: From address; return email address; subject line; body text; and message fragmentation (which splits up large attachments into multiple attachments so they can be get through email systems with bandwidth limitations).
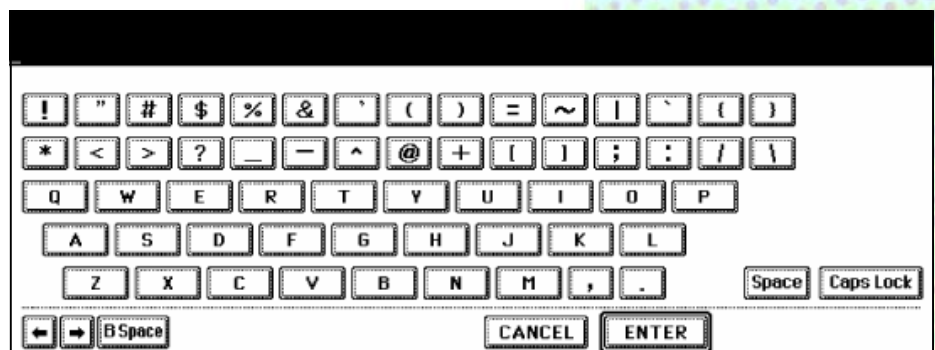
The email address book of the Toshiba e-STUDIO 4511 is well laid out with good

search facilities and integration between fax and email addresses.

The Toshiba e-STUDIO 4511 is also LDAP (Lightweight Directory Access Protocol) compliant. This means that in addition to being able to store addressees locally on the device, users can also access addresses stored on the central company contact database.

This gives the device another advantage over its closest competitor which does not include LDAP compliance within its standard scanning utility.

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Control panel tilted up and down

Copy

The Toshiba e-STUDIO 4511 is a 45ppm monochrome, 11ppm color copier, with 10-bit color scanning and 8-bit color printing. This is superior to its closest competitor which prints in 2-bit color. This means that the Toshiba e-STUDIO 4511 can reproduce a wider gamut of colors.

The control panel on the Toshiba e-STUDIO 4511 is well laid out with a large touchscreen display.

The control panel itself can be tilted from 5 degrees to 45 degrees, which is a valuable feature providing easier access to wheelchair users (section 508 compliance) and lets users adjust the angle of the control panel to remove/reduce the glare from overhead office lighting. (See images at right.)

Another useful function on the Toshiba e-STUDIO 4511 is the ability to store up to 60 templates as one-touch buttons per box. This means that with the public box, and 200 private boxes, that a maximum of 12,060 templates can be stored.

To access the template list, you press a button above the touch screen panel and select the box you require. 12 templates are displayed at a time for quick access to commonly used activities on the device.
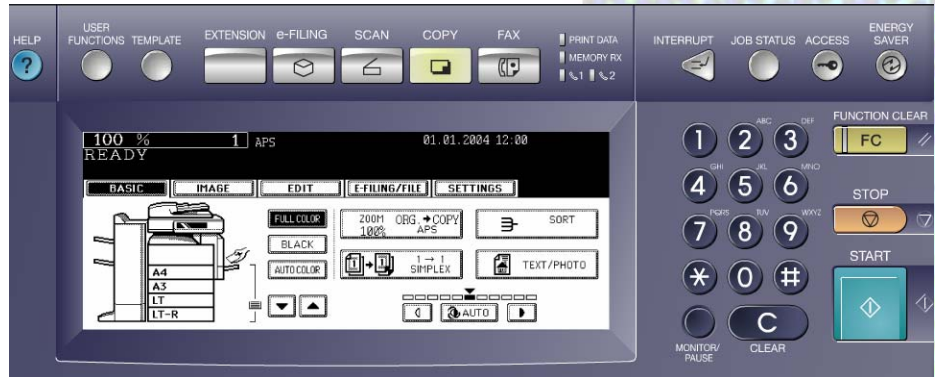
The templates can be set up either at the copier or from the desktop using Toshiba's web-based TopAccess utility.

The touchscreen menus are well laid out, with useful graphical illustrations aiding the user's selection.
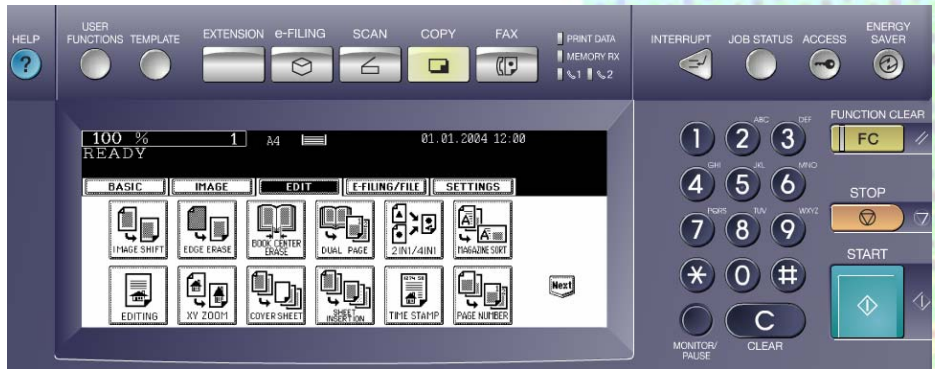
The maximum copy job length for the Toshiba e-STUDIO 4511 is 999 sets. This gives the device an advantage over its main competition, which restricts copy job length to 100 sets.
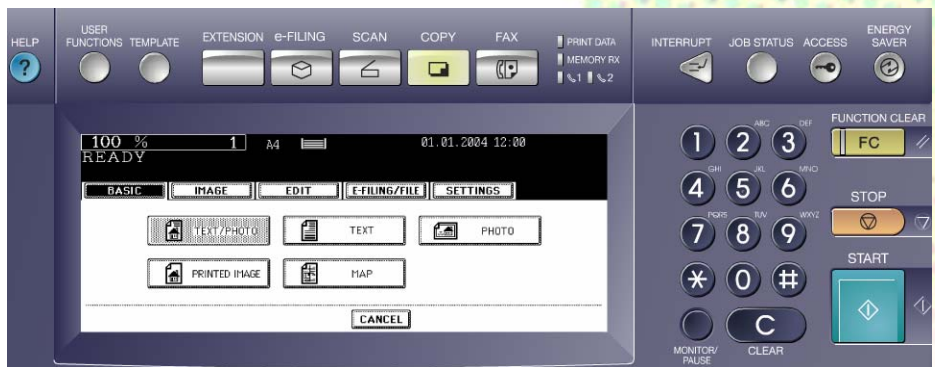

Opening copier screen

Above - Copier editing options
Below - Image setting options

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Copy

The Toshiba e-STUDIO 4511 comes with four mode selection options:

(1) Auto Color Selection/ACS (Distinguishes between color and monochrome originals, outputting monochrome pages in black only mode, reserving the slower four color process for color pages only);
(2) Full Color (where every page is reproduced in full color mode);
(3) B&W (where every page is reproduced in monochrome);
(4) Twin Color (where any color other than black is reproduced in a single color.)

Toshiba's ACS mode works differently to most color devices, which carry out a pre-scan on the first page to determine whether the document is in color or monochrome.

The Toshiba e-STUDIO 4511 determines 'on the fly' whether each page of a document is color or monochrome, applying the single pass monochrome or four pass color process as required.

Toshiba also promotes its CCD scanner, which (unlike traditional color devices that use a three line design comprising of red, green, blue sensors) includes an extra sensor specifically for black. Toshiba claims that this produces crisper, sharper black output and allows the device to maintain higher monochrome scanning speeds.

While the device's document feeder is able to hold up to 100 sheets, the Toshiba e-STUDIO 4511 includes a job build capability. This combines multiple scan sessions from either the platen or the automatic document feeder (if installed).

This is a useful feature, allowing documents to be created from standard cut-sheet and book-bound originals and originals that cannot be fed through the document feeder. It also allows documents larger than 100 pages to be scanned into memory in a single process. Toshiba claims that up to 1,000 pages can be scanned into memory during a single job.
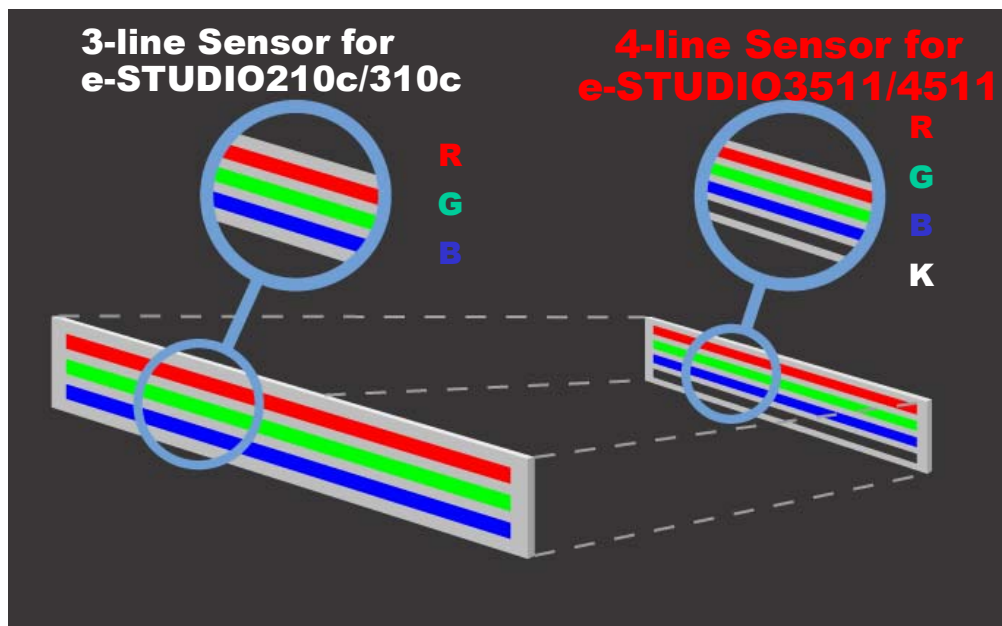

3-line Sensor for e-STUDIO210c/310c

R
G
B

4-line Sensor for e-STUDIO3511/4511

R
G
B
K

Diagram illustrating Toshiba's 4-line CCD sensor

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Copy

Copy Productivity:

Copy productivity on the Toshiba e-STUDIO 4511 was higher than its closest convenience color competitor across a wide range of color and monochrome copying jobs. Longer multi-set jobs further extending the productivity gap due to the Toshiba e-STUDIO 4511's faster monochrome and color print engine.

This productivity advantage was more pronounced in monochrome copying where the 45ppm monochrome engine offered a significant speed advantage versus the convenience color competitor's 32ppm monochrome engine.

However, compared to Toshiba's own 45ppm monochrome only copier-printer (which is built on the same e-BRIDGE™ platform) the Toshiba e-STUDIO 4511 was outperformed across every test by an average of 12%.

This is a minor sacrifice that users may be happy to trade-off in return for the color copy, color print and color scanning capabilities that the Toshiba e-STUDIO 4511 offers.

Productivity dropped slightly when finishing features were added to a document. Single sided stapling added around 0.6 seconds per set, with double stapling adding around the same.

Booklet making productivity with the saddle-stitch finisher was slower than dedicated monochrome 45ppm competitors, with a 20 page booklet taking 40 seconds to produce each set.

However, the bookletmaker is one of the main differentiating factors between the Toshiba e-STUDIO 4511 and its main convenience color competitor which does not offer the finishing option at all.

Copy Image Quality:

Toshiba promotes the e-STUDIO 4511 as a business color offering - not a graphics color device. Output was good for day to day business use.

Toshiba uses a fuser oil roller on its e-STUDIO 4511 rather than an oil tank. This results in a matte finish with less sheen. This is the preferred output format of most office users, who want to be able to write over the top of the printed page. This can be difficult in highly oiled glossy pages, as produced on some alternative systems.

There are five color output options; Text/Photo (Default mode), Text, Photo, Printed and Map. The default Text/Photo mode delivered good image quality across a wide range of original types. Photo mode produced better half-toning and reproduction of photo images. Printed mode produced the best quality on printed originals, with none of the screen clash/moire which we have seen on some competing devices.

Greyscale reproduction within a color page was also handled well, with little or no color being evident in various greyscale shades, a problem that some color devices suffer from as they attempt to create the light grey shade by mixing the four colors.

As expected with a business color system, image quality fell short of graphics quality devices. However, fine detail was fairly well reproduced, as were areas of dark contrast (which are sometimes lost on business color devices).

Overall, the device met, or exceeded most business color requirements including; basic color output ability, text highlighting, colored charts and images, plus the occasional photograph.

Print

The Toshiba e-STUDIO 4511 comes standard with network printing. Printing is driven by the integrated e-BRIDGE™ 333MHz 64-bit RISC controller, with 256MB main RAM, 128MB of page memory and a 60GB hard drive. Memory can be expanded to 512MB, which is required for 1200 x 600dpi printing. The device comes 10/100 BaseT ready with parallel and USB 1.1 ports for local connections. USB 2.0 can be used, but data transfer will be at the slower USB 1.1 speed.

The Toshiba e-STUDIO 4511 includes PCL5c, PCL6 and PostScript 3 standard. This is good because PostScript is often an optional purchasable item on rival devices.
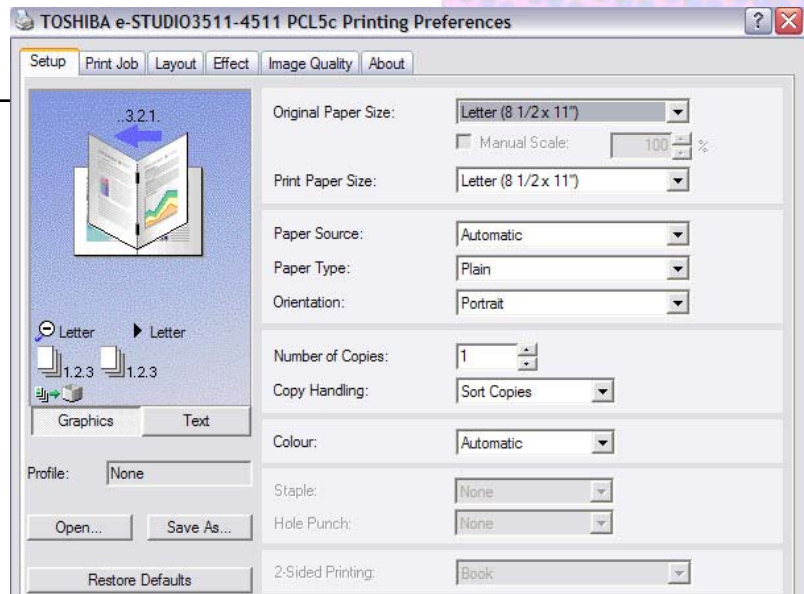
The PCL5c Driver:

PCL5c is likely to be the most commonly installed driver, it is well laid out, guiding the user through the document production process. It is split into five main tabs.
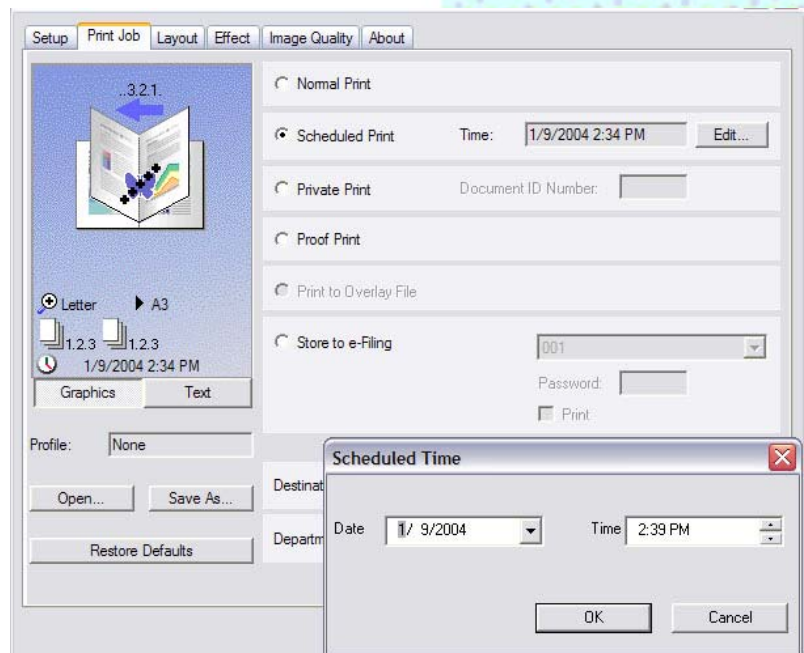
Setup:

We were pleased to see that all the major document settings are found on a single tab. Settings include document size, paper selection, number of copies, collation, color, finishing and duplex. Many users will never need to go beyond this first tab.

Print Job:

Print jobs can be set to print at a designated time **(Scheduled Print),** allowing large jobs to be printed out of busy office hours. For users printing sensitive/security critical documents, jobs can be sent with a password which must be entered at the printer before the job is released **(Private Print)**. For users wishing to make a long print run of a complex document, the driver lets you print the first set, with the remainder of the print run being held in memory. This allows the user to check that the first set is correct before releasing the remaining sets **(Proof Print).** Documents can also be stored on the hard drive of the device for later use **(Store to e-FILING)**.

Screenshots from the PCL5c driver

Layout:

This menu handles the more complex document settings, including the ability to specify different paper sources for front cover, back cover, chapter sheet inserts and the main pages of the document.

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Color at Work™

Print

The driver allows users to create a wider range of documents than some of the competition. Users can also choose to rearrange pages ready for booklet production.

We were impressed with the way in which the booklet process was laid out, with an easy to follow guide to paper sizes and other layout options. On some other units this has been confusing, resulting in several failed attempts before the desired document was produced.

The Toshiba e-STUDIO 4511 also allows users to specify a separate paper source for the booklet's cover pages.

Effect:

This allows users to add a watermark and/or overlay data to a document.

Image Quality:

There are four pre-defined image quality settings in the driver, which are designed to make the selection process as easy as possible for the average office color user.

We would have liked to have had more customizable control over color but did not see this as a major weakness for most users.

Bandwidth:

Monochrome and color network bandwidth on the Toshiba e-STUDIO 4511's PCL5c driver, while not the lowest we have seen, did not produce files that would worry an IT/network manager. Acrobat graphic files were ripped efficiently, while printing basic word processing documents produced larger file sizes than we have seen on some units.

Productivity:

Within the printer driver we were given the option of printing in automatic mode, which is the default setting when the driver is installed, or in monochrome (black) mode. Within automatic mode, each individual page is first
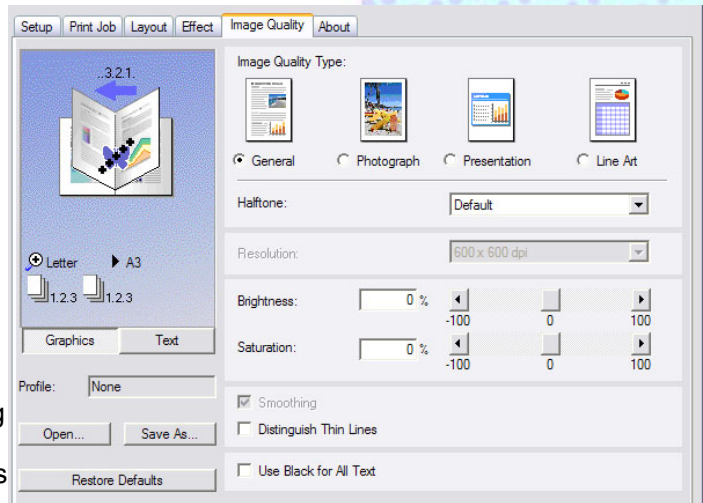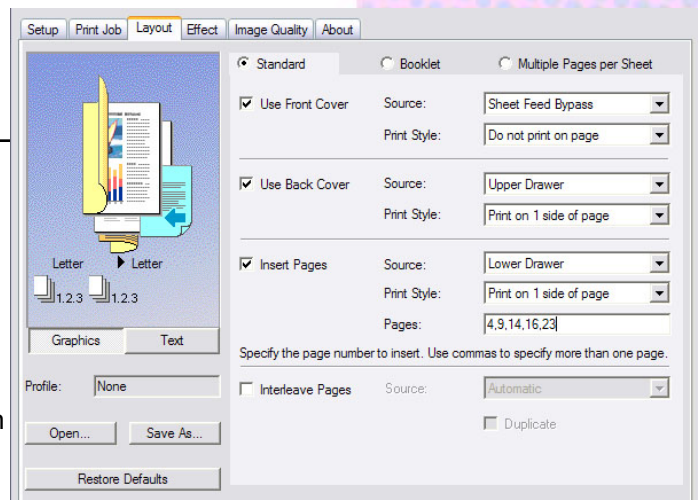
analyzed to determine whether it contains color data or not. If no color data is detected, the page is printed in monochrome mode and a single click charge is applied. If color data is detected, the page is output in color mode and four clicks are applied.

Toshiba promotes this approach as a means of reducing running costs versus printing all pages in full color and being charged four clicks for every page, even if they only contain black information.

However, this approach reduced productivity when monochrome printing. For example, when the 35 page Word document, (which printed in under 60 seconds in monochrome mode) is printed in automatic mode, it took 210 seconds to complete the job.

Print Image Quality:

Image quality across a wide range of standard office documents was good. Solid areas of color were reproduced without banding, greyscales and shaded colors were well reproduced down to our lightest 5% test pattern. Graphics and photographic material reproduction was also perfectly acceptable for general office use.

Color at Work™

Network Management

Toshiba includes a browser-based network utility called TopAccess. Users access TopAccess by entering the IP address of the device into their standard web browser.

There are 6 main tabs in the TopAccess utility, plus a hyperlink directly to the e-FILING function (jobs stored on the local HDD).

Device:

This displays the current status of the device, including paper levels, installed options and some other device information. Email notifications can be sent to up to three individuals when a device's status changes; for example, when toner or paper runs out or when the device needs servicing.

Jobs:

This provides a list of jobs in the queue. Information includes; the type of job, the size of the job, when it was submitted and its current status. There is the ability to delete jobs but no method of promoting or pausing jobs in the queue.
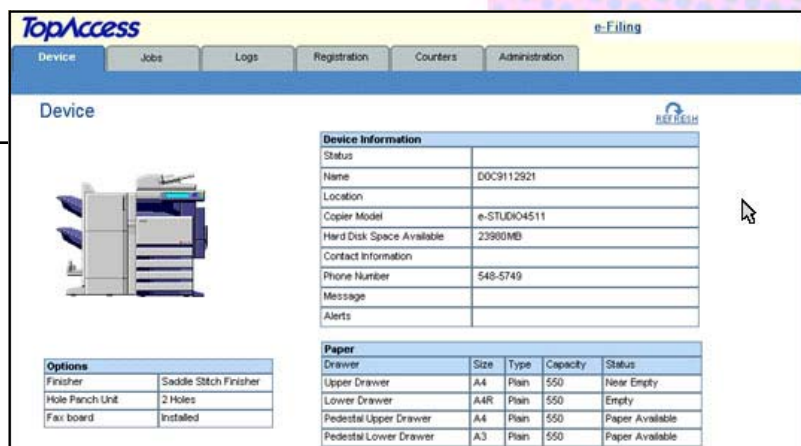
Logs:

Here, users find a list of jobs that have been completed.
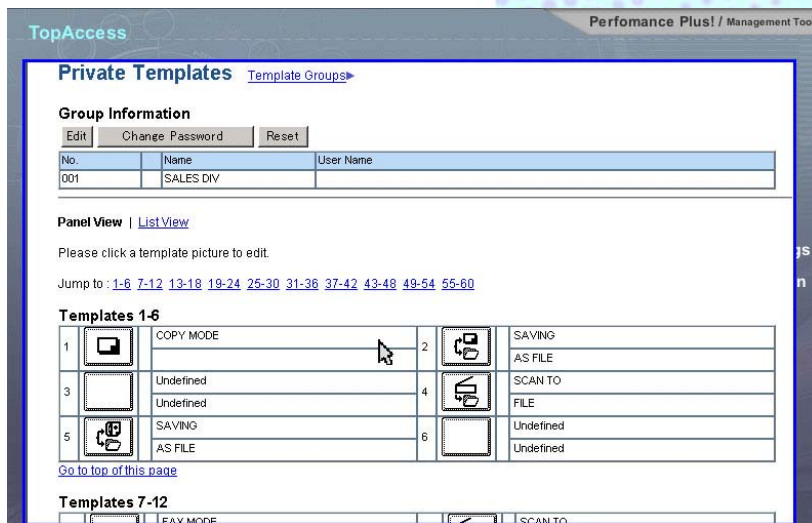
Registration:

From here, users can set up templates for network scanning. The system is well laid out, guiding users through the process.

Counters (for service clicks):

Printed pages are recorded in one set of counters. There is also a separate counting/charging mechanism for 'scans'. Both of the above counters break out totals and subtotals for:color pages; two-color pages; monochrome pages and by page size (small or large). The scan counter lists copies, network and fax scans.

Above - Device monitoring
Below - Template set-up

Administration:

This includes a range of extra utilities that are restricted to administrator password use only.

In Summary:

The Toshiba e-STUDIO 4511 offers all the functionality and features expected of a monochrome MFP with the added benefit of color capabilities. This will hold the device in good stead for office managers looking to make the move to color.

The device's rich feature set, easy to use user interfaces and aggressive running cost pricing makes the Toshiba e-STUDIO 4511 "the device to beat" in the new convenience color marketplace.

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