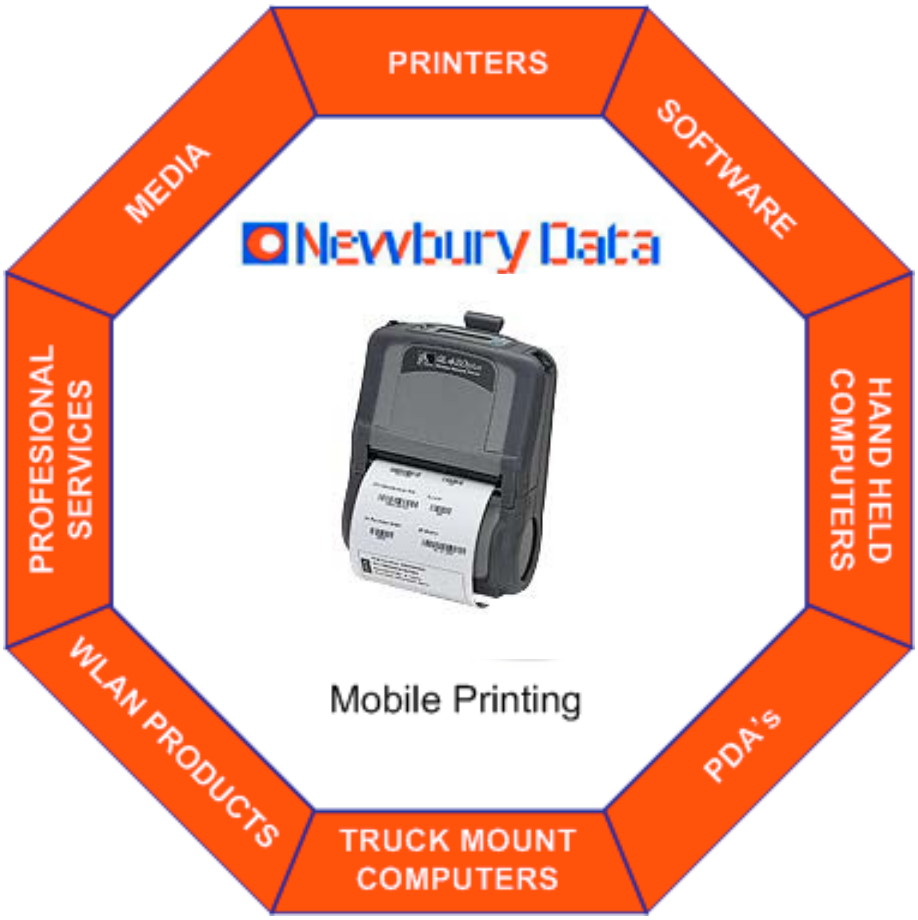
Healthcare Mobile Printing SOLUTION PROVIDERS

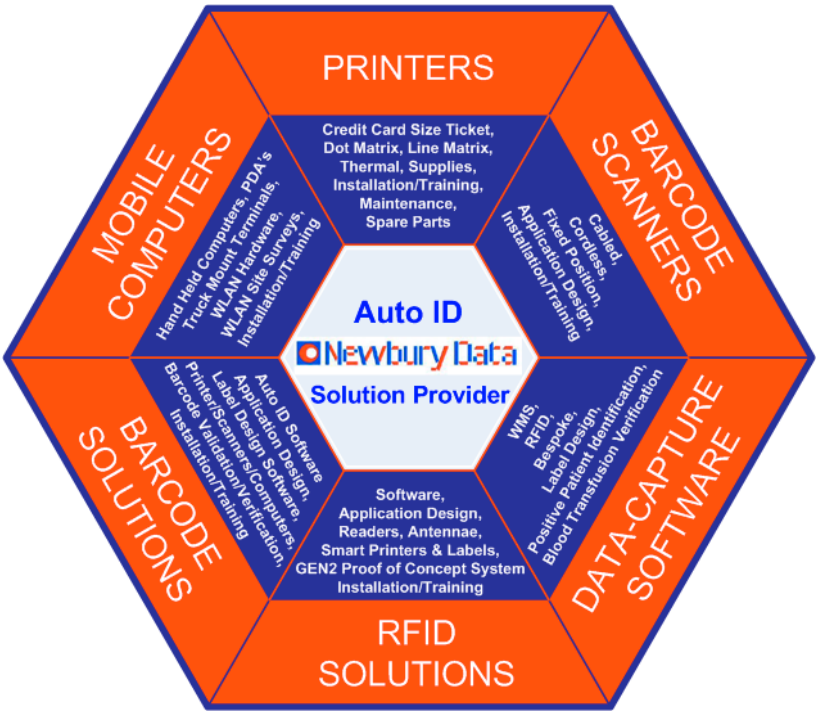


Newbury Data Recording Ltd
Premier Park
Road One
Winsford
Cheshire
CW7 3PT
Tel: +44 (0) 870 224 8110
Fax: +44 (0) 870 224 8177
Email: ndsales@newburydata.co.uk
Web: http://www.newburydata.co.uk

About Newbury Data

Since 1974, Newbury Data has become the UK's leading manufacturer of industrial impact printers and Credit Card Size encoded ticket printers. Newbury Data's reputation for our own high quality and highly reliable printers has made us the number one partner of choice from the worlds leading thermal printer manufacturers such as Citizen, Printronix and Zebra. Our expertise in impact and thermal printing solutions has allowed us to develop unique solutions to help our customers migrate from legacy desktop or stand alone systems to use Mobile, Wireless, RFID and fully automated solutions interfacing into the latest WMS and ERP systems.

With over 30 years of printing expertise, Newbury Data has the skills and understanding of printer communication and both native and alternative printer programming languages. Allowing Newbury Data to seamlessly integrate new printing solutions, into existing systems, without the need to change the current data streams. A vital tool when integrating current technologies such as Citizen and Zebra Mobile printers or Printronix and Zebra RFID Printer/Encoders & SAMSys Readers into existing or new Auto-ID and RFID applications. To compliment our printing solutions, Newbury Data has become a Quality Partner of Datalogic and an Honours Partner with Intermec. These partnerships enable us to deliver full batch & mobile data capture solutions including customer specific hand held computer software or full WMS solutions, making Newbury Data one of the most sophisticated GS1 Auto ID solutions provider in the UK.



Manufacturers Supported

- Citizen
- Cisco
- Datalogic
- Intermec
- Newbury Data
- Printronix
- RJS
- SAMSys
- Seagull Scientific
- Zebra

New for 2006

CCS (Credit Card Size) Ticket Printing

- ND4020 Desktop and/or Kiosk Rail Ticket printing
- ND4025 Ticket printer for desktop or mobile ticket issuing.
- Corporate Office Ticket-on-demand (TOD) ticket printing Kiosk

Mobile Solutions

- New partnerships with Datalogic and Intermec extend the mobile hardware portfolio
- New Wireless security available in Zebra QL*plus* mobile printers
- ND4025 Ticket printer for desktop or mobile ticket issuing.

Wireless LAN Professional Services

- A complete range of RF professional services including sites surveys, WLAN security and fault diagnostics.

RFID

- GEN2 RFID Proof of Concept system including Printronix RFID Printer/Encoders and SAMSys Readers.

Healthcare Solutions

- TraceSAFE BTV: A blood transfusion verification system designed to comply to European Directive 2002/98EC
- TransSAFE blood transfusion verifier printer/scanner
- Positive Patient Identification (PPI) system, printing patient wristbands and identification (ID) cards

On-Line Store

- Low cost printers, scanners, ribbons etc from our online store at www.newburydataonline.co.uk

Healthcare Mobile Printing Applications

Mobile printers help users bring new levels of control and agility to their operations by providing the ability to print exactly when and where the material is needed. The value in mobile printing is greatest where ready access to a central printer is inconvenient or impossible.

The best mobile printing applications result in process improvements that take advantage of the convenience the technology can provide. New processes only need to save users a little time on each transaction to provide significant patient safety improvements and can produce labour savings.

The following section highlights how mobile printing can benefit different operations and industries.

Blood Sample Collections

- Bar-coding of patient samples
- Accurate recording of key details
- Patient name, DOB, Doctor etc..
  - In Ward
  - At Bedside

Medication / Drug Administration

- **25% of errors** in hospitals are made when administering drugs
- Drug labelling with barcode is the solution
  - In pharmacy
  - At bedside
- Scan drug label when being given to patient at bedside
- Print confirmation label for case note

Laboratory Sample Collections

- Bar-coding of patient samples
- Accurate recording of key details
- Patient name, DOB, Doctor etc..
  - In Ward
  - At Bedside

Service & Asset Maintenance

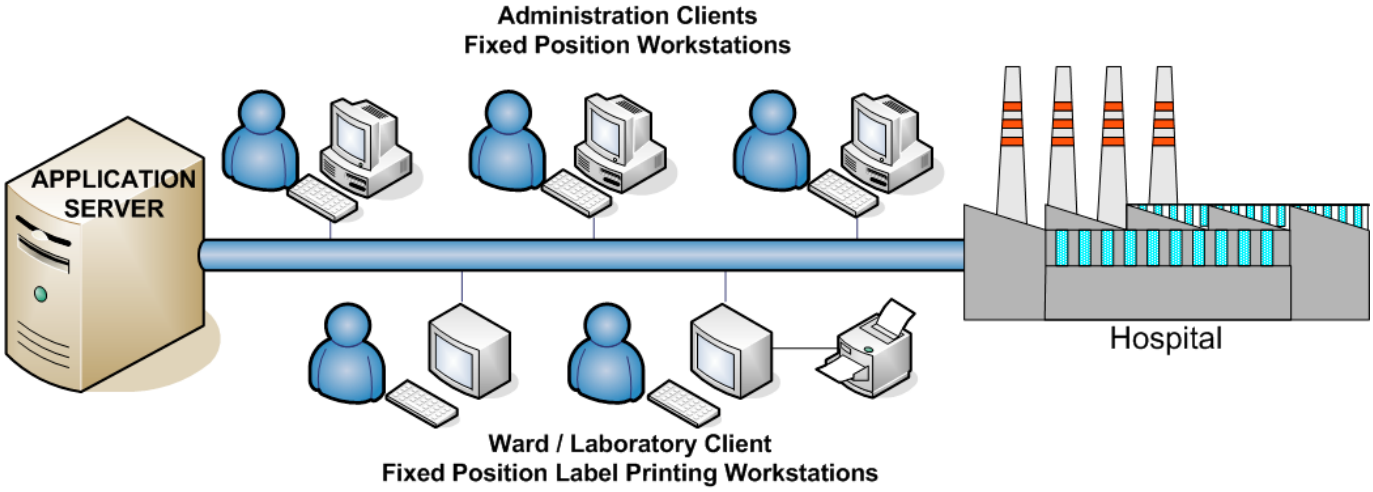
- Healthcare Supply Chain
- Stock management, identification
- Service & Maintenance
- Asset Identification and tracking

Patient Transfers

- Track transfer of patients from one hospital to another
  - Requirement to log data through all stages of collection and delivery
- Mobile Terminal for data collection (GPRS,WLAN, Bluetooth)
- Mobile Printer for receipt of delivery

Mobile Printing Technology Overview

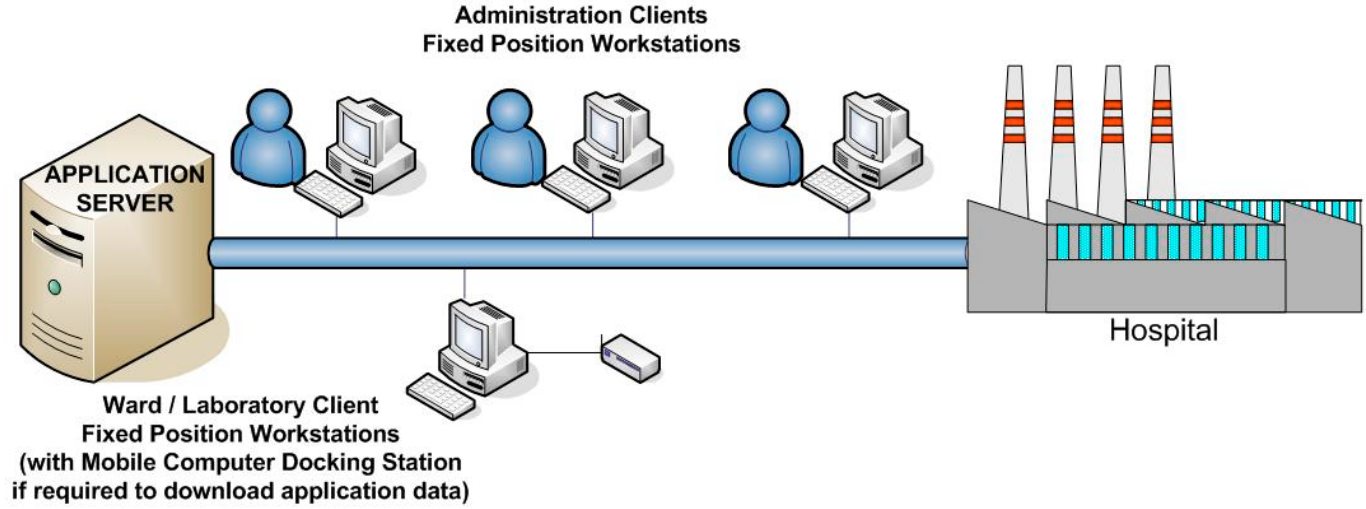
From: 'Fixed Position Care Givers - Clients'



BUT NOT FIXED POSITION STAFF/JOB ROLES!!

PHLEBOTOMISTS
MEDICATION / DRUG ADMINISTRATORS
LABORATORY SAMPLES COLLECTORS
SERVICE & ASSET MAINTENANCE
PATIENT TRANSFERS

To: 'Mobile Care Givers - Clients'



PHLEBOTOMISTS
MEDICATION / DRUG ADMINISTRATORS
LABORATORY SAMPLES COLLECTORS
SERVICE & ASSET MAINTENANCE
PATIENT TRANSFERS

Bluetooth connection from Terminal/PDA to Printer

THE GREATER THE DISTANCE OR NUMBER OF TRANSACTIONS CONDUCTED AWAY FROM THE FIXED POSITION WORKSTATION ADD TO THE JUSTIFICATION FOR MOBILE WORKERS

Bespoke Software Solutions

Despite the increasing sophistication and flexibility of "off-the-shelf" applications, many organisations suffer the burden of fixed position workstation with manual or time-consuming processes. These processes are typically an essential element of an organisation's performance and potentially a competitive disadvantage. All have one thing in common, mobilising them would provide measurable efficiency and productivity returns. Newbury Data's highly experienced applications developers address these processes by designing innovative bespoke solutions using a broad range of technologies.

Our team helps clients in many areas including:

- Business Requirements Definition with Functional specification report
- Design & Development of bespoke applications
- Integrating applications onto mobile computers & printing technologies
- Installation & integration of Wireless LAN infrastructure and Security

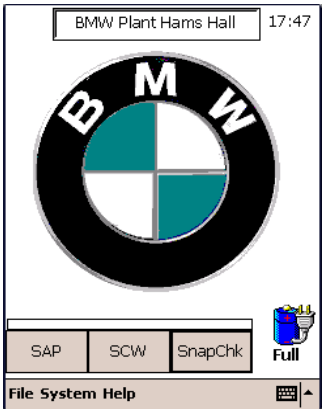
Key Benefits

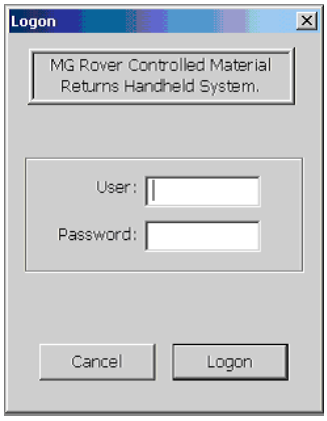
- Increased flexibility of new applications with no interruption to existing software
- Hardware and software to exactly meet your needs
- Full support and consultation through all stages

Bespoke Development

We can provide tailored applications to suite the demanding requirements of modern day business procedures. Newbury Data relies on their existing Libraries to ensure development time is kept to a minimum and provides all the expertise required to perform all tasks within the Software Development lifecycle from Design phase, through Development, Testing and finally to Installation/Integration and training.

Samples Screens for Newbury Data Mobile Computer Applications





Development Libraries

Newbury Data has developed software libraries for handheld PC's, Printers, Scanners and other computer peripheral devices. These form the basis for both in-house and external software developments.

Device Communications

Newbury Data has the ability to interface too many of the modern printers, scanners and other peripheral devices from both handheld & truck mounted devices. Method of communications includes wired, wireless, IRDA, Bluetooth, etc…

Interface/Integration Services

Newbury Data prides itself on the ability to interface to both legacy and modern systems. Using the latest technology and its own Interface Library Newbury Data can provide a cost effective fully functional interface to many existing software system using TCP/IP, XML, ADO, SOAP, text files, etc…

Technology Used

Newbury Data uses the latest Microsoft .NET Development environment to ensure that all software developed is both future-proof and adheres to modern day requirements.

Mobile Printers – QL *plus* Series

QL220 Plus

The compact, lightweight QL 220 Plus direct thermal mobile printer delivers print widths up to 1.89” (48 mm). In addition to offering the rugged construction, user-friendly options, and flexible QuickLink connectivity that have made Zebra’s QL 220 and other QL series printers so popular, the enhanced QL 220 Plus printer is specially designed for complex mobile printing applications. It’s built to handle increased levels of wireless security and to process complex labels up to four times faster, making it ideal for the secure transfer of sensitive data such as price lists, customer information, and medical records.

The QL 220 Plus is ideal for many applications, including price marking, shelf labelling, inter-store transfers, direct store vendor delivery an verification, and for mobile point of sale at boutique stores where space is at a premium.

Quick Specs
- Resolution: 203 dpi (8 dots/mm)
- Width: 1.89" (48 mm) maximum
- Speed: 3" (76 mm)/sec

Benefits
- Accommodates situations real-time and at the point of application
- Offers a rugged, lightweight mobile solution
- Connects to a wider variety of terminals
- High speed processor for complex printing applications

Ideal for
- Retail
- Field Service
- Healthcare

QL320 Plus

The QL 320 Plus direct thermal mobile printer delivers print widths up to 2.9” (73.6 mm). In addition to offering the rugged construction, user-friendly options, and flexible QuickLink connectivity that have made Zebra’s QL 320 and other QL series printers so popular, the enhanced QL 320 Plus printer is specially designed for complex mobile printing applications. It’s built to handle increased levels of wireless security and to process complex labels up to four times faster, making it ideal for the secure transfer of sensitive data such as price lists, customer information, and medical records.

The QL 320 Plus is well-suited for numerous applications, including pallet labelling, production identification, work-in-process tickets, price marking, shelf labelling, and inter-store transfers.

Quick Specs
- Resolution: 203 dpi (8 dots/mm)
- Width:2.9" (73.66 mm) maximum
- Speed: 4" (102 mm)/sec

Benefits
- Accommodates situations real-time and at the point of application
- High speed processor for complex applications
- Offers a rugged, lightweight mobile solution
- Compatible with a wide variety of terminals

Ideal for
- Retail
- Moving Violations
- Point of Sale
- Healthcare

QL420 Plus

The QL 420 Plus direct thermal mobile printer delivers print widths up to 4.09” (103.9 mm). In addition to offering the rugged construction, user-friendly options, and flexible QuickLink connectivity that have made Zebra’s QL 420 and other QL series printers so popular, the enhanced QL 420 Plus printer is specially designed for complex mobile printing applications. It’s built to handle increased levels of wireless security and to process complex labels up to four times faster, making it ideal for the secure transfer of sensitive data such as price lists, customer information, and medical records.

The QL 420 Plus is ideal for many applications, including pick tickets, forklift-mounted printing, customer pickup, shipment labelling, inventory updates, meter reading receipts, delivery verification invoices, and gas and utility inspection documentation.

Quick Specs
- Resolution: 203 dpi (8 dots/mm)
- Width: 4.09" (103.9 mm) maximum
- Speed: 3" (76 mm)/sec

Benefits
- Accommodates situations real-time and at the point of application
- Offers a rugged, lightweight mobile solution
- Compatible with a wide variety of terminals
- High speed processor for advanced applications

Ideal for
- Distribution
- Shipping
- Postal/Parcel
- Healthcare

Recommended PDA's for QL Series

Datalogic JET

The Datalogic JET™ family provides professional PDAs that extend the power of enterprise computing to all areas of supply chain management: from planning and production, to warehousing and transportation.

Datalogic's PDAs capture, compute and communicate information anywhere and anytime, and offer the most versatile business solution for any warehouse management system.

Datalogic JET Features

- Microsoft Windows CE 4.2 .Net Operating System
- Bluetooth®, Wi-Fi, and GSM/GPRS simultaneous communication options
- Laser, Imager and Laser+RFID HF-ISO 13.56 MHz data capture options
- Large high visibility color graphic display with touch screen
- Ergonomic, lightweight and robust
- 1.5 m drop resistance
- IP64 protection class

Intermec CN2B

The powerful CN2 family, combines the convenience of shirt pocket size for the ultimate in mobility, with all the ruggedness and reliability you've come to expect from Intermec, the number one supplier of rugged pocket PCs for the enterprise.

The CN2B offers the addition of Microsoft® Windows Mobile and Bluetooth support, a good fit for Field Service, Direct Store Delivery, or In-Transit Visibility applications that can run in near-real-time by connecting to a mobile phone when integrated WWAN capabilities are not required.

Intermec CN2B Features

- Bluetooth® & Wi-Fi wireless connectivity
- PDA form factor built to withstand the rigors of field use
- Delivers improved TCO over commercial grade devices
- Features and functionality common to higher priced, larger mobile devices
- Choices of radios, keypads and platforms to fit the job at hand
- SmartSystem™ device management capabilities for batch or real-time updates and maintenance

Understanding Mobile Printing Technology and Capabilities

Summary

Modern mobile printers meet numerous documentation, ticketing and labelling needs, and include many of the connectivity and convenience features previously found only on desktop models. The evolution in mobile printer functionality enables users to print materials where they are needed, instead of where they can fit a desktop printer. Hospitals can improve new processes, which take advantage of point-of-transaction printing to improve labelling accuracy and patient safety.

The key to successful mobile printing applications is developing a process that is convenient for care givers to follow. Support the process with mobile printing tools that are easy to operate and suitable for use in the ward or laboratory. There are important distinctions among printers that are moveable and printers that are truly mobile. Understanding the design and performance features that differentiate mobile printers from desktop models is critical to developing beneficial new processes and finding the right equipment.

Introduction

Mobile printing systems offer the quality and convenience necessary to provide documentation for internal operations and customer service. By handling select print jobs with small, mobile printers instead of centrally located stationary units, hospitals are improving staff productivity, lowering overall printing expenses and efficiently satisfying their customers at the point of service.

The mobile workforce carries printers wherever they go to issue label samples and evidence to provide delivery confirmation and other documentation. The Applications section will discuss additional uses in hospitals. Mobile printers have many different forms and features to perform in the diverse range of environments where they are used. The following section explains the design features and performance characteristics that will determine the success of your mobile printing application.

Mobile Printing Technology Basics

The current generation of mobile printers are lightweight, easy to use, durable, and offer outstanding print quality and graphics previously found only on stationary printers. Many offer a wireless interface that allows connection to enterprise networks and applications from anywhere in the facility, indoors or out. Many units have integrated credit card for payment processing. Mobile printers can be used to produce high-quality labels, receipts, coupons, and tickets using a variety of media.

Mobile printers are typically used in conjunction with handheld or wearable computers. The printer receives its commands from the portable computer through either a cabled or wireless connection. Transaction information and print jobs may be generated within the mobile equipment or be received from a wireless network.

Because mobile applications require user comfort and convenience, wireless connectivity is highly desirable. Mobile printers may use various forms of wireless connectivity. Short-range Bluetooth® or infrared connectivity can be used instead of a cable to communicate between the printer and mobile computer or wireless local area network; 802.11 options are also available.

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Form Factors and Ergonomics

Printers are available in multiple designs to meet the needs and preferences of a variety of mobile workers. Available form factors include devices that may be worn on a belt or shoulder strap, or securely mounted on a vehicle or a cart. Finding the best form factor requires understanding the work environment, getting user input and establishing procedures that make printing convenient for the worker. Mobile printers must be comfortable and easy to use, or they will not deliver any productivity benefits. While overall weight is important, balance, grip, and ease of carrying and operation should not be overlooked. Printers also must operate at a rate, which will not slow down the transaction; or else operators won't make printouts unless the customer insists.

There are two common types of mobile printers: wearable and vehicle mounted. Hospital use will focus on wearable printers.

Wearable

Users can wear their printers with either a belt clip or a shoulder strap. Wearing printers instead of carrying them keeps the user's hands free for other tasks and reduces fatigue, especially in environments where the printer is used frequently or carried constantly throughout the day. Users are able to comfortably carry larger and heavier printers when belt clips or shoulder straps are used, which is useful when extra media capacity or wider labels are desired. A wireless connection between the wearable printer and the mobile computer maximises mobility and enhances the ergonomics of the form factor.

Accessories

Many accessories are available to make mobile printers more comfortable and convenient to use. Accessories include shoulder straps, belt clips, stands, cables with different lengths and connector configurations, radio modules, single- and multi-unit battery chargers, soft cases and more.

Wireless Communications

There are numerous wireless technologies available for connecting mobile printers. To replace the cable between printer and computer, the wireless connection is made either by short-range radio frequency (SRRF), such as Bluetooth® technology, or infrared (IR) light. For networking, the dominant industry wireless networking technology is the IEEE 802.11b (pronounced eight oh two dot eleven b) standard, although older, proprietary networking technology is still used at many locations, particularly in the retail industry.

Cable Replacement

Radio frequency applications require a radio in the printer plus a radio and controller board in the portable computer. IR applications use the standard port built into each device. Almost all infrared products can be used with one another because they use the standard set by the Infrared Data Association (IrDA); however, this is an older technology that is often frustrating for users because the IR ports need to be directly aligned for communication.

Bluetooth also offers interoperability, allowing communication between any other Bluetooth-certified device without requiring direct line of sight. Using wireless technology for cable replacement improves ergonomics and productivity. Eliminating cables reduces the risks of tangles and falls. Going wireless can also improve system reliability because there is no chance for printer cables and pin connectors to break. This is a tremendous advantage in field service and route accounting applications, where users are often miles away from their headquarters and do not have immediate access to replacement parts.

The wireless technologies for cable replacement are described below.

Bluetooth

Bluetooth was developed as a low power consumption, wireless personal area networking (PAN) technology to allow computers, printers, and other devices to interface with each other in peer-to-peer networks without going through a centralised hub or server. Maximum range is about 30 feet, which could enable a mobile printer to be used away from a stationary PC in some retail settings.

For enterprise applications, Bluetooth is far more effective for cable replacement than for networking technology. There were initial concerns that Bluetooth devices would cause interference for other wireless networks used in retail and industrial settings, but testing by the Wireless LAN Association (WLANA) showed that Bluetooth and 802.11b devices could coexist without hindering their performance.

Bluetooth technology is emerging as the top choice for cable replacement because it provides excellent range, speed, and connectivity, and is cost-competitive with older short-range radio frequency and infrared technology.

Infrared Light (IR)

Infrared is the only non-radio technology used in wireless printing. It employs infrared light signals, the same technology used in television remote controls. IR is used for cable replacement but not for networking. Unlike all RF technologies, infrared communications requires a direct line of sight between the devices that are communicating. If the line of sight is interrupted, data may be lost and the transmission must be retried. It can take up to eight seconds for IR devices to re-establish contact following an interruption.

Some portable computers that use RF for cable replacement or networking also use IR to transfer data when the computer is placed in its communications cradle (where range, line of sight, and speed limitations are not factors). In this application, IR is used in place of physical contacts, which tend to wear over time.

Wireless Networking

Mobile printers can use a wireless network connection to receive print jobs, label formats, variable data and other information from host systems. The printer has an IP address and appears like any other device on the network, which lets users take advantage of the many excellent software products available for network management and security. Zebra's QL series is unique among all mobile printers because it supports the POP3 protocol. The POP3 function enables the printers to receive print commands via an e-mail.

Wireless network printing is possible even if the mobile computer used with the printer does not have a wireless network connection. Because mobile printers can be worn on a belt or a strap, some users prefer to put the network connectivity board into the printer to avoid drain on the handheld device's smaller capacity battery.

802.11b is the most widely used wireless network standard and offers excellent performance for enterprise applications. It uses the 2.4 GHz frequency band and allows up to 11 Mbps (megabits per second) data rates. Other standards in the 802.11 wireless networking series include 802.11a and 802.11g, which are less mature than 802.11b, make up a small percentage of all wireless network installations, and are supported in far fewer products. The a and g standards have higher data rates as well. 802.11g was developed to be backward compatible with 802.11b, so that 802.11b printers and other devices will be supported on 802.11g networks.

Mobile printers now support several leading security protocols including VPN, WPA, LEAP, and Kerberos to meet user preferences for securing wireless transmissions.

Wireless Flexibility & Benefits

More than 70 percent of all bar code printers in use around the world are connected to a network. The network may be Ethernet, Token Ring, or some other older technology, but in almost all cases a physical cable makes the connection.

There are literally miles of Ethernet cable in use throughout the world connecting label printers to networks, and additional miles of replacement cable and connectors yet to be purchased. Wireless printers are quickly gaining acceptance and popularity because they eliminate this expense.

When you remove cables, you gain flexibility. Once the network administrator assigns an IP address to the printer and turns on the unit, it is ready for use. Wireless printers can be relocated in seconds if the work area is being reconfigured for new production equipment, warehouse space allocation, or a redesigned retail-selling floor.

Wireless printers also can be put on carts or forklift trucks and moved throughout the day without ever losing their network connection, saving reboot time. Removing cables also improves ergonomics and workplace safety.

Freedom from network cables also makes it easy to add new printers to the workplace. If operations expand, or more printing capacity is temporarily needed, new printers can be up and running in minutes, instead of waiting hours or even days for busy IT staff to run cables to the work area. This is especially valuable to businesses that experience seasonal or end-of-quarter spikes in sales that challenge their existing shipping systems. Demand spikes can be satisfied by temporarily moving printers from other areas instead of buying new units. This increases asset utilisation and may reduce the total number of printers needed within a facility.

Wireless Printing Basics

Wireless printers use a radio to communicate with the network over airwaves instead of over cable. On the network side, the radio transmissions pass through an access point (or base station) that is physically wired to the main network. The access point decodes the wireless data and passes it to the wired network. The wired network infrastructure equipment does not “know” the printer is wireless; the printer appears as any other device on the network.

Radio signals can travel through walls and other physical objects—no line of sight is required between the printer and access points. Entire factory floors, distribution centres, retail stores, and shipping yards are often completely covered by only a few access points. The same network and access points used to connect wireless printers can also be used with mobile computers, scanners, and other devices.

Most industrial wireless networks have far more bandwidth than is required for their applications, so adding additional printers rarely results in network congestion or slow response times. For example, wireless warehouse management systems usually operate at 1 or 2 megabits per second (Mbps) wireless transmission speeds, but the most commonly used industrial wireless networks operate at 11 Mbps.

Printers can connect with a wireless network either through native wireless support or by adding some type of radio peripheral.