

**DELL
PROXIMITY
PRINT:
EMPOWERING
PRINTER USERS
IN THE MOBILE
WORKPLACE**



ABSTRACT

Providing quality printing services while controlling costs is an ongoing challenge for IT organizations. That challenge is becoming more daunting with the growing importance of mobile computing. Mobile users who are away from their desks often have difficulty finding and using a printer, undercutting the productivity gains that mobility can provide. At the same time, the number and types of printers in the environment are proliferating, requiring IT organizations to spend more of their time and budgets on printer administration. Dell Proximity Print, available as a free download, is designed to meet this challenge by saving administrative time and empowering the mobile worker to quickly access printer resources.

IT organizations are focusing on the need to improve print services for mobile users because the importance of mobility in the workplace is growing. In enterprise campus settings, mobility is seen as a key driver of productivity, empowering workers by greatly increasing access to information. Mobile technologies make it easier for employees to collaborate in informal settings such as cafeterias and lobbies, and enable people to take their work with them to distant meeting rooms throughout the enterprise campus.

MAKING THE MOST OF THE MOBILITY INVESTMENT

Companies are investing heavily in mobility, as evidenced by the continuing growth in sales of notebook and laptop computers. In fact, industry analysts predict that notebook sales will soon exceed desktop sales.¹ Adoption of enabling technologies continues to increase, with wireless networks becoming widespread on corporate campuses. To make the most of this mobility investment, however, companies need to provide quick mobile access to the complete array of network resources, including printers. This task is complicated by the fact that the enterprise environment is becoming more complex.

THE CHALLENGE FOR IT: REDUCING PRINTER ADMINISTRATION

The number and types of printers in the environment are growing rapidly. As a result, IT staff members spend large amounts of time on printer management. Print queues for every printer device must be installed and maintained on print servers. Print drivers must also be installed on servers and client computers, and each queue must be associated with a driver. As the environment grows, IT administrators must constantly test multiple drivers and driver updates for use on the network.

IT administrators must be careful when adding and updating printer drivers to avoid causing user downtime. Before propagating a new driver to client systems, the IT administrator must determine that the driver will not negatively affect other software already on the client machines. The administrator must know the configurations of all of the networked laptop and desktop computers, and test the new driver with those configurations. The numbers can be daunting: a typical enterprise environment can easily involve over 1,000 clients connecting to over 100 different queues, with 50 or more printer drivers.

THE CHALLENGE FOR MOBILE USERS: MAINTAINING PRODUCTIVITY

The growing importance of mobility in the workplace also presents challenges for the user. Mobile users can lose significant productivity when they need to access a printer.

To illustrate, consider a typical scenario: employees in campus settings frequently attend different meetings in different buildings throughout the day, maintaining connectivity via the wireless infrastructure. If several employees are meeting in a conference room and need to access data on the network, they can do so in a few clicks using a laptop. But if they need to print that data, the procedure is not nearly as simple. One of them must leave the conference room and search for the closest printer in what is often unfamiliar territory, write down the printer name and queue, walk back to the conference room, type the information into a laptop, print the document, and walk back to the printer to retrieve the document.

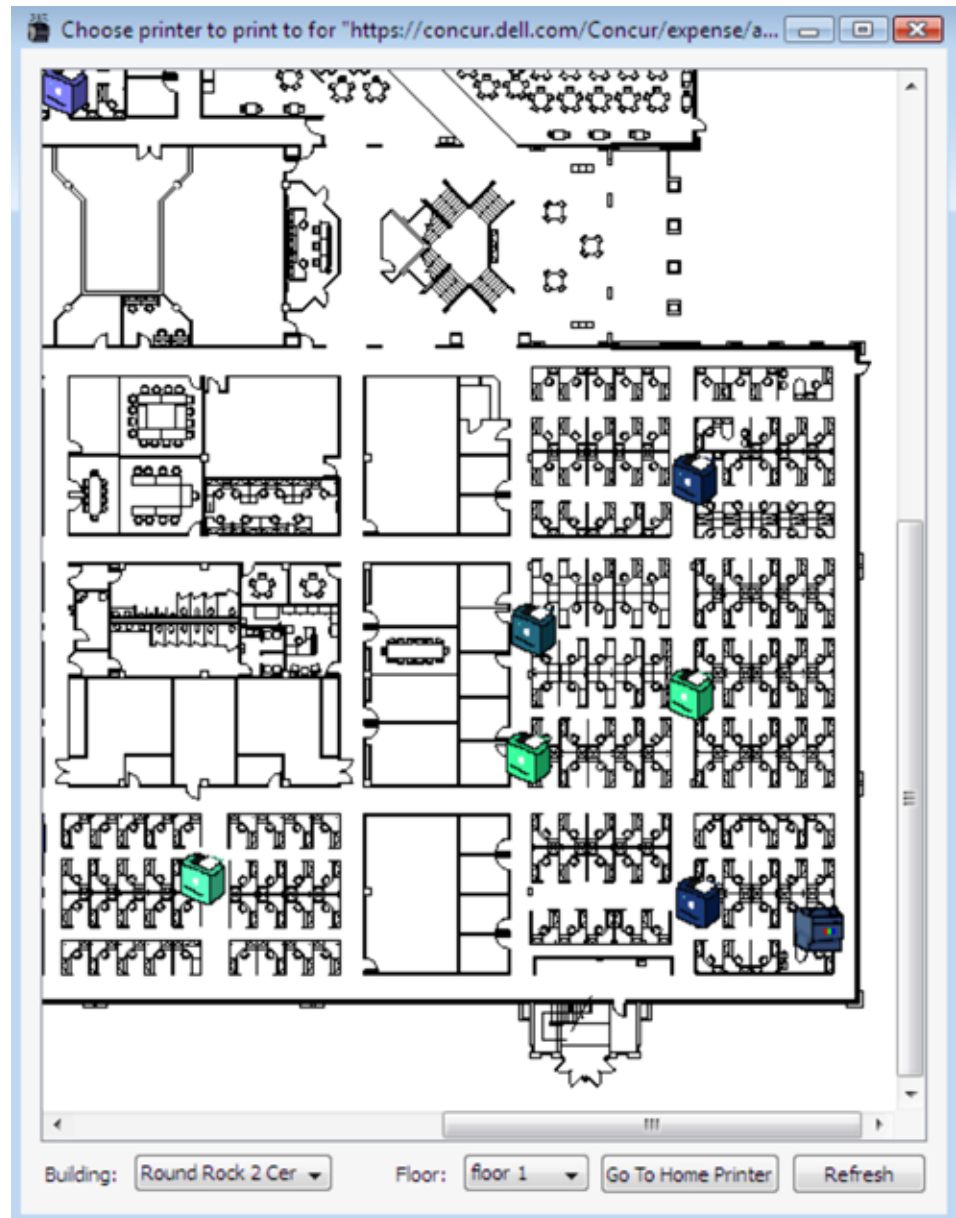
This process is not only inconvenient, but also disruptive. Collaborative interactions are interrupted, valuable ideas can be lost, and productivity suffers. As the experience of searching for a nearby printer is repeated over many months, mobile users also have the challenge of managing the multiple print queues they acquire in this way. Dozens of print queues from various campus locations may accumulate on an employee's laptop. However, the employee is unlikely to be able to match the queues to specific locations when needed.

FREE UTILITY FROM DELL HELPS IT ORGANIZATIONS AND MOBILE USERS ALIKE

Dell's innovative work for one customer in the area of mobility and printing is now paying dividends for all Dell customers. A large Boston medical center asked Dell to help it address the challenges of providing quality printer services in today's mobile environment, and Dell engineers quickly went to work on a solution. The result of their work, the Dell Proximity Print software utility, is now available as a free download. It is designed to help IT administrators and mobile users alike.

Proximity Print helps the mobile user by removing the need for multiple print queues. The user needs only one queue on the laptop, the Dell Proximity Print (DPP) queue. When the user clicks on the DPP queue, a graphical map appears showing the layout of the

Figure 1. Color-coded Proximity Print maps make it easy for employees to select and use a nearby printer as they travel around the campus.



building or floor where the user is located and the available printers in the area (see Figure 1). The user simply selects a nearby printer by clicking an on-screen printer icon—there is no need to walk around searching for a printer. Proximity Print then sends the job to the selected device over the wireless network and printing begins.

Printer icons are color-coded by status and distance from the user, and the employee can select the desired printer based on those colors. For example,

a green icon indicates a printer that is closer to the user, while shades of blue indicate printers that are farther away. Red means that a printer is off line, so the user should select a different icon. In addition, printers that can print in color are represented by a specially designed color-bar icon (as shown in the lower right of Figure 1).

The solution also helps IT administrators by eliminating the need for multiple drivers. The Dell Proximity Print software functions as a universal

print driver. And unlike other types of universal print drivers that can use only the least common capabilities in a group of printers, Dell Proximity Print can use all of a printer's capabilities. The Dell Proximity Print server uploads information about the printer that the user has selected and processes the job for that specific printer type. It converts the print job data to a format that the printer will understand before transmitting the data to the print device.

Administration is simpler with Dell Proximity Print because the IT administrator can use a single print driver to update all of the systems at once. In addition, the administrator needs to manage only a single print queue that can be tested once and then published to all of the client systems. These streamlined processes save time for IT personnel and help control operating costs.

DELL PROXIMITY PRINT SIMPLIFIES PROCESSES ON BOTH THE SERVER AND CLIENTS

Implementing Dell Proximity Print requires only a single physical or virtual server, typically located in the campus data center, plus a client package installed on user laptops. The server accepts print jobs from multiple clients and automatically redirects each print job to the printer that the user has selected. Security is maintained because the server accepts an inbound job only if the user has the appropriate network rights. The Proximity Print server can also centrally store all of the print jobs for archival purposes.

An administrative utility on the server enables the importation of printer location maps. These maps are then downloaded to client systems as they are used. When the infrastructure grows or a building layout changes, the system administrator can easily update the map database and add or move printers using a drag-and-drop graphical user interface. The next time a user opens a map after it has been changed by the administrator, the map will automatically re-download to the user's laptop with the updates in place.

The client software is easy to install and uninstall using a Microsoft® Windows® Installer package. Once the client package is in place, Dell Proximity Print makes printing easy whether employees are at their desks or moving between multiple buildings and meeting rooms. The employee designates a nearby "home printer" as a default queue for everyday use. When roaming wirelessly, the user can quickly bring up the graphical map provided by Dell Proximity Print and select a nearby printer. In a wired environment, the server automatically sends the job to the user's default queue. Dell Proximity Print eliminates the need for users to do anything other than hit File/Print and click a printer.

THE DELL PROXIMITY PRINT UTILITY IS BASED ON PROVEN, WIDELY USED TECHNOLOGY

Dell Proximity Print integrates easily into enterprise environments because it supports the client and server technologies that are already in place in most organizations.



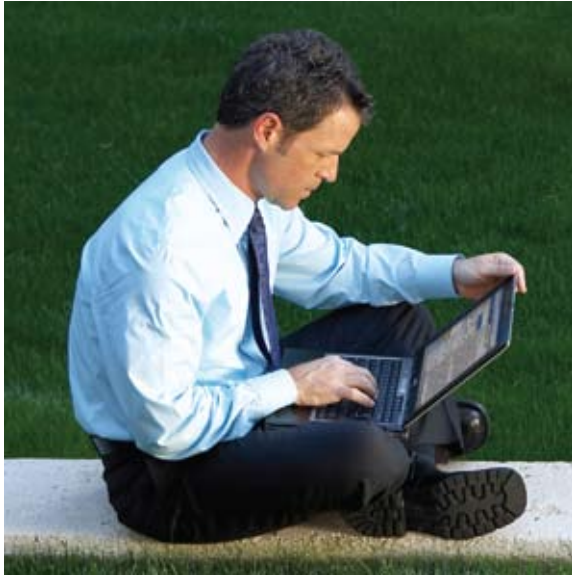
Client systems

On the client side, supported operating systems include Microsoft Windows XP, Microsoft Windows Vista®, and most Linux® distributions. Dell Proximity Print is also currently in testing on 10.x + versions of Apple operating systems.

For Windows XP, Service Pack 2 and earlier, Dell worked with Microsoft to leverage the NDIS API to enable the Proximity Print wireless utility. No additional wireless utility is needed. Proximity Print automatically scans of all the wireless access points within range of an employee's laptop, selects those with the best signal strength, and uploads access point identification data to the Dell Proximity Print server. With this data, the server can determine the building and floor where the employee is located and determine the most logical printer for the employee to use.

With the release of Windows XP, Service Pack 3, Microsoft included a standards-based wireless API that is also used in Windows Vista and Windows Server® 2008. Proximity Print supports this new Windows wireless API standard.

The Dell Proximity Print utility was built on Linux and will support any Linux distribution that includes the widely used Common UNIX Printing System (CUPS). CUPS is a publicly licensed software module for computer operating systems that provides spooling, scheduling, and other print management functionality.



Server technologies

On the server side, Dell Proximity Print runs on Linux-based operating systems and supports CUPS with custom packages developed by Dell to augment the print server functionality. Full support for Kerberos version 5 is included for back-end security. Other supported technologies include the open source Apache Web server and PHP scripting language for the back-end Web interface, and MySQL for database management and query processing.

Dell Proximity Print uses the generic CUPS PostScript 3 driver, which has been tested with all Dell printers as well as with ten different printers from other manufacturers. It also supports Printer Command Language (PCL) and Graphics Device Interface (GDI)-based printers. If a printer in a company environment is known to have problems with the standardized versions of PostScript or does not support PostScript, the Dell Proximity Print software can convert the print job into a PCL or GDI data stream. As a result, Dell Proximity Print can support almost any printer found in today's business environments.

HELPING COMPANIES INCREASE PRODUCTIVITY AND COMPETITIVENESS

Dell Proximity Print provides a productivity boost for the mobile user by eliminating the need to search for a printer, write down the printer name and queue, and enter the information into a laptop before starting a print job. Mobile users can quickly and easily find and access a printer as they move around the enterprise campus, helping to fulfill the promise of mobile computing so people can work better and companies are more competitive.

Dell Proximity Print is also a significant time-saver for the IT administrator. It streamlines management of print servers, drivers, and queues. It eliminates the need to repeatedly test driver updates to ensure they will not conflict with previously deployed user applications. And it simplifies the user experience, helping to reduce the chance of user errors that cause client systems to break down. Fielding help desk calls and making on-site repairs are among the most time-consuming and expensive tasks for any IT organization.

By helping to free IT administrators from time-consuming printer management and break-fix tasks, Dell Proximity Print enables organizations to use more of their valuable IT resources for strategic planning that advances bottom-line business goals.

FOR MORE INFORMATION

Dell Proximity Print is available as a free download—to download, go to support.dell.com.

Custom features may be added to the utility for a fee—if interested, or if you have any questions about Dell Proximity Print, just contact your Dell sales team and ask for the Dell printer consultant.

¹ See www.arstechnica.com/news.ars/post/20080103.

►► DELL PROXIMITY PRINT: SUPPORTED TECHNOLOGIES

Client

- Microsoft® Windows XP®
- Microsoft Windows Server® 2008
- Microsoft Windows Vista®
- Common UNIX Printing System (CUPS) PostScript® 3 generic driver
- Apple® – In testing on 10.x + versions
- Linux® – Will be fully supported on any distribution that supports CUPS (not yet tested)

Server

- Linux (Ubuntu/SuSE)®
- CUPS with custom packages
- Kerberos® version 5
- Apache®/PHP/MySQL®
- Printer Command Language (PCL)/Graphics Device Interface (GDI)/PostScript 3 Language

DELL PROXIMITY PRINT EMPOWERING PRINTER USERS IN THE MOBILE WORKPLACE

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US Patent pending

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