

Dynamic Scheduling: The Missing Link To Mastering Field Mobility?

by Brian Albright

When a home refrigerator shuts down for some reason, owners immediately go into crisis mode. Depending on how long the fridge may be out of service, food must be shunted into the neighbor's freezer, coolers, or even packed in snow outside if it happens to be winter. When a refrigeration unit at a grocery store shuts down, the store manager moves into crisis mode, too, only in that case there's much more

dogs. Thousands of dollars of inventory is at stake, not to mention lost follow-on sales.

Source Refrigeration & HVAC designs, installs, maintains, and optimizes mission-critical refrigeration and HVAC systems for grocery stores and other commercial and industrial businesses. The company's more than 2,500 customers expect Source to respond quickly and efficiently during emergencies and expect Source's roughly 500 service field technicians to keep their equipment running with properly timed maintenance. The company launched a new scheduling solution in 2011 that has significantly reduced technician drive times, improved customer service consistency, and has helped Source consolidate its previously distributed dispatch operations.

Manual Dispatch Of Field Techs Creates Challenges

Although Source has had a WennSoft service management solution in place since the 1990s and has had a mobile computing solution deployed since 2007, dispatchers still manually assigned jobs

Adding automated dispatch to its mobile solution has helped Source Refrigeration reduce drive times by 35%.

on the line than a few containers of soupy ice cream and some spoiled hot



Hal Kolp, VP of IT,
Source Refrigeration & HVAC

Feature Article

to technicians at each branch. “We had geographically dispersed dispatchers,” says Hal Kolp, vice president of IT at Source. “The dispatchers knew the technicians, knew their skills, and knew where many of the customer locations were because they lived in the area. Each of these dispatchers would handle 18 to 25 technicians. They understood the service priorities, and they did their best to get the jobs lined up in a sequence that made sense.”

While this system was functioning, there were problems it presented. For example, each dispatcher did things differently, which meant that customers were not receiving consistent service levels in each region. Although the local dispatchers knew their territories, they weren’t necessarily creating the most efficient routes either, costing the company thousands and thousands of dollars in unnecessary fuel usage. Source wanted to consolidate dispatch to just a handful of locations, but didn’t want to lose all of the local knowledge the dispatchers had in the process.

“We wanted an automated scheduling solution that would drive dispatch consistency across the organization,” Kolp says. “Instead of someone calculating this information in their head, we needed a system to determine the plan in a uniform way across all sites.”

Key Consideration: Dispatch During Emergency Situations

Source evaluated a number of dispatch/scheduling solutions, paying particular attention to how they worked in emergency service scenarios. Once the list was narrowed to two vendors, the company visited customer sites and ran each software solution. Source ultimately chose IFS 360 Scheduling’s Dynamic Scheduling Engine (DSE) solution. “We obviously considered price, but we primarily made our decision based on how easy the solution would be to implement and the functionality it provides,” Kolp says.

The IFS XML interface is what made integrating the scheduling solution with the existing field service management software much easier, Kolp says. “We were able to see how it works. We provided them with the key data on technicians, jobs, and

Ease Of Integration Critical With Dynamic Scheduling Solution

Source Refrigeration & HVAC needed an automated scheduling solution to round out its mobile initiative for a workforce of nearly 500 field technicians. A major consideration when it came time to evaluate vendors was that the scheduling solution had to integrate with the company’s existing workforce management system from WennSoft and with a custom mobile application that had already been deployed on the company’s fleet of Motorola ES400 mobile computers.

With ease of integration a key consid-

The deployment of 360 Scheduling DSE from IFS has rounded out Source Refrigeration’s mobile initiative. Now field techs experience automated dispatch in addition to having mobile access to work order and customer history information from their Motorola ES400s.

eration for Source, the company found IFS 360 Scheduling’s dynamic scheduling solution appealing. Integration with 360 was as simple as loading XML files from its existing solutions. “Every other system we looked at was much more complicated to deploy,”

says Hal Kolp, vice president of IT at Source. “Those solutions would have required building more complex interfaces; IFS 360 didn’t.”

IFS has an XML UDDI (Universal Description Discovery and Integration) Web services interface, which means there is no requirement for an application programming interface (API) to unlock the source code of the source applications involved; integration relies on simple data mapping and data transfer. This helps ensure that the IFS 360 Scheduling Dynamic Scheduling Engine can receive the correct inputs and send back the corresponding data to the other software systems.

In addition to its 360 Scheduling solution, IFS recently acquired Metrix and offers Metrix Service Management. To learn more about IFS’ offerings, visit www.ifsworld.com.



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customers,” Kolp says. “With that data, the solution spits out the answers we need for scheduling automatically.”

How To Measure Dynamic Scheduling Success

To measure the success of the IFS 360 DSE, Source planned to evaluate a handful of key performance indicators, including its ratio of dispatchers to technicians before and after the deployment, what percentage of scheduling decisions were made by the software versus those made by dispatchers, reduction in drive times, and compliance with service level agreement (SLA) requirements.

As the four-month deployment period began, one of Source’s primary tasks was determining how SLA performance would be calculated. Prior to the scheduling solution, the company had no way to measure SLA performance using order timestamp and arrival time because customer-specific SLAs were not recorded in their system. Other master data was missing, too. The company had to enter geolocation information for each customer and define unique problem codes that held skill, urgency, and expected duration information. Now when Source’s call center enters a new job into the system, 360 has the information it needs to describe the work to be performed. Source also realigned technician shifts,

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cataloged technicians’ specific skills, and entered geolocations for each employee’s start and end of day to help determine optimal routing.

Source currently uses Motorola ES400 rugged mobile computers for its mobile field service operations. The ES400 devices and the technicians’ vehicles are equipped with GPS technology. Source was able to leverage the GPS location data to record arrival times and technician location for the new scheduling solution as well. “We developed new tables and procedures to give just the right data to send into the IFS 360 engine,” Kolp says. “We also modified some screens in WennSoft so we could display SLAs and see the skills needed for each job.”

Scheduling Integrates With Field Service Management Solution

Each morning when a technician logs on to their ES400, 360 sends a signal to WennSoft to dispatch a particular call, and Source’s mobile solution quickly sends the job to the technician. In just a few seconds, a job’s status changes from unassigned, to dispatched, and ultimately “en route” when the technician accepts the job.

Jobs are typically dispatched one at a time to the appropriate technician, and the schedule is dynamically altered throughout the day as new work assignments are entered and real-time feedback on job status is received. “The 360 software looks at parameters like drive time, required skills, and how critical the service is, along with our customer SLA expectations,” Kolp says. “It compares that job against all other jobs and figures out which jobs to schedule for which technicians at each time.”

The 360 software knows the location of each customer store, as well as the location of each technician relative to the existing schedule. “It stacks up the day for each technician,” Kolp says.

“As new calls come in, the plan is regenerated and the calls are reprioritized. Jobs may move between technicians from minute to minute.”

The scheduling piece is just the latest step in automating Source’s field force. The existing solution already provided significant functionality. The technicians use the Motorola ES400 mobile computers (along with a custom mobile application based on the Antenna Software AMP mobile application development platform) to automatically fill out time cards, cycle count truck inventory, generate purchase orders, generate field quotes, purchase parts, fill out EPA (Environmental Protection Agency) refrigerant forms, look at asset history information, record all services performed and materials used, and even associate photos throughout the application.

“There’s a rules engine built in, so if you’re working at a Target store, for example, it reminds the technician of the specific things he must do and optional items that he should consider and provides the customer specific check-in and check-out procedures,” Kolp says. “At the end of the job, the solution then verifies he’s done those things.”

Dynamic Scheduling Produces Results

So far, the IFS 360 solution is performing well against Source’s expectations, but the company now has even higher expectations for the future. The technician-to-dispatcher has gone up nearly three times, and Kolp says the company believes further improvements are possible.

Technician drive times vary by region, since some branches cover large geographic areas, and others are fairly small. “In some areas the average drive time might be 20 minutes, but in others you have hour-long times because of the way the calls are dispersed,” Kolp says.

Source analyzed its drive times and has been able to

compare the numbers before and after the solution went live. “All of the drive times and distances at a branch dropped after 360 was implemented,” Kolp says. In one region alone, travel times were reduced by 35% while maintaining SLA compliance.

SLA performance has also improved, although Kolp says that improvement was difficult to measure at first. “We couldn’t measure our SLA performance at all before we put in 360 because we had no SLA definitions,” Kolp says. “Now that we have true SLAs we are tracking that metric and seeing improvements.”

Don’t Forget To Manage Culture Change For Dispatchers

While Kolp says the integration of the 360 scheduling solution went smoothly from a technical standpoint, getting dispatchers to trust the new system was a key challenge. “The role of a dispatcher is changing from a traditional dispatcher to one that is more like an expediter,” Kolp says. “For some, it was very difficult to let the system manage the schedule and do the dispatching because they think they know best.”

Some manual dispatching does still occur in instances where the criticality of the job is not reflected in the data that fuels the scheduling engine, or if a service manager has requested a special dispatch to satisfy a customer’s immediate need. The company has launched a new program to work closely with the dispatchers on a one-on-one basis, in order to help them better understand the solution so they can fine-tune the scheduling engine by adjusting technician travel parameters and skills. “We’re seeing big wins using that process, and our ultimate goal is to have 360 do nearly all of the dispatching,” Kolp says.

The new scheduling system dispatches jobs to the technicians differently from what occurred under the manual system. So while some regions were already used to having jobs “drip fed” to them throughout the day, others had previously given a batch of jobs to each tech and let them essentially schedule themselves during a shift. “In the beginning, there was a lot of pushback from technicians and some service managers about the sequence of jobs and loss of flexibility, but now nearly everyone is on the same page,” Kolp says.

Although the shift to automated scheduling has presented some challenges, it has also provided much better visibility, even in locations where the solution hasn’t been fully enabled. “We can now clearly see if a branch is busy, and just how busy,” Kolp says. “You could never visualize the schedule before, because we didn’t have expected job durations. Now we can tell when we don’t have

enough capacity at a branch or for a certain skill, and this allows us to shift resources from branch to branch.”

The IFS 360 scheduling engine has also improved the way the company dispatches preventive maintenance assignments. “We stack all those jobs up and presort them based on skills and location (according to zip code),” Kolp says. “They get loaded into WennSoft, and then 360 optimizes the routes for the technicians.”

iPhones On The Horizon: The Migration From Windows To iOS

Now that the IFS 360 scheduling solution has been successfully deployed, Source’s next step is to upgrade its mobile hardware. This month, the company plans to begin migrating its mobile application to iOS-based iPhones. “We’ve made a decision that we need to move to another operating system,” Kolp says. “We evaluated Android, iOS, and Windows-based devices and ultimately decided the iPhone is best for us.”

Since the technicians currently carry both a mobile computer and a phone, the move to iPhones will allow the technicians to go from two devices to one. “Our application will run well on the device, and there are many choices for rugged cases and extended batteries for the iPhone,” Kolp says. “I like the idea of having the hardware available for a number of years, which is not the case with many devices in the Android market.”

To make the transition from the Motorola ES400s to the iPhone, a new version of the mobile software Source uses will need to be developed on Antenna’s AMP 3.2 platform. “That will utilize all our existing back end process, so nothing will change, and the business rules and business logic will remain the same,” Kolp says. Spokane, WA-based consulting firm Softechnologies is helping Source redesign the solution screens to work on the new hardware.

“The user interface in iOS is superior, and there are things we’d like to do with our mobile application in the future that are harder to achieve in the Windows environment,” Kolp says. “We like the iOS FaceTime application, which will help technicians communicate with each other and get answers to problems they encounter in the field; voice dictation will simplify data entry, and navigation will make drives easier for new techs.” Kolp believes the move to an iPhone application will further enhance Source’s mobile capabilities, but the existing combination of field service management, mobile computing, and now automated dispatch/scheduling is keeping the field service operation running smoothly — and customers’ refrigerated equipment humming. ●