

White paper

Top 5 Tips for Choosing Mobile Printers

Mobile printers are deployed primarily to improve productivity. By giving users a tool to produce labels and receipts exactly when and where they're needed, enterprises save the steps required to travel to a stationary or vehicle-mounted printer, pick up the print output, and bring it back to where it is needed. These steps build unnecessary labor cost into printing operations. Therefore, the value a mobile printer provides depends directly on how it supports productivity.

"Productivity enhancement" isn't a line item on mobile printer spec sheets that organizations can use to easily compare different models. Instead, spec sheets list printer sizes and weights, print widths, media compatibility, wireless connectivity support, I/Os, power sources and other configuration options that add up to thousands of potential choices. Understanding how these features and options relate to mobile printer productivity and reliability is essential for choosing the best model for your operations.

There are five fundamental tips for finding the mobile printer that provides the best fit:

1. Respect the work environment;
2. Understand user needs;
3. Don't deviate from enterprise security and integration standards;
4. Match the mobile printer to its computer;
5. Consider operating cost as part of total cost.

This white paper explains these fundamentals, describes what differentiates mobile printers, and provides tips for selecting the model that will perform reliably, efficiently and affordably in your operations.

1. Respect the Work Environment

One of the most important differences between stationary printers and mobile models is where they are used. Stationary printers are usually installed on a sturdy stand in a computer room or on a vehicle or on a shop floor where they can be situated away from forklift traffic and the vibration and heat produced by equipment. In contrast, mobile printers go with the worker, and as such may be exposed to dust, dirt, snow, rain, heat and humidity, are at risk at being hit each time the user gets into or out of a vehicle, and are frequently dropped. Portable printers need to be protected against the work environment. Ruggedness is an extremely important quality, even for mobile computers used in retail or carpeted environments, because drops, spills and rough handling are routine, and failing to safeguard against these threats will result in lost productivity, the inability to complete necessary tasks and reduced service levels.

Research into mobile device failures in enterprise environments has shown that the value of lost productivity is many times higher than the cost of repairing or replacing the device¹ according to a study on mobile computers and peripherals. The following passage highlights an important issue to consider when evaluating printers and other devices to be used by the mobile workforce:

"With many mobile computers supporting mission-critical applications, the impact of failure on customer service, internal productivity, employee morale and ultimately lost revenues can be significant. Equipping mobile workers with the most appropriate device based on application and environment – and not upfront adoption cost – is absolutely critical."

In industrial, distribution, field service, retail and other enterprise operations, the ruggedness of the mobile device relates directly to its reliability. There is a range of ruggedness across the mobile printer product spectrum. The IP ratings and drop specifications provide a good, non-subjective measure of ruggedness. Since printers can accidentally fall, to survive in most environments they should be specified to withstand multiple 5-foot drops to concrete. Mobile printers rated IP54 or higher are environmentally sealed to prevent damage from rain, dirt, dust and other particulates. Features that promote ruggedness and reliability include molded construction, durable housing, plus carrying straps and mounting brackets to help prevent drops and reduce wear.

2. Understand User Needs

Work processes are also important to consider when evaluating mobile printers, and tend to be quite different from those supported with stationary models. Mobile printers are often used to produce shelf labels, shipment labels, invoices, receipts, work orders and other materials on demand, often while a customer is waiting or the user is ready to go onto the next task. Responsive print output is therefore a valuable feature. Print operations shouldn't slow down the work process or keep customers waiting.

Inches per second (IPS) is the most widely used measure of print speed, but not necessarily the most important. The true indicator of a printer's productivity power is its throughput, which includes the total time it takes a printer to complete a print job after receiving the print command. Before printing even begins, the printer may need to extract information from onboard memory or a mobile computer, generate graphics and format bar codes. The time required for these functions is reflected in throughput, but not in inches per second.

Throughput directly impacts the amount of time users spend waiting for the printer to output the needed labels or receipts. Since mobile printing is "on demand," the throughput to print the first label or receipt is critical. Variables that impact throughput include the type of data streams the printer can process, whether the printer has enough memory to allow fonts and label formats to be stored internally, its internal processor, its electronics and print mechanisms, supported interfaces and network bandwidth.

Ease of use also impacts productivity. Mobile printers are often used far from available tech support, so how easily the user can recharge batteries, load media, clear jams and perform other basic maintenance and troubleshooting is important. If the printer goes down, the benefits a mobile printer provides go away until the breakdown can be resolved. Productivity

¹ "Total Cost of Ownership (TCO) Models for Mobile Computing and Communications Platforms," VDC Research, July, 2007.

suffers when users have to revert to manual, hand-written procedures for generating work orders, invoices and receipts. Features like audible tones and LEDs, an LCD screen that can prompt users through operations and provide easy-to-understand error messages, control panel buttons, even belt clips and shoulder straps, all contribute to ease of use. Battery life, required recharge times and the ability to remove batteries from the printer to charge them (so spares can be swapped in) also impact productivity and user satisfaction with the printer. Support for linerless media provides convenience for workers, who will not need to carry and dispose of label backing material.

The printer's design is an important variable to ease of use. To provide productivity benefits, mobile printers need to be comfortable enough to use throughout the shift without tiring or inconveniencing the user. Many form factors and carrying options are available to support different work processes. These include mobile printers designed for wearing on a belt clip or shoulder strap, being carried (either in a case or mounted to a workboard that can also hold a mobile computer), or mounted in a truck, cart, van or materials handling vehicle.

3. Don't Deviate from Enterprise Security & Integration Standards

Ease of integration with various enterprise software applications and development environments also differentiates mobile printers and is an important variable cost to consider. Mobile printers can support enterprise IT standards for integration, device management and wireless security, so organizations should insist on models that are compatible with their platforms and preferences. It is not enough for a wireless mobile printer to connect to the network or with other devices, it must do so securely. That means mobile printers used on wireless LANs should have native support for leading and standard security protocols such as 802.1x, WPA2, EAP-TLS, TTLS, LEAP, PEAP and 802.11i. Bluetooth is another popular wireless connection option, especially for interfacing with mobile computers and other peripherals. Bluetooth security settings and profiles should be set the same for printers as they are for other devices. Card readers integrated into mobile printers should support the latest ISO and EMV certifications for payment collection.

It is advantageous to include printers in mobile device management programs. Doing so helps administrators monitor performance, order predictive maintenance, remotely update security, settings and applications and provide other support that doesn't require hands-on activity. The alternative is manual maintenance, which can keep printers out of service for hours or even days as the printer makes its way from the user to the help desk and back.

Another time saver is selecting mobile printers that share a common development environment with other devices used in the enterprise. This approach leverages programming knowledge and code while requiring fewer specialized skills and environments to support.

4. Match the Mobile Printer to Its Computer

Independent printing remains relatively rare for portable printers, which in most cases are matched to a mobile computer that directs printing and runs other applications. Most mobile printers have basic compatibility with dozens of mobile computers. However, many users are surprised to learn that printer performance can vary significantly depending on the computer it is paired with. Testing of the same label format, on the same mobile printer with different mobile computers found output time differences of up to 27 percent depending on which mobile computer was used. The printer-computer combination is an important variable for productivity and should be evaluated during the selection process.

Compatibility between computer and printer goes beyond whether each device supports the organization's desired interface. Bluetooth, USB and other interfaces provide basic connectivity between the mobile printer and computer, but do not optimize operations. Even with standard interfaces in place, mobile computers and software applications use different drivers and emulations when working with printers and have several options for how print jobs are processed. Users should test their own label and receipt formats to determine which printer-computer combination is fastest and most responsive for users.

The printer should also be a close match with the computer in terms of form and functionality. Ruggedness and durability vary widely among mobile printer models. Organizations should select one with drop resistance and environmental protection ratings that at least match those of their mobile computers. Temperature resistance ratings are important for field-based applications because often printers are left in vehicles overnight, but the computers are brought inside a facility for data transfer and secure storage. Therefore the printer is subjected to wider temperature extremes than the mobile computer or even the worker, who do not spend hours in vehicles with no climate control. As noted, wireless printers should support the same standards and configurations as the computers and networks they will interact with.

In select cases, creating simple applications that will run on the mobile printers can also minimize overall hardware costs by eliminating the need for a mobile computer to direct printing operations. For example, workers may only need to print a "pass" or "fail" label to complete an inspection process. This operation could be completed without a mobile computer by using the function keys and LCD on a mobile smart printer to select and print the required label. Intelligent mobile printers can function independent of a mobile computer. The key features that enable independent operation include an LCD display to guide and prompt the user, keypad controls for basic input, integrated magnetic stripe readers to support card transactions, and sufficient memory and processing power to run applications. Mobile printers can also act as the host for a cordless scanner for common relabeling applications. Mobile smart printing is a relatively new capability, and applications are emerging.

5. Consider Operating Cost as Part of Total Cost

The purchase price of a printer and the cost of its supplies are only a small measure of its true cost. Performance issues that limit productivity drive up the cost of mobile printers, so reliability, expected maintenance costs, the time to complete repairs and whether printers can be serviced remotely should all be considered. Rugged mobile printers often have a higher list price than common commercial models, but have longer life cycles and are more resistant to damage, which results in lower repair costs and service interruptions, and allows organizations to keep smaller spare pools.

Service and support requirements are a major component to total cost of ownership, and tend to vary more widely than hardware list prices. For example, a mobile printer that can accept the enterprise's legacy label formats (so new ones won't have to be developed), has native support for the preferred mobile computer, and allows the organization to leverage its mobile device management system to configure, monitor and maintain the printer provides cost advantages over a model that would require additional software development to integrate.

The most important cost to consider is how the printer impacts productivity. Those that perform reliably and minimize the time users and their customer spend waiting for labels and receipts will provide superior value.

Conclusion

Mobile printers are available in a variety of configurations and ruggedness levels so they can be optimized for specific business processes and work environments. The mobile printer model that is best for any specific job is the one that will provide superior reliability to keep users productive. Some of the key differentiators that promote productivity include:

- Ruggedness – For demanding environments, printers rated IP54 or higher are recommended;
- Drop-in media loading – which is fast and helps prevent jams;
- Security – mobile printers should support enterprise wireless security protocols so they don't create a loophole or require additional development work to securely integrate with the network;
- Battery life – long life cycles, removable batteries and short recharge periods promote uptime;

- Memory – onboard memory impacts throughput, and therefore productivity. Sufficient memory to store logos, other graphics and label and form formats enables faster printing;
- Remote management support – mobile printers that are compatible with remote management systems reduce downtime because they can be provisioned and serviced without having to be returned to support staff for hands-on adjustments;
- Control panels – LCDs and function keys help users quickly resolve problems and can, in select cases, eliminate the need for a separate computer to direct printing;
- Computer compatibility – portable printers' performance changes when they are paired with different mobile computers, so seek combinations that provide responsive printing and save development and support work for the IT staff.

Intermec offers a complete range of mobile printers to meet enterprise needs in industrial, field service, retail, distribution and other environments that demand reliability and ruggedness. Intermec mobile printers are also designed to integrate with the mobile computers, data collection devices and enterprise IT systems used in these environments, and include native support for wireless security and mobile device management. Intermec mobile printers are extremely rugged and are available in a variety of form factors and configuration options to meet different needs.

Intermec has been developing ruggedized mobile computers and peripherals for more than 40 years and have successfully integrated hundreds of thousands of devices into demanding industrial, warehouse, field service, delivery, logistics, retail and other environments. Intermec mobile computers and mobile printers are rugged and are designed for use in challenging environments.

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