



Color at Work™

100% Independent Analysis

OKI C9600 Series 36 ppm Color Tabloid Printer



Key Buyer Benefits

Very aggressive price offering more headline color PPM for the dollar than any other device in its range.

Good paper handling options with heavy card stock from all trays and banner printing capability via the multi-purpose tray.

Good finishing and paper selection options allows a wide range of documents to be produced.

Good productivity across a wide range of typical office documents both text and graphically oriented.

Vibrant, crisp reproduction of typical office color documents.

User-friendly right click direct PDF capability provides fast submission of this popular file format.

BERTL 4-Star Award Winner

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Product Dynamics

OKI has been a leading force in color printing technology since the advent of tandem color printing — with the introduction of its four-in-line OKI 8c printer back in 1998. Since then, OKI has continued to push the boundaries of desktop color printing with faster engines and aggressive price point marketing strategies.

OKI's reputation has traditionally been more focused towards offering a very aggressive value-for-money proposition.

This has lent itself to office color placements where the ability to produce color output at no expense to general office productivity and with minimum bottom line effect is critical.

OKI recently announced its new 36 ppm color/40 ppm monochrome LED ledger/A3 capable print engine with, for the first time in its history, an option of two controllers.

1) The OKI C9600 with an OKI home-grown controller and 2) the OKI C9800 with a Fiery controller.

The C9800 has already been reviewed by BERTL's analysts and has been praised for offering Fiery printing capability at a price never before seen in the printing world. The C9800 is positioned to capture buyers from both the front office world and the professional color world of the back office or graphic studio.

While the Fiery-driven C9800 may offer superior productivity, image quality, and more print utilities, it comes at a price, and may, in terms of its complexities, actually be harder for some front office users to come to grips with.

The C9600 is designed for the front office buyer who is looking for simplicity, flexibility and good productivity at a low price.

The OKI C9600 looks set to win the hearts and minds of buyers with an enviable list of features, plenty of processing horsepower, and a price that leaves competitors behind.

Speeds and Feeds

General specs of the C9600 are impressive. OKI offers a choice of two configurations, the C9600n and the C9600hdn. The only difference between the two models being that the hdn model includes automatic duplex capability.

Both models come rated at 40 ppm monochrome, and 36 ppm full-color. The monthly duty cycle is rated at 150,000 pages.

Other headline specs of the line include:

- 1200 x 600 dpi print resolution
- 256 / 384 MB RAM (n / hdn)
- 720 MHz print processor
- Banner printing ability
- Direct PDF printing as standard

BERTL analyst
with OKI C9600



Product Dynamics

Design Considerations:

The OKI C9600 is LED-based, with four rows of tightly spaced LEDs — one row each for cyan, magenta, yellow, and black. The unit is engineered to protect critical components from users while also being easy to service, helping to reduce the frequency of technician visits.

Shields move into place to protect the LED arrays as the machine is opened for service, and replacing individual toner/drum assemblies is very easy for even the casual office worker without running the risk of compromising key components.

The test model's optional finisher unit rolls off with very little physical effort required, enabling access to the unit's duplexer and hole-punch scrap tray. The structure of the finishing-unit-related components is strong and stable. However, the fact that the finisher needs to be rolled away to gain access to the duplex unit itself may be an issue in some environments.

1. The duplex unit is a common culprit when the occasional paper jam occurs. In the event of a jam, the OKI C9600 user must roll away the finisher, which could be difficult for some physically disabled users, and
2. It also means that space must be reserved to the left of the device, preventing the device from being positioned near a wall.

Front Office Suitability

The key to a successful front office device is building in a wide range of functionality.

The PCL driver, the driver of choice for most front office workers, is designed to be a user-friendly experience, with a visually attractive and well laid out driver interface, allowing



Protection plates prevent damage to LED arrays when being serviced

users to maintain high levels of productivity with the minimum amount of effort.

In addition to the PCL driver, front office desktop users will enjoy the wide range of software that comes bundled with the device including OKI's own PrintSuperVision network utility, which provides an easy to use device management function.

Finisher being rolled away to gain access to the duplex unit



Product Dynamics

Hardware

The device is being sold through both the dealer and VAR/reseller channel, so the issue of device installation itself may fall on the hands of the dealer, rather than the end user. Having said that, the installation is easy and should cause little disruption to the office.

Software

The connection to the device itself was straight forward, with OKI software walking us through the process. While the connection to the device may have been easy, the installation of the multiple software elements was not.

Most of the applications must be installed separately — a nuisance for both administrators and users. Software for the C9600 is in need of a better installation routine that would enable users to “Install All” or, better yet, be presented with a list of available software to be selected for installation by simply placing a checkmark next to the item.

Connectivity

Here again, the OKI C9600 shines with standard features, including Linux/UNIX support, an OKILAN® 10/100 Base-T internal Ethernet print server, IEEE-1284 bidirectional parallel, and USB 2.0 connectivity — with automatic connection-interface-switching — right out of the box. The device can be networked or used as a standalone unit, supporting all popular flavors of Windows and Macintosh operating systems. Wireless is supported with an internal option OkiLAN510w.



We would have liked to see

BERTL analysts identified only two potentially weak (depending upon customer needs and usage requirements) connectivity issues.

First, wireless connectivity isn't an option — forcing the unit into workgroup uses and bypassing all walk-up printing activities from users with laptop PCs and PDAs, for example. (Note: Wireless connectivity is possible with the C9800 Series through 3rd party USB-connected wireless devices users can purchase at CompUSA, Office Depot, for example.)

Second, BERTL analysts are disappointed that walk-up direct printing from a USB keychain drive is not included, especially when you consider that raw PDF data streams can be handled by the controller.

Paper Handling

This is an area of relative strength for the OKI C9600. Starting with manual-feed capability, the multipurpose tray is a 230-sheet capacity and handles paper sizes of up to 12.9" x 47.24" (32.7 x 120 cm). The 47.24" / 120 cm refers to banner printing. This is a useful feature within certain niche markets such as:

- Education — creating class display materials
- Retail — producing point-of-sale materials
- Marketing — producing exhibition and other display material in-house

Both models include a universal 530-sheet tray which can hold paper up to 12" x 18" (Tabloid Extra), combining with the 230-sheet multi-purpose tray, for a total of 760 sheets. Paper capacity can be extended further through the addition of additional four 530-sheet universal trays, raising the maximum number of sheets to 2,880.

While this is low compared to some competing units, it provides for up to an hour of uninterrupted printing before paper supplies need to be replenished, which should be more than adequate for use.

The standard universal trays handles paper stock from 20 lb bond to 90 lb index (75 to 217 gsm), while the MPT extends that range to 150 lb index (271 gsm).

The paper trays and guides were clearly designed with durability in mind. Reloading the trays was easy, with sliding guides along the long edge and a guide that's slotted into pre-cut paper-size markers for the short edge. The guides can be easily adjusted with a single hand (a nice plus for offices requiring strong Section 508 features).



OKI C9600 banner printing being used to produce marketing collateral

The OKI C9600 can be equipped with an optional finisher unit. The 2-tray finishing unit holds up to 1,000 sheets of 12" x 18" and staples up to 50 sheets.

The finisher handles 2- or 3-hole punching, sort/non-sort, stapling (single or multiple staples at the edge, or centered for saddle stitching), and book-style binding.

Oki offers the finisher in two configurations. The capabilities of the two finishers are identical, and are simply offered to allow connection to either the four-tray or five-tray equipped devices, with the five-tray equipped device obviously standing higher than the four-tray unit.

An automatic duplexing unit is also included as a standard feature on the C9600hdn.

Universal trays under the main engine unit



Paper Handling / Security

The productivity of the finisher unit was not as good as we have seen on traditional copier color MFP models: with a single staple adding 7 seconds to each set compared to the same job exiting via the default, center output area, and a double-side staple added over 10 seconds to each set.

However, the device's saddle-stitch booklet-finisher option offers finishing options missing from some competitors.

The benefit of the higher stacking capacity and the ability to create a wide range of finished documents in a single step, in our opinion, far outweighs losing a few extra seconds .

This is only an issue to those who live by the artificial world of the stopwatch — instead of the real world, where users receive emails telling them when their output is ready to collect — counting away the lost seconds added to each stapled job.

We did find some design issues with the finisher installed.

First is the issue of the duplex unit being positioned along the left side of the device, requiring the finisher to be rolled away every time a paper jam in the duplex unit has to be removed. This is irritating and prevents the device from the being situated closer to a wall.

The second irritation is that when rolling the finisher back into place after removing a jam, it is quite easy to catch one of the cables between the finisher and the base engine unit. This, over a period of time could damage cables and result in service engineer calls.

Security

Administrators can specify IP address-level security, filtering-out packets to prevent unsecured access from unauthorized servers and IP address ranges.

We would like to see

While IP address filtering is available we could find no way to restrict access via MAC address ranges. IP addresses can be changed in an instant, allowing a potential hacker to bypass security, however, MAC addresses are fixed.

BERTL has spoken with government purchasing agents who have standardized on equipment that has to permit MAC filtering. PC motherboards are purchased with sequential MAC addresses allowing the buyer to lock down access to the network equipment around the building to only those MAC address ranges the company has installed.

Printer Driver

PCL5 Driver

The PCL6 driver is easy to use, with a good selection of options for the typical general office user. The Setup tab offers typical selections such as paper size, source, and feed options, along with finishing options which include:

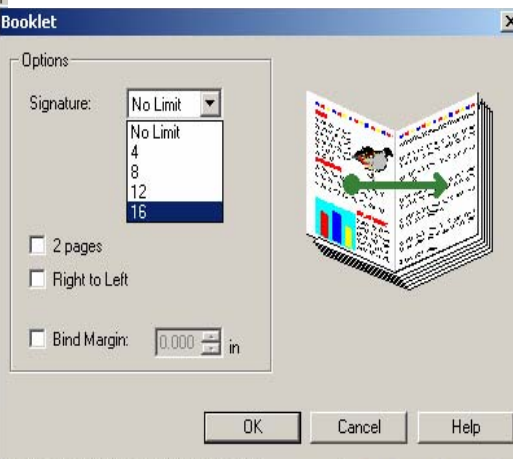
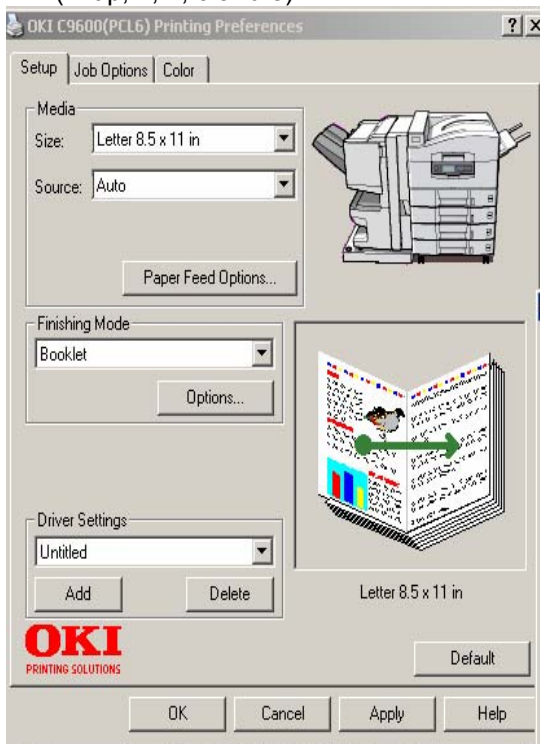
- Booklet printing (with options for signatures, 2 pages, right to left, and bind margin — see the screenshot below)
- Collating (which can be handled by the application or the printer itself)
- Separating queued print jobs (printing a separation page)
- Cover print (feeds special stock from a different tray for use as a document cover)
- Custom page size (by available choices or user-customizable)
- Printing multiple pages on one sheet (N-up, 2, 4, 6 and 8)

- Duplex printing
- Fit to page (print data formatted from one size page onto a different size page, without modifying the print data)

As is the case with drivers from virtually all manufacturers, users can save typically-used functions.

We would have liked the ability to choose both front- and back-cover paper stocks, a benefit that would allow users to specify a heavy card stock for both covers, adding to the overall professional feel of a document.

We would also have liked to have seen a poster mode — a feature that allows users to create large display materials by splitting an image over multiple printed sheets. This feature is available on some rival units. **Note:** The PCL5c driver does include a poster mode for those that need it.



Printer Driver

Job Options

The Job Options tab includes the following selectable print resolutions:

- Photo (Multilevel),
- Fine/Detail (1200 x 600 dpi),
- Normal (600 x 600 dpi), and
- Draft (600 x 600 dpi).

Resolution will of course affect speed and consumables usage. Upon changing the selection, the user is presented with a new graphical representation to help as an expected output guide.

Also available at this level are output, overlay, font, portrait/landscape, scaling, and other options. These are fairly typical

settings that users will find within most PCL drivers in this segment.

The print driver of the OKI C9600 supports secure printing — where a user may queue named (up to 16 alphanumeric characters) confidential documents on the device's hard drive and then print those documents by entering a system administrator-assigned user PIN (0000 to 9999) at the device's control panel. Delete options are available at the device's control panel.

This is an important feature when the device is out of line of sight of the users, allowing them to send confidential documents securely without running the risk that a third party will view the document before collection, violating data

security legislation like HIPAA, SOX and GLB.

The C9600 also offers a Stored Print feature (see screenshot to left). This allows users to store a file onto the hard drive of the device for later reprinting.

This valuable print on demand feature is actually missing from the more expensive Fiery-driven C9800 model.

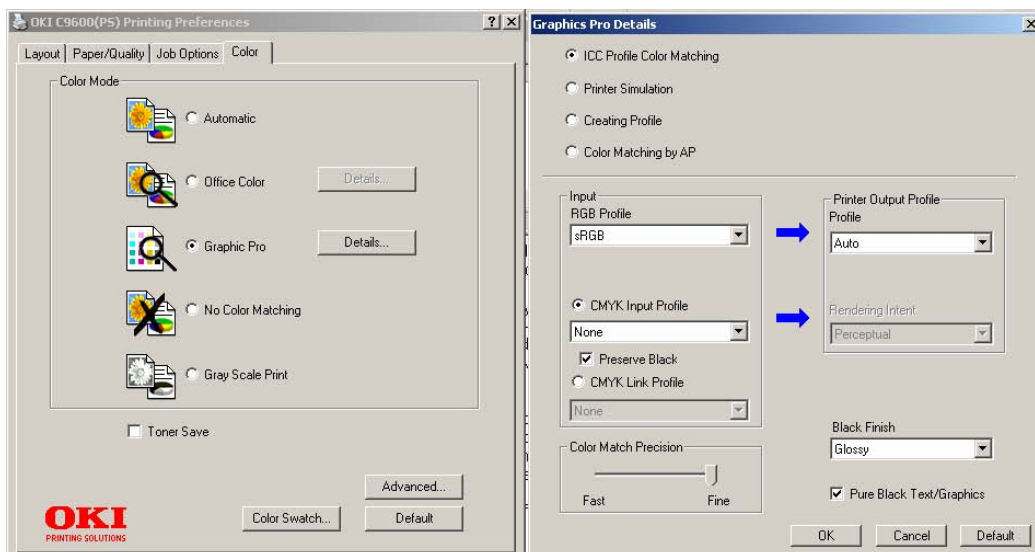


Printer Driver

Color Tab

The Color tab offers user a selection of color-matching options; automatic, Office Color, Graphic Pro and grayscale color matching — and the option to turn off color matching. Options within this area bring the user to various pre-selections for color-matching and black (either composite or pure black; the latter being the device's default), as well as user-specified (numerically or via slider) brightness and saturation. Graphic Pro settings also includes ICC profiling allowing users to match RGB profiles to printer output profiles.

The toner save mode is also found within the color tab.



Printer Driver

PDF Print Direct

This very valuable OKI utility — while not unique in the marketplace, but also not yet common in such devices — streamlines the process of printing PDFs by sending files directly to the printer without triggering/opening the Adobe Acrobat or other Reader applications.

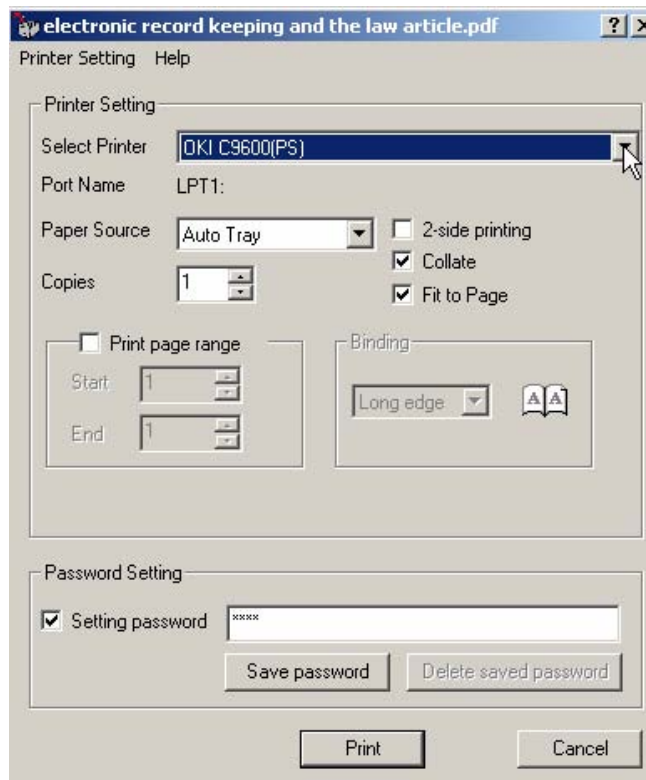
We liked the way in which users could initiate the direct PDF print process by simply right clicking on the file. This differs from some competing direct PDF functions that force users to first open new applications, browse to the file in question and then start the printing process.

Prior to sending the PDF to the device, PDF Print Direct also gives the user the flexibility to change paper source, quantities, duplexing, collation, fit-to-page properties — and, if the device is appropriately equipped — page ranges and binding options.

We would have liked to have had the ability to choose more advanced finishing options such as stapling and hole punch.

Note: For those who would like to be able to carry out more advanced direct PDF printing tasks there is a solution.

The one way in which automatic direct PDF print could be accomplished with the more advanced finishing added would be to set up multiple printer drivers with the finishing feature set as default.



Printer Driver

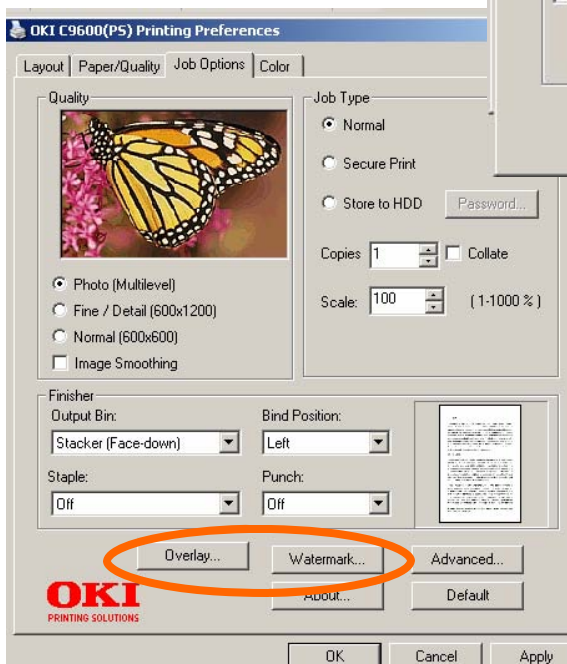
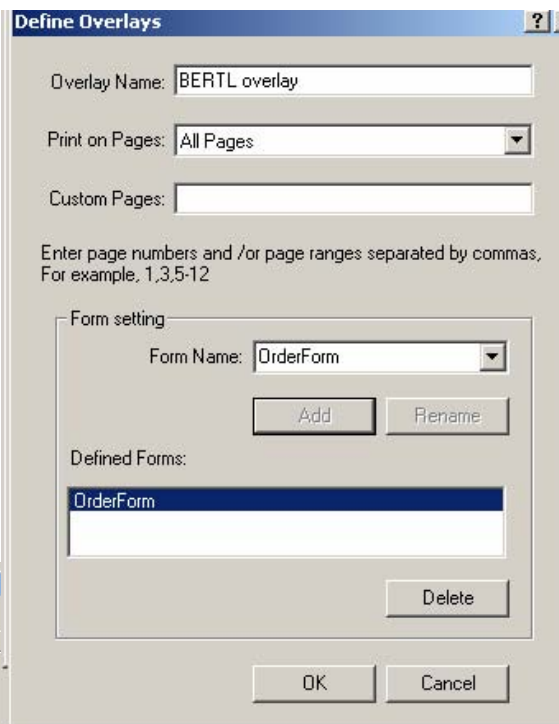
Overlay Function

The PostScript driver has a similar look and feel to the PCL driver but also conforms to standard PostScript driver design.

The PostScript driver includes four tabs versus the PCL driver's three. The extra tab is due to the PostScript driver splitting paper selection out into a separate tab, while PCL includes the details within the setup tab.

The biggest functionality difference between the two drivers is the additional ability to add a watermark or overlay within a PostScript print job.

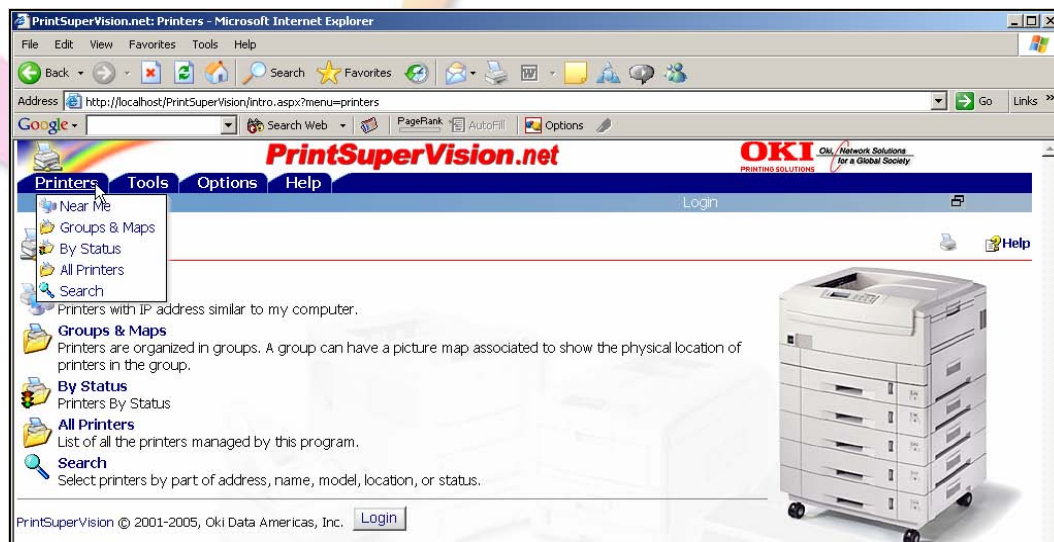
The overlay function is especially useful for those looking to implement an electronic forms system. Users are able to store the forms as an overlay file, thus removing the need to rip the form background data every time a form is printed.



Device Management

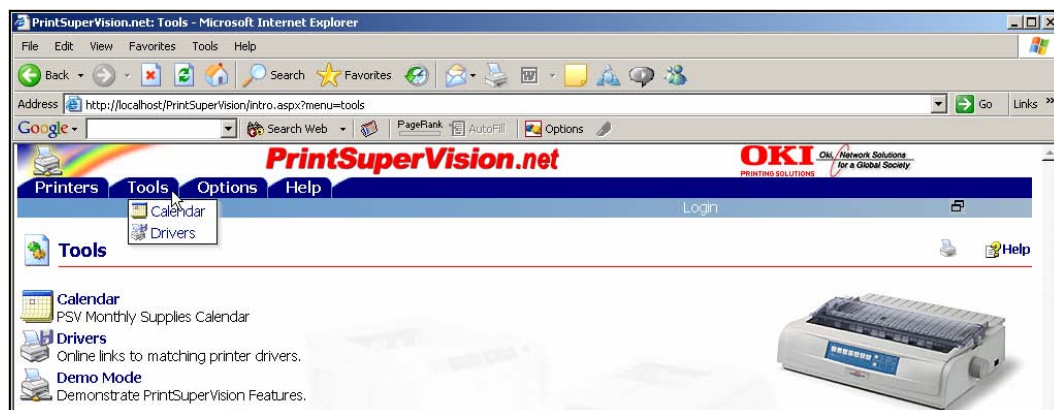
Included OKI Device Management Solutions		
PrintSuperVision	Browser-based printer management software	Based on the Microsoft .NET architecture, PSV helps administrators and helpdesk staff monitor and manage both OKI and most SNMP-compliant, networked printers — individually or as groups. Among a wide variety of capabilities, it can, for example, schedule reports and send them via email, or send print files directly to remote printers without the need for a local PC.
Admin Assistant	Remote network-card management utility	Allowing IT administrators access to TCP/IP configuration, IP filtering, Protocol On/Off, SNMP and NetBEUI settings, this utility supports email event notification and, for example, monitoring network traffic to specific printers.
Web Driver Installer	Enterprise installation tool	This browser-based utility automates print driver installation across even large networks, greatly reducing the manual effort required of IT personnel. It sends users an email which includes a URL; the user then clicks on the link to download and install the driver themselves.
LPR Utility	Ethernet direct printing	Eliminating the need to route print jobs through a print server, LPR works with most major operating systems.
Storage Device Manager	Manages device-based memory	With SDM, IT managers can initiate and manage both flash memory and hard drives, including saving fonts, barcodes, and graphical images. It also enables quick printing of a demo or fonts page, or a file listing of forms currently on the device.
ESP Print Pro	UNIX print system	Based on the Common UNIX Printing System™ (CUPS), ESP Print Pro brings a wealth of printing capabilities to Linux, Mac®, OS X, and UNIX systems.

Device Management

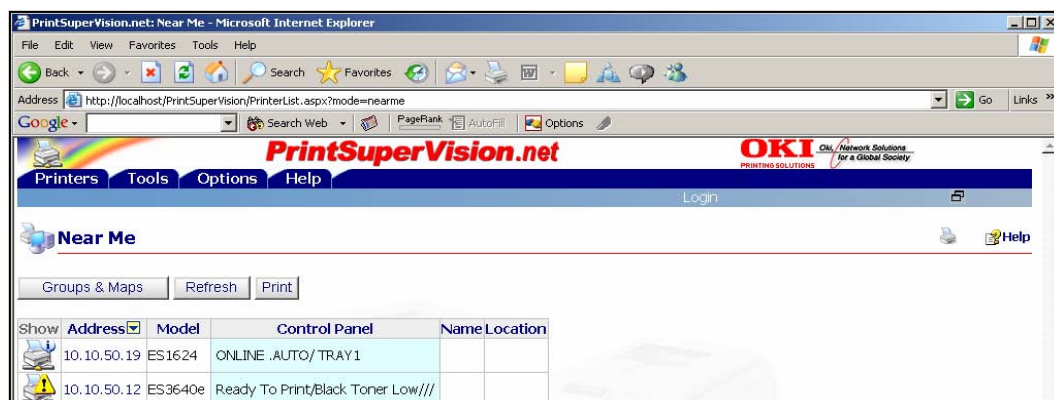


Above: Printer tab allowing users to view printers using multiple filter categories

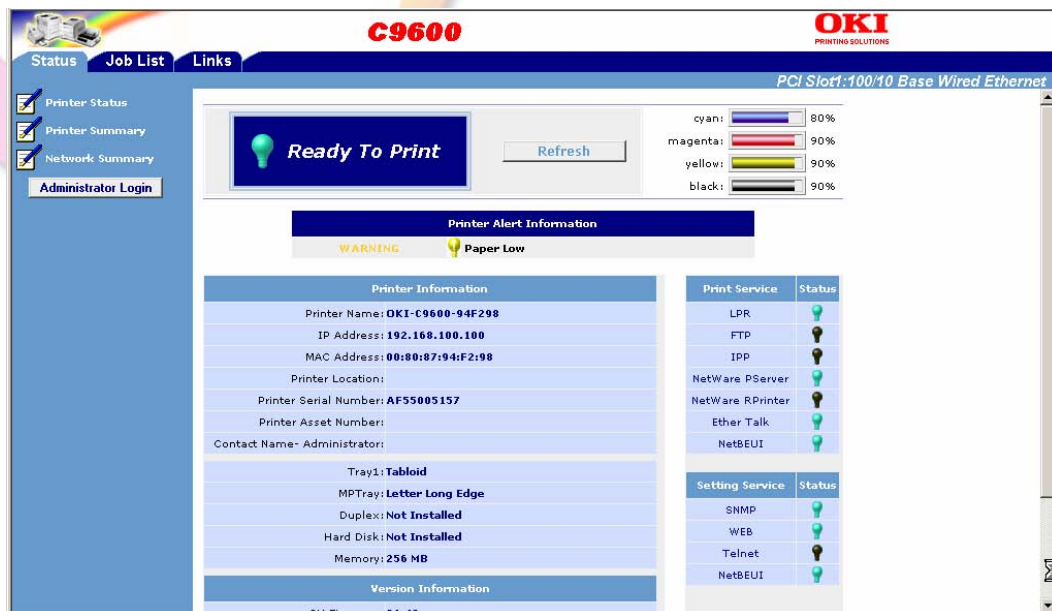
Below: Tools tab providing users with drivers for OKI products plus a supplies calendar function



Below: Users can see devices near them that are available for print jobs

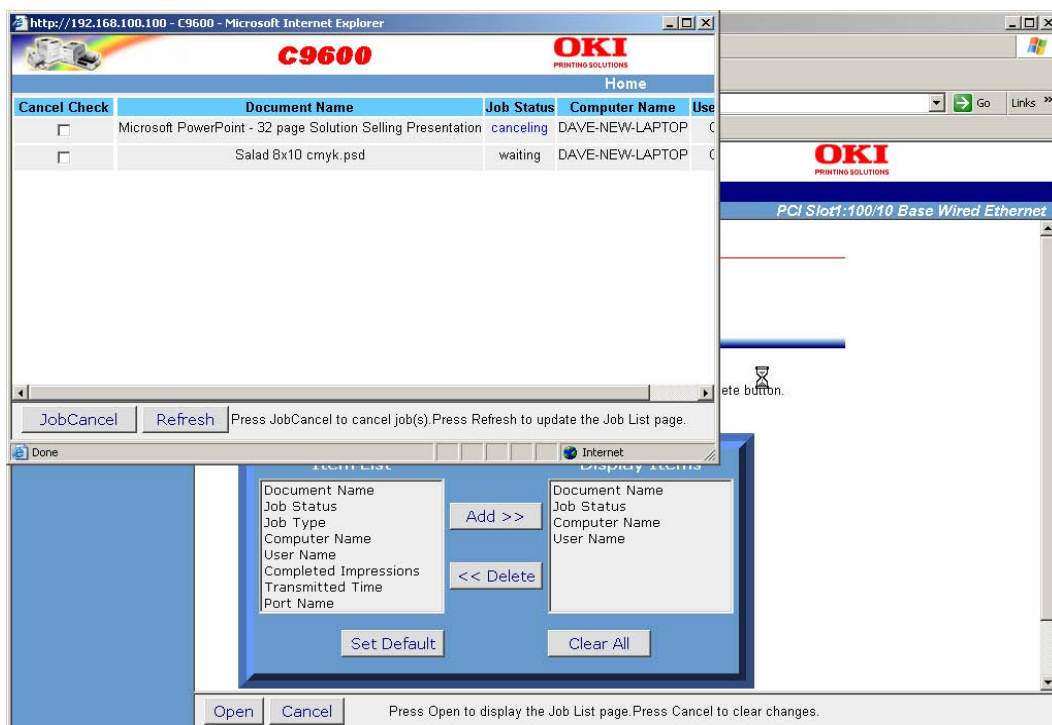


Device Management



Above: Status can be monitored. Users/administrators can view paper, supplies and network settings all from a single tab display.

Below: Users can delete jobs and view jobs waiting in the queue.



Print

Print Productivity Observations

The OKI C9600 delivered good print-times across a wide range of test files spanning a selection of standard office applications.

While productivity can only be truly assessed on a user-by-user and workflow-by-workflow basis, we would expect most users to be happy with the degree of printing productivity they achieve on simplex output from the OKI C9600.

OKI C9800 vs. OKI C9600 Productivity

On general office print runs, the difference in productivity was minimal between the Fiery controlled C9800 and the OKI controlled driven C9600. The biggest differences as expected were seen on the more graphically-intensive processor hungry jobs such as the 69-page PowerPoint presentation and the Photoshop file.

BERTL analysts measured no discernable speed difference between "1200 dpi Multilevel" Photo, 600 x 600 dpi Normal, and 600 x 600 dpi Draft.

We measured only marginal productivity differences between the PCL and PostScript driver modes on graphic-based jobs. PCL resulted in an advantage when processing text-based Office documents.

Productivity Comparison Between OKI C9800 and OKI C9600 Printers		
	OKI C9600	OKI C9800
6-page graphically intensive PDF	25.31 sec	23.56 sec
16-page PDF magazine draft	47.26 sec	42.10 sec
32-page text intensive PowerPoint	76.12 sec	70.42 sec
69-page image intensive PowerPoint	206.49 sec	148.50 sec
38-page text intensive Word	82.39 sec	73.62 sec
1-page high resolution Photoshop file	181.76 sec	150.41 sec

Image Quality

Print Image Quality

BERTL analysts were impressed by the image quality across the spectrum of most test samples output on the OKI C9600.

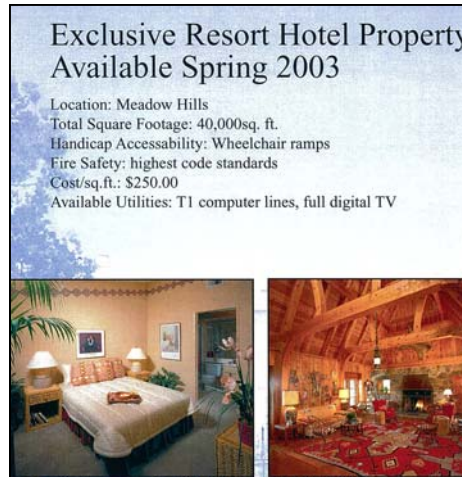
Solid areas of color were reproduced without streaking or banding that sometimes occurs in color devices.

Registration was good overall with only very slight registration issues creeping into one of two test samples.

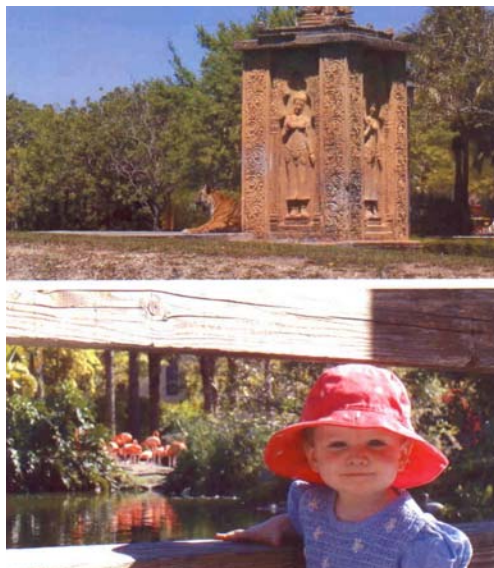
High-resolution graphic images were reproduced with a good level, however, compared to the OKI C9800 there was a noticeable difference in quality with the more expensive Fiery-driven printer outputting crisper, more vibrant output.

Digital photograph reproduction was to a high standard, with skin tones reproduced well, a factor that will be important for marketing departments producing company newsletters, etc.

Scenic greens and blues were reproduced with an attractive vivid nature. This will appeal to real estate agents looking to produce attractive looking open house materials and other house details.

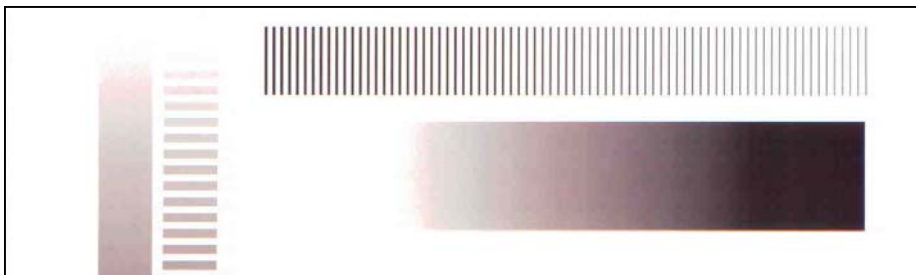


Above: Business color output looks vibrant and attractive to the eye.



Above: Digital photography reproduction was to a good level.

Below: Grayscales reproduced in full-color images showed some sign of other colors between 25 and 50% grayscale ranges. (600 dpi scanned-image illustrative purposes.)



Summing Up

Those looking for a versatile good-quality, high-speed color printer will like the OKI C9600.

Out of the box the OKI C9600 offers more bang for the buck than most competing units, with high-speed color and monochrome output coupled with flexible media handling capabilities and an impressive array of finishing options.

While the installation process may not have been the fastest we have ever seen, the process was carried out without any problems.

Image quality was to a good standard on most office work, with only the grayscale reproduction between 25-50% reproduced in full color mode raising issues. This same issue was not found on the Fiery controlled C9800.

Productivity was to a good standard throughout testing with an admirable showing, versus the more powerful Fiery-driven C9800, with only the most processor-intensive workloads highlighting the difference in horsepower between the two units.

The direct PDF feature will be appreciated by those who handle PDFs on a day-to-day basis.

We would have liked to see the ability to read USB flash stick drives, especially in lieu of the device's ability to handle direct PDF workflow.

The heavy-media, weight support and banner print mode will be appreciated by those looking to create a diverse range of display and marketing collaterals from the device.

We would have liked to have seen a poster mode within the printer driver. This would

have allowed users to split images over multiple sheets, creating large display posters when wide format printing is not a feasible alternative either through cost or time constraints.

Users will find the device relatively easy to maintain, with easy routine maintenance items such as drums, toner cartridges, etc., all being easily accessible.

The one area of design we would like to see improved was the positioning of the duplex unit. This is situated between the main engine unit and the finisher, if installed. The problem arises when a paper jam occurs forcing the user to roll away the finisher unit before accessing any duplex jams. In addition to being an irritation to most and a difficult procedure for others, the design also means that more space is required when positioning the device in the office to allow for this eventuality.

In closing, the C9600 has more strengths than weaknesses. In our opinion the combination of good productivity, solid image quality, flexibility, and a very impressive return on investment price point results in a device that will be a valued and successful addition to the majority of general office environments.

