Cover Story
Perfect symbiosis:
Ingram Micro Logistics Centre, Straubing,
(hu)man and machine in perfect harmony

Partner Forum
Bar codes and RFID:
transparency in the food supply chain

Professional Service
Sniffing the network:
malicious programs have no chance
MC9190-G

THE ROBUST MOBILE COMPUTER

The latest generation of the successful MC9000 Series

The Motorola MC9190-G mobile computer is more robust and efficient, and provides a higher resolution display, more scanning performance and more scanning options than its predecessors. Users will be able to process information more quickly and more accurately and react accordingly, even in the most challenging environments.

For more information on this and other Motorola products, please visit the Motorola Solutions website.

www.motorolasolutions.de
Dear Reseller,

I am pleased to present a new edition of IM.tec, the solutions magazine from Ingram Micro’s Data Capture/POS division. In this issue we focus on the logistics sector.

All our major vendor partners offer products designed specifically for the logistics market. These range from bar code label printers and smart label encoders, to bar code readers and rugged mobile computers, as well as wireless LAN infrastructure products. With brands such as Motorola, Zebra, Datalogic and Intermec, we have solutions that fit your customers’ needs.

This edition of IM.tec examines some of the many ways in which these devices are deployed in logistics, including product labelling, tracking, put-away, picking and shipping operations. The common objective is to increase productivity and accuracy while reducing costs.

Whether you are already a specialist auto ID/data capture reseller, or one looking to expand into these technologies, you will find that Ingram Micro’s dedicated DC/POS sales and support teams really understand the products and their applications. And, being a part of the world’s largest technology distributor, we represent a one-stop-shop for all your IT requirements.

Ingram Micro’s record-breaking European distribution centre in Germany is the subject of our cover story. Here we carry comprehensive stocks of the most popular product configurations, shipping to most European destinations in one or two working days. Please call your local IM DC/POS sales office – contact details are inside the back cover – for availability and highly competitive pricing. We wish you every success in growing your business in partnership with Ingram Micro.

Kind regards
Ernesto Schmutter
COVER STORY

06
Perfect symbiosis: machines and humans working in perfect harmony
A visit to the Ingram Micro Distribution Centre in Straubing, Germany

PARTNER

11
MC9190-G by Motorola
For robust warehouse and logistics applications

12
Barcode and RFID solutions from Zebra
Transparency in the food supply chain

NEWS

INGRAM MICRO TO SUPPLY HP POS SOLUTIONS

Ingram Micro Data Capture/POS division now distributes HP retail point-of-sale solutions throughout Europe. HP POS systems are available in sleek all-in-one form factors or in versatile modular packages, so resellers can put together the perfect solution for every end user in the retail, hospitality and leisure markets. Look out for our dedicated HP communications and visit our microsite on www.ingrammicro-dcpos.eu/hp.
Vertical Energy is the name of Ingram Micro's joint campaign with Intermec, designed to help reseller partners grow their businesses in a number of different vertical markets, deploying Intermec’s innovative thermal printing, bar code scanning and mobile computing products. We’re offering demonstration packages to resellers working in the retail, transport/logistics, healthcare and manufacturing sectors, as well as for field forces generally. Visit the website to learn more about Vertical Energy and download software and documents: www.ingrammicro-dcpos.eu/verticalenergy.
Perfect symbiosis: (Hu)man and machine in perfect harmony

Freelance journalist Julia Löwrick visits the Ingram Micro Distribution Centre in Straubing. Read the fascinating story about her first encounter with high-tech logistics.

The first glance into the logistics warehouse instantly brings to mind an anthill: rife with activity, where the workers and the machines all know exactly what to do and when to do it; items are moved around and everything has its own specific place. Workflows coexist harmoniously, as if someone sitting above is skilfully manipulating the puppet strings.

Straubing in Lower Bavaria is home to Ingram Micro’s Regional Distribution Centre (RDC). The RDC serves the markets in the German-speaking countries, including Austria and Switzerland; in the components business, it also acts as a hub which supplies all of Ingram Micro’s other European locations. Up to 160 lorries are dispatched every day from the 98 loading docks. That represents 25,000 orders, 60,000 packages or 300,000 individual products daily.

How does that work? It’s a question that springs to mind if one isn’t familiar with logistics centre processes. I had the chance to spend an entire day observing this highly efficient workplace, gaining an insight into the contexts and workflows in Europe’s largest IT logistics centre.

Alois Freudenstein, Consultant for Operational Excellence, was my guide through the facility, following the exact path a product would take, from receiving to shipping.

“Since expanding to RDC 2 in 2008, the logistics centre now has over 80,000 m² of storage space,” said Freudenstein. More than 650 team members are currently employed and the training of young talent is very important: with an average of 45 apprentices a year, Ingram Micro’s logistics centre is one of the largest apprenticeship sites in the Straubing region.

For standard orders, it takes less than 60 minutes from the time the order is received for the package to be loaded onto the lorry. In the “home” markets, if the order is received be-
fore 5 pm, it will almost certainly be received by the customer on the next working day. That is a key service promise of Ingram Micro.

**Receiving requires advance notice**
Part of what makes the warehouse in Straubing so efficient is that it requires at least 24 hours’ notice prior to delivery of goods to its receiving department. “Ingram Micro will assign a time window for receiving and tell the shipper, together with the AVIS number,” Freudenstein explains.

Upon arrival, the shipper signs in and the appointment status is checked. Does the shipper actually have an appointment? If the shipper does, then a delivery ID is created, the shipper’s papers are returned and the driver takes the lorry to the assigned gate where the papers are checked again. The lorry has already been checked at the security entrance to ensure that its cargo is still sealed and the cargo number is intact.

After driving up to the loading dock, the driver can relax. Ingram Micro team members take care of the entire unloading process, under the watchful eyes of camera surveillance.

**Receiving: requires people power**
If the delivery consists of complete pallets, which can either contain a single product or a mixture of products, it is visually checked against the shipping documents. The questions asked, according to Freudenstein, include “Are the goods what we’ve ordered, is the quantity correct, is there any damage?” But for mixed pallets, the goods must first be sorted. If everything is OK, receipt of the goods is marked on the shipping documents and the driver is allowed to leave.

Small consignments are delivered by parcel or shipping service in boxes either of one product or mixed. Unlike with pallet deliveries, an assigned team member enters all goods received into the warehouse management system by scanning each package’s bar code and comparing it against the delivery sheet. Returns are collected directly on pallets and taken from receiving to returns processing.

**Everything has its place: from receiving to storage**
The next step, sorting and identification, requires calling up the delivery ID and each product’s ID via the product bar code. “We also check whether the delivery ID can be assigned and if the product already has a master tray or a storage location. From there, the product will be individually picked for shipping to our customers. In addition, the system checks whether there is enough space left for the newly-received product.

If that’s the case, that’s the first place we would take the product. Any items we’ve received for which there’s no room on the shelf are housed in an overflow area,” explains Freudenstein.
If a new product requires shelf space, a suitable location must be found as quickly as possible. To achieve this, logistically-relevant data about the product, such as package length, width, height and weight, as well as available serial numbers, are entered into the warehouse management system. For packaged quantities, the data must be entered for both the individual products and the package and the number of individual pieces within the package. From this data the system calculates the optimal storage location. “Every day, we handle up to 200 new products,” said Freudenstein.

Finally, the product is logged into the system with a storage location number. “This means that the team member informs the system how many units of the product can be found at which location. The storage location is recorded as a unique, sequential ID number used when transporting goods internally,” said Freudenstein.

Some of the internal goods transportation is performed by conveyor belt to minimise travel times. The conveyor system covers 6.5 km and can run at speeds of up to two metres per second carrying repacked boxes of up 20 kg and full case packages (products that are delivered ready for dispatch) up to 40 kg; the maximum size is 70 cm. Goods too large or heavy for the conveyors are moved with forklifts.

**Coordination at the highest level: built for speed**

The forklift control centre coordinates the movements of the forklift trucks. Forklift drivers receive their instructions by data transmitted to mobile terminals on their machines. The mobile terminals record each forklift’s movements. “This way every driver always knows where that product needs to be dropped off.” Goods to be kept in long-term storage are stored in the high-bay warehouse, as determined by scanning the storage unit number. The system then displays the destination address on the terminal screen.

The lanes in the high-bay warehouse are 3.6m wide to allow the reach trucks to move quickly, turn around and keep work flows running smoothly. Each truck has a camera on its lifting device so that the driver can see what’s happening as the pallets are shelved eight metres above. Each of the high shelves has a bar code which is scanned by the team member after the product has been placed there; this records the product’s new location in the warehouse management system. “Now the system knows that the pallet has been stored and will be available as soon as we need it for new orders,” explains Freudenstein. The warehouse management system minimises both distances travelled and transportation times.

**Value Added Services: more value for customers, suppliers and partners**

“Ingram Micro offers services in addition to purely logistics services. For example, we configure and assemble different products such as servers, PCs or terminals for mobile data collection. We also install software updates,” explains Freudenstein. The systems are tested and delivered with a full warranty. By being integrated with the logistics process, the lead times are also minimal.
In addition, Ingram Micro also handles the management of product returns: receiving the return, determining if it qualifies for service or refund, handling warranty and guarantee claims, managing the repair, returning it to the manufacturer for recycling or disposal.

Picking

Products that can be shipped in their original packaging are immediately assigned shipping documents to make them ready for shipment.

Orders comprising various small-volume products are picked in a separate area. The shipping boxes are mechanically prepared and transported by conveyor belts to the picking area where the individual orders are assembled. The control of the picking process is done wirelessly via special mobile terminals. “The system keeps track of the amount of labour needed at individual picking stations by calculating the order volume being processed,” explains a member of the team. “If the system predicts that we don’t have enough people to process the orders on time, an early warning signal is sent to prevent late shipment and a breach of our 24-hour delivery promise.” Team members follow the system’s signals and make sure that there are no bottlenecks in the warehouse’s work flow. Every team member in the picking department makes an average of 150 scans per hour.

All products needed for an order are made available in sufficient quantities in the picking area, which is constantly refilled either from the high-bay warehouse or directly from receiving. “Once a product inventory has been picked below a certain threshold, the warehouse management system automatically orders a refill,” said Freudenstein.

Chaotic inventory has nothing to do with chaos

“Do the terms ‘chaotic’ or ‘dynamic’ inventories mean anything to you?” Mr Freudenstein asks me at one point. I shake my head and Freudenstein explains as follows: “With this type of inventory system, products are not stored according to a fixed, internal organisation system; instead they are stored chaotically, wherever there’s a free space. To make this possible, parameters to optimise distances for storage and retrieval play an important role. An ABC classification system is used to keep distances as short as possible. The most frequently shipped products (A-movers) are stored where they can be retrieved as quickly as possible; rarely shipped items (C-movers) are stored in the rear of the warehouse. We prefer heavy items lower down, lighter items can go higher.” The A and B items are stored in RDC 1, which is focussed mainly on the delivery business; C-movers are in RDC 2.

If a B- or C-mover suddenly becomes a hot item (an A-mover), this can lead to bottlenecks in the supply and the item might be back-ordered. The product is available, but it is not in a place where it can currently be picked. As soon as possible, then, the item will be moved to a more convenient location so that the 24-hour service guarantee can be kept.

“Our focus in the mornings is on receiving and preventive refilling of
“Working with the people here is what makes my job so special. We practice our corporate values such as teamwork, respect, responsibility, integrity and innovation. That’s been the basis of our success and is now more important than ever. When we started, the warehouse was just a place to pack shipments, a means to an end. Today, product flows are bundled, value-added services are offered. We have developed into a professional unit, a sort of logistics factory. We do a lot more than just move inventory: with such complex processes it is essential that all staff pull together. That’s exactly what takes place here and that’s fun.”

Walter Reiter, Senior Manager Operational Excellence, Ingram Micro

the picking shelves; in the afternoons, our priority shifts to those parts not readily available,” explains Freudenstein.

On their way
When a shipment is ready to go, a packing slip is automatically inserted, the box is sealed and provided with the shipping label. Before the packages are fed into the delivery conveyor system, each is weighed and given a final inspection. “This practically eliminates wrong deliveries,” says Freudenstein. If discrepancies are discovered, however, they are sent to a special conveyor belt where further checks are conducted.

The sophisticated handling system then delivers the packages to the correct dock where they are loaded onto the waiting lorry. pallets are provided for the shippers in the shipping area. Once the lorry backs up to the shipping dock, the team member scans the shipping label and the lorry’s load number, creating a cross-reference in the system. “The system thus receives confirmation that all the goods have been loaded correctly onto the right lorry. The loading of each cargo piece is done under camera surveillance, so that we can check the quality of the loading and shipment processes at any time,” said Mr Freudenstein, explaining the final step of the process. Then the lorry leaves the warehouse, loaded with the packages on their way to their final destination.

Outlook
After a day at one of the largest logistics centres in Europe, I left full of information and impressions of work flows that I had never encountered on such a scale. I also began to recognise how things fit together. I was astounded at the functionality and effectiveness of technologies, the harmonious interplay between workers and machinery, and the realisation that even the most sophisticated technology cannot fully replace the human element. But through the symbiosis and intelligent integration of machinery and human intelligence, true excellence can be achieved. In the end, I felt that I had developed an understanding of something new.
MC9190-G – For demanding warehouse and logistics applications

The current generation of the successful MC9000-G series is the most productive and powerful ever and offers a great many options.

Whether near or far, whether damaged or dirty, the terminal reliably reads virtually all 1D and 2D bar codes and DPM codes. For each application, this mobile computer can be equipped with the appropriate scan engine: the LR (long range) SE4600 engine reads 1D and 2D codes from a distance of up to 9 metres. Alternatively, 1D laser, 2D SR (standard range), DL (driver licence for intermediate codes) or HD (high density) imagers can be installed. The proven Lorax 1D laser engine is available for customers who need to read 1D codes both near and far.

The powerful 802MHz Marvel PXA320 microprocessor manages the most demanding multimedia applications without consuming battery power. 256Mb RAM and 1Gb Flash memory chips are available which can be further extended with SC or MMC cards to 32Gb.

The MC9190 is backwards-compatible with all MC9000 accessories. This allows customers upgrading to the MC9190 to continue using their previous accessories, including the batteries.

Thanks to the Motorola MAX Sensor, the MC9190 automatically rotates the screen to match device orientation and automatically logs every drop over 1.21m to improve user accountability and troubleshooting. The robust build withstands 1.8m drops to concrete and carries an IP64 sealing rating, making the unit ideal for use in production facilities and warehouses, loading bays and vehicle fleets. It is just as suitable for bar code scanning in freezing temperatures or excessive heat.

The device ensures uncompromised performance even with complex applications. The terminal provides reliable wireless data transmission in real time via the built-in Wi-Fi and Bluetooth antennae. It handles wireless synchronisation, wireless printing and wireless headphones to simplify daily tasks.

The ergonomic pistol grip ensures comfortable handling even during longer use sessions when scanning from near as well as distances up to 10 metres. Other important features include a range of modular, interchangeable keypad options and a high resolution VGA touch screen that is easy to read in any light.
Zebra bar code and RFID solutions: transparency in the food supply chain

Zebra Technologies offers its customers a range of printing and labelling technologies designed to identify critical people and transactions and ensure transparency in the supply chain.

Food manufacturers and retailers are currently showing a great deal of interest in transparency within the food supply chain. Crises such as e. coli, salmonella, dioxin, etc. have had a major negative impact on the food industry. Technologies such as bar codes and RFID scanners play a key role in creating fully traceable food supply, alongside the responsibility of the manufacturers themselves. These technologies make it possible to trace food companies’ sources, distributors and transporters. Products can now be directly identified by bar code and RFID technology and immediately removed from the shelves. This reduces the risk of contaminated foods reaching the consumer. Furthermore, in addition to higher levels of customer satisfaction, the companies implementing these technologies also save time and money while fulfilling the latest legal requirements for batch tracking (EU 178/2002).

Zebra is one the world’s most recognisable suppliers of identification technologies, including bar code and RFID printers, which allow customers across all industries to optimise their business processes.

Transparency
“from pasture to plate”

A typical scenario at one of Zebra Technologies’ customers: a customer in the baking industry introduced automatic pallet labelling and an identification system; in just the first year, the customer saved over €2m in warehouse and distribution costs. The company has over six warehouses across Germany and, before the new system was introduced, was unable to determine and plan its inventory. An accurate and almost real-time inventory became possible for this company after they began labelling all cartons and pallets with bar codes for SSCC (Serial Shipping Container Code) and batch number. After each pallet is loaded, it is now scanned and data about the place of production, quantity produced and product ID numbers are entered into the company database. This has also meant that the company has been able to increase the average number of pallets per shipment from 47 to 61, an increase of 30 per cent. Finally, fewer lorries are needed for customer orders, further reducing logistics costs.

Shortly after the system was implemented, the company was in a situation requiring a recall of some of its products. This proved to be no problem, because all the products could be quickly and safely identified by their bar codes. The recall of the shipment was lightning-fast, limited to the affected batches and therefore at a minimal cost to the company’s bottom line.

The heart of the warehouse – receiving

When lot numbers and expiration dates are contained in a bar code, controls of food products can be made at any point in the supply chain. The information is also automatically available as text after the user scans the bar code. For example, inventory management systems can use variable codes or “best before” information to sequence food deliveries from the warehouse to the customer.

Coding a lot number is another way to create product traceability. The globally standardized UPC/EAN bar codes on products and associated case codes only identify the manufacturer, product type and packaging, but cannot uniquely identify each item. An additional identifier with information about the pallet label would be necessary. GS1 DataBar, formerly known as Reduced Space Symbology (RSS), is a bar code format which integrates a variety of information in a single, compact bar code label.
Improved traceability – real-time availability. The insight into the product life cycle from production to transport, from storage to being sold to consumers, increases inventory accuracy up to 99.99 per cent and helps move products as they near their expiration date.

Improved food quality – no gaps in supply chain transparency. Less spoilage, fewer contaminated foodstuffs and fewer food-borne illnesses.

Higher productivity – automatic and effective food labelling. Less time spent processing, with savings of up to 25% by implementing automated track and trace food solutions.

Higher supply chain efficiency – improving efficiency with bar code and RFID track and trace solutions.

Return on investment – regulatory compliance through automated bar code or RFID-based food traceability.

Rapid ROI through greatly reduced internal workload, increased efficiency, improved product quality and customer satisfaction.

Pro bar codes in the food industry: a short summary

Seeing the big picture in the warehouse – efficient warehouse management

Cross-docking is a warehouse management technique that can significantly reduce storage and handling costs in the industry. It only works, though, if all the goods can be identified quickly and accurately. That’s why bar codes are a central element in cross-docking. Incoming goods are recognised upon arrival and immediately shipped without long detours through the warehouse.

Mobile bar code printers play a key role in cross-docking. Employees equipped with mobile computers, bar code scanners and label printers can capture, print and share the information needed by the warehouse quickly and reliably, often over Wi-Fi connections. RFID is also suitable for efficient cross-docking. Incoming pallets or cartons with smart labels can be automatically forwarded directly for cross-docking or order delivery. The fast reading capability allows immediate identification of the shipping container and all of the individual items it contains. Cross-docking combines receiving, warehousing and shipping, all of which benefit from bar code or RFID identification. This way, the movements within the warehouse of all products can be automatically and accurately tracked.

The correct “address”

A common bar code application captures each carton and each pallet before transporting. A wireless connection sends the bar code scan to the host computer, which compares the loaded shipments with the sales order. Incorrect or missing parts are detected immediately and the employee is notified by radio. Using bar codes, data collection and real-time checks usually results in a shipping accuracy of more than 99 per cent. RFID offers similar functionality.

Transparency in the food supply chain

Tighter traceability does not have to be seen as a burden by the industry. On the contrary, companies in the food industry can take advantage of the technical possibilities to increase food security and reduce their internal inventory, storage and handling costs. Many companies in the food industry rely on printers, labels and wireless solutions from Zebra Technologies.
The DS35X8-ER from Motorola

Motorola's rugged industrial imager is the ideal solution for demanding applications in the logistics industry.

Modern warehouse management is in a permanent state of transition as it keeps up with new demands and technological developments. By switching to 2D encryption, processes which have been using one-dimensional barcodes become more efficient and robust. Because they offer amazing levels of data storage while being small in size, these 2D symbols are ideal for the continuous tracking of products.

Growing demands in warehousing

As imaging technology evolves, increasing numbers of companies want to take advantage of 2D technology and at the same time deploy a long range scanning solution in their warehouses. This development is driven by the need to trace individual parts from production to shipping and beyond for information collection and auditing purposes, mostly for internal use, but also to comply with statutory regulations. Because 2D barcodes offer considerably more data storage in a similar footprint to that of 1D codes, their popularity is increasing.

Laser scanners have traditionally been used in warehouses because they can read barcodes quickly, accurately and over large distances. With the spread of 2D barcodes and the development of imaging technology, more and more users are discovering how these latest scanners can improve flexibility, traceability and regulatory compliance.

Often many different barcodes are used in the same warehouse. Small articles are often used with high-density symbols ranging from 7.5 to 20 mm in size, while on boxes or pallets medium-sized barcodes are used. For storage location markings which require a typical reading distance of up to 14 metres, retro-reflective barcodes are typically used in sizes from 70 to 100 mm.

The DS35X8-ER is the perfect solution for quickly and accurately reading all of these barcode types from almost any distance and under any lighting conditions. The long range imager completes Motorola’s well-known and proven industrial scanner range. Depending on the application, there are two versions of the scanner. The wired model would be suitable for scanning from the forklift, or for use in tracking incoming and outgoing goods, and all other static jobs. Thanks to the universal interface, the scanner can be connected to a host via a universal cable.

The wireless model, on the other hand, is designed for all applications that require moving around the workplace, in the aisles, on the conveyor belt or on the loading dock. Bluetooth 2.1 meets the highest security requirements, enables rapid pairing between the scanner and the host and has excellent charge cycles thanks to its energy-saving features.

Easy migration and dual imaging

The DS35X8-ER has an IP65 rating, making it dust, dirt and water resistant. It has the same form factor as other industrial scanners from Mo-
The DS35X8-ER easily reads dirty, faded or torn bar codes.

Motorola and is backwards-compatible with existing accessories. This makes migration easier for your customers and delivers optimum protection of their investment.

The device operates with two screen captures: fixed sensors capture two images simultaneously, one up-close and one at far range. The software then decides which image should be decoded. Because no manual adjustments are needed between close-up and long range scans, decoding becomes fast and highly reliable. The transition between different distances is effortless and instant.

Reliable, robust and innovative
The DS35X8-ER easily reads dirty, faded or torn bar codes, and can even scan through several layers of shrink wrap. Thanks to the advanced imaging technology, the device works well outdoors in bright sunlight as well as in dimly lit or completely dark warehouses. The DS35X8-ER can successfully handle all scanning tasks in the warehouse: omnidirectional scanning, including vertically-mounted bar codes, from the forklift, capture of 1D and 2D codes, outdoor operation regardless of temperature and weather conditions. And all this with just one device.

Progressive companies are increasingly relying on 2D bar codes to increase efficiency and to meet demands for higher performance. The benefits of 2D bar codes in warehouse management are becoming ever stronger in terms of traceability, serialisation, standards conformity and high information density in a small area. Motorola's persistence in exploring and developing new technologies has resulted in the DS35X8-ER, a scanner which is an effective solution for long-range applications and innovative 2D applications alike.

Increased productivity for the smallest possible price with the DS35X8-ER industrial long range imager from Motorola.

For additional information please contact your nearest Ingram Micro Data Capture/POS sales office or visit the Motorola Solutions website:

www.motorolasolutions.com
Distribution centre managers are unprepared for “reverse Logistics”

Intermec research has revealed that more than half of the organisations surveyed do not have the right processes in place to manage returned goods.

According to a study recently conducted by Intermec, more than half (52%) of distribution centre managers admit that they don’t have the appropriate processes and tools in place to determine if returned goods should be discarded, returned to vendor or moved quickly back into inventory.

Managing returned items at any time of the year represents a challenge to many businesses. To combat the increasing strain of returned goods and to minimise the impact at peak times, 60% of managers are now turning to reverse logistics – the reverse management of stock – to get items back into the supply chain as soon as possible.

The survey, with 250 supply chain distribution centre managers in the UK, France, Germany and North America, also revealed:

- More than three in five managers (excluding France) see reverse logistics as a key focus area; just over a third of managers in France agree with this.
- 44% of distribution centre managers admit that managing returned goods is a pain point within the business.
- 57% of distribution centre managers experienced challenges when managing returned goods last year and have started to identify changes needed to get returned stock back into the supply chain as soon as possible.

Trends such as reverse logistics are growing in popularity as businesses seek to manage returned goods within the supply chain as quickly as possible to reduce the impact on the bottom line. And along with this, managers are adopting ‘Hardware as a Service’ models to ease the burden of peak periods without significant capital expenditure. In the last six months alone, eight out of ten managers have been tasked with finding an average of 19% cost savings from existing operations. 89% believe that investing in new technology would enable them to achieve time savings and improve worker productivity by focusing on process improvements. Such companies can innovate by taking advantage of the low-risk, affordable and proven technologies and solutions provided by Intermec. Intermec solutions deliver results that matter to these businesses, with measurable business outcomes that are critical to remaining competitive and profitable.
To assist you in selling specialist solutions into vertical markets Ingram Micro and Intermec bring you the Vertical Energy campaign:

- Grow your business in key vertical markets
- Leverage PartnerNet Demo Discount to get demo products at great prices
- Purchase complete solution kits and use downloadable demo applications to strengthen your pitch
- Give customers confidence to invest with you and Intermec
- Give your sales Vertical Energy!
Falcon X3:
Mobile data collection in the fast lane

The Falcon X3 portable data terminal (PDT) by Datalogic ADC handles demanding applications throughout the supply chain. From procurement to sales, the Falcon X3 supports seamless data collection processes. Flexible and ergonomic, the new PDT is available in both hand-held and pistol-grip models.

The Falcon X3 collects and communicates data and information in real time. It allows inventory to be automated and increases productivity. The Falcon X3 can be configured to suit individual requirements: bar code reading with 1D laser scanner or 1D/2D imager, both with the patented Datalogic Green Spot for reader feedback; numeric or alphanumeric backlit keypads; either Windows CE or Windows Mobile operating system; and data communications via 802.11a/b/g Wi-Fi, USB, RS232 or Ethernet.

Dual processor Power3 architecture provides Falcon X3 with outstanding performance, while the ergonomic design ensures user comfort during scan-intensive applications. The backlit QVGA display makes data reading easy in both very bright outdoor environments as well as in darker environments. The user’s investment is protected by the unit’s outstanding robustness: the Falcon X3 withstands repeated drops onto concrete from 1.8m and is dust- and water-resistant with an IP rating of 64. Further protection is available with Datalogic’s Ease of Care service packages.

Free bonus: for quick configuration and centralised management of the devices, Wavelink Avalanche software is pre-licensed and loaded onto the Falcon X3 at the factory.

For additional information please contact your nearest Ingram Micro Data Capture/POS sales office or visit the Datalogic ADC website:

www.datalogic.com
The Falcon™ X3 Mobile Computer is a powerhouse of computing performance for a variety of applications, and provides a tailored solution for demanding environments requiring real time transaction visibility. The Falcon’s Summit IEEE 802.11 a/b/g radio with CCX v4 certification from Cisco ensues seamless roaming in warehouse and logistics environments making it easy to deploy and manage.

Get more information now! www.adc.datalogic.com
Malicious programs (malware, bots, Trojan viruses, etc) can install themselves via loopholes in systems, such as security gaps in the operating system or inadvertently opened email attachments.

You may be thinking: “That’s why I use my personal firewall to protect my system!” You are correct, in principle; personal firewalls can determine if programs are secretly transmitting data to the attacker or allowing them to enter the system. However, a personal firewall is vulnerable with “carrier media” such as Internet Explorer or Instant Messenger, because these applications don’t set off the firewall’s alarms.

To ensure that such tools do not go undetected, the user must penetrate even more deeply into the system to find out, for example, which data was sent where. This is where “sniffers” come to the rescue. These programs are integrated into the traffic of the network and log all data packets that are sent through the network. This allows very precise analysis of whether an application is sending unauthorised data.

Normally network sniffers are used in large networks, and help local network administrators to find weaknesses or errors in the local system. Sniffers are generally equipped with a multitude of features that allow the administrator to break down all network data and perform automatic error detection.

However, these professional programs often have their price and can cost up to €5,000, but there are also tools available for free online. Such programs include Wireshark, Ettercap, Networkminer and TCPdump.

A network sniffer consists of several components. There is the capture driver, which inserts itself into the network card’s drivers and ensures that all sent data and received packets are buffered. Filters can be set as to which data packages should be stored for later inspection. Filter criteria can include protocols, ports and network addresses.

Depending on their purpose, an analysis component examines the packets for errors in data transmission and for the presence of hackers. Possible attacks are detected based on certain patterns: ports which are known to be used by trojans, bots, etc are scanned.

Finally there is the decoding component. This prepares the packets and enables the administrator to distinguish them without having to know which bytes are responsible for the destination port. Manual sorting is no longer necessary. Based on this clear presentation of information, it is now possible to search for malicious programs or uncover security loopholes.

As an example of sniffers in use, they can be deployed to monitor communication from Outlook to the mail server. Outlook uses port 995 as its standard POP3 port (POP3 with SSL encryption). Now you can monitor this traffic with a sniffer and analyse the communication between Outlook and the mail server. Normally, nothing unusual turns up in this packet analysis. However, if passwords are transmitted in plain text, port 995 will not be used, presenting a significant security risk that can be averted by using a sniffer. Security-conscious administrators therefore like to use sniffers on POP3 connections so that they can warn their users against this risk. Similarly sensitive protocols are FTP, Telnet and HTTP.

Ethernet is fundamentally a shared medium. This means that all packets will be sent to all stations. So that individual computers are not constantly busy seeking certain packets, filters are already installed in the network card. This passes only those packets to the drivers that are specifically addressed to the MAC.
address of the NIC or to recipients of broadcasts and multicasts.

However, network cards should support the so-called “promiscuous mode.” This allows the capture driver to instruct the network card to receive all network packets and forward them to the driver, allowing it to monitor the traffic on a network segment.

Sniffing is made more difficult by using switches in networks, because the switches control the data traffic to ensure that packets are forwarded only to dedicated receivers. Therefore, a network card in promiscuous mode only sees broadcasts and packets addressed to it. This situation naturally makes error analysis by sniffing effectively impossible.

To carry out an error analysis in switched networks, a switch with a mirroring port is required. This port allows the administrator to reflect the complete data stream to this one port and analyse it there. In most cases the uplink port is selected since almost the entire data stream can be detected.

But sniffing is even possible on a wireless network. The wireless network operates like a hub, enabling all users to see all packets. This means that the Wi-Fi card has to be put into promiscuous mode, eliminating the need for any special sniffer programs for wireless networks; the standard models are sufficient for an analysis of the pure data traffic.

Sniffing does have a downside: it’s not just the administrator who can sniff a network, identify problems and be the “good guy.” Hackers, of course, use these same tools to obtain sensitive data. But what can you do when an unauthenticated sniffer is on your network? How can you find these tools?

1. Sniffer programs resolve IP addresses to host names using reverse DNS lookup. Their goal is to find out the name of the host in order to draw conclusions about its task (exch.test.de = Exchange server). But these DNS queries can be done in the network, if they happen more frequently. At this point, a sniffing program can help uncover these queries.

2. Also latency times allow conclusions to be made about an unwelcome sniffer on the network. Since the network card of the host where the sniffer is installed is operating in promiscuous mode and accordingly processes all incoming packets, the answer of the network card takes longer than usual. Without promiscuous mode, a filter would be active, rejecting incoming data packets that are not meant for it. Accordingly, the response time is shorter. The easiest way to identify these “bad” hosts is ICMP echo queries (pinging). You simply flood the network with ping packets and measure the time delay in the responses of the target computer. If the latency time is considerably higher, the reason is that the target computer is engaged in the processing of packets not intended for it. The timing, however, must be measured precisely to the microsecond.
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