

Case Study



Zebra's BAR-ONE Helps Online Grocer Deliver Fresh and Fast with SAP-based Printing and Processing Systems

Challenge: FreshDirect is succeeding where other online grocers have failed by giving its customers superior freshness, great prices and delivery convenience. Customers in the heart of New York City get next-day delivery of farm-fresh produce plus, fish, meats, breads and other perishables delivered to their door because of FreshDirect's state-of-the-art food processing and distribution systems. Zebra printers and its BAR-ONE software turn data from FreshDirect's SAP enterprise resource planning (ERP) system into thousands of bar code labels every day to automatically route items through the facility and accurately mark them for home delivery.



Begun in September 2002 by Joe Fedele and Jason Ackerman, FreshDirect uses a fleet of more than 80 trucks to deliver mostly perishable items to more than 70,000 customers throughout Manhattan's East side. Fresh produce is sometimes hard to get in the city, and customers often pay a premium for it. But FreshDirect uses a hyper-sophisticated system of data gathering, order fulfillment and distribution that maximizes efficiency and keeps costs low through the elimination of the middleman and shelf stocking fees typically charged by most stores.

On-demand printing is an important part of this process, particularly in the produce, meat, fish, coffee and deli sections. There, every item picked, whether one slice of bologna or two dozen Granny Smith apples, gets its own identifying bar-coded label. It's high-volume, fast-paced work that demands quick response from dependable systems.

FreshDirect orders directly from farmers, dairies, beef processors and dockside fish markets. Orders are processed and packaged in a 300,000-square-foot plant, which is essentially a giant refrigerator with multiple cold zones, just across from Manhattan in Queens. "FreshDirect is one enormous conveyor belt," comments Mark Croteau, Zebra senior account manager for the Northeast.

Customers choose their items from a 15,000-product inventory and select a two-hour time window during the evening or weekend when the delivery can be made. Sending delivery trucks out at those times keeps them out of the infamous New York traffic gridlock. Orders must be made at least a day in advance, allowing FreshDirect to purchase only as much as it needs direct from suppliers and group similar orders and locations together.

Solution: The online order triggers the fulfillment sequence, and FreshDirect's 350-plus employees get to work, laboring in sweaters and coats from about 1 a.m. to 7 a.m. to download orders off computers, pick and box them. The company uses SAP ERP software to monitor every aspect of operations and make sure orders are logically grouped and filled.

Personnel from Zebra's Application Assistance Group spent a lot of time with FreshDirect associates early in the project doing programming and training. The label formats were set up using Zebra's BAR-ONE flexible label formatting software. The WYSIWYG (what-you-see-is-what-you-get) tool allows the standard format for all the labels to be set up and easily accessed from any printer. Variable information for each individual label can be retrieved from the SAP system as needed to initiate each unique label on demand by setting up tables that link the bar codes, text and graphic fields to SAP database fields. Printing from SAP isn't easy, says Croteau, but BAR-ONE makes it a streamlined process. He adds that Zebra personnel trained FreshDirect workers to install the printers and oversaw more than half the installations.

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Bar-coded work orders are placed in bar-coded totes sent down a conveyor to the various stations. An automatic sorting system keeps the totes rolling down the proper conveyor without human intervention by reading its bar code and redirecting the tote accordingly. At each station, workers scan the bar code to initiate light-directed (pick-to-light) picking, where the system guides the workers to the right items. Individual items are scanned and placed in the tote, which is then sent on to the next stop.

Seven miles of fiber-optic cable connect every thermometer, scale and conveyor belt to a high-tech control room to alert workers of any problems so immediate corrective action can be taken. The amount of control is breathtaking: The system can tell the butcher the total number of steaks he needs to cut, what size and what thickness; the baker what ingredients and how much of each he needs to make 200 loaves of bread; the coffee roaster how many pounds to roast and grind; and the produce manager exactly how ripe orders of fruits and vegetables should be. This methodology allows the company to nearly eliminate waste through spoilage, a high cost for groceries. By cutting, packaging and baking according to individual orders, FreshDirect wastes no pre-cut or prepackaged items that often spoil before they are sold.

Both Zebra 110*XIIIPlus* high-performance printers with 300 dpi printheads, and compact LP 2844-Z desktop printers with 203 dpi printheads are used in the facility. All printing is accomplished using direct thermal technology. The cost-effective LP 2844s are used for less-demanding areas including shipping. The larger, more industrialized 110s are necessary for the produce/deli stations, where workers produce thousands of labels daily. Labels containing the product name and description, regulatory information and a bar code are printed for every item prepared. Add to that workload the fact that the temperature is a constant 36 degrees throughout the facility, and the humidity is 40 to 60 percent in the washdown areas, and one understands the conditions demand only rugged printers for this environment.

An earlier installation of 120 printers from another vendor didn't work well in these tough conditions, so FreshDirect systematically replaced all of the original units—all less than a year old—with Zebra models.

"FreshDirect felt comfortable with Zebra," says Croteau. Also, understanding that cost was a big factor for the grocer, Zebra reps did a careful analysis of the facility to determine where the less-expensive LPs could be used, delivering a cost savings to the grocer.

Results: More than a year after installation, Zebra printers have been performing well in the harsh conditions. "The printers really get banged around and they still come through," says Croteau. Performing reliably and consistently without downtime is critical to the success of a high-volume, low-margin, cost-conscious business like FreshDirect.

While starting small, FreshDirect believes its concept and systems are highly scaleable. It has plans to expand to include all of the New York City metropolitan area, and eventually move outside of New York, as well as deliver unprepared, semi-prepared, and prepared foods to institutions. To provide service to suburbs, the company plans to send refrigeration trucks to "aggregation points" such as train stations or office parks where customers can simply drive up and get their orders. Fedele projects revenues of \$225 million by 2004. Customers praise FreshDirect for its lower-than-supermarket prices, and the company has earned "Best of New York" recognition from New York Magazine. The privately-held firm credits its automation systems for producing profit margins that are significantly higher than the industry average.



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