Oracle® Advanced Scheduler

User Guide

Release 12.1

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Preface

Intended Audience

Welcome to Release 12.1 of the *Oracle Advanced Scheduler User Guide.*

This guide is designed for implementers, administrators and users of the Oracle Advanced Scheduler application. It assumes that you have a working knowledge of the principles and customary practices of your business area, along with specific application knowledge of the Oracle Field Service suite of products.

See Related Information Sources on page viii for more Oracle Applications product information.

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Structure

1 Understanding Oracle Advanced Scheduler

This chapter provides overviews of the Oracle Advanced Scheduler application and its components, explanations of key concepts, features, and functions, as well as the application's relationships to other Oracle or third-party applications.

2 Using Oracle Advanced Scheduler

This chapter documents procedures for using Oracle Advanced Scheduler functionality to schedule service tasks.

A Windows and Navigation Paths

Related Information Sources

Oracle Field Service Implementation Guide

Oracle Field Service User Guide

Oracle Spares Management User Guide

Oracle Mobile Field Service Implementation Guide

Oracle Mobile Field Service User Guide

Integration Repository

The Oracle Integration Repository is a compilation of information about the service endpoints exposed by the Oracle E-Business Suite of applications. It provides a complete catalog of Oracle E-Business Suite's business service interfaces. The tool lets users easily discover and deploy the appropriate business service interface for integration with any system, application, or business partner.

The Oracle Integration Repository is shipped as part of the E-Business Suite. As your

instance is patched, the repository is automatically updated with content appropriate for the precise revisions of interfaces in your environment.

Do Not Use Database Tools to Modify Oracle Applications Data

Oracle STRONGLY RECOMMENDS that you never use SQL*Plus, Oracle Data Browser, database triggers, or any other tool to modify Oracle Applications data unless otherwise instructed.

Oracle provides powerful tools you can use to create, store, change, retrieve, and maintain information in an Oracle database. But if you use Oracle tools such as SQL*Plus to modify Oracle Applications data, you risk destroying the integrity of your data and you lose the ability to audit changes to your data.

Because Oracle Applications tables are interrelated, any change you make using an Oracle Applications form can update many tables at once. But when you modify Oracle Applications data using anything other than Oracle Applications, you may change a row in one table without making corresponding changes in related tables. If your tables get out of synchronization with each other, you risk retrieving erroneous information and you risk unpredictable results throughout Oracle Applications.

When you use Oracle Applications to modify your data, Oracle Applications automatically checks that your changes are valid. Oracle Applications also keeps track of who changes information. If you enter information into database tables using database tools, you may store invalid information. You also lose the ability to track who has changed your information because SQL*Plus and other database tools do not keep a record of changes.

1

Understanding Oracle Advanced Scheduler

This chapter provides overviews of the Oracle Advanced Scheduler application and its components, explanations of key concepts, features, and functions, as well as the application's relationships to other Oracle or third-party applications.

This chapter covers the following topics:

- Overview of Oracle Advanced Scheduler
- Key Features of Advanced Scheduler
- How Advanced Scheduler Functionality Works
- Scheduling Modes Used by the Advanced Scheduler
- Methods for Running Advanced Scheduler
- Autonomous Scheduler
- Scheduling Based on Parts Availability
- Calculating Travel Time and Distance
- Costing Schedule Options
- Releasing Work (Committing Tasks) to Technicians
- Inspection and Preventive Maintenance
- How Advanced Scheduler Relates to the E-Business Suite

Overview of Oracle Advanced Scheduler

Oracle Advanced Scheduler provides comprehensive scheduling functionality for assigning tasks to qualified field service technicians. Advanced Scheduler uses cost calculations and configurable constraints to create optimized schedules. Efficient and accurate scheduling of field service technicians improves service while decreasing operational costs.

Advanced Scheduler handles two primary business scenarios. First, it can create service schedules for the *break/fix* service business model. This model typically applies when a

customer discovers an unexpected problem, and calls the service organization to open a service request. In the break/fix scenario, quickly resolving service requests is often a priority. Second, Advanced Scheduler is also capable of addressing a *planned work* model, in which an organization identifies scheduled inspection and proactive and preventive maintenance needs. The planned work business model requires a tool that assigns qualified technicians to scheduled tasks according to business objectives, such as cost efficiency and service contract commitments that specify response time.

The driving principle of Advanced Scheduler functionality is that you can more effectively schedule task assignments to benefit your field service operation, either through reduced cost or increased customer satisfaction, if you have a carefully designed methodology and setups in place for selecting the best field service technician to handle a particular task.

Advanced Scheduler considers many parameters, such as overtime allowed, proximity to the customer site, possessing the necessary skill set or specific spare part, whether or not a technician is notated as "preferred resource" on the customer contract, and so on, and weighs these factors when creating scheduling options to best suit your business needs.

Advanced Scheduler can be configured to use geo-spatial data of the road network, to effectively schedule technicians with their trips better optimized for their travel time and travel distances. This will not only make the service organization more efficient, but also leads to significant cost savings in the long run.

Integration with Oracle Field Service, and especially the Spares Management module of Oracle Field Service, offers a unique and powerful scheduling solution. Integration with Spares Management offers schedule optimization based on spare parts availability.

Key Features of Advanced Scheduler

Oracle Advanced Scheduler also supports the following features:

Address Validation and Geo-Coding

To calculate the travel time and distance using geo-spatial data, the addresses of customer locations and technician's home are geo-coded by the location finder. Geo-coding is essentially determining the latitude and longitude of the location and associating the street segment details to the addresses. The Location Finder tries to geo-code the address to the accuracy level of street, postal code, or the city centroid, in that order. If the location finder fails to geo-code a specific address, it will stamp the address as invalid. All invalid addresses can be corrected and validated by using the Change Invalid Addresses user interface.

Change Invalid Address for Scheduling

When scheduling tasks, dispatchers sometimes encounter situations where the customer's address in the system is invalid. For example, a call center service

representative enters an address incorrectly. As a result, the Advanced Scheduler automatic scheduling functionality cannot assign the task to a technician. The task remains unscheduled.

Field Service provides the Find Invalid Addresses concurrent program to identify invalid addresses and enables dispatchers to correct them. By identifying and correcting invalid addresses before they are called by Advanced Scheduler decreases the amount of time Advanced Scheduler needs to schedule tasks.

Note: This option is only applicable if you have geo-spatial data loaded.

Note: Advanced Scheduler proceeds with scheduling tasks that have an invalid address if the profile CSR: Use Fixed Values for Invalid Addresses is set to Yes.

For more information on identifying and changing invalid addresses, see the Managing Field Service Task Schedules chapter of the *Oracle Field Service User Guide*.

Commute Times in Technician's Shift

Customers have an option to consider the commute time from home to the first task or back home from the last task, either within or outside the technician's trip, by setting the profile option CSR: Include commutes in shift.

This functionality is useful if you are including travel costs in the planning options.

Schedule Tasks Longer Than Standard Shift Durations

Tasks related to planned work, such as preventive maintenance and scheduled inspections, typically span across multiple days. Advanced Scheduler has the capability to handle tasks longer than a standard work shift. When scheduling such tasks, Scheduler automatically splits the longer task (parent task) and creates related child tasks, which breaks the work into contiguous shifts. The two scheduling modes that are compatible for scheduling tasks longer than a standard shift are the Assisted mode, and the Intelligent mode. The Window-to-Promise mode is designed to schedule tasks of smaller duration to fit into a technicians' standard shift and hence is not available for scheduling very long duration tasks.

When interactively scheduling a task, the Dispatch Center displays a scheduling option with all feasible shift options. Multiple options in the schedule appear, ranked by cost.

Note: Advanced Scheduler schedules all child tasks in contiguous time slots for a single technician initially. The tasks can be rescheduled to different technicians later on if needed.

Manage the Customer Confirmation Process

Some customers require confirmation of an appointment prior to scheduling it. This confirmation requirement can be created in preventive maintenance program details of Service Contract Coverage or manually entered when a "break/fix" service request or task is created in TeleService. The dispatcher can also add the confirmation from the Dispatch Center user interface. In all cases, Field Service and Advanced Scheduler products provide the ability to:

1. Record the confirmation requirement.
2. Schedule tasks with confirmation requirement.
3. Record confirmation receipt.
4. Release only confirmed tasks with confirmation requirement to the technician.

After a customer has confirmed a task assignment, any change in the task, such as appointment time, or assigned technician, must be reconfirmed by the customer. After a task has been confirmed, it can be executed. Tasks requiring confirmation that have not yet been confirmed are not released to the technicians.

Scheduling With Access Hours and After Hour Requirements

Planned work at a customer site can sometimes be intrusive to a customer. Because of this customers need the ability to specify access hours for when a technician can perform a scheduled task. When access hours are indicated on the task, Advanced Scheduler considers this as a constraint when scheduling tasks interactively or through the background Autonomous Scheduler program.

Customers can optionally specify instructions for accessing their site using after hours. After hours requirements are instructions that are textual in nature. Because of this the Autonomous Scheduler concurrent program skips the tasks with after hour requirements. Dispatchers will have to schedule these tasks interactively duly honoring the instructions.

How Advanced Scheduler Functionality Works

This section describes the processes Advanced Scheduler uses to assign tasks to field service schedules.

Advanced Scheduler Process Flow

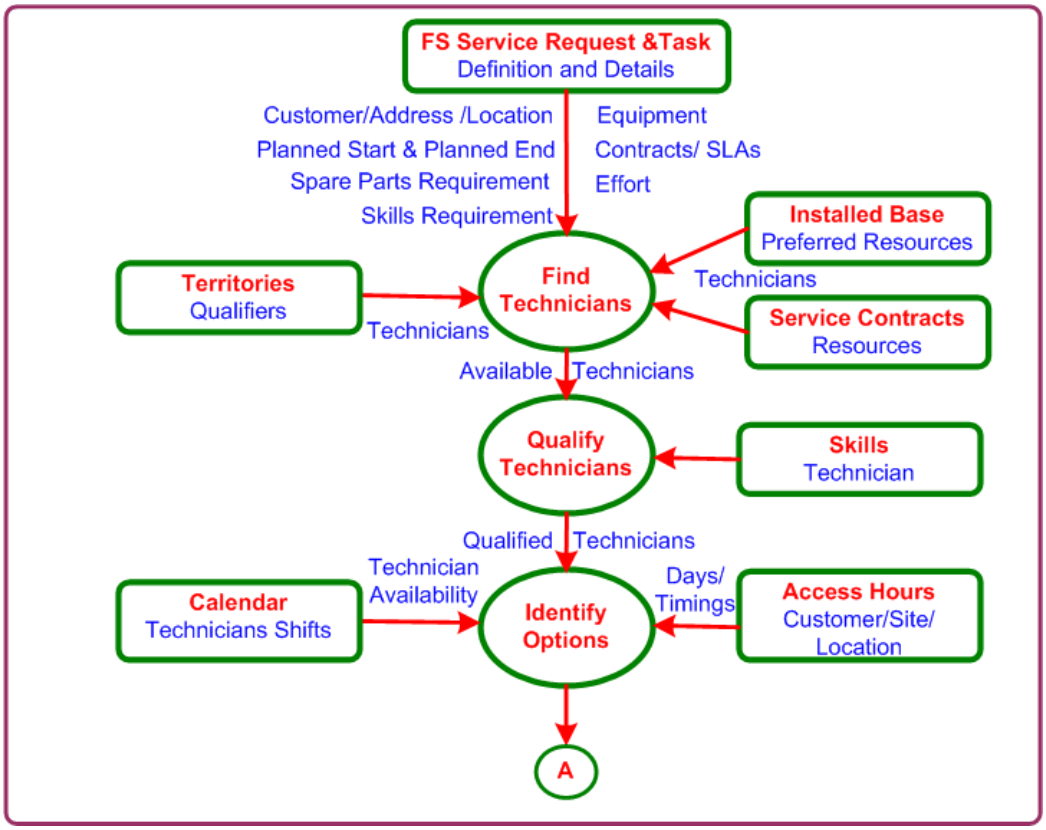
This section describes the processes Advanced Scheduler uses to assign tasks to field service schedules.

The Advanced Scheduler engine can be run as a batch process to schedule a high

volume of tasks. Advanced Scheduler considers several profile option settings during the background processing. The Advanced Scheduler engine is also invoked from the Schedule Task window, during interactive scheduling. Several preferences related to territories, contracts, Install Base preferred resources, parts, and the scheduling mode, are considered during interactive scheduling.

The scheduling process uses the following criteria to find the plan options and schedule resources:

- Preferred resources
- Resource availability
- Skills
- Territories
- Part location and availability
- Travel time and distance
- Cost Factors
- Customer Access Hours
- Business-driven constraints, such as overtime, and meeting service level agreements


FS Service Request &Task
Definition and Details
Customer/Address /Location
Planned Start & Planned End
Spare Parts Requirement
Skills Requirement
Equipment
Contracts/ SLAs
Effort
Installed Base
Preferred Resources
Technicians
Territories
Qualifiers
Find
Technicians
Technicians
Service Contracts
Resources
Available Technicians
Qualify
Technicians
Skills
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Calendar
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Days/
Timings
Access Hours
Customer/Site/
Location
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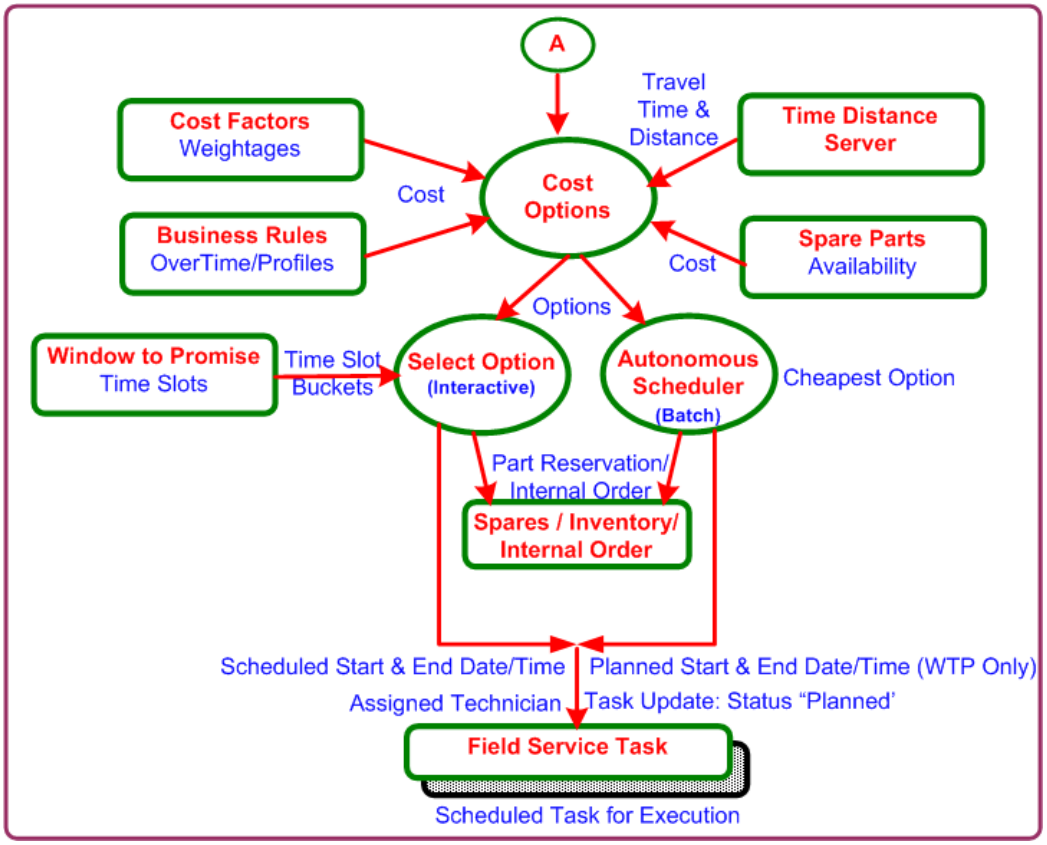


Finding Candidate Technicians

The application finds technicians assigned to the customer's service territory. When the customer specifies a preferred technician as part of the contract definition, or a preferred technician is associated to an Install Base record, the application searches that technician's calendar for an available appointment time.

Qualifying Technicians

The application reviews the pool of candidate technician resources to identify which resources satisfy the constraints and requirements for a particular task.

Scheduler considers skill requirements and other constraints such as, territory qualifiers, contracted service level agreement, service parts availability, customer access hours, task duration, customer confirmation status, and the planned window while looking for schedule options to fit qualifying technicians.

> **Note:** A planned window is the time between the Planned Start Date time and Planned End Date time. These times are typically the Earliest and Latest Planned Date times to start the work.

Identifying Schedule Options

Next, Advanced Scheduler compares available time slots appearing in the schedules for qualified service technicians to the customer-specified hours, and then generates a list of viable schedule options. This comprehensive list includes a separate option for each available time slot, for each service technician qualified to perform the task, driven by the planned date times:

- Earliest Start and Latest Start
- Earliest Start and Latest Finish

See Scheduling Modes, page 1-11.

Calculating Incremental Schedule Option Costs

Advanced Scheduler calculates the cost of adding the task to each viable schedule option. The cost concept used here, is not taken in the sense of operating expense. Instead, these costs are a measure of how well the service schedules match the business rules and priorities. It is helpful to view these costs as penalty points associated with undesired outcomes, such as arriving late for a field service appointment, or traveling a great distance to a customer site.

Cost is applied to all options identified, depending upon the lowest cost to insert a task into a technician's trip, including moving other non committed (non released) tasks within the trips.

Advanced Scheduler's spatial component calculates travel times and distances to optimize the daily trips of each field service technician.

Costs parameter values (Cost Factors) are set up prior to scheduling to tune the Oracle Advanced Scheduler algorithm, so that the resulting schedules align with the specific business rules and priorities.

See Costing Schedule Options, page 1-19.

Scheduling a Task to a Technician

Finally, the task is scheduled to a particular technician either interactively, or by a background process. In the interactive method, the application provides the Schedule Task user interface to the dispatcher. The user interface displays each viable schedule option, sorted by the calculated cost associated with choosing that option. When the dispatcher chooses a particular option, that task is tied to the selected service technician's trip in the appointed time slot. Task details are updated and scheduled start and scheduled end date times are stamped. Activating the background method enables the Autonomous Scheduler to automatically assign the task to the lowest cost schedule option.

Scheduling Process

The scheduling process uses criteria based on preferred resources, resource calendar, territories, parts availability, and travel time and distance to select a qualified resource for a task. The following table lists the process elements that the scheduling process relies on.

Scheduling Process and Descriptions

Process Element	Description
Preferred resource information	A preferred resource is a single person or a resource group that is defined in Oracle Service Contracts or recommended from the Installed Base in Oracle Service for a customer.
Skill	Skills are the field service technician's competencies. Skills fall into three major categories: technical product skills, other technical skills, and non technical skills, for example specific knowledge of a certain language. When scheduling each task, Advanced Scheduler matches the field service technician's skills to be equal or above the skills required to perform the task.
Skill level	The skill level indicates the expertise scale of the field service technician's skill and Advanced Scheduler requires that the technician's skill level meet or exceed that which is required for the task.
Territory definition	Technicians are identified and assigned to the territories based on the territory qualifiers. Territories are defined in the Territory Manager module. For more information, see Territory Manager in the *Oracle Common Application Components User Guide*.
Planned task effort information	Task effort information (how long the task will take to complete) is essential for checking the availability of the resource and for designating a resource as unavailable in the resource's calendar after a task has been scheduled and assigned to the technician. Task effort information is the amount of effort Planned at creation of the task. Task effort information is needed to derive the Scheduled Start Date Time and Scheduled End Date Time.
Planned Start Window	This is the time frame in which it has been determined that the task must begin. This is the Time window between the Planned Start Date Time and Planned End date Time.

Process Element	Description
Resource's availability information	Availability of the resource is provided by the Calendar component in which a resources shifts and unavailability is defined.
Spare parts location and availability	Spare part location and availability information is needed by Advanced Scheduler to make a reservation at task assignment if spares are to be considered. Spare part information is provided by Spares Management.
Road network for calculation of travel time and distance	Geo-spatial data of road network is required for Advanced Scheduler to be able to calculate travel time and distance in between tasks and to optimize the technicians' schedules and trips. In the absence of spatial data, Advanced Scheduler can obtain the travel time and distance from the profile option values.

Scheduling Preferences

When scheduling field service tasks interactively, you can influence how the selection criteria are applied by making different filtering choices. When the field service tasks are scheduled automatically using the Autonomous Scheduler batch program, the selection criteria are set by the profile option values.

The following table outlines how field service tasks are scheduled using various methods and modules and also displays how the criteria are used to select a qualified resource for a task.

Matching Attributes and Different Modules

Criteria	Dispatch Center Window (Field Service) and Service Request Window (Task Tab)	Automatic Scheduling
Territory Matching Attributes	Used to retrieve all resources for the assignment from the qualified territories, based on the matching attributes.	Used to retrieve all resources for the assignment from the qualified territories, based on the matching attributes.
Contracts	When selected, these resources are also considered.	Contract Resources also considered.
Installed Base	When selected, these resources are also considered.	Installed Base Resources also considered.

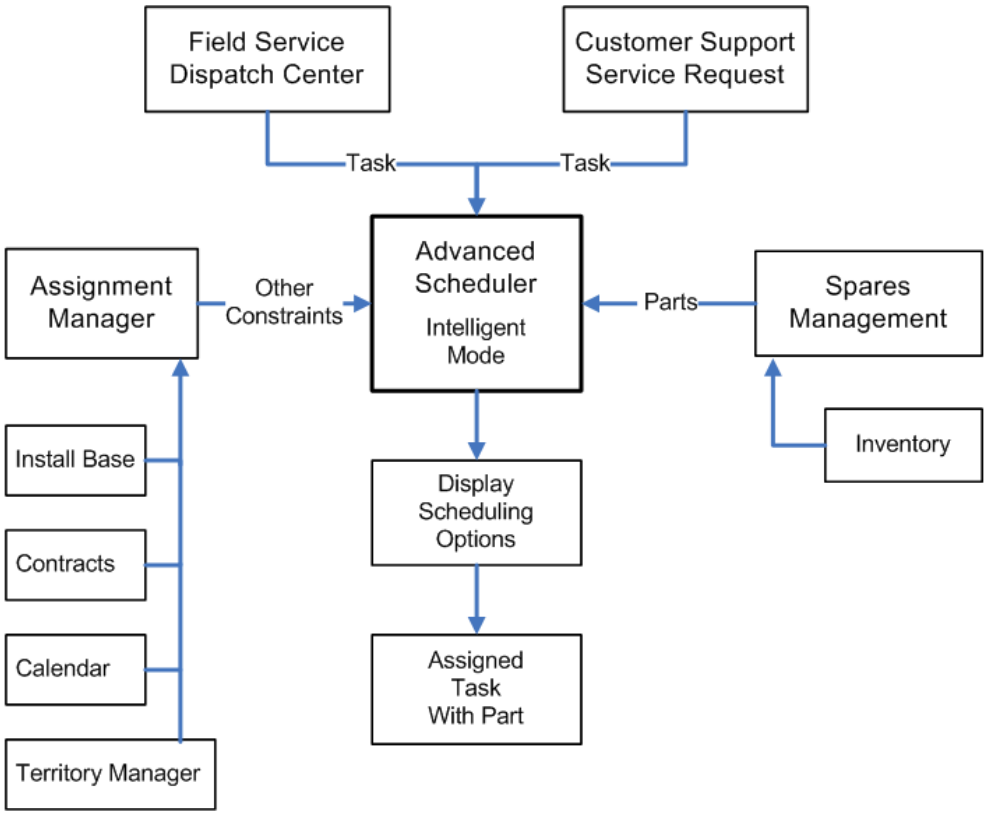
Criteria	Dispatch Center Window (Field Service) and Service Request Window (Task Tab)	Automatic Scheduling
Skills	Technicians at or above the required skill level are considered.	Technicians at or above the required skill level are considered.
Resource Calendar	The Resource Calendar and the availability of the resource are always considered.	The Resource Calendar and the availability of the resource are always considered.
Spares	A list of qualified resources based on the criteria above is passed on to Spares Management to check parts availability based on the availability condition selected, at the time of finding scheduling options.	A list of the qualified resources based on the criteria above is passed on to Spares Management to check parts availability based on a **predefined** availability condition.
Travel time and distance	The travel time and distance for each plan option are calculated for the resources returned.	The travel time and distance for each plan option are calculated for the resources returned.
Cost Related Constraints	Predefined business driven constraints are applied for each plan option to produce a list of qualified resources or available time slots.	Predefined business driven constraints are applied for each plan option to produce a list of qualified resources or available time slots.

Scheduling Modes Used by the Advanced Scheduler

The Advanced Scheduler has three scheduling modes that you can use when scheduling tasks.

Intelligent Mode

The Intelligent scheduling mode assigns tasks based upon predefined constraints and costs. This graphic illustrates how Oracle Advanced Scheduler creates schedules using the Intelligent scheduling mode.



Advanced Scheduler receives unassigned tasks created in either the Field Service Dispatch Center or the Customer Support Service Request window. The dispatcher selects a task to be scheduled.

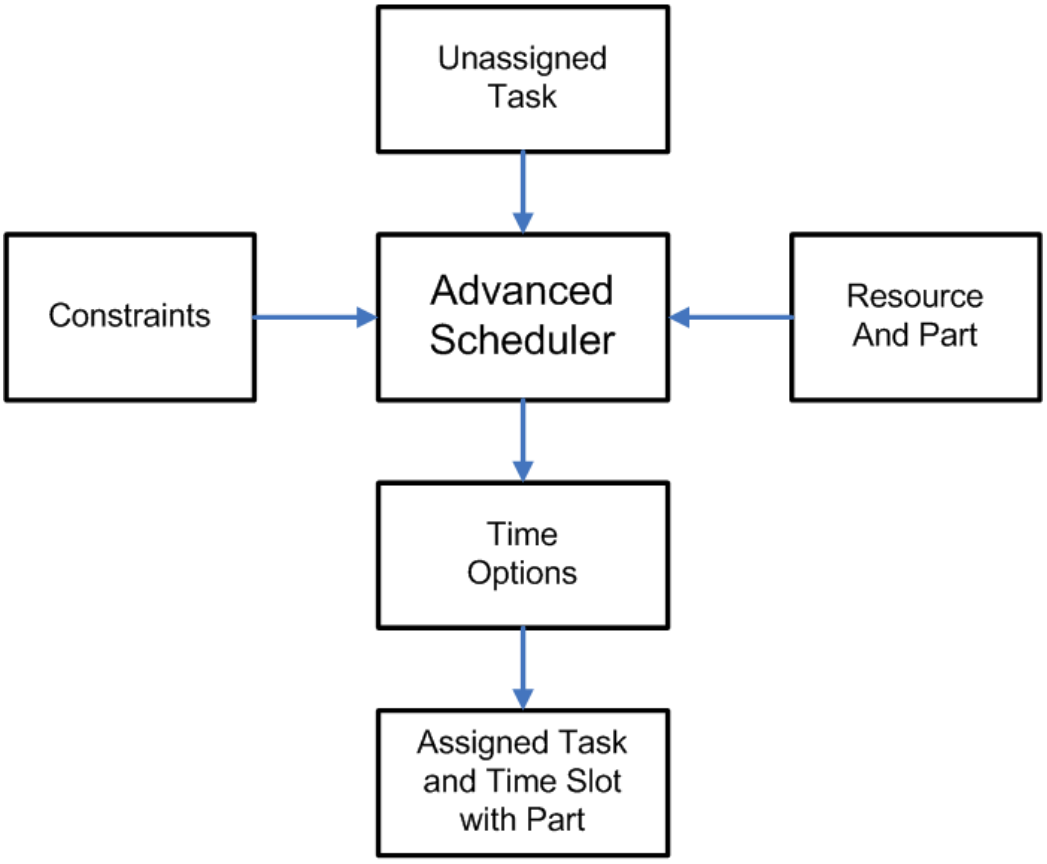
Intelligent scheduling analyzes constraints and costs, and then displays a list of feasible schedule options, along with the technician, spare parts, service time, and calculated costs associated with adding the task to each schedule option. The dispatcher can then select a schedule option interactively from the display.

One task at a time is scheduled. Continuing this process creates a *trip*, which is a scheduled sequence of tasks, for each service technician. The dispatcher can optimize the technician's trip sequence later in the process, or manually reassign tasks before committing or releasing the schedule to the service technician.

Window-to-Promise Mode

The scheduling algorithms used in the Window-to-Promise scheduling mode are the same as those used in the Intelligent scheduling mode. One difference between the modes is the format for presenting the information on the user interface. Window-to-Promise displays schedule options and associated costs in a date and time slot format. This format addresses the situation where your customer wants to schedule an appointment for a field service visit to occur sometime during an agreed time slot, or window.

This graphic illustrates how Oracle Advanced Scheduler creates schedules using the Window-to-Promise mode.



Advanced Scheduler receives unassigned tasks, considers predefined constraints, availability of parts, and availability of technicians in the same manner as does Intelligent scheduling. The user interface shows date and time slots in technicians' calendars that remain available to promise to the customer. The dispatcher consults with the customer to select a time slot.

The outcome of scheduling with Window-to-Promise is a task and qualified service technician resource assigned to an agreed time slot during which the technician will visit the customer to perform a service task. The time slot is reserved for the specific customer on the service request.

One time slot can be reserved for multiple customers, assuming multiple resources are available to service the requests simultaneously. The dispatcher can modify a service technician's trip later in the process, before committing the schedule. The dispatcher can accept the suggested option, reassign a task, or determine whether it is beneficial to reschedule it. The Window-to-Promise mode schedules only one task at a time.

Assisted Mode

Use Assisted Mode if you want to find the best time slot with the least cost for the qualified resources to perform the task in the given planned start and end date and time. A list of resources appears in the Advice tab. You can filter this search for a single technician, in which case the system displays only the possible schedule options for that preferred resource. Assisted mode also takes costs into account.

Methods for Running Advanced Scheduler

You can run the Advanced Scheduler using several different methods. The methods for running the Advanced Scheduler are:

- Real time (interactive) scheduling using the Schedule Task window accessed from the Field Service Dispatch Center or the Service Request window.

  When scheduling interactively, Advanced Scheduler offers three scheduling modes:

  - Intelligent Mode, page 1-11
  - Window-to-Promise Mode, page 1-12
  - Assisted Mode, page 1-14

  In the Intelligent and Window-to-Promise modes, Advanced Scheduler considers constraints such as skills, and calculates costs such as travel time. See Costing Schedule Options, page 1-19. The Window-to-Promise mode is similar to the Intelligent mode, but instead presents options in time slot buckets. Assisted Mode is similar to Intelligent Mode except that it provides one best plan option to the eligible technicians.

- Semi-automated scheduling using the Auto Schedule button on the Field Service Dispatch Center and the background scheduling process.

  When scheduling semi-interactively, dispatchers are able to select tasks to be scheduled in a batch to the qualified resources. A concurrent program schedules the tasks using the intelligent mode. It automatically chooses the schedule option that offers the lowest cost.

- Batch (background) scheduling using the Autonomous Scheduler concurrent program.

  The Autonomous Scheduler concurrent program schedules tasks using the intelligent mode. It automatically chooses the schedule option that offers the lowest cost.

Autonomous Scheduler

You can run the Autonomous Scheduler concurrent program to automatically schedule tasks without user intervention or you can run the program semi-interactively from the Field Service Dispatch Center through the Auto Schedule button. The Autonomous Scheduler concurrent program accepts the *Task Query* set in the "CSR: Selection of Tasks for Autonomous Scheduler" profile option as a parameter or if scheduling semi-interactively from the Dispatch Center the group of tasks selected by the Dispatcher is as follows:

If:

- the task query criteria are met, and
- the task is at a schedulable status, and
- the task matches the concurrent program's task list parameters,

then the task is automatically picked up by the Autonomous Scheduler concurrent program for scheduling.

> **Tip:** To improve scheduling efficiency within the field service operation, identify as many potential task candidates for automatic scheduling as possible. This affords the dispatcher more time to schedule complex tasks and tasks with exceptions.

See Setting Up the Autonomous Scheduler in the *Oracle Field Service Implementation Guide.* When Oracle Advanced Scheduler is not able to schedule a task, the task is moved to a status as dictated by the profile "CSR: Rejected by Autonomous Scheduling Status" and a log is generated. To view these logs, see the Working with Tasks Rejected by Autonomous Scheduler, *Oracle Field Service User Guide*.

In addition, the Autonomous Scheduler and Auto Schedule process use several profile options for scheduling tasks. These profile options are:

- CSR: Territory based resource for auto-schedule and autonomous scheduler
- CSR: Skill based resource selection for auto-schedule and autonomous scheduler
- CSR: Installed base resource selection for auto-schedule and autonomous scheduler
- CSR: Contracts based resource selection for auto-schedule and autonomous scheduler

Scheduling Based on Parts Availability

When Oracle Spares Management functionality is implemented, Advanced Scheduler

also takes into account service parts requirements and availability. Spare parts requirements can be defined in these ways:

- Define part requirements in the Task Templates and associated through:
  - Knowledge Management features and functions.
  - Service Request window in TeleService.
  - Preventive Maintenance Program definition.
- Manually create the requirement while creating a service request and task in TeleService.
- Manually create the requirement from the Dispatch Center window.

The availability of spare parts is an important consideration in making sure that the right technician is assigned to the task. For this purpose, the Advanced Scheduler tightly integrates with the Spares Management module of the Field Service application. This integration ensures that parts availability across the field service supply chain is considered when tasks are assigned to technicians.

Scheduling with the parts option is available when:

- Scheduling tasks interactively (intelligent and window to promise) through the Schedule Task window.
- Scheduling tasks semi-interactively using the Auto Schedule button in the Field Service Dispatch Center.
- Scheduling tasks in batch mode using the Autonomous Scheduler concurrent program.

Spares integration, at is applies to Advanced Scheduler, is as follows:

1. The Advanced Scheduler engine provides the Spares Management module with a list of resources qualified to resolve the task and available dates.

   Spares Management has the capability to define and prioritize parts required for the product and task. This can be done manually when the required service parts are known, or automatically to define frequently used parts based on the probability of need and through a historical evaluation of debrief transactions for the product and particular task.

   The availability condition represents the urgency for a part to be available to resolve the task, and is based on the likelihood that part is used to resolve a specific task. In Spares Management, a relationship between the problem definition of a task and the parts that are likely to be used to resolve the task is established. Frequently used parts are mapped to a high probability of being needed to resolve the task.

   For autonomous or automatic scheduling the availability condition is defined at

setup using the profile "CSF: Default Spares Availability". This profile value determines whether the Advanced Scheduler should consider parts while scheduling the tasks.

2. In Spares Management, based on the availability condition indicated, for each resource from the list, the part availability for a resource is checked for the time options given. This is controlled through the profile "CSP: Include Car Stock". Costs are calculated for each possible option, this might include shipping parts to a resource from another resource, from a warehouse, or from a secondary support location.

   When no feasible options are found, this will be prompted to the dispatcher. When scheduling automatically using the background process, a log is generated and the task is moved to the status dictated by profile "CSR: Rejected by Autonomous Scheduling Status".

3. A list of resources with a related date and relevant cost for the parts is returned to Advanced Scheduler.

4. When a task is scheduled to a resource, a reservation is created automatically for the technician's on hand spare parts to ensure those parts are not considered as available for other task assignments. However, by giving consideration to other cost factors that influence scheduling options, it may be necessary to assign a task to a technician who does not have the necessary parts on-hand. If the spare part is available within the inventory organization (at different locations, with other technicians), then an internal order is created to get the part shipped to the technician being scheduled. For an internal order to be created the part needs to be an ATP (Available to Promise) part. A part is defined as an ATP part while creating the part in the system. Based on the value for the profile "CSP: Use ATP For Parts", Advanced Scheduler returns plan options for the task involving ATP parts. For scheduling tasks which include ATP parts, the profile can be set to either Always or Scheduler Only. When spare parts must be internally ordered, the Advanced Scheduler automatically creates an internal order in Booked status for the necessary parts, and considers the parts arrival dates and times when scheduling the task. Advanced Scheduler also considers the costs for ordering the part and shipping it to the technician as part of costing the option. While suggesting the schedule start date time and the scheduled end date time, the Scheduler considers the defined shipping method and the lead time to ship the part to the technician. When a needed spare part is not available, the dispatcher can manually create a purchase requisition.

   If the task is canceled/unscheduled, and if the order has not yet been shipped, the system ensures cancellation of the created internal order. If the order has already shipped, the part requirement is de-associated from the task. The technician can receive the order and add the part to the trunk stock. If for some reason, the task is rescheduled to the same technician then the reservation and internal orders are retained. When the task is rescheduled to a different technician then a new reservation and internal orders are generated. The same behavior is seen when a

reservation is created for a part.

A task may require multiple parts, which might create a reservation and internal orders when scheduling. For all the ATP items requested for the task a single internal order is created. For the other parts a reservation is created. The technician may use only a few parts among the many parts indicated to be utilized to perform the task. In those cases, the reservation and internal order is cancelled for those parts alone when the task is completed by the technician.

The seeded availability options in Advanced Scheduler are:

- **All Parts:** The availability for all part definitions for the task are considered and required.
- **No Parts:** The availability for the parts defined is not considered.

If you use the All Parts option for scheduling with parts, even if one part is not available to be reserved/shipped to the technician before the scheduled start date of the task or the part is unavailable to be sourced, then the task is not scheduled to the technician.

The part condition availability is user definable. You can add conditions when you define Parts Categories during implementation of the Spares Management module.

For more information on defining Part Categories, see the Spares Management section of the *Oracle Field Service Implementation Guide*.

Calculating Travel Time and Distance

Managing travel time and distance traveled is often a key objective for field service organizations. Advanced Scheduler analyzes the location of the customer and the locations of the technicians to identify driving routes that reduce travel time. Advanced Scheduler uses spatial data related to road network data to create these routes and to estimate travel time and travel distance. There are three mapping options available:

- Default standard Travel Time and Distance
- Point-to-Point Travel
- Street Level Routing

Travel Time and Distance Calculations

The Time Distance Server component in Oracle Advanced Scheduler calculates travel time and distance. The Time Distance Server determines the distance between two locations and estimates the travel time between the two, based upon the appropriate road network. To calculate travel time and distance between two tasks, Scheduler requires the geo-coded location information for each task. The location finder derives location information from the site address, using street, road, city or zip code, and

country.

For more information on the travel time and distance calculations, see the *Oracle Field Service Implementation Guide.*

Costing Schedule Options

When more than one service technician can perform a task, the assignment decision depends on which service technician can perform the task the most cost effectively (lowest cost option). Costs are related to the organizations business priorities for planning and enable the cost mechanism to compare the alternative options for scheduling. Even though the default values are seeded for these cost factors, to enable the cost mechanism to work effectively, the values for each of the seeded constraints must be set by experimenting with different values, and comparing the schedule options generated.

The costs used here should not be considered strictly as monetary costs, but rather as "penalty points" that determine which is the most effective task assignment with respect to several business priorities such as, prompt customer service response, travel distance, and overtime. You can define cost parameter values as part of the setup process.

You can assign values to each of these cost parameters that act as "weights" to tune the Oracle Advanced Scheduler algorithm so that the resulting schedules align with the specific business rules and priorities. The cost related constraints are used for scheduling. These seeded constraints are applied to each schedule option Advanced Scheduler finds.

To set up cost parameters, see Setting Up Scheduling Parameters in the *Oracle Field Service Implementation Guide.*

Cost Factor: Cost for not assigning preferred resource

Description: The cost penalty for not assigning the defined customer preferred resource applies to all scheduling options utilizing non preferred resources.

Formula: For all schedule options that utilize non preferred resources, add the Cost Factor value to the total cost for the option.

Business Rule: Preferred resources, based on Service Contracts or Install Base setup, should be considered before assigning other resources. Schedule options that utilize preferred resources should rank higher in the presentation of options.

Business Justification: Increase customer satisfaction by assigning tasks to the preferred resources.

Cost Factor: Cost per day the task is scheduled to start after the day it was received

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Description: The cost penalty for each day the task is scheduled after the day the request was logged.

Formula: For each day the scheduled start date is later than the earliest start date, add the Cost Factor value to the total cost for the option.

{ [(Scheduled Start date, any time) - (Planned Start date, any time)] * Cost factor value] }

- In the break/fix scenario, the task Planned Start date default value is the current date when the task was created in the Service Request user interface.
- For planned work in the preventive maintenance scenario, the task Planned Start date is the earliest start date of the preventive maintenance schedule defined in the contract or fleet maintenance plan.

Business Rule: Schedule options that occur earlier should rank higher in the presentation of options.

Business Justification: In a break-fix scenario, improve customer service by scheduling the task as quickly as possible.

For preventive maintenance planned work, increase flexibility in planning and scheduling tasks. Scheduling tasks earlier in the maintenance schedule window increases flexibility for accommodating break-fix calls and unknown or unexpected work loads.

Cost Factor: Cost per unit traveling distance

Description: The cost penalty per kilometer for adding the travel distance associated with a task to a trip.

Formula: For each option,

Travel Distance in Kilometers * Cost factor value

Travel distance is calculated in these ways:

- Using Default Values for Travel Time and Distance Calculation

  For information see, Using Default Values for Travel Time and Distance Calculation in the *Oracle Field Service Implementation Guide.*

- Calculating Estimated Travel Time and Distance (Point-to-Point or As the Crow Flies)

  For information see, Calculating Estimated Travel Time and Distance (Point-to-Point or As the Crow Flies) in the *Oracle Field Service Implementation Guide.*

- Calculating Actual Travel Time and Distance (Street Level Routing)

  For information see, Calculating Actual Travel Time and Distance (Street Level Routing) in the *Oracle Field Service Implementation Guide.*

Business Rule: Schedule options with shorter trip travel distance should rank higher in the presentation of options.

Business Justification: Optimize the travel distance a technician travels, from one task to another, during scheduling planned work. Reduce travel distance and expenses. More productive utilization of technicians time.

Cost Factor: Cost per minute traveling time

Description: The cost penalty per minute for adding the travel time associated with a task to a trip.

Formula: For each option,

Travel Time in minutes * Cost factor value

Travel time is calculated differently for the following options:

- Default, based on profile option
- Point-to-Point estimate
- Street level Routing

See Setting Up Advanced Scheduler and Time and Distance Calculations in the *Oracle Field Service Implementation Guide*.

Business Rule: Schedule options with shorter trip travel time should rank higher in the presentation of options.

Business Justification: Optimize the travel time a technician travels, from one task to another, during scheduling planned work. Reduce travel time and expenses. More productive utilization of technicians time.

Cost Factor: Cost per minute a resource is working overtime

Description: The cost penalty per minute for assigning tasks that end after the technicians standard work shift, as defined by the arrival task for the technician.

Formula: Overtime is the additional time the technician is scheduled to work beyond the shift end time. It is the *positive* time elapsed between the scheduled end of the last task and the end of the shift (arrival task).

[(Scheduled End time of last task in a trip) - (Scheduled End time of arrival task), in minutes] * Cost Factor value

Business Rule: Schedule options that require more overtime should rank lower in the presentation of options.

Business Justification: Reduce overtime expense.

Cost Factor: Cost per minute visiting too early

Description: The cost penalty per minute for assigning tasks that cause the technician to arrive at the customer site earlier than the planned start time. This is applicable for scheduling planned work, and not applicable for a break-fix scenario.

Formula: If Scheduled Start time is earlier than Earliest Start time, then add the cost (calculated as follows) to the total cost of the option.

[(Planned Start time) - (Scheduled Start time), in minutes] * Cost Factor value

Business Rule: Avoid arriving early, if possible. Schedule options that cause the technician to arrive at the customer site earlier than the planned start time should rank lower in the presentation of options.

Business Justification: Starting earlier than planned may lead to some waste of a technicians time and customer dissatisfaction if a prior confirmation is already obtained.

Note: The Advanced Scheduler schedules within the plan window and hence, this cost factor is no longer needed.

Cost Factor: Cost per minute visiting too late

Description: The cost penalty per minute for assigning tasks that cause the technician to arrive at the customer site later than the latest start time.

Formula: If Scheduled Start time is later than Latest Start time, then add the cost (calculated as follows) to the total cost of the option.

[(Scheduled Start date time) - (Planned end date time), in minutes] * Cost Factor value

- In break/fix scenarios, the planned end date time is the 'Respond By' time.
- In preventive maintenance scenarios, the planned end date time is the latest schedule date in a planned or preventive maintenance work schedule.

Business Rule: Avoid violation of promised service level agreements. Schedule options that cause the technician to arrive at the customer site later than the planned end date time should rank lower in the presentation of options.

Business Justification: Starting later than planned may waste some of the technicians time and decrease customer satisfaction if a prior confirmation is already obtained.

Cost Factor: Cost per day the parent task takes longer to execute than absolutely possible

Description: The cost penalty per day for taking longer than the absolute minimum number of days to complete a task that has a duration longer than one shift. This factor will reduce jobs being scheduled across weekends.

Formula: When scheduling tasks longer than a standard shift, add the Cost Factor value to the total cost of options with a duration (elapsed time in days) greater than the shortest possible duration.

[(Scheduling Option Duration, in Days) – 1 day] * Cost Factor value

Where

Scheduling Option Duration in days = number of days between Scheduled Start Date and Scheduled End Date.

Business Rule: Schedule options with lower total elapsed time are preferable, and should rank higher in the presentation of options.

Business Justification: Improve customer service by scheduling tasks (that take longer than a shift) to ensure the least possible interruption to the customer and the least number of trips to the customer site.

Reducing total elapsed time of the job provides for a better customer experience and reduces the risk of not completing the task.

Avoid gaps due to weekends and holidays in the schedule.

Cost Factor: Cost per each additional task created more than absolutely required for task longer than shift

Description: The cost penalty per child task created that is greater than the absolute minimum number of child tasks required to complete a task that has a duration longer than one shift. There is a cost trade-off for working overtime to complete the task in one less day, thus avoiding another trip to the customer site. This factor tends to cause jobs to be completed by using overtime, rather than extending the task duration into the next work day.

Formula: Number of child tasks created times the cost per each additional task created more than absolutely required for a task longer than a shift.

(Number of excess site visits, as represented by the number of excess child tasks) * Cost Factor value

Where

Excess site visits = (Number of Child Tasks that would be created if the option is selected) - (Minimum number of Child Tasks required)

Minimum Child Tasks required = Task Planned Effort / Standard Shift Time.

Business Rule: Plan options with fewer visits to the customer site are preferable, and should rank higher in the presentation of options.

Business Justification: Improve customer service by scheduling tasks (that take longer than a shift) as early as possible, to ensure the least possible interruption to the customer and the least number of trips to the customer site. Scheduling options with fewer visits results in better customer service and less travel.

Releasing Work (Committing Tasks) to Technicians

Tasks scheduled to technicians can be released in these ways:

- Select individual tasks in the Dispatch center, and then release to technicians by committing the task.
- Manually, by committing the trip of an individual technician in the Dispatch Center.
- Automatically, by running the Auto Commit concurrent program.

The Auto Commit program accepts the Task Query created in the Dispatch Center as a parameter. Multiple concurrent programs can be initiated, using their individual queries run at different times to release different tasks.

Example

For example, run Auto Commit at the end of the day to find and release (or commit) tasks with efforts greater than the standard work shift duration.

See Releasing Work to the Field - Concurrent Program, *Oracle Field Service User Guide*.

Task List Query

The Auto Commit program uses the Task List Query to select tasks with the appropriate status to be automatically committed.

- Task Status: In Planning - indicates that the task is not scheduled.

  Default task creation status depends on the profile Task Manager: Default Task Status.

- Task Status: Planned - indicates that the task is scheduled, but not assigned, in other words, not committed.

- Task Status: Assigned - indicates that the task has been committed.

  Tip: Keep the tasks in Planned Status to maintain flexibility to reschedule or make necessary adjustments. Tasks can be released (committed) to technicians as needed to utilize available resources.

To release work to the field interactively, see Releasing Work to the Field - Interactive Process, *Oracle Field Service User Guide*.

For information about Task Statuses, see Task Status and Task Assignment Status Flow, *Oracle Field Service User Guide*.

Inspection and Preventive Maintenance

You can define preventive maintenance programs for products that require planned inspection and maintenance. Preventive maintenance programs track customer products, installations, and usage. For an overview of the preventive maintenance process flow, see Preventive Maintenance Programs, *Oracle Field Service User Guide*.

You define preventive maintenance programs as either as usage-based or time-based. For usage-based programs, a usage forecast is required. To set up preventive maintenance programs, see Preventive Maintenance Setup Steps in the *Oracle Field Service Implementation Guide*.

How Advanced Scheduler Relates to the E-Business Suite

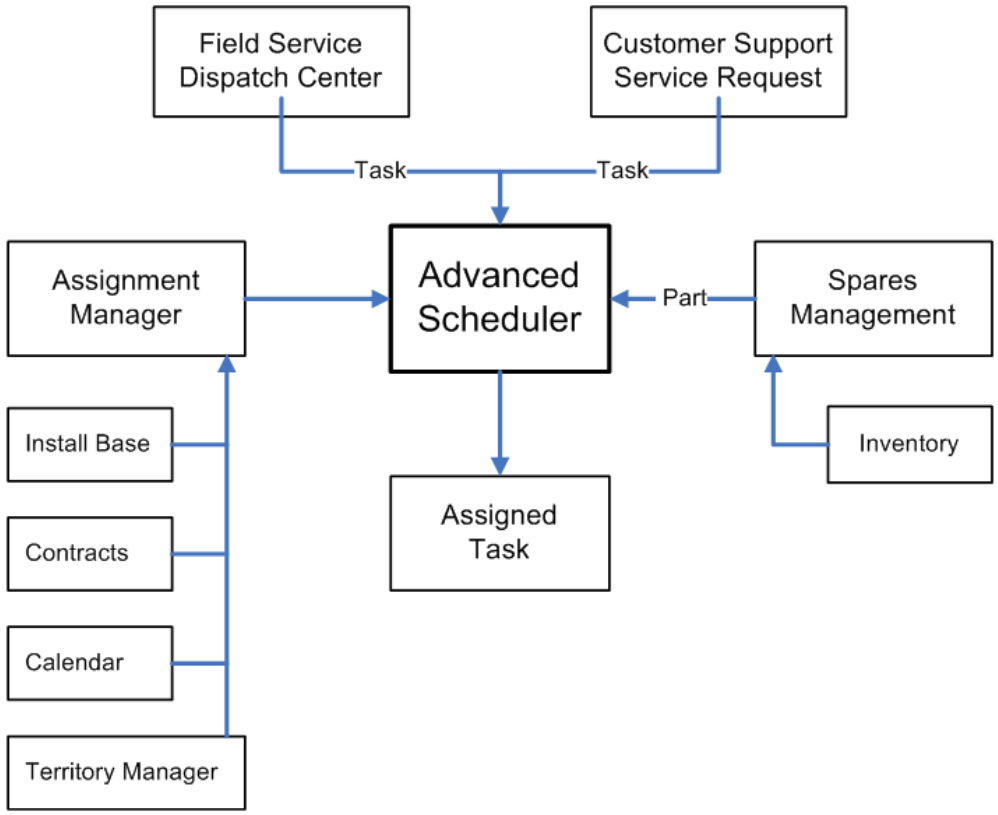
Advanced Scheduler integrates with several Oracle applications. This figure illustrates the integration between Advanced Scheduler and the following applications:

- Field Service

- Service Request

- Assignment Manager
- Spares Management

The major applications involved in this process and their relationship to each other are explained in more detail in the sections following the figure.



Advance Scheduler can create a task assignment and schedule from the Service Request or the Dispatch Center windows.

Field Service Dispatch Center

Advanced Scheduler tightly integrates with the Field Service Dispatch Center. You access the Advanced Scheduler from the Field Service Dispatch Center for task assignment and scheduling. From the Schedule Task window, you can set preferences for Advanced Scheduler to use when creating task assignments and also choose the method of scheduling.

Field Service provides a concurrent program that identifies invalid addresses associated with tasks. An address is considered invalid when it is not found in the spatial database. After invalid addresses are identified, a user can update them to the correct address through the Change Invalid Address functionality.

Service Request

Advanced Scheduler also integrates with the Service Request, which can directly access the Advanced Scheduler through its integration with the Schedule Task window for task assignment and scheduling.

Assignment Manager

The Assignment Manager is an E-Business Suite component that assists in assigning ownership of documents and tasks, and determining the availability of qualified resources needed to perform a task. The Assignment Manager searches for qualified resources from multiple sources, including Service Contracts, Installed Base, and the territory setup. The Assignment Manager sorts a set of territory resources based upon the absolute rank associated with the territory definition, rather than the territory identifier. Absolute ranks are derived from the setups entered by the user.

This sorted list of qualified resources is returned to the Advanced Scheduler. When scheduling tasks to technicians the Advanced Scheduler looks for plan options among the technicians returned by the Assignment Manager. The Advanced Scheduler uses the Schedule Task window for scheduling field service tasks.

The following applications have an indirect relationship with Advanced Scheduler:

- Installed Base can recommend a preferred service technician.
- Service Contracts also can recommend a preferred service technician.
- Territory Manager defines rules for identifying qualified technicians based on the service request and task, and customer preference.
- Calendar is used to define shift availability of the service technician.

This information is passed to the Advanced Scheduler.

For more information on Assignment Manager, see *Oracle Common Application Components User's Guide*.

Spares Management

The Advanced Scheduler passes eligible resources and parts priority to Spares Management. From this information, Spares Management determines parts availability and locations for the task and for each resource (or technician). The list of technicians is sent back to the Advanced Scheduler with an arrival date, time, and cost for each part required by the task. Spares Management also evaluates multiple methods of shipment and provides these to the Advanced Scheduler as additional options.

Advanced Scheduler applies its predefined constraints, including travel time and distance, to this list of resources. When a task assignment is created, reservations for service parts are made if the technician has the parts on hand. If a service part item is

not on hand, then an internal requisition is created based on the sourcing and available-to-promise set up for that item. When the task is committed, an order for the part is created.

2

Using Oracle Advanced Scheduler

This chapter documents procedures for using Oracle Advanced Scheduler functionality to schedule service tasks.

This chapter covers the following topics:

- Scheduling with Oracle Advanced Scheduler
- Accessing the Schedule Task Window
- Using the Schedule Task Window
- Using Advanced Scheduler in the Dispatch Center
- Using Additional Features of the Advanced Scheduler

Scheduling with Oracle Advanced Scheduler

Advanced Scheduler enables a field service operation to make complex task scheduling decisions manually or automatically. In both cases, Advanced Scheduler considers a host of applicable criteria and returns plan options that meet the needs of the company based upon the criteria used.

A key difference between manual scheduling and automated scheduling, either through the use of the Advanced Scheduler Autonomous Scheduling functionality or through the use of the Auto Schedule functionality in the Dispatch Center, is that with manual scheduling the dispatcher is given several plan options to choose from for scheduling purposes, while automatic scheduling always schedules the plan option with the lowest cost value to the task.

To enable Autonomous Scheduling, you set some profile options and run a concurrent program. See Setting Up the Autonomous Scheduler in the *Oracle Field Service Implementation Guide.*

For more details on manual scheduling with Advanced Scheduler, see the following topics:

- Accessing the Schedule Task Window, page 2-2

- Using the Schedule Task Window, page 2-2
- Using Advanced Scheduler in the Dispatch Center, page 2-7

Accessing the Schedule Task Window

You will use the Schedule Task window to schedule tasks interactively based upon the criteria chosen by a dispatcher, customer service representative, or a call center agent.

There are two Oracle applications modules that provide access to the Schedule Task window:

- Field Service Dispatch Center (Field Service)
- Service Request (Tele Service)

To access the Schedule Task window from the Dispatch Center, select a task in the Task List region. Right-click on the task and select Schedule from the menu options. The Schedule menu option is available when the task carries a status that can be scheduled.

To access the Schedule Task window from the Tasks tab of the Service Request window, click the Scheduler icon located next to the Assignee field for the task. The task must be of type Field Service and it must also carry a status that can be scheduled.

Using the Schedule Task Window

The Schedule Task window consists of a region that displays the Task Details of the task you want to schedule, and two tabs:

- Preferences tab, page 2-2
- Advice tab, page 2-6

When the dispatcher searches for plan options for a task, based on the profile settings, plan options are retrieved for the eligible resources. Modifying the search criteria in the Preferences tab can refine results.

Preferences Tab

The Preferences tab is where you specify the scheduling criteria you want Advanced Scheduler to use when retrieving schedule options. There are several sub regions within the tab:

- Assistance Level
- Resources
- Time Zone

- Routing Mode
- Overrule
- Spares

The Assistance Level enables you to select the scheduling mode. The options are: Intelligent, Window to Promise, and Assisted. This table describes these options:

Scheduling Option

Assistance Option	Description
Assisted	Use the Assisted option to find the best plan option for the eligible resources based on a predefined set of criteria. When no qualified resource is shown, adjust the criteria and search again. This provides the dispatcher the ability to override scheduling parameters as well as the flexibility needed to quickly schedule the task to an available qualified technician.
Intelligent	The Intelligent option provides relative cost and travel time information to schedule cost effective trips based on predefined business rules and constraints. This mode of scheduling is useful when geo-spatial data is being used for scheduling.
Window to Promise	The Window to Promise option displays time buckets (time slots) during which an available service technician can visit the customer site and start working on the task. Schedule options appear with costs related to the particular time frame requested by the customer.

In the Resources region, you can select which criteria you want Advanced Scheduler to consider when searching for scheduling options. These criteria can be included in the search:

- Territory Qualifiers. Any combination of the following dynamic attributes is available:
  - Area Code
  - City
  - Country
  - Customer Name
  - Customer Name Range

- Postal Code
- Request Severity
- Request Status
- Request Type
- Request Urgency
- State
- Task Priority
- Task Status
- Task Type
- VIP Customers

- Contracts
- Installed Base
- Skills
- Resource Type
- Resource Suggestion

Advanced Scheduler prioritizes its scheduling process based upon the chosen criteria.

Finding Technicians

In cases where a dispatcher selects more than one of the criteria in the Resources region, Advanced Scheduler returns either all the resources found, or just those that fit all the criteria. This table describes how Advanced Scheduler filters options when using a single criterion or multiple resource criteria:

Scheduling Resource Criteria and Results

Selected Criteria	Scheduler Results
Territory Qualifiers	Returns resources that satisfy the Territories requirement.
Contracts	Returns resources that satisfy the Contracts requirement.

Selected Criteria	Scheduler Results
Installed Base (IB)	Returns resources that satisfy the Installed Base requirement.
IB + Contracts	Returns all resources that are identified in IB and Contracts depending on the profile JTFAM: Resource Search Order. If the profile value is set to *Both Contracts and Install Base* then preferred resources from both IB and Contracts are retrieved. If the profile value is set to *Contracts Preferred Resource* then preferred resources from Contracts alone are retrieved. If the profile value is set to *Install Base Preferred Resource* then preferred resources from IB alone are retrieved.
IB + Territory Qualifiers	Returns only those resources that satisfy both the IB and the Territory requirement.
Contracts + Territory Qualifiers	Returns only those resources that satisfy both the Contracts and the Territory requirement.
IB + Contracts + Territory Qualifiers	This returns all resources that are identified in either IB or Contracts AND who also satisfy the Territory requirement. Returns all resources that are identified in IB and Contracts depending on profile JTFAM: Resource Search Order AND also satisfy the Territory requirement.

Qualifying Technicians

If the Skills check box is selected, then in each of the above scenarios, after the relevant resources are identified, additional skills filtering is done to determine which of the initially identified resources also fill the skills requirement. In other words, the Skills requirement is only applied after a set of resources has been identified based on the other criteria. Advanced Scheduler picks technicians with skill levels at or above the requirement.

Additional Overriding Criteria

Also in the Resources region of the Preferences tab, you can add a specific Resource Type and Resource Name that you want considered.

In the Overrule region, you can modify the Planned Start and Planned End dates. If Access Hours are to be considered, the Access Hours check box is selected.

In the Routing Mode region, the Route Based check box displays whether or not street routing is to be factored into scheduling. This Routing Mode check box, if checked, overrides the Profile Option CSR: TDS Mode value setting.

The value of the check box overrides the Profile Option CSR: TDS Mode value if:

- The Assistance Level is "Intelligent" and the Profile Option CSR: TDS Mode is set to ROUTE. Then the Route Based check box default setting is CHECKED.
- The Assistance Level is "Window to Promise" and the Profile Option CSR: TDS Mode is set to ROUTE. Then the Route Based check box default setting is UNCHECKED.
- The Assistance Level is either "Intelligent" or "Window to Promise" and the Profile Option CSR: TDS Mode is set to ESTIMATE. Then the Route Based check box default setting is UNCHECKED.

This value governs which data is used by Advanced Scheduler during the search for schedulable options.

In the Spares region, you can select an Availability Condition. There are two seeded conditions in Field Service: No Parts and All Parts. If you don't want Advanced Scheduler to consider spare parts availability, then choose No Parts. If you want Advanced Scheduler to require all parts for a task, then select All Parts. For details on Advanced Scheduler's integration with Spares Management, see Scheduling Based on Parts Availability, page 1-15.

You can add additional values to this list, depending upon the needs of your particular field service operation. For more information on setting up Parts Categories, see the *Oracle Field Service Implementation Guide*.

Advice Tab

In the Advice tab, the plan options that Advanced Scheduler identifies after its search are displayed in a table format. The plans consist of the Cost value, Resource name, start and end times available for the task, along with other optional information such as Travel Time, Spares Date, and Spares Cost. To view the information in a Gantt chart click the Gantt button.

The plan options are displayed and sorted based upon their cost effectiveness in accordance to the criteria selected for the search. If a Customer Confirmation is required, the Customer Confirmation Received check box is enabled. Also, in the Schedule with Status field, you can choose the task status that you want to associate with the task you are scheduling.

The dispatcher can interactively receive and record customer confirmation by selecting the Customer Confirmation Received check box before clicking the Schedule button.

You can also change the Results display section by selecting one of the following options in the Display Selection sub region:

- All
- For Each Day-Lowest Cost

- For Each Resource-Lowest Cost
- Single Resource

Once Scheduler has returned plan options, the dispatcher can schedule the task assignment by selecting the preferred plan option and clicking the Schedule button. At that point, Advanced Scheduler schedules the technician for the task and changes the task status accordingly.

Using Advanced Scheduler in the Dispatch Center

See the following procedures for performing Advanced Scheduler functions from the Field Service Dispatch Center:

- Scheduling Using the Intelligent Option, *Oracle Field Service User Guide*
- Scheduling Using the Window to Promise Option, *Oracle Field Service User Guide*
- Scheduling Using the Assisted Option, *Oracle Field Service User Guide*
- Scheduling Tasks Automatically, *Oracle Field Service User Guide*
- Working with Tasks Rejected by Autonomous Scheduler, *Oracle Field Service User Guide*
- Overview: Invalid Addresses, *Oracle Field Service User Guide*
    - Submitting the Find Invalid Addresses Concurrent Program, *Oracle Field Service User Guide*
    - Correcting and Validating Addresses, *Oracle Field Service User Guide*
- Overview: Rescheduling Tasks, *Oracle Field Service User Guide*
    - Rescheduling a Scheduled Task from the Plan Board, *Oracle Field Service User Guide*
    - Rescheduling a Scheduled Task from the Gantt View, *Oracle Field Service User Guide*
    - Using Drag and Drop to Reschedule Tasks, *Oracle Field Service User Guide*
    - Rescheduling a Scheduled Task from the Task List, *Oracle Field Service User Guide*
    - Rescheduling Tasks Longer than a Shift, *Oracle Field Service User Guide*
    - Rescheduling, Unscheduling, or Canceling a Trip with Actuals, *Oracle Field*

Service User Guide

- Recalculating a Trip, *Oracle Field Service User Guide*
- Recalculating all Trips, *Oracle Field Service User Guide*
- Optimizing One or More Trips from the Dispatch Center, *Oracle Field Service User Guide*
- Optimizing Blocked and Past Dated Technician Trips, *Oracle Field Service User Guide*

Using Additional Features of the Advanced Scheduler

The Advanced Scheduler provides additional scheduling features for you to use.

Working With Tasks Durations Longer Than a Standard Shift

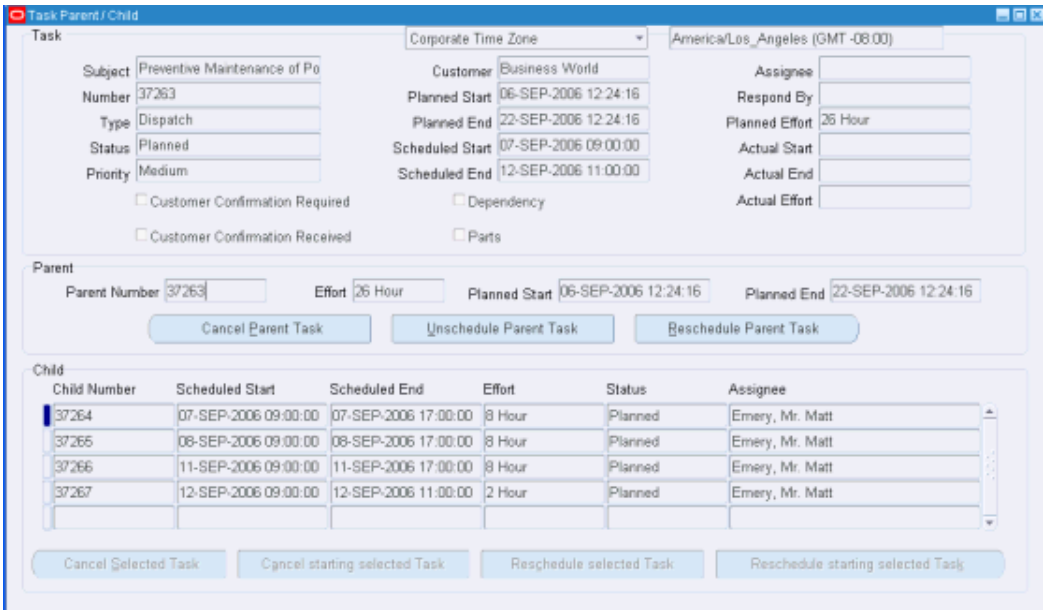
The Parent/Child tab of the Dispatch Center Task Details view displays the parent and child relationship of a set of tasks. When the effort of the task is longer than a regular work shift, Oracle Advanced Scheduler splits that task, called the "Parent" task, into multiple "Child" tasks, to accommodate and execute within the regular work shift of a technician.

Example

For example, a parent task effort is 12 hours. The parent task propagates two child tasks, one for an eight hour task, and another for a four hour task.

> **Note:** In the Task List region of the Dispatch Center Task Details view, task numbers appearing in italics indicate tasks having related parent or child tasks.

To manage parent or child tasks, dispatchers can invoke the Task Parent/Child window by right-clicking the task, and then selecting Parent/Child from the right-click menu options. The task you selected information appears at the top of this window. This could be a parent or child task. Parent task information appears in the middle of the window and Child task information appears in a table at the bottom of the window. Buttons enable the dispatcher to:



- Cancel the parent task
- Unschedule the parent task
- Reschedule the parent task
- Cancel a selected child task in the sequence
- Cancel a selected child task and all subsequent child tasks
- Reschedule a selected child task in the sequence
- Reschedule a selected child task and all subsequent child tasks

Advanced Scheduler initially schedules Parent tasks to a single technician available for the entire effort of the task to be performed. Later if the technician falls sick or is unavailable for some reason, the child tasks can be rescheduled to another qualified technician. A single child task can be rescheduled to a qualified technician using the Reschedule selected Task button. All of the child tasks starting from the second in sequence of the child tasks hierarchy for a Parent task can be rescheduled to a qualified technician using the Reschedule starting selected Task button.

To either cancel or reschedule the original parent task, or all or some of the child tasks, see Rescheduling Tasks Longer Than a Shift, *Oracle Field Service User Guide*.

To configure Advanced Scheduler to handle tasks longer than a standard shift, see Setting Up Tasks Longer Than a Standard Shift in the *Oracle Field Service Implementation Guide.*

Working With Customer Confirmations

Since planned work-related tasks, like tasks for inspections and preventive maintenance typically disrupt business operations and involve equipment or site down time, customers may require confirmation of scheduled visits prior to the technicians arrival.

The confirmation requirement is typically defined in the Service Contract for the preventive maintenance programs and related activities. Tasks for such preventive maintenance activities are created automatically with the requirement. You can also define the confirmation requirement constraint for a task in the Task tab of the Service Request window or in the Field Service Dispatch Center window. See Marking a Task to Indicate Customer Confirmation Requirement in the *Oracle Field Service Implementation Guide*..

The Autonomous Scheduler engine can schedule tasks that require customer confirmation but the tasks cannot be assigned (released to the technician), or "committed" to the technicians without first recording the confirmation receipt. The Auto Commit concurrent program skips tasks having confirmation requirements. Dispatchers can query tasks having the confirmation requirement, and interactively record receipt of the confirmation before scheduling and committing the task to a specific technician.

Dispatchers can cancel and reconfirm the technicians visits. To monitor the efficiency of customer service and the organizations commitment to the confirmation process, the Dispatch Center keeps track of the number of reschedules and reconfirmations initiated by the service organization. Those initiated by the customer are not counted.

To record receipt of confirmation or to manage the confirmation process from the Dispatch Center, use the following procedure:

Confirmation Process

1. Navigate to the Field Service Dispatch Center, page A-2.

   The Field Service Dispatch Center window appears.

2. Use the task query functionality to load tasks having the customer confirmation attribute set.

3. Select a task and click the Customer Confirmation Required button or right mouse click on the task and select Customer Confirmation from the menu options.

   The Customer Confirmation window appears. The field next to Customer Confirmation label is set to Required. The Set to Received button is enabled.

4. To record receipt of the customer confirmation, the dispatcher clicks the Set to Received button.

   The Customer Confirmation field changes from Required to Confirmed. The Dispatcher can now proceed with interactively committing the task to a technician.

The Dispatch Center button will also update. It will change from Customer Confirmation Required to Customer Confirmation Received.

See Choosing a Scheduler Option, *Oracle Field Service User Guide*.

5. (Optional) To initiate a reconfirmation process, the dispatcher can navigate back to the Customer Confirmation window and set the customer requirement again using the Set to Required button.

   At that point, you can also remove the requirement by clicking the Set to No button.

Scheduling With Access or After Hours Requirements

Some customers restrict access to their site to times when work on a task would not intrude on normal business operations. Oracle Field Service enables you to define Access Hours, which are periods when a technician can arrive and start working. When Access Hours constraints are activated, Oracle Advanced Scheduler automatically considers them when identifying schedule options. Alternatively, you can define After Hours requirements. After Hours requirements are treated as special instructions for field visits, and are entered as free format text. When an After Hours requirement is invoked, the task must be scheduled interactively. The dispatcher can view and schedule After Hours tasks by making a query in the Task List region of the Dispatcher Center for those tasks carrying the After Hours attribute.

Advanced Scheduler handles these constraints differently. Definition of Access Hours constraints and After Hours requirements are mutually exclusive.

The Dispatch Center Plan Board view and Gantt chart indicate which tasks have active Access Hours constraints or After Hours requirements.

See Setting Up Access Hours and After Hours Constraints in the *Oracle Field Service Implementation Guide.*

Access Hours

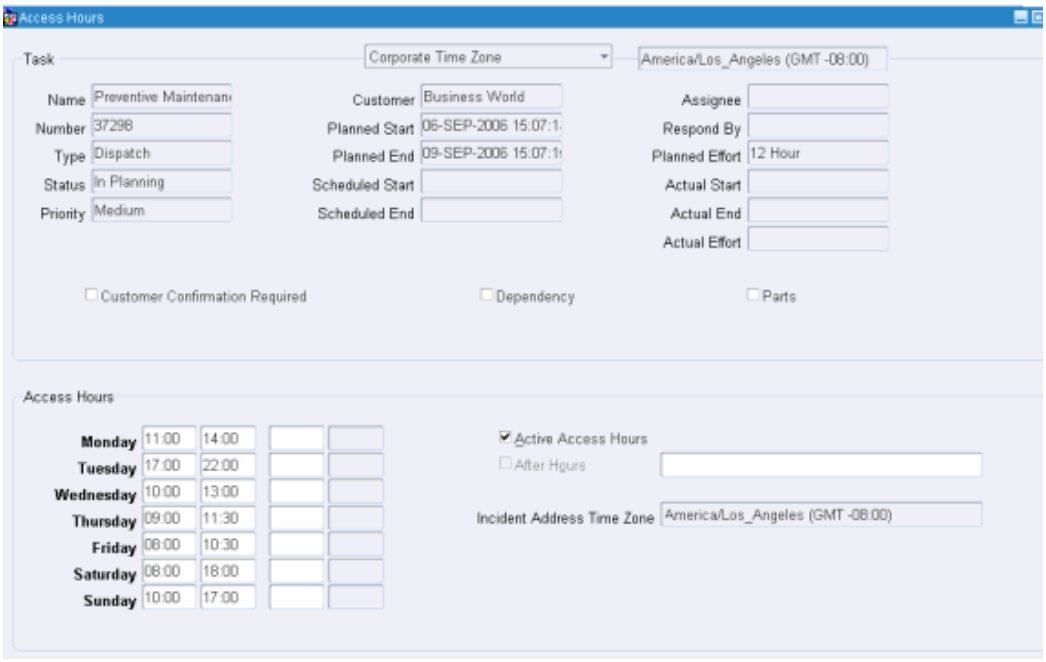
Field Service Advanced Scheduler can schedule Field Service tasks within Access Hours constraints.

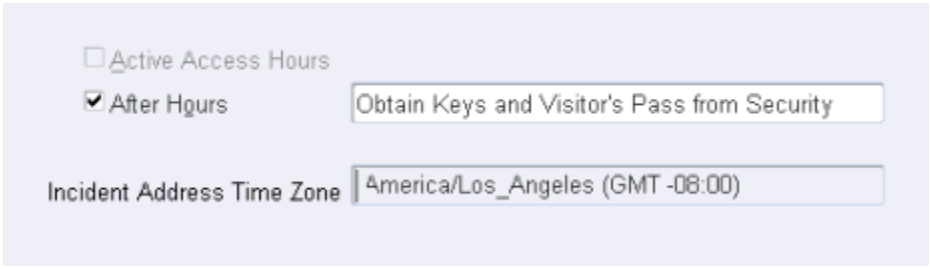
An Access Hours constraint can be set up for a customer, customer site, or location, and can be set up for different time slots (ranges) that apply to different days of the week. Service requests and tasks created for preventive maintenance honor the Access Hours constraint definition. Preventive maintenance tasks are created automatically with this constraint. In Break-Fix scenarios, an Access Hours/After Hours constraint can be entered manually against a specific task in the Field Service Dispatch Center window. This can be done by right-clicking a task in the Task List and then selecting Access Hours from the menu options. Access Hours entered against such tasks are honored by Advanced Scheduler.

After Hours

After hours information can be set up to apply to a customer, customer site, or customer site location. Optionally, after hours information can be specified for a specific task in situations where the information is unique to a task and customer combination. Autonomous Scheduler does not schedule tasks that have active After Hours constraints. Using the Field Service Dispatch Center window, the dispatcher queries tasks possessing the after hours attribute, and schedules those tasks interactively.

Defining Task Access Hours or After Hours Constraints for a Specific Task





Use this procedure to create access hours and after hours for a particular task.

Creating Access Hours and After Hours Constraints

Steps:

1. Navigate to the Access Hours window, page A-2 from the Dispatch Center.

The Access Hours window appears. Task details display for the selected task. Boxes appear in rows representing each day of the week. There are four boxes in each row. These boxes enable you to define up to two access hour time slots per day.

Setting Up Access Hours

2. To create Access Hours, select the Active Access Hours check box.

   This disables the After Hours check box. The two actions are mutually exclusive.

3. Fill in the access hours that are available for scheduling service tasks. For example, Monday 17:00-21:00.

   Hours must be entered in military time.

4. Save your work.

   Although you can *change* Access Hours, even if the task status is 'Planned' or 'Assigned', you cannot *remove* Access Hours once the task status changes to 'Working' or 'Completed'.

Setting Up After Hours

5. To define After Hours requirements, select the After Hours check box.

   This disables the Active Access Hours check box.

6. In the text box to the right of the check box, enter instructions regarding the after hours scheduling that you want the dispatcher to consider.

7. Save your work.

Scheduling Tasks With Dependencies

Dispatchers can use the Field Service Dispatch Center window to create task dependencies. See Creating Task Dependencies, *Oracle Field Service User Guide*.

The Autonomous Scheduler concurrent program or the Auto Schedule feature in the Dispatch Center will not consider these task dependencies (ignores the dependencies between tasks) and schedules these tasks treating them as any other normal field service tasks. The dispatcher will use the Dispatch Center window to query and schedule these tasks interactively, duly honoring the dependencies.

Making Trip Adjustments

When tasks are scheduled manually, the corresponding travel times are not calculated in an optimized way. Hence an optimized schedule of a trip is not achieved. To achieve a better sequence in scheduling and optimizing the route of a technicians trip, you can perform a recalculation of the trip or an optimization of the trip.

Recalculating Trips

This functionality is available in the Dispatch Center. This functionality calls Advanced Scheduler to sequence the trip in a regular fashion based on the scheduled start times of the task.

For more information see Recalculating a Trip, *Oracle Field Service User Guide*.

Optimizing Trips (Interactive)

To arrange a trip in a better sequence, based on the travel distance, time and other cost factors, optimize trip calls Advance Scheduler to rearrange the tasks within a trip in a fashion such that the least cost is achieved for performing the tasks in the trip.

For more information see Optimizing One or More Trips From the Dispatch Center, *Oracle Field Service User Guide*.

Optimizing Technician Schedules Across Trips

Scheduling tasks to field service technicians optimally is always a challenge for dispatchers and managers of service organizations. This becomes increasingly complex due to other factors such as, operational costs, constraints on tasks, skill requirements, and technician availability. Service organizations also want to reduce the technicians commute costs directly associated with the technicians travel times and distances and also the overhead costs incurred for performing the tasks in the field.

Sub-optimal technician schedules (trips) can occur for several reasons. Most of the time, dispatching and scheduling functions are handled on an on-demand basis, as dispatchers schedule jobs as they are logged, without any insight into future jobs that are yet to be logged. Such periodic scheduling activities, including manual scheduling, often lead to sub-optimal trips for technicians such as, technicians traveling long distances, multiple technicians traveling to the same or near by geographical locations, or multiple technicians visiting the same customer site.

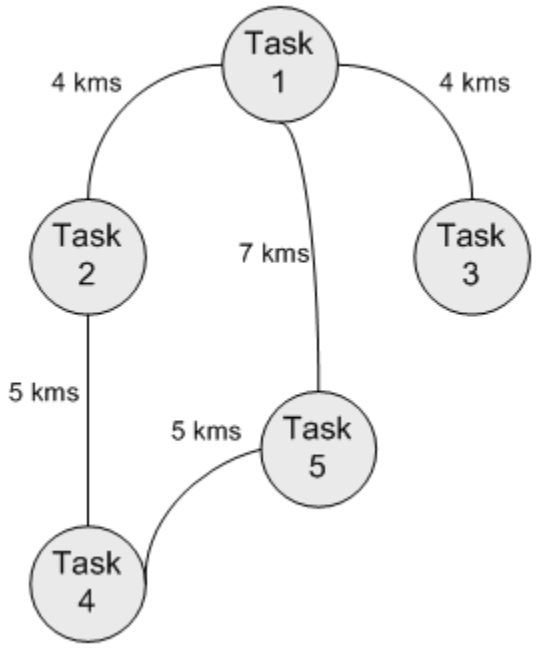
Advanced Scheduler provides the Optimization Across Trips functionality to address the issues leading to sub-optimal schedules. Using this functionality you can geographically cluster tasks before you optimally schedule them to technicians. This functionality handles more complex scheduling scenarios and compliments the optimize trip functionality which you can perform interactively to optimize a trip for a technician across a single day through the Dispatch Center. For information on optimizing a technicians schedule for a trip (one day), see Optimizing One or More Trips from the Dispatch Center, *Oracle Field Service User Guide*.

Geographical Proximity Based Sorting of Tasks

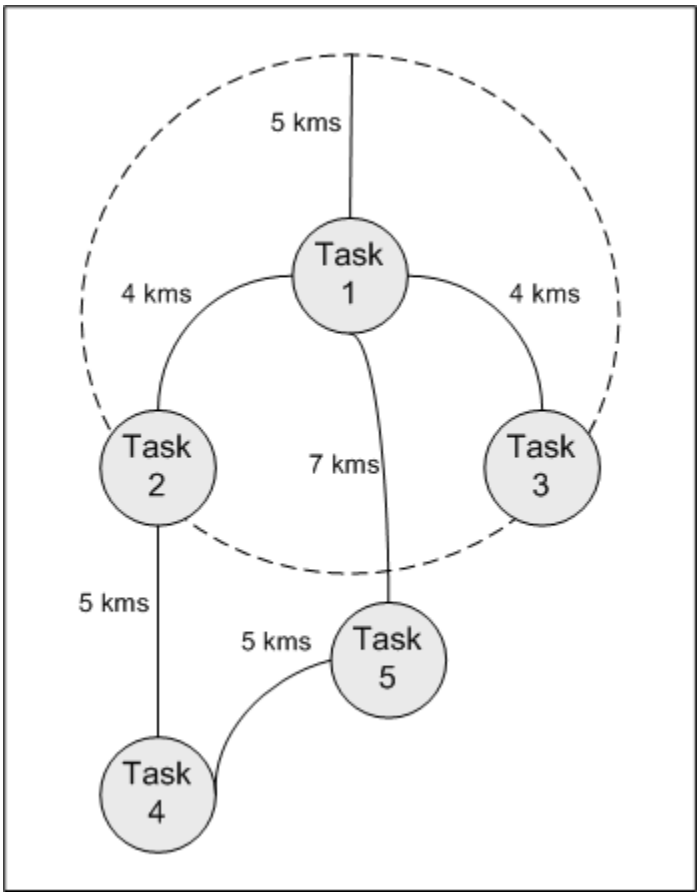
The sorting of the tasks before they are actually scheduled assists with creating the most optimal schedules for the technicians.

When you have a set of tasks with latitude and longitude information, the question

becomes how does one model two-dimensional geography into a one-dimensional task list with the tasks perfectly ordered by proximity.



In this illustration, there are two possible paths from task #1. One can either say that task #2 is closer to task #1 or say task #3 is closer to task #1. If we choose task #2, it is obvious that the next closest task is #4 and then task #5. Thus task #3 ends up being the last task in the list. Despite, task #3 being closer to task #1, since we chose another closer task #2, we are deviating from #3 and thus the original intent of sorting closer tasks together is lost. Task #3 might end up getting scheduled to another technician. The issue here is that we are trying to convert a two-dimensional space into a one-dimensional list. It is not whether task #3 should be immediately next to task #1. It is whether task #3 is as close to task #1 in the list when compared to other tasks. Similarly, task #5 could be considered to be closer to task #1. It could very well be after task #4. It is a complex process to convert a two-dimensional space into a one-dimensional list, and because of the complexity we might have a few exceptions in the final list.



To minimize these exceptions and to ensure that the tasks that are separated by some configurable distance are still together in the final list, you will set the profile option CSR: Optimizer- Maximum Travel distance in kms between tasks in a group. Using this profile option, you can decide the limiting distance such that the scheduling algorithm results in a better sorting of tasks.

Alternatively, this distance can also be thought of to be the radius of the circle around each task (reference illustration) so that the algorithm considers the others tasks within that circle together to be processed as a single group. Suppose we set the profile option to be 5 (kilometers), then the geo-clustering algorithm will end up creating the final sorted list as 1, 2, 3, 4, and 5 rather than 1, 2, 4, 5, and 3.

Autonomous Scheduler Program with Geographical Sorting

The Autonomous Scheduler concurrent program is used to schedule a multitude of tasks to technicians. The Autonomous Scheduler program has information about the tasks that have been scheduled and are part of the technicians' trips. It also has information about the tasks currently on hand and being scheduled. The Autonomous Scheduler processes each and every task based on the status, planned start and end times, and date and time of creation. Though the Autonomous Scheduler has information about the location of tasks in the pipeline to be scheduled, priority is given

to the creation and planned dates of the tasks for scheduling. This intended behavior of the Autonomous Scheduler might sometimes create sub-optimal schedules and trips for technicians. Plus, the dispatchers have the ability to interactively assign jobs and make adjustments to technicians schedules which further lowers the possibility of generating optimal technician schedules.

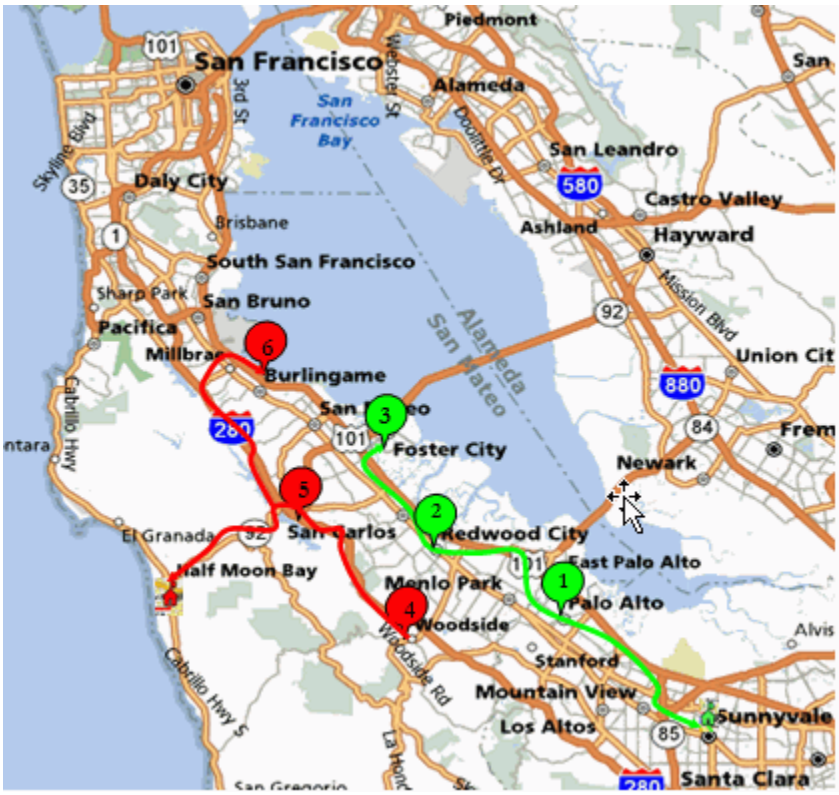
Due to this functionality, several technicians may have to:

- Travel farther distances than required (spending more time on the road).
- Travel to the same location or close proximity to locations traveled by other technicians.
- Travel to the same customer site or location on different days.

The Autonomous Scheduler utilizes the geographical proximity based sorting of tasks based on geo-spatial attributes (latitude and longitude) of a tasks address. This is the first step in determining when and to whom the task has to be scheduled. Scheduling tasks that are closer in proximity, to eligible technicians cannot always be accomplished, as the Autonomous Scheduler is bound by other constraints such as, the available capacity of the technicians, overtime allowed, shift definition, current location of the technician, technicians home address, and so on.

These examples illustrate the sorting process:

Scheduling Without Sorting Tasks by Geo-Spatial Attributes (Latitude and Longitude)

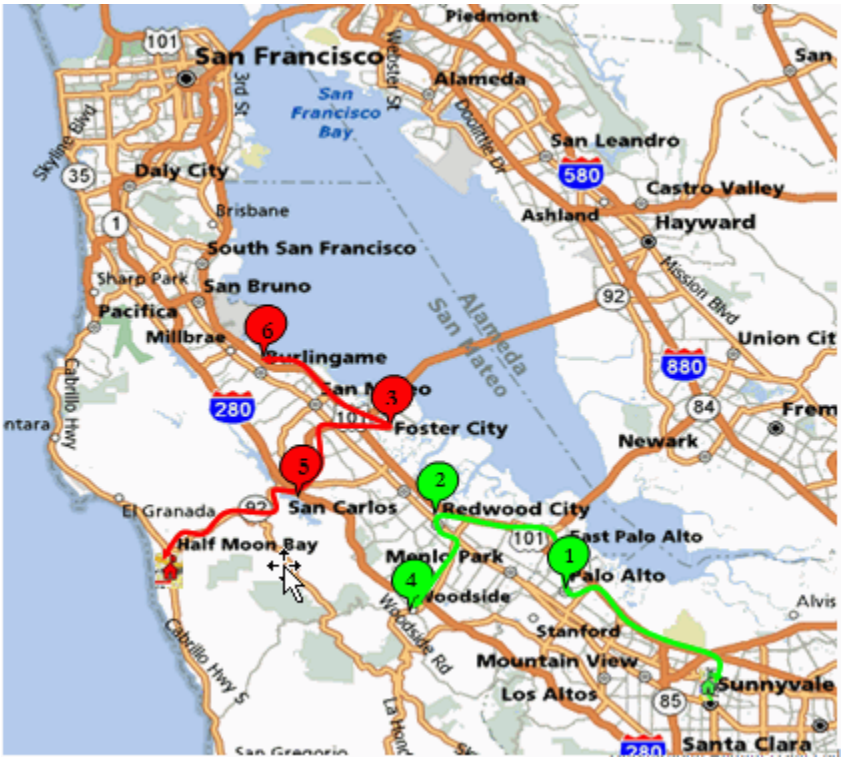


This diagram illustrates the trips of two technicians marked by the circles (green and red) with their home icons displayed. Tasks 1, 2 and 3 are scheduled to one technician and tasks 4, 5, and 6 are scheduled to another technician. Six tasks labeled as number 1 through 6 are retrieved and sorted using the query. From the task addresses (location) you can see that the tasks marked as 2 and 4 are in close proximity to each other. Similarly, tasks marked as 3 and 5 are in close proximity to each other.

Assuming that the tasks were fetched in the order of 1, 2, 3, 4, 5 and 6, and prior to the algorithm improvements, the scheduler engine would assign tasks to a technician whose trip has a task closer to the task being processed. In other words, if the technician (in green) was assigned task 1, subsequent tasks would also be assigned to that technician, as the tasks would be closer to this technician than the technician in red. For simplicity, let us assume that a technician can perform only three tasks in a day. So the trip of the technician in green gets filled with tasks 1, 2, and 3. So the remaining three tasks are placed in the trip of another technician as shown in red. This ends up in generating a sub-optimal schedule for the technicians. The core-scheduling engine does leverage travel time and distance and its associated costs during its search for the optimal technician and trip. The sub-optimal schedule (trips) occurs due to the manner in which the background engine used to sort and handle the to-be processed task list. The tasks are sorted without considering the location proximity of the tasks and because of that the core-scheduling engine has no visibility into the tasks that are yet to processed, the cheaper technician for a task is assigned to other tasks thereby

completely utilizing the technician availability. This highlights the importance that is played by the order of processing and sorting of the task list in the generation of the final schedule.

Scheduling After Sorting Tasks by Geo-Spatial Attributes (Latitude and Longitude)



With the Optimization Across Trips functionality, the core Scheduler engine orders the tasks in the list not only based on the existing task sort criteria but also on the geographical location (based on the geo-spatial attributes, namely latitude and longitude) of the task. This improved sorting logic ensures that the closer location tasks are processed one after another by the core engine and the engine might schedule these tasks to the same technician, given the availability and qualification of the technician to perform the tasks.

The postal code or the name of the city does provide location information for a task. They do not represent the proximity of one task to another. More sophisticated algorithms are required to compute geographical proximity of the tasks from the address without compromising on performance. Hence, the Scheduler engine utilizes the latitude and longitude information of the task address to sort the tasks for processing. Autonomous Scheduler now employs this sophisticated algorithm during its initial sorting of tasks when determining better optimized schedules.

Using the same example as given before, yet this time leveraging the algorithm improvements, the Autonomous Scheduler would assign tasks as depicted in this illustration. Tasks 1, 2, and 4 are scheduled to one technician (green) and tasks 5, 3, and 6 are scheduled to another technician (red). This time task proximity is taken into

consideration.

The scenarios mentioned before, leading to the generation of sub-optimal trips by the Autonomous Scheduler cannot be totally avoided. To minimize the impacts of sub-optimal schedules there is a need to further fine tune and optimize the schedules and trips generated by the Autonomous Scheduler.

Understanding the Optimization Across Trips Functionality

Both the Autonomous Scheduler and Optimization Across Trips concurrent programs use the Optimization Across Trips functionality. This functionality contains several processes and algorithms that are used by both of the programs.

Plus, before you can use the Optimization Across Trips functionality you need to set up several profile options. Profile options are:

- CSR: Optimizer - Maximum Travel distance in kms (kilometers) between tasks in a group
- CSR: Optimizer - Maximum Travel distance in minutes between tasks in a group
- CSR: Force Optimizer to prefer grouping than cost
- CSR: Optimizer - Minimum percentage of successful Tasks for Trip Optimization
- CSR: Use Fixed Values for Invalid addresses

For more information on these profile options, see Profile Options Used for Optimization Across Trips, page 2-24.

Process Flow

A high-level business process flow for this functionality would include these steps:

1. Several tasks are created for your customers.

   These customers are located in several different locations.

2. The Autonomous Scheduler program is executed to schedule technicians to perform these tasks. This program performs these steps:

   1. Tasks are sorted by proximity and are clustered geographical.
   2. Processes are used to determine the most cost effective technicians to perform the sorted tasks.
   3. Tasks are optimally scheduled to technicians.

   At this point in time, several technicians trips are complete for a period of time (day or week).

3. More tasks are created for your customers.

4. The Autonomous Scheduler program is executed to schedule technicians to these tasks.

5. The dispatcher reschedules a task or manually schedules a task using the Field Service Dispatch Center.

   Due to the nature of how scheduling is performed you may now have sub-optimal technician schedules.

6. The Optimization Across Trips program is executed to fine tune the technicians schedules. This program performs these steps:

   1. Tasks are sorted by proximity and are clustered geographical.

   2. Schedules are optimized across trips.

   3. Tasks are rescheduled to create more efficient and cost effective trips.

Optimization Across Trips Program

To fine tune and optimize the trips generated by the Autonomous Scheduler, the Advanced Scheduler application provides the Optimization Across Trips (multiple trip) concurrent program. Using the Optimization Across Trips program, tasks within a selected date range are shuffled among the trips of selected technicians or among all the technicians within a territory. Tasks are shuffled and realigned in such a way that more efficient and cost effective trips are created when compared to the previous sub-optimal schedules.

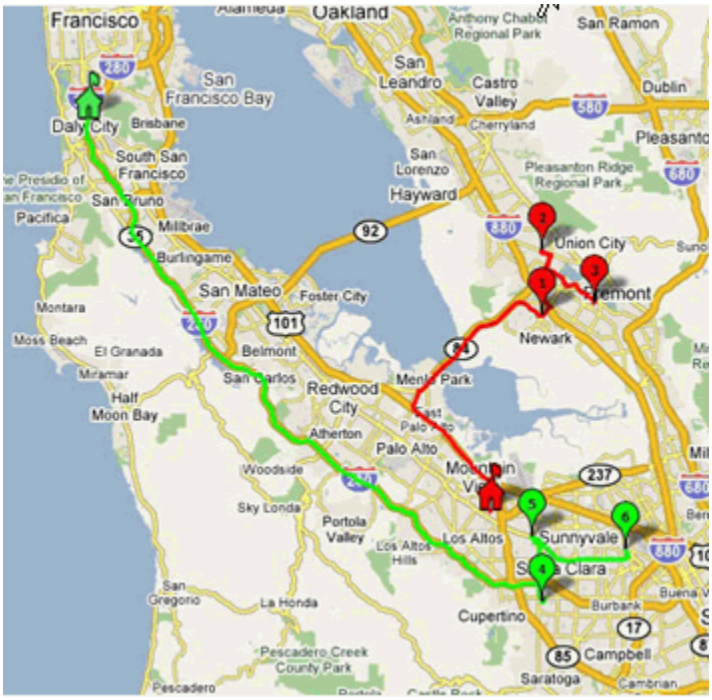
Optimization of a single trip or across trips comes into the picture only after tasks are scheduled into the trips of the technicians. If scheduling is done even after optimizing, either manually or through Autonomous Scheduler, the corresponding trips of the technicians might end up again having sub-optimal schedules. The Optimization Across Trips program is more effective, if the program is run after the trips of the technicians are scheduled with tasks and the scheduling action is frozen for the dates. After optimal trips are generated for the technicians, their trips can be committed and tasks can be released for execution.

Even with the constraints based scheduling algorithm leveraged by the Autonomous Scheduler, the scheduling results can always be further improved upon with another run of the optimization process. In other words, time is the only constraint to getting a perfectly optimized schedule. In the process of optimization tasks are initially clustered for better scheduling.

These examples illustrate the difference between not performing virtual clustering of tasks and when performing virtual clustering of tasks.

Example

Before Virtual Clustering of Tasks

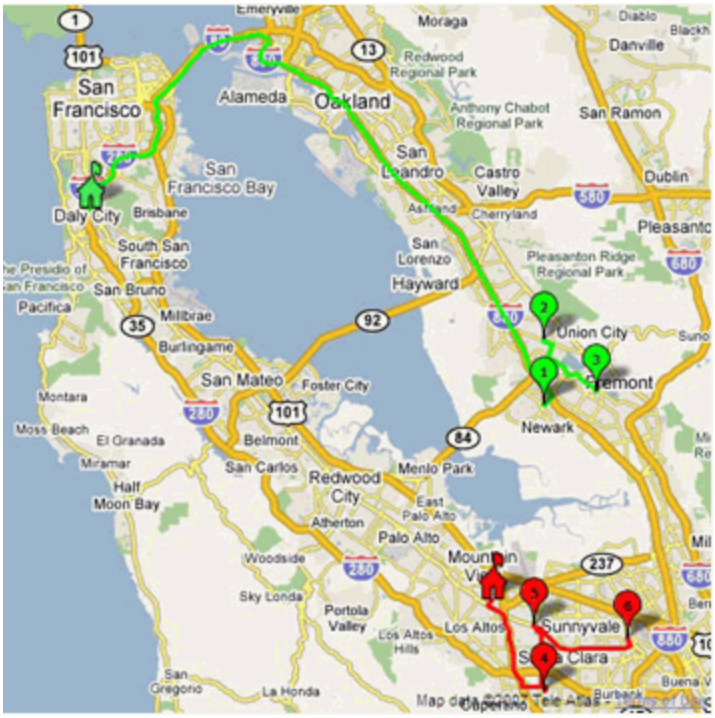


Using this illustration, let us assume that we have a set of six tasks labeled from 1 through 6. Tasks 1, 2 and 3 are scheduled to one technician (red) and tasks 4, 5, and 6 are scheduled to another technician (green). Further, let us assume that the final sorted task list is Task #1, Task #2, Task #3, Task #4, Task #5, and Task #6. In comparing the technicians schedules, one of the technicians (in red) is closer to Task #1 and thus will travel all the way to that region ignoring the tasks in their region.

As you can see from this illustration, despite sorting the tasks appropriately, Autonomous Scheduler may still offer a schedule that may not be completely optimal. With the existing configurable constraints, Scheduler may find eligible technicians and still assign Task #1 to the cheapest among the two technicians.

Autonomous Scheduler stamps the schedule for every task before it processes the next task. This enables the Dispatcher to view the updates on the task and subsequently inform the customer about the scheduled times for the task and the expected availability of the technician on site.

After Virtual Clustering of Tasks



With the assumption that the parts are available and that the skill requirements are met, it is expected that all the tasks at a given customer location preferably be scheduled to a single technician. Similarly, one expects that the tasks within a certain geographic boundary be scheduled to the same technician. You will determine this boundary or spread that is suitable for your implementation.

Some implementations may prefer that tasks at a given location be assigned to a single technician and may not bother with whether that same technician also gets tasks in closer proximity. Other implementations may prefer that tasks separated by a travel distance of say 10 Kilometers is acceptable and should be handled by a single technician. Using the profile option "CSR: Optimizer- Maximum Travel distance in kms between tasks in a group" you will define the acceptable travel distance preference. Depending on this profile setting and the task effort, it may be possible to schedule the entire group of tasks to a single technician. At other times, the total effort of the tasks in the group might be so large that the technician may not have the required availability to perform all the tasks. In such cases, the scheduling algorithm ensures that the group is broken down into smaller groups such that the total travel time within these smaller groups is minimal. The scheduling algorithm also ensures that the same location tasks are retained together, as practical.

After clustering the tasks in proximity to each other, the tasks would be re scheduled between the two technicians in the fashion displayed in the illustration.

The Optimization Across Trips program will not optimize tasks that have these attributes:

- After Hours.
- Task Dependencies.
- Customer Confirmation when set to Received.
- Parent/Child Tasks.

Profile Options Used for Optimization Across Trips

The Optimization Across Trips functionality (processes and algorithms) uses several profile options for its processing.

A few of the profile options are used by the Optimization Across Trips algorithms which are shared by the Autonomous Scheduler and the Optimization Across Trips concurrent programs and a few of the options are used just by the Optimization Across Trips concurrent program.

CSR: Optimizer - Maximum Travel distance in kms between tasks in a group

When optimizing across trips, you will want to sort the tasks by proximity before you actually schedule the tasks to technicians. Sorting of the tasks by proximity will assist with creating more optimal schedules for technicians.

Using the profile option CSR: Optimizer - Maximum Travel distance in kms between tasks in a group you will enter the limiting distance between tasks that are grouped (clustered) together.

For more information on how this profile option is used, see Geographical Proximity Based Sorting of Tasks., page 2-14

CSR: Force Optimizer to prefer grouping than cost

When optimizing across trips, the grouping and assignment of tasks to a single technician may result in an increase to the total cost of the trip. A group of tasks, if optimally scheduled to a technician might lead to overtime. At times, it may be preferable for a technician to work overtime either to finish the tasks at the same location or tasks close by rather than visiting the same region again on another day or alternatively, to dispatch a different technician altogether.

Using the profile option CSR: Force Optimizer to prefer grouping than cost, you can define whether the tasks will be grouped or not when optimizing across trips. If you want to group and schedule the tasks at the same location to a single technician within a trip, then set the profile value to Yes.

CSR: Use Fixed Values for Invalid Addresses

During the Optimization Across Trips process, if a task has been submitted for optimization but it has an invalid address and the Autonomous Scheduler is not able to geo-code the geometry, then the task will be auto rejected. This will occur if the profile option CSR: Use Fixed Values for Invalid addresses is set to No. Otherwise, the task will be processed successfully.

Plus, if one of the technicians trips included for optimization has an invalid address

then that technicians trip is ignored and other technicians trips are considered for optimization.

CSR: Optimizer - Minimum percentage of successful Tasks for Trip Optimization

Unlike the Autonomous Scheduler, the Optimization Across Trips concurrent program commits the processed transactions only at the end of its operation upon successful processing. The number of tasks submitted for optimizing (several technician trips across different dates) might range from a few to a large number of tasks. It is likely that a few tasks from the pool of all the selected tasks for optimization might not find an optimal schedule option. You will define the criteria for the successful run of the optimization process using the profile option CSR: Minimum percentage of successful Tasks for Trip Optimization. The Optimize Across Trips program decides whether to commit or abort its operation by the value set for this profile option. If the percentage of tasks optimized (based on the number of tasks submitted for optimization) is greater than or equal to the profile value the optimizer will commit the operation. Otherwise, it will abort as soon as the threshold (set by the profile value) is exceeded. This profile option is used for each run of the Optimization Across Trips program.

Running the Optimization Across Trips Concurrent Program

They are a few methods that can be used to initiate the Optimization Across Trips concurrent program. Two of the methods are from the Field Service Dispatch Center and the other method is by directly initiating the concurrent program.

Use one of these procedures to optimize technician schedules across trips:

Running the Optimization Across Trips Program

To Interactively Optimize Trips for All Technicians Using the Plan Board:

For information on this procedure, see Optimizing One or More Trips From the Dispatch Center, *Oracle Field Service User Guide*.

To Interactively Optimize Trips for All Technicians Using the Schedule Management Page:

For information on this procedure, see Optimizing Blocked or Past Dated Technician Trips, *Oracle Field Service User Guide*.

To Optimize Trips for All Technicians by Directly Initiating the Concurrent Program:

1. Navigate to the Optimize Across Trips window, page A-2.

   The Parameters window appears.

2. Enter the Start Date and End Date.

   The program will process the trips for technicians during this time frame.

3. (Optional) Select a Territory Name.

To process all territories do not select a territory name.

The program will process the trips for technicians that are associated with this territory.

4. Click OK.

   The Optimize Across Trips window appears displaying the parameters selected.

5. Click Submit.

   The Optimize Across Trips program is initiated. A Decision box appears displaying the request number and asking if you want to Submit another request?

6. Click No.

7. Navigate to the Requests page (View > Requests).

   The Find Request page appears.

8. Select the All My Requests option or select the Specific Request option and enter the Request ID number for the program and then click Find.

9. Locate the specific request ID and click View Output.

   The output file appears displaying the results of that specific concurrent program run.

   The output file contains several sections. The Header section displays the start time for the program and the action.

   The Footer section displays the completion status, completion message, and completion time.

   The Important Information relevant to the Program run section displays the technicians and territories and profile options used during the program run.

   The Tasks Auto-Rejected during Optimization Process section displays the task numbers and the reason why the tasks were auto rejected during the optimization process.

   The Trips skipped during Optimization Process section displays the trips and the reason why they were skipped during the optimization process.

   The Optimizer Completion Status section displays the number of trips used for optimization, the total number of tasks considered for optimization, and the cost benefit achieved through optimization of tasks across trips.

A

Windows and Navigation Paths

Overview of Field Service Windows and Navigation Paths

The following table displays the default navigation path for each Oracle Advanced Scheduler window.

- Text in brackets ([]) indicates a button.
- (T) indicates to select a tab.
- (M) indicates to select the menu option from the window.

Windows and Navigator Paths

Oracle Advanced Scheduler Windows and Navigation Paths

Window	Navigator Menu Path
Access Hours	• Field Service Dispatcher > Dispatch Center > (M) Navigate > Access Hours • Field Service Dispatcher > Dispatch Center > Right-click on task in Task list > Access Hours • Field Service Dispatcher > Dispatch Center > Plan Board or Gantt view> Right-click on task > Access Hours • Field Service Dispatcher > Service Request > Service Requests > Create Service Requests > (T) Tasks > [Access Hours]

Window	Navigator Menu Path
Customer Confirmation	• Field Service Dispatcher > Dispatch Center > (M) Navigate > Customer Confirmation • Field Service Dispatcher > Dispatch Center > Right-click on task in Task list > Customer Confirmation • Field Service Dispatcher > Dispatch Center > Plan Board or Gantt view> Right-click on task > Customer Confirmation • Field Service Dispatcher > Dispatch Center > (T) Overview > [Customer Confirmation]. The dynamic label toggles to Customer Confirmation Received when a confirmation is obtained and recorded. • Field Service Dispatcher > Service Request > Service Requests > Create Service Requests > (T) Tasks
Field Service Dispatcher Center	Field Service Dispatcher > Dispatch Center
Field Service Dispatch Center - Gantt view	Field Service Dispatcher > Dispatch Center > (I) Gantt
Field Service Dispatch Center - Map view	Field Service Dispatcher > Dispatch Center > (I) Map
Field Service Dispatch Center - Plan Board view	Field Service Dispatcher > Dispatch Center > (I) Plan Board
Optimize Across Trips	Field Service Setup > Optimize across Trips
Requests	• Other > View Requests • (M) View > Requests

Window	Navigator Menu Path
Schedule Management	• Field Service Dispatcher > Dispatch Center > (M) Navigate > Schedule Management • Field Service Dispatcher > Dispatch Center > Plan Board or Gantt view > Right-click Resource Name > Schedule Management
Schedule Task	• Field Service Dispatcher > Dispatch Center > Right-click on a task in the Task list > Schedule • Field Service Technician Portal: Field Service Technician Dashboard > (I) Schedule next to a task in the Task table • Field Service Technician Portal: Field Service Technician Dashboard > (I) Update Task for a task > [Schedule]
Submit Requests: Autonomous Scheduler	Field Service Setup > Autonomous Scheduler)
Task Parent/Child	• Field Service Dispatcher > Dispatcher Center > (M) Navigate > Parent/Child • Field Service Dispatcher > Dispatch Center > Tasks view > Right-click Task in Tasks list > Parent/Child • Field Service Dispatcher > Dispatch Center > Gantt view > Right-click Task > Parent/Child • Field Service Dispatcher > Dispatch Center > Plan Board view > Right-click Task cell > Parent/Child