



Annual Color End-User Survey

In this issue of *The Office Products Analysts* we will be reporting the results of our Annual Color End-User Survey. This is the first in a two part series on color products. The next issue will include the Annual Color Reliability Study, which will summarize the results of surveys conducted via telephone with service managers from dealerships across the country. It will represent their perceptions of the reliability of the color products that they sell and service. This issue addresses results of surveys conducted via the telephone with those who use and administer color products within their organizations.

Through our extensive research experience, we've noticed that there are significant differences between the data obtained from a dealer-based sample and that of a sample consisting strictly of end-users. For example, our End-User Survey includes a broader range of brands and models. End-users tend to express their opinions and perceptions more freely, particularly where issues such as service responses are addressed. Finally, our End-User Survey includes brands that are not only serviced through the dealer channel, but by direct organizations and independent service organizations as well.

The Color Reliability Study lets us present reliability ratings from those dealerships actually providing service. In that survey, service managers often use actual service documentation, rather than a "gut feel" perception. In comparison, dealers may tend to be a bit biased and stand by their brand, while users tend to base their perceptions on their most recent service experience.

This Color End-User Study is based on 128 verified responses, which includes 253 installed color printers and color copiers/multifunctional products (MFPs). Note that the majority of color copier products *can* be connected to a computer or a network as an option, allowing them to function as a printer as well. This qualifies them as MFPs. However, in certain data sets, full-color MFPs that are not connected to a PC or a LAN are designated as standalone units. As you review the data, please note that some columns have no entries, indicated by a "----". If a particular response category had a statistically insignificant number of responses, we did not calculate the results. This should not be confused with an entry of "0.0" which indicates that there were no responses in a particular cell. We deemed as significant those instances where an

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Published by Industry Analysts, Inc.

The OPA (Office Products Analyst) is published monthly by Industry Analysts, Inc., 50 Chestnut Street, Rochester, NY 14604-2318, USA, Phone #: (585) 232-5320, Fax #: (585) 454-5760, Web: www.industryanalysts.com. Publisher, Louis E. Slawetsky. This publication is for the exclusive use of our subscribers. The information and opinions in each issue are based on the best information available, but the completeness and accuracy cannot be guaranteed. Subscriptions: \$350.00, one year (US); \$365.00 overseas and Canada. Prices for multiple subscriptions on request. Reproduction in any form without written permission is strictly forbidden and will be subject to prosecution.

item received no response from a significant number of respondents and displayed this fact as a zero entry.

The data presented in Table 1 show the breakout of products used by our respondents. Over 75.0% (77.3%) of the survey respondents have a full-color unit available for their use. For those respondents indicating that they do have a full-color unit available to them, 70.7% report having access to a full-color multifunctional product (MFP) and 64.6% have a full-color printer. Only 12.1% of respondents indicated that they had access to a standalone full-color copier. Note that these respondents may have access to any combination of full-color standalone copiers, full color MFPs and full-color printers. For each of the color product type(s), respondents indicated an average (median values used) of 1.0 each within their organizations.

% Of Respondents That Have	
Color Product	77.3%
Have Color Copier/MFP	12.1%
Median # Of Copiers	1.0
Have Color Printers	64.6%
Median # of Printers	1.0
Have Color MFP	70.7%
Median # of MFPs	1.0
Source: OPA	

Table 2 shows the full-color copier and printer brand distribution of this sample, broken out by establishments. These data indicate the percentage of establishments that are currently using each brand. Multiple responses were allowed as many user sites with multiple installations have more than one brand. A respondent reporting only one unit of a particular brand would be weighted in the establishment data exactly the same as a respondent reporting multiple installations of the same brand.

In the first column, Copiers/MFPs, we present the data that indicate the percentage of establishments that are currently using each brand for their full-color copiers, which may or may not be connected to a PC or network. The second column, Printers, presents the same information for those brands used for their full-color printers. In the Copier/MFP column, Hewlett-Packard is the brand used most by full-color copier/MFP users (27.4%) in our sample with Konica Minolta showing strong represen-

	Copiers/MFPs	Printers
Hewlett-Packard	27.4%	53.3%
Konica Minolta	19.2%	3.3%
Canon	13.7%	10.0%
Xerox	13.7%	6.7%
Toshiba	11.0%	1.7%
Savin	5.5%	1.7%
Brother	4.1%	6.7%
Gestetner	4.1%	0.0%
Ricoh	4.1%	3.3%
Dell	4.1%	10.0%
Epson	2.7%	15.0%
Kyocera	2.7%	0.0%
Lexmark	2.7%	3.3%
Murata/Muratec	2.7%	0.0%
Sharp	2.7%	0.0%
Imagistics	1.4%	0.0%
Samsung	1.4%	0.0%
IKON	1.4%	0.0%
Kodak	1.4%	1.7%
Oki Data	0.0%	5.0%
Other	0.0%	1.7%
<i>*Multiple Responses Allowed</i>		
Source: OPA		

tation (19.2%), followed by Canon and Xerox with 13.7% each. Among the Printer users, Hewlett-Packard's representation is significantly higher than all other brands with 53.3%. Epson color printers are a distant second, used in 15.0% of the establishments surveyed, followed by Canon and Dell, each used in 10.0% of the establishments in our survey.

Respondents were asked to indicate the method they used to acquire their full-color units. The responses to this question are summarized in Table 3.

Outright purchase is the most popular method of acquisition for standalone color units, as noted by 71.4% of respondents.

Among connected color users, significantly fewer respondents (57.7%) acquired their color units through direct purchase. No color units were acquired through rental agreements.

The data presented in Table 4 call out the most common channels of distribution for the full-color units included in this sample. This table is broken out into two columns. The first column describes acquisition sources for Full-Color Copiers/MFPs and the second for Full-Color Printers. Copier/MFP Dealer and Direct From Manufacturer are the primary acquisition channels for full-color copiers (29.7% and 23.0% respectively).

While nearly a quarter of our sample (22.6%) did not know where they acquired their full-color printers, an equal percentage of respondents indicated that they purchased them Direct From the

Manufacturer (22.6%). A cumulative 37.7% of respondents acquired their color printers through the retail channel. This is not surprising considering many full-color printers have low price points and are not service intensive.

While the first part of this report summarized the full-color copiers and printers across the entire enterprise, this next section focuses only on the full-color units used most often by the respondent. To make the data more meaningful, we break it down by brand. The brands listed within each table are the brands that had the highest representation among users in our sample. The Universe and Brand data are comprised of only color units that are connected to a computer or a network (printers/MFPs). When appropriate, we have in-

	Connected Color	Standalone Color
Purchase	57.7%	71.4%
Lease	42.3%	28.6%
Rent	0.0%	0.0%

Source: OPA

	Full-Color Copiers/MFPs	Full-Color Printers
Copier/MFP Dealer	29.7%	8.1%
Direct From Manufacturer	23.0%	22.6%
Business Equipment Dealer	16.2%	12.9%
Office Supply Store	14.9%	14.5%
Retail Store	5.4%	4.8%
Discount Store	1.4%	3.2%
Internet	1.4%	8.1%
Computer Retail Store	0.0%	8.1%
VAR	0.0%	1.6%
Don't Know	14.9%	22.6%

*Multiple Responses Allowed
Source: OPA

cluded a column among the Brands that specifies standalone color units. These data represent full-color copier products but are not brand specific, in order to understand the differences between connected color and standalone color as viewed by the end-user.

Table 5 indicates how long the user's primary color product has been installed and whether it was acquired as an additional color unit or as a replacement. In our sample, the average length of time a full-color unit has been installed is 18.0 months (median value), among all brands represented. When these units were

placed, the slight majority (50.7%) was purchased as replacement color units, while 49.3% were purchased as additions to existing color units. Hewlett-

	Months Installed*	Additional	Replacement
Universe	18.0	49.3%	50.7%
Canon	13.5	42.9%	57.1%
Dell	12.0	50.0%	50.0%
Hewlett-Packard	24.0	91.7%	8.3%
Konica Minolta	12.0	33.3%	66.7%
Ricoh Family Group	12.0	37.5%	62.5%
Toshiba	12.0	42.9%	57.1%
Xerox	24.0	38.5%	61.5%
Standalone Color	24.0	50.0%	50.0%

*Median Value Used
Source: OPA

Packard color units have the highest percentage being purchased as additional color units (91.7%), when compared with the other brands, while Konica Minolta has a significantly higher percentage replacing color units (66.7%).

In Table 6, we find that the average number of users with access to a full-color unit is 6.9, with the highest average number of users reported for Toshiba brand products (18.1%). With the

	# Of Users	Usage Limited
Universe	6.9	20.5%
Canon	7.0	25.0%
Dell	5.0	50.0%
Hewlett-Packard	4.8	16.7%
Konica Minolta	5.9	22.2%
Ricoh Family Group	6.0	22.2%
Toshiba	18.1	14.3%
Xerox	7.0	15.4%
Standalone Color	2.0	14.3%

Source: OPA

cost of color prints and copies being higher than black and white, we asked if there was limited access to the full-color units in the respondent's organization. The percentage of the respondents stating that access to their connected color unit is limited is 20.5%, nearly 10% less

than last year's study. Note that Dell brand users have the highest percentage with limited access (50.0%), while Toshiba has the lowest with 14.3%.

Table 7 indicates reasons for limited access and what the limitations are for the full-color units. The primary reason for limited access is to Exclude Usage by other departments (50%). Respondents reported that it was Corporate Policy to limit access to color units (28.6%), while Cost, To Avoid Unnecessary Use, and So That The Machine Runs Properly were each cited by 21.4% of re-

spondents as to why access to color products is limited. It is of significant note that although expressed variously, all the primary reasons for limited access aim at ultimately controlling costs.

The data presented in Table 8 show that among those connected color devices, 78.8% are connected to a local area network (LAN) rather than directly to a workstation. On average (median values used), 5.5 personal computers are attached to respondents' LANs. Toshiba brand units have the highest percent connected to a LAN (100.0%), followed closely by Xerox with 92.9%. Toshiba has the highest number of PC's attached to the LAN with 10.0.

	Universe
Reasons For Limited Access:	
Department Use Only	50.0%
Only Certain People Can Use	25.0%
Staff/Employee Use Only	31.3%
Limitations:	
Corporate Policy	28.6%
Cost	21.4%
To Avoid Unnecessary Use	21.4%
So That Machine Runs Properly	21.4%
Each Desk Has Own	7.1%
Need Special Instructions To Use	7.1%

Source: OPA

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox
Percent Connected To Network	78.8%	80.0%	57.1%	60.0%	81.8%	90.0%	100.0%	92.9%
PCs Per Network:								
Median	5.5	6.8	9.5	5.5	6.0	7.0	10.0	6.5

Source: OPA

Respondents were asked what their primary uses are for their color products (see Table 9). Marketing Materials is the application mentioned most often by 48.7% of respondents. Brochures (43.6%) and Presentations (41.0%) followed. Among the brands, we see Photographs as the most popular application with Xerox users (46.2%) The primary application for standalone color

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox	Stand-alone Color
Marketing Materials	48.7%	50.0%	50.0%	50.0%	55.6%	33.3%	42.9%	53.8%	33.3%
Brochures	43.6%	75.0%	50.0%	33.3%	55.6%	11.1%	71.4%	53.8%	23.8%
Presentations	41.0%	25.0%	50.0%	58.3%	33.3%	33.3%	42.9%	53.8%	28.6%
Text Documents	38.5%	12.5%	25.0%	58.3%	22.2%	11.1%	57.1%	46.2%	57.1%
Reports	32.1%	25.0%	25.0%	41.7%	22.2%	33.3%	28.6%	38.5%	33.3%
Photographs	30.8%	25.0%	0.0%	16.7%	33.3%	33.3%	14.3%	46.2%	14.3%
Spreadsheets	30.8%	25.0%	25.0%	41.7%	22.2%	11.1%	42.9%	30.8%	9.5%
Manuals	16.7%	0.0%	50.0%	25.0%	11.1%	11.1%	28.6%	15.4%	9.5%
E-mail	10.3%	12.5%	0.0%	25.0%	0.0%	11.1%	14.3%	0.0%	9.5%
Architectural Drawings	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Billing Statements/Invoices	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Book Covers	1.3%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%
Color Separation	1.3%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%
Maps	1.3%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%
Pre-press Set Up	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%
Proofs	1.3%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
All Of The Above	3.8%	0.0%	0.0%	0.0%	0.0%	11.1%	14.3%	7.7%	0.0%

*Multiple Responses Allowed
Source: OPA

units is Text Documents (57.1%).

In Table 10, respondents were asked what software they used to create their color documents. Adobe (67.5%) and Microsoft Word (66.2%) were mentioned most frequently by the respondents in our sample. While Presentations was the third most popular application (Table 9), it is somewhat surprising that PowerPoint was only the fifth most popular application, mentioned by 36.4% of respondents. Among the brands, 100% of Toshiba users cited Adobe and Microsoft Word, while Dell users mentioned PowerPoint most frequently (75.0%).

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox
Adobe	67.5%	57.1%	50.0%	66.7%	88.9%	55.6%	100.0%	76.9%
Microsoft Word	66.2%	57.1%	75.0%	58.3%	44.4%	66.7%	100.0%	69.2%
Excel	46.8%	28.6%	25.0%	33.3%	33.3%	44.4%	71.4%	61.5%
PDF	44.2%	57.1%	25.0%	75.0%	44.4%	55.6%	28.6%	53.8%
PowerPoint	36.4%	28.6%	75.0%	33.3%	33.3%	33.3%	71.4%	46.2%
Access	13.0%	14.3%	0.0%	8.3%	22.2%	0.0%	42.9%	15.4%
Quark	10.4%	28.6%	0.0%	0.0%	44.4%	0.0%	0.0%	7.7%
Publisher	2.6%	0.0%	0.0%	0.0%	11.1%	11.1%	0.0%	0.0%
AutoCad	1.3%	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%
Billing Statements/Invoices	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Corel Draw	1.3%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Engineering Software	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Print Shop	1.3%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Quickbooks	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

*Multiple Responses Allowed
Source: OPA

The data in Table 11 show output patterns for each of the following: Color Output, Monochrome Output (black and white only) and Mixed Output (documents which contain both color pages and black and white pages). Monochrome Output is most common for the full-color units represented in our sample, accounting for 48.7% of the output, suggesting that these devices are beginning to replace traditional monochrome printers. Color Output is next with 38.3% of all output, followed by Mixed Output (13.0%). Konica Minolta has the highest percentage of color output among the brands (56.9%). Standalone color units have a lower percentage of color output (30.2%) when compared with the Connected Color Universe.

The next section of Table 11 shows the average number of pages per document in each of the output categories. Black and White Output and Color Output have the same average number of pages produced (5.0) per document. Canon and Xerox users have the highest number of color pages per document (10.0) among the connected color brands.

The final section of Table 11 indicates the number of sets printed by out-

put category. Once again, Black and White Output and Color Output have the same average number of sets produced (10.0) among connected color units. It is interesting to note that Konica Minolta users reported a significantly greater number of sets for color output as compared to all other brands. We suspect this is due to the unique applications of the Konica Minolta C500 (low production color unit– 50 pages per minute) users in our sample, and is not representative of all Konica Minolta users.

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox	Stand-alone Color
Percent Color Output	38.3%	50.0%	17.5%	25.7%	56.9%	41.1%	39.7%	49.2%	30.2%
Percent Monochrome Output	48.7%	43.6%	73.8%	55.5%	32.9%	46.4%	51.4%	30.0%	55.0%
Percent Mixed Output	13.0%	6.4%	8.8%	18.4%	10.3%	12.4%	9.3%	20.8%	14.8%
Median # Pages Color Output	5.0	10.0	4.5	5.0	2.0	5.0	2.0	10.0	4.0
Median # Pages Monochrome Output	5.0	5.0	7.5	3.0	2.0	10.0	2.5	20.0	2.0
Median # Pages Mixed Output	2.0	1.0	2.0	7.5	2.0	2.0	2.0	10.0	1.3
Median # Sets Color Output	10.0	7.5	6.0	10.0	70.0	5.0	15.0	3.8	4.0
Median # Sets Monochrome Output	10.0	10.0	4.0	6.0	20.0	4.8	11.0	20.0	2.0
Median # Sets Mixed Output	2.5	3.5	2.0	5.0	20.0	1.0	10.0	12.0	2.0

Source: OPA

In Table 12, 70.5% of respondents indicate that they print on various types of paper (other than the standard 20-lb. paper). Canon has the highest percentage of users (100.0%) producing output on paper types other than 20-lb. stock. Non-standard paper adds to the cost of using color products, in that special paper costs more, in addition to the already high output costs.

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox	Stand-alone Color
% Who Print/Copy On Paper Other Than 20 Lb. Copy Paper	70.5%	100.0%	75.0%	66.7%	77.8%	66.7%	42.9%	76.9%	28.6%
Paper Types Used:									
24# Paper	21.8%	37.5%	-----	0.0%	28.6%	33.3%	0.0%	20.0%	33.3%
28# Paper	14.5%	12.5%	-----	0.0%	0.0%	16.7%	0.0%	50.0%	16.7%
80# Paper	12.7%	12.5%	-----	0.0%	28.6%	0.0%	0.0%	30.0%	0.0%
60# Post Stock	9.1%	12.5%	-----	12.5%	14.3%	0.0%	0.0%	10.0%	0.0%
Photo Paper	9.1%	12.5%	-----	0.0%	14.3%	0.0%	33.3%	0.0%	16.7%
Thick Weight Card Stock	9.1%	0.0%	-----	0.0%	14.3%	16.7%	0.0%	10.0%	0.0%
Glossy Paper	7.3%	0.0%	-----	12.5%	0.0%	0.0%	0.0%	10.0%	0.0%
Heavy Weight Paper	5.5%	25.0%	-----	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Flyer Paper	3.6%	0.0%	-----	12.5%	14.3%	0.0%	0.0%	0.0%	0.0%
Legal Size Paper	3.6%	0.0%	-----	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%
11 x 17 3-hole Reinforced	1.8%	0.0%	-----	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%
100# Paper	1.8%	0.0%	-----	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%
32# Paper	1.8%	12.5%	-----	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Acrylic banners	1.8%	0.0%	-----	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%
Color Copy Paper	1.8%	0.0%	-----	12.5%	0.0%	0.0%	0.0%	0.0%	16.7%
Thin Weight Paper	1.8%	0.0%	-----	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%

Source: OPA

Full-color devices have higher output costs associated with their usage when compared with traditional black and white units, therefore, we wanted to see if users had the default on the color units set to black and white to prevent unnecessary color output. In addition, since most respondents, provide some administrative function for the full color unit, we wanted to see if *their* default setting was different than the default setting for the majority of users in their departments. The data in Table 13 indicates that 63.9% of respondents indicated that Black and White is the default setting for their staff group, while a lower percentage of the administrators (54.3%) indicated that their default setting was Black and White as well. In fact, across most brands, the percentage of administrators whose default was set for Color Printing was higher than the percentage of user groups for whom Color Printing was the default. The only exceptions were Konica Minolta users for whom there was no difference in default settings between users and administrators (42.9% of all users and administrators had Color Printing as the default) and Dell users for whom *none* of the administrators, but 25% of the users, had their default set to Color. Only 14.3% of Ricoh Family Group users had set their output default to Color, while 80.0% of the Xerox users set their default to Color. Xerox users reported the highest percent defaulting to Color in the last three consecutive years of this survey.

Table 13 – Black & White Output

<u>Default Setting For Staff:</u>	<u>Color</u>	<u>B&W</u>
Universe	36.1%	63.9%
Canon	50.0%	50.0%
Dell	25.0%	75.0%
Hewlett-Packard	33.3%	66.7%
Konica Minolta	42.9%	57.1%
Ricoh Family Group	14.3%	85.7%
Toshiba	16.7%	83.3%
Xerox	80.0%	20.0%
Standalone Color	23.5%	76.5%
<u>Default Setting For Self:</u>	<u>Color</u>	<u>B&W</u>
Universe	45.7%	54.3%
Canon	71.4%	28.6%
Dell	0.0%	100.0%
Hewlett-Packard	41.7%	58.3%
Konica Minolta	42.9%	57.1%
Ricoh Family Group	25.0%	75.0%
Toshiba	42.9%	57.1%
Xerox	91.7%	8.3%
Standalone Color	31.6%	68.4%
<u>% Don't Combine B&W Jobs With Color Jobs On One Printer/Copier:</u>		
Universe	46.2%	
Canon	50.0%	
Dell	25.0%	
Hewlett-Packard	50.0%	
Konica Minolta	66.7%	
Ricoh Family Group	11.1%	
Toshiba	57.1%	
Xerox	53.8%	
Standalone Color	40.0%	

Source: OPA

We also asked users if they limited their color units to produce only color output, directing monochrome output to devices that only print black and white. Just over 45.0% (46.2%) of the respondents dedicate their color units to color jobs alone. This percentage is slightly higher when compared to standalone color users (40.0%). From these numbers, one can safely conclude that color devices still have not completely replaced monochrome printers.

Reasons for not producing black and white output on color units are mentioned in Table 14. The primary reason is the Cost to Print black and white on color units (77.1%). This is followed by concerns about excess Wear and Tear on the color product (40.0%) and by the Speed of the unit (37.1%). Users of

Standalone Color units indicate Speed as the primary reason to separate color and monochrome copy jobs (71.4%).

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox	Stand-alone Color
Cost To Print	77.1%	100.0%	-----	83.3%	83.3%	-----	50.0%	100.0%	57.1%
Wear & Tear	40.0%	25.0%	-----	66.7%	16.7%	-----	75.0%	14.3%	57.1%
Speed	37.1%	50.0%	-----	66.7%	50.0%	-----	50.0%	0.0%	71.4%
Convenience	8.6%	0.0%	-----	16.7%	0.0%	-----	25.0%	0.0%	14.3%
Quality Of Print	5.7%	0.0%	-----	0.0%	0.0%	-----	0.0%	14.3%	0.0%
Only Have One Unit	2.9%	0.0%	-----	0.0%	16.7%	-----	0.0%	0.0%	0.0%

Source: OPA

Users were asked if they have a service contract for their full-color unit.

Table 15 indicates that 69.2% of the users have a service contract for their color device, and 90.7% of those contracts are for on-site service. One hundred percent (100.0%) of respondents in the Konica Minolta, Toshiba and Xerox brand groups indicated that they have a service contract. While only 47.6% of standalone units are covered by a service contract, 100% of those include on-site service.

	Contract In Use	On-site
Universe	69.2%	90.7%
Canon	75.0%	100.0%
Dell	50.0%	-----
Hewlett-Packard	25.0%	-----
Konica Minolta	100.0%	100.0%
Ricoh Family Group	77.8%	85.7%
Toshiba	100.0%	100.0%
Xerox	100.0%	92.3%
Standalone Color	47.6%	100.0%

Source: OPA

Table 15A indicates what is included in the service contracts on color units. For those color users with a service contract, Parts (76.0%) and Labor (74.0%) are included with the greatest frequency. Among the brands, Canon and Konica Minolta have the highest percentage indicating that LAN support is included in their service contracts (33.3% each).

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox	Stand-alone Color
Parts	76.0%	66.7%	-----	-----	77.8%	50.0%	83.3%	66.7%	87.5%
Labor	74.0%	66.7%	-----	-----	77.8%	50.0%	83.3%	66.7%	87.5%
Supplies	54.0%	50.0%	-----	-----	66.7%	16.7%	66.7%	50.0%	62.5%
Drivers	40.0%	33.3%	-----	-----	33.3%	16.7%	50.0%	33.3%	NA
Printing Functions	40.0%	33.3%	-----	-----	44.4%	16.7%	50.0%	41.7%	NA
Scanning Functions	34.0%	50.0%	-----	-----	55.6%	16.7%	33.3%	16.7%	NA
Applications	30.0%	16.7%	-----	-----	44.4%	16.7%	50.0%	16.7%	NA
LAN Service	28.0%	33.3%	-----	-----	33.3%	16.7%	16.7%	25.0%	NA
Toner	2.0%	0.0%	-----	-----	0.0%	0.0%	16.7%	0.0%	0.0%
All the above	22.0%	16.7%	-----	-----	22.2%	50.0%	16.7%	33.3%	12.5%

Source: OPA

Users were asked if they had a service call for their color device within the past 12 months. Table 16 indicates that 57.7% of the connected color units had a service call, which is almost 15% higher than what was reported last year

(43.1%). For all units serviced, 93.3% of them are on a service contract, and required an average of 5.0 service calls in the past 12 months. Xerox brand color units had the highest percentage requiring service (84.6%), and the highest number of calls (7.9). By contrast, only 8.3% of Hewlett-Packard brand products were serviced, requiring an average of 1.0 service calls, yet none of the HP color products in our sample was covered by a service contract.

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox	Standalone Color
Had Service Call in Past 12 Months	57.7%	75.0%	50.0%	8.3%	88.9%	66.7%	71.4%	84.6%	28.6%
Service Contract:									
Yes	93.3%	100.0%	100.0%	0.0%	100.0%	66.7%	100.0%	100.0%	66.7%
No	6.7%	0.0%	0.0%	100.0%	0.0%	33.3%	0.0%	0.0%	33.3%
# of Service Calls In Past 12 Months:									
Mean	5.0	2.8	1.5	1.0	4.7	5.4	2.2	7.9	2.7

Source: OPA

Table 17 lists the causes for service on respondents' full-color devices.

While connected color users found Mechanical problems to be at the root of 34.1% of all service calls, for Standalone Color Users, the primary reasons for concern were Paper Jams (40.0%).

	Connected Color	Standalone Color
Mechanical	34.1%	20.0%
Image Quality – Full-Color	29.3%	20.0%
Paper Jam	17.1%	40.0%
Paper Feeder	9.8%	20.0%
Scheduled PM	4.9%	0.0%
Chip/Electrical	2.4%	0.0%
Networking	2.4%	0.0%
Operator Error	0.0%	0.0%

Source: OPA

Those respondents who received a service call were asked to rate their service provider on a scale of 1 - 10, with

“10” being the highest and best rating. Respondents were asked to rate:

- **Response Time** – Did the service technician arrive within a reasonable amount of time after the call was placed?
- **Ability to Repair** – How effective was the service technician in terms of his/her ability to repair the equipment?

The overall rating shown in Table 18 is simply an arithmetic average of these two ratings. Standalone end-users indicate that they were more satisfied with the technicians' ability to repair

(9.8) than the Connected color users (8.2). While there was not enough responses to provide Response Time and Average Downtime data for Standalone Products, the Average Length of Down-

	Connected Color	Standalone Color
Ability To Repair	8.2	9.8
Response Time	8.6	----
Overall Ratings	8.4	----
Average Downtime (Hrs.)	3.1	----

Source: OPA

time for Connected units is significantly shorter (3.1 hours) than what was reported in our survey last year (10.9 hours).

This next section addresses future purchase plans for full-color products by respondents. Table 19 indicates that only 10.2% of the respondents *do* plan to purchase a full-color unit within the next six months. For those that do not plan to purchase a unit within the next six months (86.7%), the reasons given were No Need (69.6%), Budget Concerns (21.7%) and Contentment with Existing Unit (8.7%). These data are consistent with the data reported in last year's survey.

<u>Plan To Purchase:</u>	<u>Universe</u>	<u>Color Users</u>	<u>Non-Users</u>
Yes	10.2%	10.1%	10.3%
No	86.7%	87.9%	82.8%
Don't Know	3.1%	2.0%	6.9%
<u>Decision Factors To Not Plan:</u>			
No Need			69.6%
Happy With Current			8.7%
Budget Concerns			21.7%
Source: OPA			

In Table 20 we see that for those who do intend to purchase a full-color

<u>% Plan To Purchase Copier Or Printer:</u>	
MFP	76.9%
Printer	15.4%
Copier	7.7%
<u>Brands Planned:</u>	
Imagistics	30.8%
Brother	15.4%
Hewlett-Packard	15.4%
Kyocera Mita	15.4%
Canon	7.7%
Dell	7.7%
Gestetner	7.7%
Konica Minolta	7.7%
Xerox	7.7%
Don't Know	15.4%
Source: OPA	

product, 76.9% plan to purchase a full-color MFP, 15.4% will purchase a full-color printer, and 7.7% plan to buy a full-color copier. When asked which brands they plan to purchase, Imagistics is mentioned most often (30.8%).

Table 21 shows that 53.6% of the respondents send color jobs out to print shops. When asked to compare this to one year ago, 13.8% stated that this is more frequent, 33.8% stated that it is less frequent, while 52.3% find that it is

the same as a year ago. When comparing it to five years ago, 25.4% stated it is more frequent, 37.3% stated it is less frequent, while 37.3% stated it is the same as five years ago. In essence, having full-color devices in the office has affected the frequency with which end-users send color jobs to print shops, when compared to a year ago.

The next portion of Table 21 indicates how full-color needs were fulfilled prior to installation of their full-color device. Using a previous color unit (49.2%) was mentioned most often, fol-

% Send Color Jobs To Print Shops	53.6%
<u>% Change From A Year Ago:</u>	
More	13.8%
Less	33.8%
Same	52.3%
<u>% Change From 5 Years Ago:</u>	
More	25.4%
Less	37.3%
Same	37.3%
<u>How Needs Fulfilled Prior To Installation:</u>	
Use Previous Machine	49.2%
Outsource/Local Copier Service	34.7%
No Need/Didn't Use	12.9%
Don't Know	10.5%
Source: OPA	

lowed by outsourcing to a local copy service company (34.7%).

We presented our respondents with a list of full-color features and asked them to rate each on a scale of 1 to 10, with “10” being the most important to the respondent. Responses to these features are reported in the final three tables.

Table 22 summarizes the respondents’ priorities for choosing a color device, based on a scale of 1-10 (ten being the highest) by Connected Color Users and Standalone Color Users. The most important feature mentioned by con-

Table 22 – Importance Rating

	Connected Color	Standalone Color
Overall Product Reliability	9.7	9.4
Color Consistency	9.4	8.6
Image Quality	9.4	9.3
Network Compatibility	9.4	NA
General Ease of Use	9.3	9.4
Color Resolution	9.2	8.0
Affordability	9.1	8.9
Color Fidelity (Color Accuracy)	9.1	8.4
Color Productivity	9.1	9.2
Full Service Maintenance Agreement	9.0	7.3
Ease of Calibration	8.8	9.0
Ease of Operator Maintenance	8.8	9.5
Speed – Multiple Pages	8.8	8.3
Cost Per Page for Color	8.7	8.9
Controller Reliability	8.6	NA
Print Driver Stability	8.6	NA
Speed – First Color Page	8.5	7.8
Paper Capacity	8.3	7.9
Scanning Capability	8.1	NA
Cost per Page for Black & White	8.0	8.9

Source: OPA

connected color users is overall product reliability (9.7), however reliability is a nebulous criterion; everyone wants it, but its efficiency cannot be accurately determined until the product is acquired, installed and working under “real world” conditions, the nature of which is as varied as the number of locations in which

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Table 23 – Performance Ratings

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox
Reliability:								
Color Productivity	8.0	8.5	8.5	7.4	7.8	8.8	9.3	7.7
Controller Reliability	7.9	8.2	8.0	6.4	7.3	8.8	8.8	8.5
Overall Product Reliability	8.4	8.4	8.8	8.3	8.2	8.8	9.5	8.3
Print Driver Stability	7.9	8.4	8.3	6.2	7.7	8.8	9.0	8.4
Average	8.1	8.4	8.4	7.1	7.8	8.8	9.2	8.2
Image Quality:								
Color Consistency	8.5	8.2	8.8	8.8	8.1	8.7	9.3	8.4
Color Fidelity (Color Accuracy)	8.6	8.9	9.0	8.7	8.1	8.9	9.5	8.3
Color Resolution	8.5	8.9	8.5	8.3	8.4	8.9	9.0	8.6
Image Quality	8.7	9.1	9.0	8.5	7.7	8.9	9.3	8.8
Average	8.6	8.8	8.8	8.6	8.1	8.9	9.3	8.5
Operability and Functionality:								
Ease of Calibration	8.3	8.5	8.3	8.6	8.4	8.8	9.5	8.1
General Ease of Use	8.5	9.1	9.8	7.8	7.9	9.1	9.6	8.3
Network Compatibility	8.8	9.1	9.5	7.9	9.1	9.0	9.4	8.5
Paper Capacity	8.1	8.0	8.0	8.1	7.4	9.0	9.0	7.7
Scanning Capability	8.2	8.9	---	6.3	7.9	9.1	9.3	7.9
Speed – First Color Page	7.7	7.7	8.5	6.9	7.6	8.1	9.1	7.4
Speed – Multiple Pages	8.0	8.8	8.8	6.8	7.9	8.8	9.4	7.5
Average	8.2	8.6	8.8	7.9	8.0	8.8	9.3	7.9
Maintenance and TCO:								
Affordability	8.0	8.2	8.5	7.7	7.2	8.7	9.3	7.9
Cost Per Page for Black & White	7.7	8.7	8.5	7.4	7.3	8.7	7.8	6.8
Cost Per Page for Color	7.4	7.9	8.5	6.3	7.2	7.6	8.0	7.6
Ease of Operator Maintenance	8.1	8.4	9.0	6.5	7.6	8.6	9.1	8.9
Full Service Maintenance Agreement	8.7	9.0	---	8.0	7.9	9.0	9.4	8.8
Average	8.0	8.4	8.6	7.2	7.4	8.5	8.7	8.0
Overall Average	8.2	8.6	8.7	7.8	7.8	8.6	9.1	8.2

Source: OPA

it is installed. The best determinant for reliability in any given environment is past performance of a product by the same manufacturer. The next three equally important priorities for users of connected color products are Color Consistency, Image Quality and Network Compatibility, with each receiving an average rating of 9.4. While Cost Per Page ranked eighth overall with several preceding criteria tying for importance, bear in mind that the majority of respondents are users/administrators and not purchasing decision makers for connected color products. Even purchasing decision makers rarely rank “cost” first. Our experience indicates that cost is important only if other “base” criteria (those ranked higher) are met. The top features mentioned by standalone color users in terms of importance are Ease of Operator Maintenance (9.5), Overall Product Reliability and General Ease of Use (9.4) and Image Quality (9.3).

Table 23 indicates the actual performance of the features as rated by the respondents. In this table we have separated the features into four primary categories: Reliability, Image Quality, Operability and Functionality, and Maintenance and TCO (Total Cost of Ownership). This allows a more comprehensive overview of how the brands compare with one another within the various groups.

Among the brands, Toshiba received the highest average rating in all four categories, trouncing the competition in the areas of Reliability and Image Quality. In fact, while the difference between the highest and lowest overall brand ratings is 1.3 points or 15%, the gap between Toshiba’s overall rating of 9.1 and the second highest rated brand (Dell) at 8.8 is .3 or 3.3% of the total range from highest to lowest average ratings. While all users may have experience with more than one brand of color products, Toshiba users consistently rated their Toshiba full-color products higher than users of any other brand in our survey.

Table 24 combines users’ Importance Ratings with their Performance Ratings to achieve a more relevant rating system. We call this combination of Performance and Importance, “Effectiveness”. In this table we have also separated the features into four primary categories: Reliability, Image Quality, Operability and Functionality, and Maintenance and TCO (Total Cost of Ownership).

When both criteria were applied (the importance of a feature and the user’s perception of its performance) to connected color devices, Toshiba had the greatest number of first place ratings winning 12 out of 20 sub-categories. Furthermore, Toshiba had the highest average among all the brands in all four

primary categories. We congratulate Toshiba on their outstanding achievement.

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Table 24 – Effectiveness Ratings

	Universe	Canon	Dell	Hewlett-Packard	Konica Minolta	Ricoh Family Group	Toshiba	Xerox
Reliability:								
Color Productivity	8.5	8.5	8.8	8.3	8.7	9.2	9.3	8.3
Controller Reliability	8.3	8.5	8.2	6.9	8.2	8.9	8.8	8.7
Overall Product Reliability	9.1	8.9	9.4	9.1	8.8	9.4	9.8	8.8
Print Driver Stability	8.3	8.8	8.4	6.8	8.2	9.0	8.9	8.5
Average	8.6	8.7	8.7	7.8	8.5	9.1	9.2	8.6
Image Quality:								
Color Consistency	8.9	8.8	9.1	9.1	8.9	9.1	9.5	8.7
Color Fidelity (Color Accuracy)	8.9	9.0	8.8	9.0	8.7	9.1	9.6	8.5
Color Resolution	8.9	9.2	8.4	8.9	9.0	9.2	9.3	8.8
Image Quality	9.0	9.3	9.3	8.7	8.6	9.2	9.5	9.2
Average	8.9	9.1	8.9	8.9	8.8	9.2	9.5	8.8
Operability and Functionality:								
Ease of Calibration	8.6	8.5	8.5	8.6	8.7	9.2	9.3	8.2
General Ease of Use	8.9	9.2	9.6	8.5	8.3	9.5	9.5	8.7
Network Compatibility	9.1	9.0	9.6	8.4	9.2	9.3	9.5	9.0
Paper Capacity	8.2	7.8	8.8	8.2	7.9	8.8	8.8	7.8
Scanning Capability	8.2	8.3	---	7.0	7.9	9.2	9.1	7.7
Speed – First Color Page	8.1	7.4	8.8	7.9	8.4	8.4	9.2	7.8
Speed – Multiple Pages	8.4	8.6	8.9	7.9	8.4	9.2	9.7	7.9
Average	8.5	8.4	9.0	8.1	8.4	9.1	9.3	8.2
Maintenance and TCO:								
Affordability	8.5	8.3	8.8	8.5	8.4	9.3	9.5	8.3
Cost Per Page for Black & White	7.9	7.8	8.9	7.9	7.6	9.0	8.3	6.6
Cost Per Page for Color	8.0	8.1	8.9	7.3	8.4	8.3	8.8	7.7
Ease of Operator Maintenance	8.5	8.6	9.0	7.4	8.1	9.0	9.1	8.6
Full Service Maintenance Agreement	8.8	9.2	---	8.4	8.9	9.0	9.7	9.1
Average	8.3	8.4	8.9	7.9	8.3	8.9	9.1	8.1
Overall Average	8.6	8.7	8.9	8.2	8.5	9.1	9.3	8.4

Source: OPA

Technical Perspective

Security – Your Biggest Liability

Security is the buzzword of the day. Vendors are playing the acronym game, complying with ISO/IEC standards, certifying systems and solutions under ISMS and CCC designations, participating in NIAP approved programs, etc. It's enough to make your head spin. Printer and MFP manufacturers have done an excellent job promoting the security of their systems. But are they doing enough and are you still at risk?

Reading the literature on vendor websites, it seems that these devices are safe and that you have no worries with respect to security issues around these machines. Data security kits protect the content of print jobs that reside on the hard disk in your MFP. However, the data on that disk is often written in code that



would be extremely hard to translate into meaningful information in the unlikely event that someone did obtain it.

While the vendors have explained in length what they have done to secure the information on the hard drive, many of their devices have critical weaknesses they fail to address in terms of how to fend off malicious attacks that use the MFP as an entry point to the network. Indeed, earlier this year, a known security weakness in Xerox MFPs was exposed. While this issue has since been rectified, these devices were in the field for years before it was addressed.

Most vendors allow access to their network imaging devices through a simple web browser. This is typically marketed as an advantage with the understanding that IT can remotely configure, monitor and support the machine. If someone really wants to access your network, finding an open port is a place where some may focus their efforts. While enterprise customers with full-time qualified IT departments may have the expertise to adequately address this vulnerability, SMB customers may be at risk, depending on the security of their device and the capability of whomever is supporting their network.

Programs such as NetView are readily available to discover all TCP/IP nodes and according to the NetView website, “draw a full geographical map (including routes) using DNS, MAC addresses, SNMP, WMI, NetBIOS and TCP Ports information.” While this is not how this program is intended to be used, it represents a rather easy method for a hacker to obtain critical information. Netcap.exe is another program useful to people with malicious intent. This tool allows a system integrator (or unauthorized user who has obtained access) to monitor packets on a LAN and save the information to a log file. What it really does is allow a person running the program to find the source and destination of addresses on the network, bringing the hacker one step closer to achieving his or her goal.

These are two of many programs being openly discussed in Internet forums. It seemed that the intent of most of these people posting in these forums was to try to use the imaging peripheral to access the network as a personal challenge or a test of their own network vulnerability. However, not everyone on the Internet operates with the best intentions.

Some of the access discussed in these forums was dependent on getting past the device password. Because there are typically many technicians authorized to fix a company’s device, it’s quite possible that the installing technician left the device password set on the default. Even if they didn’t, according to our research, many machines can be reset remotely, an act that will reset the password to the default setting. In fact, quite a bit of sarcasm was aimed at a few vendors who used a default password of “password.”

For those companies that own printers/MFPs that cannot be reset remotely, in cases where someone is motivated, it’s not far fetched to think they might physically walk into an office and tell a customer they are the service technician there to read the device’s meter. This may or may not work. If it does, the person can easily reset the password once they are in front of the machine, often as simply as pressing two or three buttons. Virtually every shred of information required to reset a device is available online, usually in product manuals available either on the vendor’s website or even on the device itself.

Why would people go to these lengths to do this? While it's unlikely that a customer will be faced with such an extreme situation, cyber crime is a wide-open frontier. It's hard to stop and even harder to trace. Many customers, both large and small, have sensitive client and banking information on their computers and networks. Some may have the ability to print checks, obtain personnel files, access databases and anything else a criminal mind may find of use. While some hacks may be as "innocent" as placing a Trojan horse or worm behind a company's firewall, others may be more purposeful.

Of course, part of breaching a network involves bypassing the firewall. This first level of defense is often far less secure than it should be, especially in SMB accounts where a great deal of security may be provided by under qualified personnel. Once they are past the firewall, in most cases, it's far easier to obtain network access through the imaging peripheral than it is to access through the server or other clients.

The point is, the print industry has elected to address a small portion of the overall security concerns their devices present. While securing the data on the device hard drive is important, it is a small part of the overall security vulnerabilities of the machine. Vendors need to understand that slapping certifications on a printer or MFP does not equate to security. Devices that do have the ability to prevent a remote security breach need to ensure that the technician supporting the device is properly configuring all the services. They should explain to the customer what's being done in this area to minimize exposure and risk. Those vendors that fall short need to prioritize this area of R&D. Customers spend thousands securing their network in other areas. As they become more aware of the risks certain products pose, they will want these issues addressed. As of now our industry is falling short.

Technical Perspective is provided by Industry Analysts Technical Services Division (IATSD). For more information on IATSD, or to obtain information on testing, please contact IATSD Senior Director Ted Neddleman at (973) 227-8699, or ted@industryanalysts.com, or visit www.industryanalysts.com