

Staples Business Depot Sees Big Benefits From RFID Test

Wins include significant reductions in shipment-processing time and on-time receipt of almost all orders sent to its store test site.

By Mary Catherine O'Connor

Sept. 27, 2006—The results of a three-month pilot program launched by [Staples Business Depot](#) are in. Several of the project's successes were revealed at the [RFID Journal Industry Summits](#) conference in Chicago this week. Among them: The 270-store Canadian unit of [Staples Inc.](#) reduced the amount of time required to process shipments received at both its RFID-enabled delivery center and a store in the Toronto area—and also recorded a near-100 percent on-time arrival of orders at the retail location—by using RFID to receive them rather than by scanning bar codes.

The goal of the pilot, which [Staples Business Depot](#) undertook with a few of its product vendors, was to evaluate the benefits of using RFID to track the shipment and receipt of goods (see [Staples' Canadian Unit Plans RFID Trial](#)). The program began in late May of this year and spanned 90 days, including set-up and calibration. Participating vendors included [Acco](#) and [Unisource](#), each of which applied RFID tags to cases and pallets of their goods headed for Staples' RFID-enabled delivery center and store. [UPS Supply Chain Solutions](#) (UPS-SCS), which operates Staples' private-label warehouse, tagged pallets of private-label Staples goods, as well as products from a number of other vendors, that it ships for them to Staples stores. [Fellowes](#), a manufacturer of records-storage systems, computer accessories and paper shredders, helped develop the project but did not participate due to timing conflicts with other large-scale projects.

RFID tagging and interrogation stations were established at one of each of the vendors' distribution centers, at a Staples delivery center (where goods from vendors are received and then distributed to retail locations) and at one of Staples' retail locations in the Toronto area (where tagged goods shipped directly to stores were received and processed). The vendors and retailer used advance shipment notices (ASNs) to reconcile the purchase orders with the shipments of RFID-tagged pallets and cases. In total, the delivery center processed 295 tagged pallets during the pilot, and the store processed 32.

All of the project participants are members of the [Supply Chain Network Project](#) a group led by [PriceWaterhouseCoopers Canada](#) (PWC) that collaborates on projects aimed at bringing new technologies into the supply chain (see [Group Studies Supply Chain Technology](#)).

[Bell Enterprise Group](#), an information communications and technology arm of Canadian telecommunications firm [Bell Canada](#), was the systems integrator for the project, working with middleware provider [Shipcom Wireless](#), tag and interrogator provider [Symbol Technologies](#) and [Zebra](#), which provided RFID printer-encoders. Event-management software from [Descartes](#) linked the RFID tag data with Staples' back-end software.

The Supply Chain Network developed two sets of measurement criteria to judge the project's success. Its

qualitative metrics were used to determine whether specific goals of the project were met—for instance, whether the interrogation zones functioned properly, and whether the back-end reporting accurately compared results for RFID and non-RFID shipments. The quantitative metrics evaluated whether the project met read rates and other benchmark goals and gauged the extent of improvements over the non-RFID, manual shipping and receiving processes that were conducted and tracked in parallel with the RFID-enabled shipments.

The overall results of the pilot were positive, says Jeff Ashcroft, vice president of logistics and supply chain at PWC Canada's Advisory Services division and leader of the Supply Chain Network. All of the qualitative criteria were met, as were all but one of the quantitative criteria. The read-rate benchmark of RFID tags attached to pallets and cases of inbound goods at the Staples locations was set at 99.9 to 100 percent, but the actual rate was 97.41 percent.

Ashcroft notes that the tag read rate actually translates to an overall receipt accuracy of 99.2 percent for the tagged shipments. This is because, for the purposes of the test, only the pallet tag's ID, which correlates with a list of all the cases on the pallet, was utilized to receive the goods into the delivery center or store's inventory system. Thus, the pilot met its target of a receiving variance of 1 percent or lower between the results of RFID-enabled receiving and manually receiving.

To test the effectiveness of the RFID system against the current manual receiving process, the test pallets were received by capturing their tag data as they moved through interrogation portals, comparing the tag data with the ASN and comparing that with the purchase order to ensure the shipment was complete. As a check, and to provide a timing comparison, the company also manually broke the pallets down and read each case's bar code.

Staples staff spent less time receiving shipments using the RFID tagged cases and pallets than they did with the manual method of receiving and physically breaking down the pallets. At the delivery center, RFID-tagged pallets took an average of 2.65 minutes to process, compared with 5.36 minutes for non-tagged pallets received during the same time period. At the Staples store, RFID-tagged pallets took 2.7 minutes to process, as opposed to 17.75 minutes for non-tagged pallets. Pallets generally take more time to process manually in stores than in delivery centers, says Ashcroft, because those sent to stores tend to carry a large number of different products, whereas those sent to delivery centers are more likely to carry just one type of product.

Ninety-five percent of the 62 purchase orders using RFID tags were received at the Staples location on time. When received using the manual receiving process, nine of those same orders (or 15 percent) were delayed, causing them not to be received into the Staples system on the same day they arrived. In total, this represents a loss of 20 selling days for the items in those orders.

Based on the results of the pilot, the participants believe that deploying RFID could enable Staples and its vendors to benefit from more on-time deliveries, through more detailed and automated shipment tracking, and faster processing time for RFID orders—which would, in turn, reduce labor costs.

Ashcroft says the group owes much of the completed pilot's success to its careful planning and synchronization efforts to ensure that the tag data and ASNs were properly routed to Staples' back-end systems. Once the system was set up, he adds, the pilot planners did little verification to make sure the pilot ran as expected. "In the real world," he states, "there will be no babysitting."

According to Ashcroft, the project participants have identified seven other potential pilots, including the use of RFID to reduce product out-of-stocks in Staples stores, and to track and improve promotions management. The retailer may also experiment with tagging products in the Far East, tracking them at each step in the supply chain.

