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UTILITIES

Scheduling Without Boundaries

How the Computational Grid in Oracle Utilities Mobile
Workforce Management Optimizes Enterprise Field Resources

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Introduction

In the past, applications that planned and scheduled utility field work could handle only a limited amount of data. They forced utilities to divide large territories into arbitrary geographic subsets. And they limited a manager's ability to schedule more than a few weeks into the future.

Oracle Utilities Mobile Workforce Management eliminates those limitations. It treats a utility's entire territory—no matter how large—as a single unit, and it permits managers to schedule as far into the future as they wish.

The technical structure that underlies this break-through is the computational grid. It permits utilities to distribute the field optimization task across multiple servers and arrive at schedules and assignments that maximize efficiency.

Yesterday: A Fractured, Inefficient Mobile Workforce

Decisions about dispatching utility field technicians rest on a wide variety of individual data points, including a technician's:

- Credentials.

- Current location.

- Normal working days and hours.

- Contractual work rules.

- Access to tools and equipment.

Dispatchers must also consider such factors as the:

- Priority of the current assignment and its scheduled completion time.

- Priority of potential next assignments and the estimated duration of the task.

- Distance and travel conditions between the current and potential next assignments.

- Availability of alternative technicians / crews able to address the pending tasks.

At any given moment, mid-size and large utilities may have thousands of technicians operating individually or as crews across very large territories. And even small utilities may have tens of thousands of pending tasks, many of them requiring completion within specific timeframes in order to keep warranties in effect.

Mobile workforce applications that superimpose artificial boundaries onto a utility's territory impede common-sense assignment of field technicians.

In the past, even the most sophisticated mobile workforce applications have been unable to accommodate all the individual data points needed to ensure the assignment of the optimal individual or crew to the optimal task. To cope, utilities frequently divided their territories and restricted technicians to work within only one. Other utilities used different dispatching and scheduling solutions for different departments. Or different departments may have used individual, stand-alone versions of a single application.

These different coping strategies all had the same result, however: inability to share qualified resources, ineffective schedules, and improper work assignments.
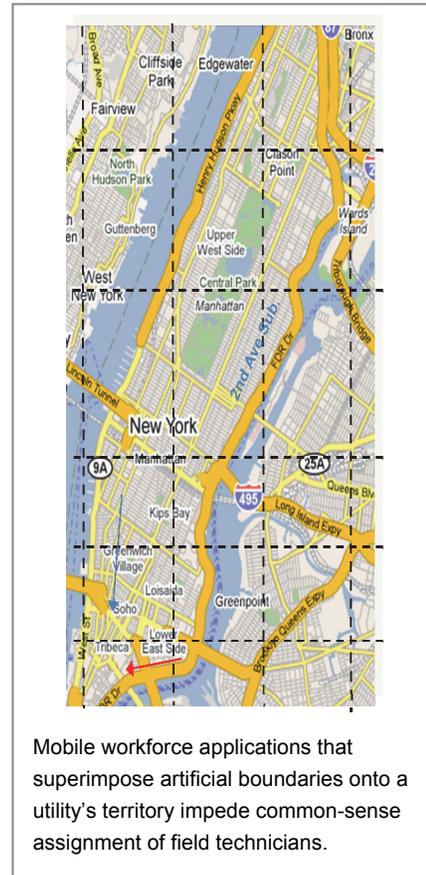
Today: An Enterprise-wide Mobile Solution

Oracle Utilities Mobile Workforce Management (MWM) ends scheduling inefficiencies by eliminating the artificial boundaries of the past. Instead, it uses a computational grid—multiple servers, working in parallel—to optimize scheduling across an entire territory. A single instance of MWM can handle hundreds of thousands of field activities.

MWM eliminates artificial boundaries—not just geographical boundaries but also boundaries between the types of work individual technicians and crews can undertake. Utilities no longer need to divide work into separate categories. Instead, they can move qualified field personnel among short-term and long-term emergency, repair, and maintenance tasks anywhere they are needed.

Benefits

MWM's enterprise-wide solution, encompassing its computational grid and distributed optimization, include:

- Faster emergency response. When emergencies occur, utilities can dispatch the nearest qualified crew, not the nearest qualified crew within some artificial territory or the nearest qualified crew assigned to emergency duty.

- More efficient use of personnel. Utilities can take constant advantage of a technician's full set of qualifications rather than limiting assignments on any given day to "emergencies" or "construction."

- Lower fuel costs and less vehicular wear and tear. MWM creates schedules that minimize time and distance travelled rather than schedules that keep technicians within artificial boundaries.

- Lower IT costs. Each application maintenance or change task occurs once, not multiple times.

- Longer scheduling horizons that more easily accommodate training and vacations without last-minute changes.

- Less overtime. Crews can complete tasks more quickly when they spend less time travelling.

- Better use of hardware. The computational grid increases request throughput, because the software assigns each request to the server that is the least busy.

- Lower administrative cost because MWM has only one point of configuration.

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