SmartRouting User Guide

Part Number E62349-01

Contents

About this Document

This document describes the general principles on which the ETAdirect system is based. It is intended for the personnel who work with ETAdirect.

Important: This document explains how to accomplish tasks in the Sunrise demo instance of ETAdirect. If your instance of ETAdirect is configured differently or if you have customized your instance, your screens, labels, and processes may differ from those described in this guide.

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Getting Started with ETAdirect

ETAdirect can help you complete your day-to-day tasks faster and more accurately than traditional or manual workforce management tools. In particular, you can use ETAdirect to:

- **Understand what is happening in the field right now.** Use the Time View to see at a glance where resources are working and what they are working on. You can easily see who is at a job site and who is traveling as well as the status of their activities.
- **Reduce calls to and from the field looking for a resource to take a new job.** At a glance, you can tell whether the resource has time available for additional work.
- **Place new work on a route quickly and easily.** If the resource does have time, you can move work to the route.
- **Respond to jeopardy situations immediately.** When an activity is a risk, you can move it to avoid the service window being missed.

Chapter 1

Introduction To SmartRouting

Topics:

The SmartRouting module assigns activities to resources based on location, skill set, work order history and proximity to customer.

Benefits of using the ETAdirect SmartRouting Module

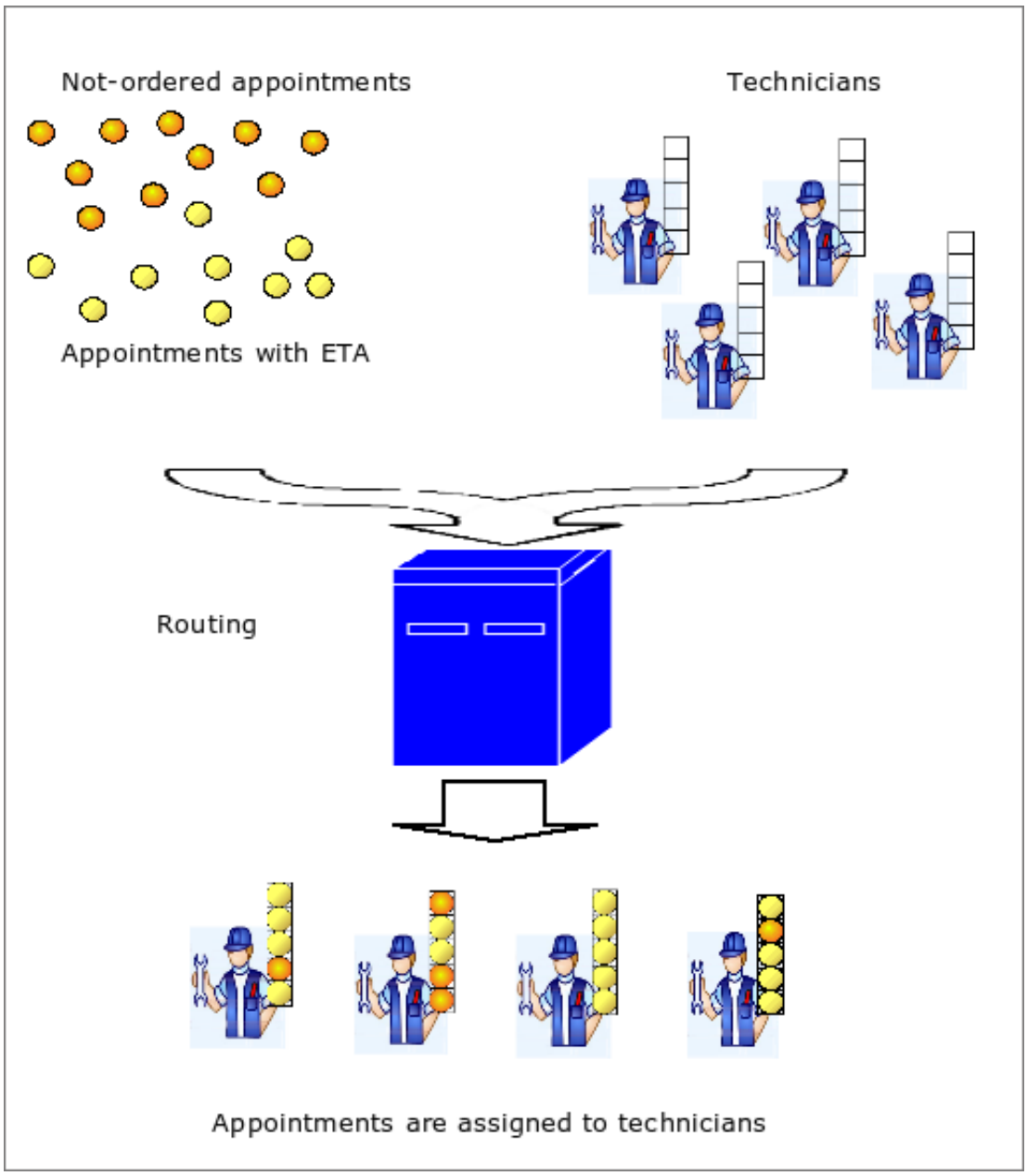
With continued use, the SmartRouting module provides the following benefits over manual routing and most other routing tools on the market:

- Satisfies more customer activities within the promised service window.
- Ensures that properly skilled resources are assigned activities within their geographical areas.
- Minimizes the cost of delivering service.
- Reduces expenses by minimizing resource travel time, work time, idle time and overtime.
- Balances the workload across all resources.
- Automates many routing tasks, making the process faster and easier.

How the SmartRouting Module Works

The SmartRouting module leverages a sophisticated algorithm to optimize resource utilization. The SmartRouting module learns about your resources and activities through information you enter into ETAdirect and through the real-time data that it collects about resources and activities. The SmartRouting module then uses that information to generate routes that optimize the mobile workforce.

The picture below shows the data flow of the routing process:



Activities are received by ETAdirect from the activity booking system. ETAdirect identifies the necessary skills and skill levels for the activity as well as any other requirements and then identifies *resources* with a matching set of skills and skill levels. Then ETAdirect assigns the activity to the resource that best matches the requirements. The company realizes cost savings through efficiencies, resources receive routes that are tailored to their skill levels and their locations, and customers receive quality service on time.

When routing begins, *ETAdirect* first considers the requirements established in the work skills, work zones, and resources calendars. After that, it considers the settings in the routing plan.

Note: ETAdirect optimizes routes using a number of different goals, not just the ones that you select. For example, if you build a routing strategy that optimizes travel time and work, ETAdirect prioritizes the optimization of travel time and work, but it also optimizes for uniformity as a secondary prioritiy.

Relationship Between SmartRouting and SmartCapacity

SmartRouting and SmartCapacity each perform important but very different roles in the efficient management of your mobile workforce.

SmartCapacity: Focuses on optimizing the booking of activities. It uses predicted activity completion time and the quota that you set for each category to calculate the time used by booked activities and the time remaining for additional activities.

SmartRouting: Matches booked activities with properly skilled and available resources. It combines the activities for each resource into routes that are optimized against your business goals.

Chapter 2

Default Routing Profiles

Topics:

ETAdirect ships with three default routing profiles. These profiles produce optimized results for most companies. Each of the default routing profiles contains one routing plan.

Routing profiles are assigned at the bucket level, so you can use different routing profiles for different buckets when necessary. If you find that your routing results are not optimized with a default routing profile, you can modify that profile by adding additional routing plans or by editing the default routing plan. You can also create custom routing profiles and routing plans.

The following default routing profiles ship with ETAdirect.

- **Bulk Routing (High Uniformity):** Each profile contains one routing plan. This plan provides the best possible uniform distribution of work across all resources in your operating area. Bulk routing works best when you book most of your activities before the day of service.
- **Bulk Routing (Minimize travel and work):** This routing plan provides the least-cost distribution of work across all resources in your operating area. Bulk routing is typically run once a day, so it works best when all of your activities are scheduled before you run routing. Least cost routing is a good choice when you have some flexibility with the arrival time, for example, when resources can arrive later in the service window.
- **Dynamic Routing (2 activity / 120min):** This plan provides true dynamic routing, assigning two activities and two hours of work at a time to the resource. Dynamic routing tends to be useful when your activities are booked the same day as the service or when you do not know in advance which resources will be available to perform the activity.

Choosing a Default Routing Profile

The routing profile that will work best in your environment depends largely on your goals for the routing process and the flow of activities into your organization.

Consider the following questions when selecting a routing profile.

- Do you want to optimize travel time and work above all else, or would you prefer to balance your activities across all of your resources?

  If you want to optimize travel time and work above all else, consider a routing profile that minimizes travel and work. If you want to balance work across all of your resources, consider a routing profile that uses the high uniformity option.
- Do you know about most of your activities before the start of the day or are most of the activities received with a short turnaround window of a couple of hours or less?

  If most of your activities are booked before the start of the day, a routing profile that uses bulk routing is likely to provide the most optimal results. Bulk routing is typically run once a day before the day starts, though, so if your activities are received shortly before the activity time, a routing profile that uses dynamic routing might be a better choice.

  Dynamic routing plans are typically run frequently throughout the day to catch the activities as they are added to the system. Bulk routing provides more optimized routing results because it can consider all of the activities at the same time, but dynamic routing provides for more flexibility when trying to cover last minute activities.

  The following table lists a number of common routing goals, the default routing profile that best suites each goal and the ETAdirect setting that influences each goal. You can use this information to choose the default routing profile that will work best in your environment or to decide on the settings to fine-tune the routing profile that you choose.

Meet Service Level Agreement (SLA)

Default Routing Profile that Best Matches this Goal	Setting that Most Affects this Goal
Bulk Routing (High Uniformity)	Routing Plan / Assignment Parameters / Route Uniformity Routing Plan / Filters / Late Arrival Penalty

Minimize Travel Time

Bulk Routing (Minimize Travel and Work)	Routing Plan / Travel Time Resource Type > Travel Time Cost

Minimize Idle Time

Bulk Routing (Minimize Travel and Work)	Routing Plan / Assignment Parameters / Automatic Ordering Resource Calendars

Minimize Overtime

Bulk Routing (High Uniformity)	Routing Plan / Resource Overtime Resource Type > Overtime Cost

Complete the Maximum Number of Activities

Bulk Routing (Minimize Travel and Work)	Routing Plan / Assignment Parameters / Automatic Ordering

Maintain an even workload across all field service employees

Bulk Routing (High Uniformity)	Routing Plan / Assignment Parameters / Route Uniformity

Maintain an even workload across all field service employees

Bulk Routing (High Uniformity)	Routing Plan / Assignment Parameters / Route Uniformity

Ensure that the assigned field service employees have the necessary skills

All	Work Skills, Work Skill Levels, and Work Skill Conditions

Ensure that the field service employees are assigned work in their desired location

All	Work Zones

Ensure that the assigned field service employee has the necessary inventory, tools, or test equipment

Bulk Routing (High Uniformity) Routing Profile

The routing plan in the Bulk Routing (High Uniformity) routing profile distributes activities evenly across the entire workforce while still minimizing travel and work costs where possible.

Table 1: Routing Plan

Setting	Value	Explanation
Routing Plan Name	Uniform – Bulk Routing	N/A
Routing Profile	Bulk Routing (High Uniformity)	N/A
Active	Checked	The routing plan must be active before ETAdirect can use it to run routing.
Time Limit	3 minutes	The amount of time that the plan runs.

Note: Three minutes is usually sufficient. In some cases, running the plan longer might produce a result that better matches your objectives.

See the Time Limit section in ***Configuring the Routing Plan Section of a Routing Plan*** for more information.

Table 2: Run Schedule

Setting	Value	Explanation
Run routing	N/A	N/A

Note: You can use any run schedule with this goal. Most companies that use bulk routing run the plan once a day in the evening or early morning.

See ***Configuring the Run Schedule for the Routing Plan*** for more information.

Table 3: Filters

Setting	Value	Explanation
	Resources	
Activities	*	Bulk Routing does not use filters. You can add filters to prioritize certain types of activities or certain resources over others.
	Scheduled	
Assignment Cost	Normal	
	Settings	
Late arrival penalty	Normal - late arrival may result in rescheduling if the customer is no longer at home	
Assigning Activities which are about to be late	Do not assign "overdue" activities and leave them in the bucket	
Cost of not assigning an activity	Normal - default setting	

See the following sections for detailed instructions: ***Creating a Filter*** and ***Adding an Activity Filter to a Routing Plan*** for more information.

Table 4: Assignment Parameters

Setting	Value	Explanation
Home zone radius overstep weight	4	This option defines the penalty to be applied if the resource leaves the home area to complete the activity.[1]
Try to schedule activities to service window start	✔	This option instructs SmartRouting to schedule activities as close to the start of service windows as possible. As a result, ETAdirect is more likely to divide the activities evenly across all of the resources in the bucket. Activities are typically more evenly distributed, but routes may be less efficient.
Automatic Ordering	✔	This option places activities without service windows on the route in the most efficient order. Checking this option makes routes more efficient, but reduces the resources' freedom to exercise judgement in completing activities.
Center point home zone support and Home zone radius	4	An optional setting that permits you to specify a radius spans a technician's starting location. Penalties are assessed for assigning activities outside the circle of the defined radius. The further away the activity is, the higher the penalty.
Limit work by points	✖	This option is necessary only if you use points to estimate activities.

Setting	Value	Explanation
		This option limits the number of activities assigned to a resource based on the maximum points allowed within the shift. The point value for each activity must be sent through the API.

Note: 1. This option is only displayed when **Center point home zone support** is checked.

See the following sections for more information ***Using Assignment Parameters to Fine-tune the Routing Plan***

Table 5: Dynamic Routing

Setting	Explanation
Load Resources	When you use a 0 in both fields, Dynamic Routing is turned off. Dynamic routing enables you to control the number of activities or the amount of time that should be filled on the resources' schedules. Routing plans that use dynamic routing are typically run recurrently throughout the day.

See ***Using Dynamic Routing on a Routing Plan*** for more information.

Table 6: Resource Overtime

Setting	Value
Assign activities even if the assignment causes overtime	✗
Do not assign "overtime" activities and leave them in the bucket	✓
Do not assign activities with more than __ min. overtime	✗
Do not assign activities that unlikely to be finished in __ min. before end of resource's day	✗

Note: When you select **Do not assign "overtime" activities and leave them in the bucket**, resources do not receive activities that will extend their workday past their scheduled working hours.

See ***Controlling Overtime (Resource Overtime) through a Routing Plan*** for more information.

Table 7: Travel Time

Setting	Value
Minimize summary travel even if some activities require long travel times.	✓
Avoid travel longer than __ minutes, even though some activities might not be assigned and summary travel might increase.	✗

Note: The typical selection for this setting is Minimize summary travel even if some activities require long travel times. This option produces routes with optimized travel times for the entire group, but not necessarily for each individual resource. As a result, a few activities might require long travel times, but the amount of travel for the whole group is optimized.

See ***Controlling Travel Time through the Routing Plan*** for more information.

Bulk Routing (Minimize Travel and Work) Routing Profile

The routing plan in the Bulk Routing (Minimize Travel and Work) routing profile minimizes travel and work costs while still meeting customer expectations.

Table 8: Routing Plan

Setting	Value	Explanation
Routing Plan Name	Least Cost – Bulk Routing	N/A
Routing Profile	Bulk Routing (Minimize travel and work)	N/A
Active		The routing plan must be active before ETAdirect can use it to run routing.
Time Limit	3 minutes	The amount of time that ETAdirect runs the plan.

Note: Three minutes is usually sufficient. In some cases, running the plan longer might produce a result that better matches your objectives.

See the Time Limit section in ***Configuring the Routing Plan Section of a Routing Plan*** for more information.

Refer to ***Run Schedule*** in Bulk Routing (High Uniformity) Routing Profile

Refer to ***Filters*** in Bulk Routing (High Uniformity) Routing Profile

See the following sections for detailed instructions: ***Creating a Filter*** and ***Adding an Activity Filter to a Routing Plan*** for more information.

Table 9: Assignment Parameters

Setting	Value	Explanation
Home zone radius overstep weight		This option defines the penalty to be applied if the resource leaves the home area to complete the activity.
Try to schedule activities to service window start		When this option is unchecked, the routing plan instructs ETAdirect to schedule activities anytime in the service window, even near the end. This configuration allows ETAdirect to use the resource that is closest to the activity, even if it means that one a resource receives many more activities than another resource.
Automatic Ordering		This option places activities without service windows in the route in the most efficient order. Checking this option makes routes more efficient, but reduces the resources' freedom to complete activities when they want to.
Center point home zone support and Home zone radius		An optional setting that enables you to specify a radius that spans the technician's starting location. During the routing process penalties are assessed for assigning activities beyond

Setting	Value	Explanation
		this radius. The further away the activity is, the higher the penalty.
Limit work by points	✖	This option is only necessary if you use points to estimate activities. This option limits the number of activities assigned to a resource based on the maximum points allowed within a resource's shift. You must send the point value for each activity to ETAdirect through the API.

Note: This option is only displayed when **Center point home zone support** is checked.

See ***Using Assignment Parameters to Fine-Tune the Routing Plan*** for more information.

Table 10: Dynamic Routing

Setting	Value	Explanation
Load Resources	0 minutes 0 activities	When you use a 0 in both fields, Dynamic Routing is turned off. Dynamic routing enables you to control the number of activities that should be placed on the resources' schedules, or the amount of time that should be filled on the resources' schedules. Routing plans that use dynamic routing are typically run recurrently throughout the day.

See ***Using Dynamic Routing on a Routing Plan*** for more information.

Table 11: Resource Overtime

Setting	Value
Do not assign "overtime" activities and leave them in the bucket	✖
Do not assign activities with more than __ min. overtime	✖
Do not assign activities that are unlikely to be finished in __ min. before end of resource's day	✖

Note: When you select **Assign activities even if the assignment cause overtime**, routes are optimized for travel time and work, but resources might need to work past their scheduled working hours.

See ***Controlling Overtime (Resource Overtime) through a Routing Plan*** for more information.

The typical selection for this setting is Minimize summary travel even if some specific activities have long travel time.This option produces routes with optimized travel times for the entire group, but not necessarily for each individual resource. As a result, a few activities might require long travel times, but the amount of travel for the whole group is optimized.

See ***Controlling Travel Time through a Routing Plan*** for more information.

Refer to ***Travel Time*** in Bulk Routing (High Uniformity) Routing Profile

Dynamic Routing (2 Activity/120min) Routing Profile

The routing plan in the Dynamic Routing (2 Activity/120min) routes activities frequently. This routing plan is useful when activities are booked shortly before the activity time or when you do not know in advance which resources will be available to accept the activities. Routing results are not as optimal as using bulk routing, but activities are routed closer to their actual activity time.

Table 12: Routing Plan

Setting	Value	Explanation
Routing Plan Name	2hr in advance - Dynamic Routing	N/A
Routing Profile	Dynamic Routing (2 Activity / 120min)	N/A
Active		The routing plan must be active before ETAdirect can use it to run routing.
Time Limit	3 minutes	The amount of time that ETAdirect runs the plan.

Note: Three minutes is usually sufficient. In some cases, running the plan longer might produce a result that better matches your objectives.

See the Time Limit section in ***Configuring the Routing Plan Section of a Routing Plan*** for more information.

Table 13: Run Schedule

Setting	Value
Run routing	Recurrent
for	Today's activities
from	6:00
to	20:00
interval between runs	30 minutes

When activities are added to the system throughout the day and require a quick turn around, you must run routing plans frequently.

Choose the recurrent option and run the plan to Today's activities. Set the interval between runs to a short interval, typically 30-60 minutes is optimal.

See *Configuring the Run Schedule for the Routing Plan* for more information.

Refer to ***Filters*** in Bulk Routing (High Uniformity) Routing Profile.

Table 14: Assignment Parameters

Setting	Value	Explanation
Home zone radius overstep weight	4	This option defines the penalty to be applied if the resource leaves the home area to complete the activity.This option displays only when Center point home zone support is checked.The default value is 4.

Setting	Value	Explanation
Try to schedule activities to service window start	✔	This option instructs SmartRouting to schedule activities as close to the start of service windows as possible. As a result, ETAdirect is more likely to divide the activities evenly across all of the resources in the bucket. Activities are typically more evenly distributed, but routes might be less efficient.
Automatic Ordering	✔	This option places activities without service windows on the route in the most efficient order. Checking this option makes routes more efficient, but reduces the resources' freedom to complete activities when they want to.
Center point home zone support and Home zone radius		An optional setting that enables you to specify a radius that spans a technician's starting location. During the routing process penalties are assessed for assigning activities beyond this radius. The further away the activity is, the higher the penalty.
Limit work by points	✖	This option is only necessary if you use points to estimate activities. This option limits the number of activities assigned to a resource based on the maximum points allowed within a resource's shift. You must send the point value for each activity to ETAdirect through the API.

Note: This option displays only when **Center point home zone support** is checked.

See ***Using Assignment Parameters to Fine-Tune the Routing Plan*** for more information.

Table 15: Dynamic Routing

Setting	Value	Explanation
Load Resources for	120 minutes 2 activities	Dynamic routing enables you to control the number of activities that should be placed on the resources' schedules, or the amount of time that should be filled on the resources' schedules. 120 minutes means that the routing plan fills the resource's next 120 minutes with activities and 2 activities means that the routing plan assigns, at most, two activities to the resource.
Stop loading when any limit is exceeded	✖	When checked, this option instructs the routing plan to stop adding activities to the resource's schedule when **either** the activity limit **or** the time limit is reached.
Stop loading when both limits are exceeded	✔	When checked, this option instructs the routing plan to stop adding activities to the resource's schedule when **both** the activity limit **and** the time limit is reached.
Assign activities even if the assignment causes overtime	✔	When you select **Assign activities even if the assignment cause overtime**, routes are optimized for travel time and work, but resources might need to work past their scheduled working hours.

Setting	Value	Explanation
Do not assign "overtime" activities and leave them in the bucket	✖	When checked, this option instructs the routing plan to stop adding activities to the resource's schedule when **both** the activity limit **and** the time limit are reached.

See ***Using Dynamic Routing on a Routing Plan*** for more information.

Table 16: Resource Overtime

Setting	Value
Do not assign activities with more than __ min. overtime	✖
Do not assign activities that are unlikely to be finished in __ min. before end of resource's day	✖

Note: When you select **Assign activities even if the assignment cause overtime**, routes are optimized for travel time and work, but resources might need to work past their scheduled working hours.

See ***Controlling Overtime (Resource Overtime) through a Routing Plan*** for more information.

The typical selection for this setting is Minimize summary travel even if some specific activities have long travel.This option produces routes with optimized travel times for the entire group, but not necessarily for each individual resource. As a result, a few activities might require long travel times, but the amount of travel for the whole group is optimized.

See ***Controlling Travel Time through a Routing Plan*** for more information.

Refer to ***Travel Time*** in Bulk Routing (High Uniformity) Routing Profile

Chapter 3

Preparing ETAdirect for Routing

Topics:

The SmartRouting module uses a number of settings to make decisions about how to match activities to resources. Your configuration of these settings can have a significant influence on the routing results.

Preparing the Resource Tree for Routing

Verify that the resources that should receive the activities are in the same bucket as the activities that you want them to receive.

When organizing the *Resource Tree*, consider the following limitations:

- You can only route activities from buckets to resources.
- You can group resources inside a bucket using either groups or buckets. You can route from a bucket to a direct child resource or to a succeeding generation resource.

See **SmartManage User Guide** for detailed instructions on configuring the Resource Tree.

Preparing Resource Calendars for Routing

Verify that calendars are current and accurate. The SmartRouting module uses this information to determine whether a qualified resource is available to take an activity.

Important: Resources inherit calendars from parent objects like groups or buckets unless you override the settings at a lower level.

Tip: Put all of the resources that you want to use the same calendar in one bucket and assign the calendar to the bucket. The resources inherit the calendar settings from the bucket and you only have to configure the calendar once.

See the **SmartManage User Guide** for detailed instructions for configuring *Resources Calendar*.

Preparing the Resource Tree for Routing

Verify that should resources that you want to receive the activities are in the same bucket as the activities that you want them to receive.

When organizing the Resource Tree, consider the following limitations:

- You can only route activities from buckets to resources.
- You can group resources inside a bucket using either groups or buckets. You can route from a bucket to a direct child resource or to a succeeding generation resource.

See the **SmartManage User Guide** for detailed instructions for configuring the Resource Tree.

Preparing Work Skills and Work Skill Conditions for Routing

Verify that the work skills, work skill levels, and the work skill conditions that you configured in ETAdirect are accurate.

Important: If you do not assign work skills to a resource, ETAdirect assumes that the resource has all of the work skills at the highest level.

Work skill conditions: identify the work skills that are necessary to complete each activity.

Work skills: identify the expertise that a resource has. They are the link that enables ETAdirect to match activities with resources.

The **required level** setting and the **preferable level** settings in the work skill have a strong impact on routing. The required level identifies the minimum work skill level that the resource must have to be eligible for the activity. The preferable level determines how early in the routing process the activity is routed. The earlier the activity is routed, the larger the pool of resources to choose from is. A larger pool of resources typically results in a better match.

For best results, assign a higher preferable level to an activity that requires advanced skills or skills that are difficult to find. This strategy ensures that the activity is staffed from the largest possible pool of resources.

Tip: If SmartRouting is not able to match activities to resources, consider relaxing your work skill levels and work skill conditions so that more resources match the *work skills* and work skill levels required by the activities.

See the **SmartCapacity User Guide** for detailed instructions for configuring work skills and *work skill conditions*.

Preparing Work Zones for Routing

Verify that work zones are accurately configured for your resources.

If SmartRouting is not able to match activities to resources, consider assigning each work zone to more resources so that more resources are available for the activities in that work zone.

If resources are assigned to a lot of work zones, you can use work zone levels to influence which work zones they receive work in. Assign a higher level to more desirable work zones and a lower level to less desirable work zones.

Important: Resources inherit work zones from parent objects like groups or buckets unless you override the setting at a lower level.

Tip: Put all of the resources that you want to use the same work zones in one bucket and assign the work zone to the bucket. The resources inherit the work zone settings from the bucket, and you only need to configure the work zone once.

See the **SmartManage User Guide** for detailed instructions for configuring Work Zones.

Preparing Quota for Routing

For best results, your SmartCapacity strategy should map closely to your routing strategy.

Verify that you are booking the number of activities that your resources can reasonably complete. If you overbook activities, you will not have enough resources to handle all of the activities. In this case, the SmartRouting module cannot route all activities. If you underbook activities, the SmartRouting module can easily find matches for the activities, but your resources will have idle time.

See the **SmartManage User Guide** for detailed instructions for adding and managing quota.

Preparing Activity Types for Routing

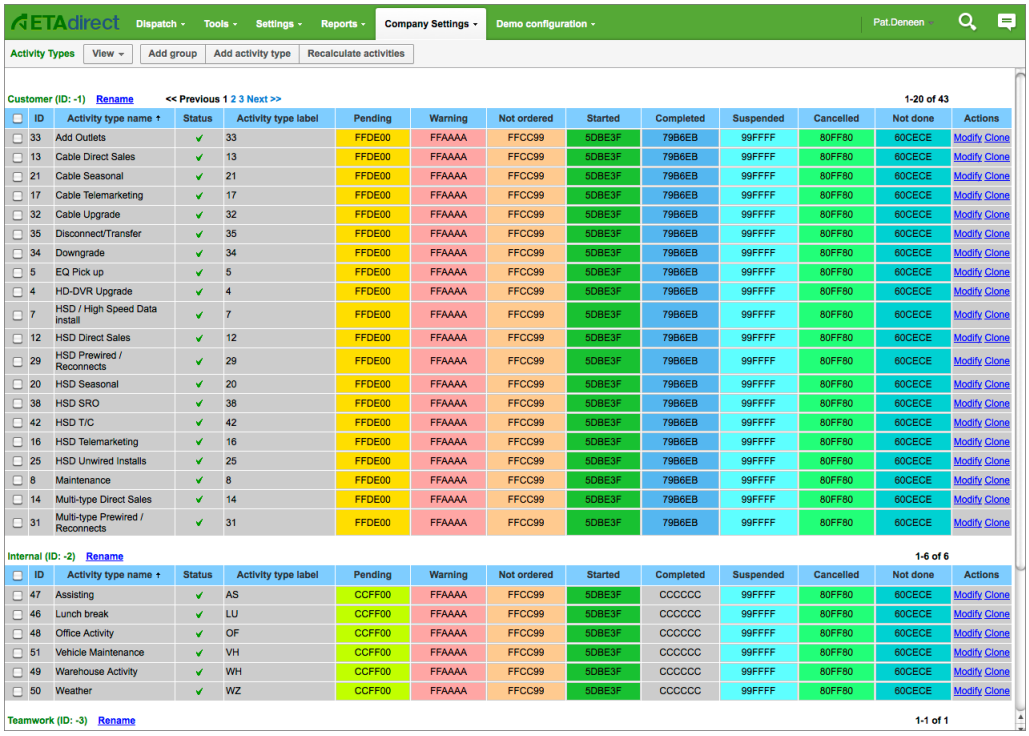
You can specify preferred resources for different activities. The SmartRouting module will take these requirments into account when routing activites. These settings are enabled in the activity type and are set on the individual activity.

ETAdirect provides the following preference settings:

- **Required:** Only resources identified as required can be assigned these activities.
- **Preferred:** When no resources are identified as Required, then any resource defined as Preferred is given priority over the rest of the pool of resources.
- **Forbidden:** Any resource defined as Forbidden for an activity cannot be assigned the activity.

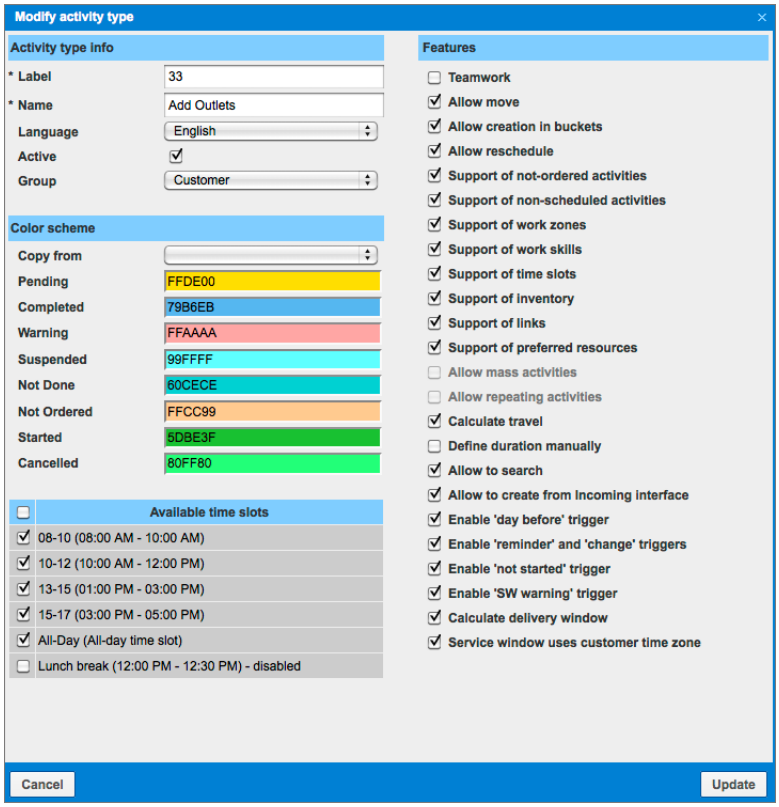
To enable the use of preferred resources for a particular activity type:

1. Click **Company Settings**, and then select **Activity Types** from the drop-down. The Activity Types screen displays.



2. Find the row for the activity type that you want to add preferences to and click **Modify**. The **Modify activity type** screen displays.

Note: You can also add a new activity type. At the top of the Activity Type screen, click **Add activity type**.



3. Under Features, click the checkbox next to **Support of preferred resources**. The **Activity Type Details** screen displays.

   Set the resource preferences for an individual activity:
4. The bottom of the Activity details screen on the **Resource Preferences** tab. See the **SmartManage User Guide** for detailed instructions.

Creating a Filter

You can use filters as a part of the routing process to prioritize certain groups of resources or activities above others. First you must create the filter. Then you can add it to a routing plan and configure it for that plan.

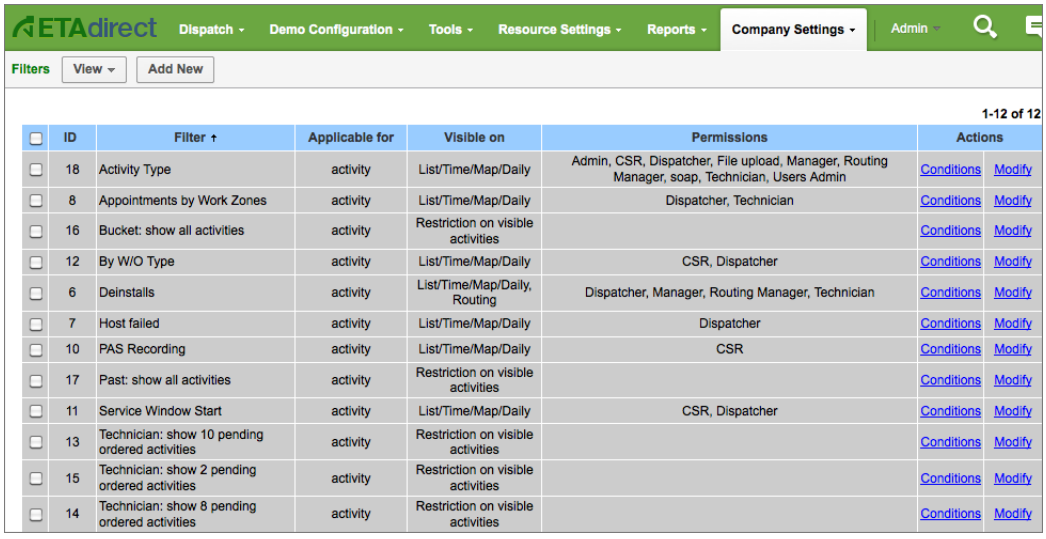
Filters can help you reduce the number of routing plans that you need to run against a bucket. Instead of using routing plans to prioritize certain types of activities or resources above others, you can use filters.

For example, if you want to route trouble tickets before all other types of activities, you can use a filter to tell the routing plan to prioritize activities that have the trouble ticket type above activities with any other *activity type*.

You can also use filters to prioritize certain types of resources above others. For example, if you want to minimize the use of contractors because they are more expensive, you can assign contractors a high cost and in-house employees a low cost. The routing plan then chooses in-house employees before choosing contractors.

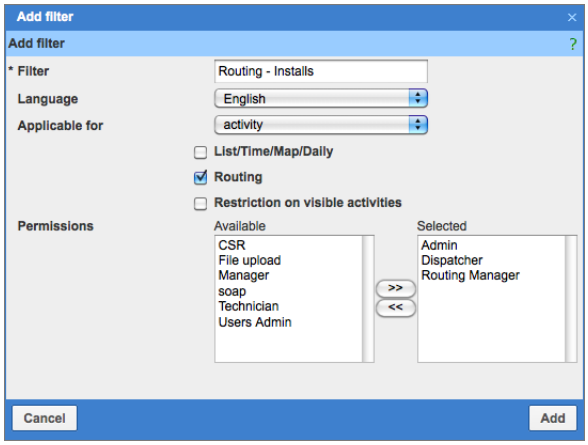
To create a filter:

1. Click **Company Settings** and select **Filters** from the drop-down menu. The list of existing filters displays.
2. Click the **Add new** button from the toolbar.



ID	Filter	Applicable for	Visible on	Permissions	Actions
18	Activity Type	activity	List/Time/Map/Daily	Admin, CSR, Dispatcher, File upload, Manager, Routing Manager, soap, Technician, Users Admin	Conditions Modify
8	Appointments by Work Zones	activity	List/Time/Map/Daily	Dispatcher, Technician	Conditions Modify
16	Bucket: show all activities	activity	Restriction on visible activities		Conditions Modify
12	By W/O Type	activity	List/Time/Map/Daily	CSR, Dispatcher	Conditions Modify
6	Deinstalls	activity	List/Time/Map/Daily, Routing	Dispatcher, Manager, Routing Manager, Technician	Conditions Modify
7	Host failed	activity	List/Time/Map/Daily	Dispatcher	Conditions Modify
10	PAS Recording	activity	List/Time/Map/Daily	CSR	Conditions Modify
17	Past: show all activities	activity	Restriction on visible activities		Conditions Modify
11	Service Window Start	activity	List/Time/Map/Daily	CSR, Dispatcher	Conditions Modify
13	Technician: show 10 pending ordered activities	activity	Restriction on visible activities		Conditions Modify
15	Technician: show 2 pending ordered activities	activity	Restriction on visible activities		Conditions Modify
14	Technician: show 8 pending ordered activities	activity	Restriction on visible activities		Conditions Modify

3. Complete the fields as shown below.



Filter: Provide a name for the filter. In our example, the name of the filter is Routing - Installs.

Language: Select your native language. For this example, we chose English.

Applicable for: Select Activity or Technician. In our example, this filter applies to an *Activity* (since we are filtering on Installs activity). To enable SmartRouting to differentiate one resource type from another select Technician from the drop-down.

List/Time/Map/Daily: Check these options if you want to have the filter available in these views.

Routing: Check this option to so that the filter is available for SmartRouting

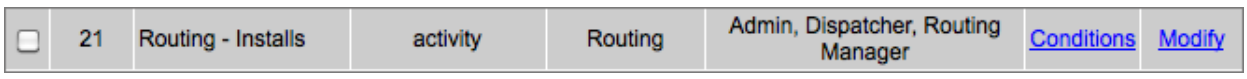
Restriction on visible activities: Do not check this option if used only for filters that tie in with display profiles, some of which can limit the number of activities that a resource can see along their daily route. This option is not applicable to routing plans.

Permissions: Select the user profiles that have access to this filter. For example, if this filer is used for routing, the profile for the person who performs routing must have permission to access the filter.

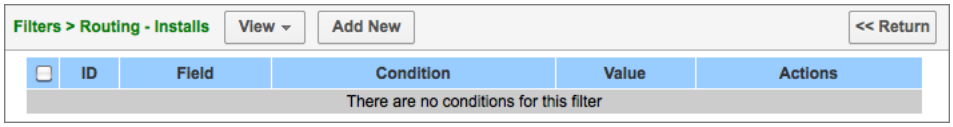
4. Click the **Ok** button to save the filter. The new filter is added to the list of filters.

ID	Filter	Applicable for	Visible on	Permissions	Actions	
18	Activity Type	activity	List/Time/Map/Daily	Admin, CSR, Dispatcher, File upload, Manager, Routing Manager, soap, Technician, Users Admin	Conditions	Modify
8	Appointments by Work Zones	activity	List/Time/Map/Daily	Dispatcher, Technician	Conditions	Modify
16	Bucket: show all activities	activity	Restriction on visible activities		Conditions	Modify
12	By W/O Type	activity	List/Time/Map/Daily	CSR, Dispatcher	Conditions	Modify
6	Deinstalls	activity	List/Time/Map/Daily, Routing	Dispatcher, Manager, Routing Manager, Technician	Conditions	Modify
7	Host failed	activity	List/Time/Map/Daily	Dispatcher	Conditions	Modify
10	PAS Recording	activity	List/Time/Map/Daily	CSR	Conditions	Modify
17	Past: show all activities	activity	Restriction on visible activities		Conditions	Modify
21	Routing - Installs	activity	Routing	Admin, Dispatcher, Routing Manager	Conditions	Modify
11	Service Window Start	activity	List/Time/Map/Daily	CSR, Dispatcher	Conditions	Modify
13	Technician: show 10 pending ordered activities	activity	Restriction on visible activities		Conditions	Modify
15	Technician: show 2 pending ordered activities	activity	Restriction on visible activities		Conditions	Modify
14	Technician: show 8 pending ordered activities	activity	Restriction on visible activities		Conditions	Modify

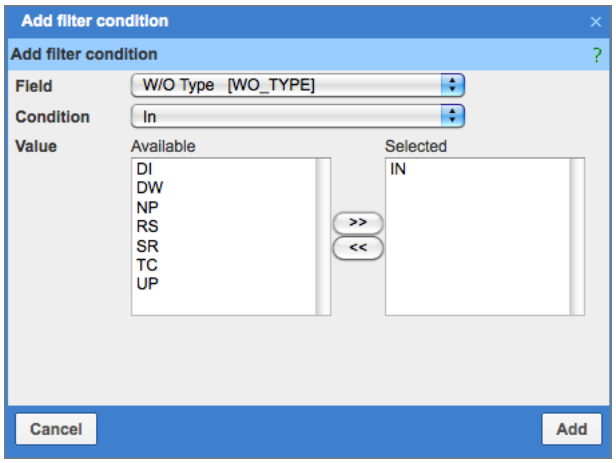
5. Click the **Conditions** link located in the **Actions** column for the Routing - Installs filter.



6. Click the **Add new** button to create a new condition for this filter.



7. Complete the following fields:



Field: Select the field that applies to this condition from the drop-down. In our example, we are selecting the field Work Order Type (WO_TYPE) from the activity record. The fields that display here depend on the entity type selected for the filter. If "Technician" were selected, then the field options would be those that are associated with resource entities.

Condition: Select the operator that is used to compare the field to the value. In our example, we used the condition where the value indicated needs to be in the field.

Value: Add the value that filters this record. In our example, we use the value/code IN, which is our code for an Install.

8. Click the **Add** button to save the condition within the filter.
9. Optional: Add additional conditions or additional filters if necessary. To determine whether you should use multiple filters or multiple conditions, see *Using Multiple Filters or Multiple Conditions*below.

Note: After you create the filter, you must add it to the routing plan and configure it for routing. See *Adding an Activity Filter to a Routing Plan* and *Configuring an Activity Filter for Routing* for detailed instructions.

Using Multiple Filters or Multiple Conditions

You can use multiple filters or multiple conditions to further refine the results of the filter. When you add multiple conditions to a single filter, the filter returns options that meet **any** of the conditions, but not necessarily all of them. When you use multiple filters, the filter returns only the options that meet **all** of the conditions.

> If you create two conditions, one for installations and one for in-house employees, the filter finds the activities that require the installation skill or an in-house employee, or both.When you use two filters, one for installations and one for in-house employees, the filter returns activities that require both installation skills and an in-house employee.

Chapter 4

Setting up Routing Profiles and Plans

Topics:

If you find that your routing results are not optimized with a default routing profile, you can modify that profile or routing plan or you can create a custom routing profile or plan.

ETAdirect includes three default routing profiles. Each of the default routing profiles contains one routing plan. These profiles produce optimized results for most companies without further configuration.

See *Default Routing Profiles* for more information.

Adding a Routing Profile to the System

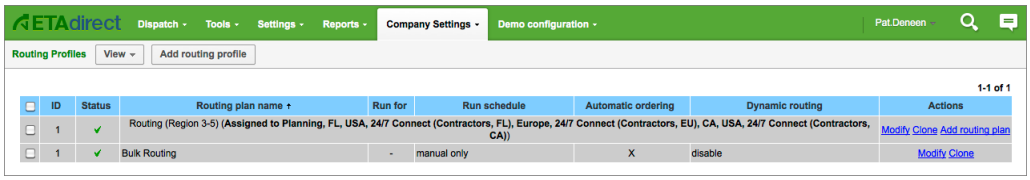
Routing profiles contain the routing plan or plans that run against the bucket. You can use routing profiles to group more than one routing plan together so that you can run them all against one bucket.

Note: ETAdirect ships with three default routing profiles. These profiles produce optimized results for most companies without further configuration. If you find that your routing results are not optimized with a default routing profile, you can modify that profile or you can create a custom routing profile.

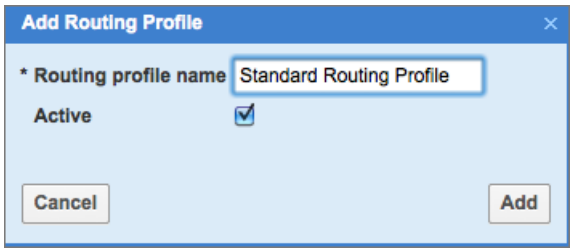
Creating a New Routing Profile

To create a new routing profile:

1. Click **Company Settings** and select **Routing Profiles** from the drop-down list. The **Routing Profiles** window displays.



2. Click the **Add routing profile** button located on the toolbar. The **Add routing profile** dialog box displays.
3. In the **Routing profile name** field, type the name of the routing profile.
4. Check the checkbox next to **Active**.
5. Click **Add**. The new profile displays in the **Routing Profiles** list.

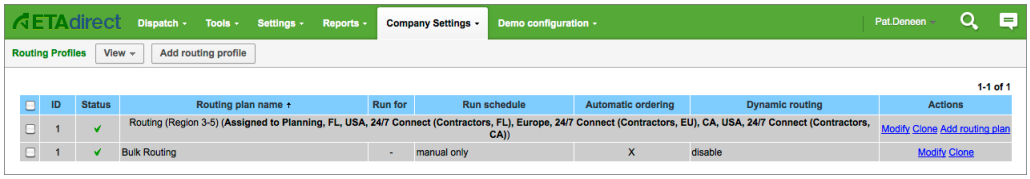


Cloning an Existing Routing Profile

If you want to add a routing profile that is similar to an existing routing profile, you can create a clone. A clone is an exact copy of the existing routing profile. You can change the clone to differentiate it from the existing routing profile.

To clone a profile:

1. Click **Company Settings** and select **Routing Profiles** from the drop-down list. The **Routing Profiles** window displays.



2. Find the routing profile that you want to clone in the list.

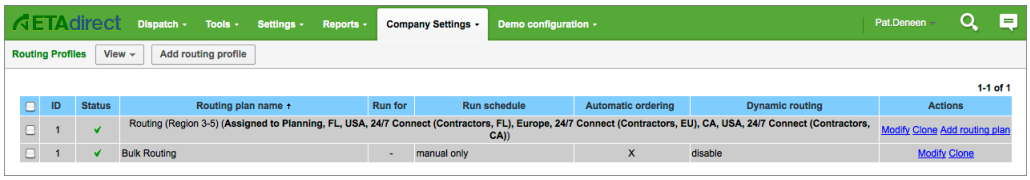
3. Click **Clone**. The **Clone Routing Profile** dialog box displays. In the **Routing profile name** field, type the name of the new routing profile.
4. Check the checkbox next to **Active**.
5. Click **Clone**. The new profile displays in the **Routing Profiles** list.

Modifying a Routing Profile

You can modify a routing profile on the **Routing Profiles** screen.

Follow these steps to modify a routing profile:

1. Click **Company Settings** and select **Routing Profiles** from the drop-down list. The **Routing Profiles** window displays.



2. Find the routing profile that you want to modify in the list.
3. Click Modify to display the **Modify Routing Profile** dialog box.
4. Make the changes and then click **Update**.

Activating and Deactivating Routing Profiles

Active routing profiles are used to route activities to resources. Inactive routing profiles are not used.

You might want to deactivate a routing profile if you want to save it for future use, but you don't want to use it right now.

Follow these steps to activate or deactivate a routing profile:

1. Click **Company Settings** and select **Routing Profiles** from the drop-down menu. The list of routing profiles and routing plans displays.
2. Find the row for the routing profile that you want to activate or deactivate and click **Modify**.
3. Check or clear the box next to **Active**.
4. Click **Update**.

Adding a Routing Plan to a Routing Profile

Routing plans provide the rules that ETAdirect uses to route activities to resources. They are based on the business goals of your organization. Routing plans are assigned to routing profiles. Routing profiles are assigned to the buckets that you run the routing plan against.

Note: ETAdirect ships with three default routing plans. These plans produce optimized results for most companies without further configuration. If you find that your routing results are not optimized with a default routing plan, you can modify a default routing plan or you can create a custom routing plan.

Choosing the Routing Plans to Assign to a Routing Profile

Routing profiles are used to group more than one routing plan together so that you can run them all against the same bucket.

By default, ETAdirect assigns one routing plan to each routing profile. If necessary, you can assign more routing plans to a routing profile so that you have more plans available to run against a bucket.

Be cautious when running more than one plan against a *bucket* to avoid conflict between plans for shared resources and activities. When plans conflict with each other or try to use the same resources and activities, the routing results are typically less than optimal.

For best results:

Use caution when running multiple routing plans against the same resources. Second and later generation routing plans will yield less successful results because they run against the resources remaining from the previous runs. Do run the same resources through multiple plans that run against the same bucket, but do so with caution.

For example, run one routing plan against the bucket in the evening to assign most of the activities for the day. Then run a second routing plan against the bucket around mid-morning. This second run might find openings for some of the activities that were not assigned in the first run. It can also assign the activities that came in after the first run. Do use the fewest number of routing plans necessary. Doing so can minimize the chances of accidental sharing of resources and activities across plans.

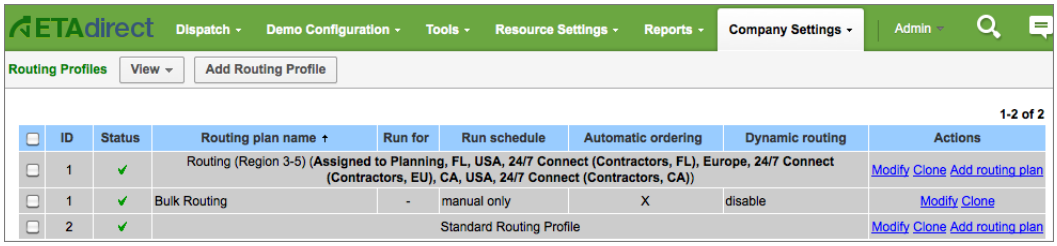
Do run routing plans against large groups of resources and activities. When the pool of resources and activities is small, ETAdirect has fewer options for making a good match. As a result, routes will be less optimal and more activities will be unassigned.

Creating a New Routing Plan

You must create a Routing Profile first. See *Adding a Routing Profile* for details.

Routing plans provide ETAdirect with the rules to use when deciding how to route activities to resources. When you create a new routing plan, you select the routing profile to assign it to in the first step.

1. Click **Company Settings** and select **Routing Profiles** from the drop-down menu. The list of routing profiles and routing plans displays.
2. Find the routing profile to which you want to add the routing plan.
3. Click **Add routing plan** in the Actions column. A new routing plan template displays.

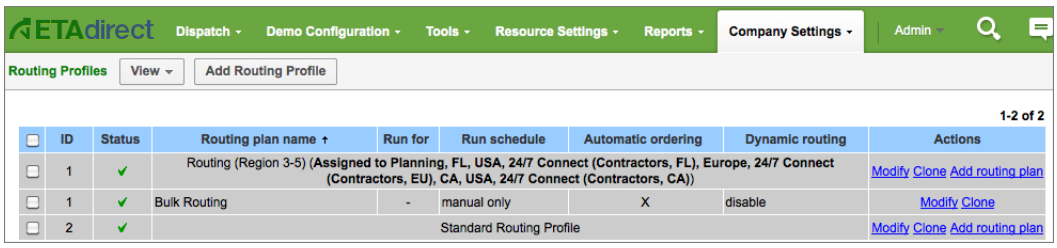


4. Add values as necessary. See *Configuring a Routing Plan* for instructions for each section.
5. Click **Add**. Before you can run a routing plan against a bucket, you must assign the routing profile that contains the routing plan to the bucket. See *Assigning a Routing Profile to a Bucket* for details.

Cloning an Existing Routing Plan

If you want to add a routing plan that is similar to an existing routing plan, you can create a clone. A clone is an exact copy of the existing routing plan. After you create the clone, you can change it to differentiate from the original routing plan.

1. Click **Company Settings** and select **Routing Profiles** from the drop-down menu. The list of routing profiles and routing plans displays.
2. Find the routing plan that you want to clone.
3. In the Actions column, click **Clone**. The plan that you want to clone displays.



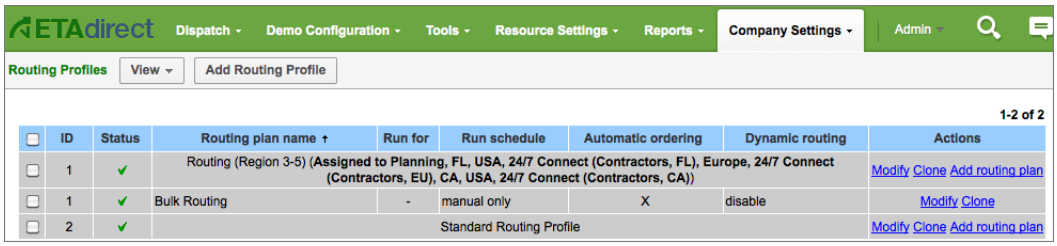
4. Change the values as necessary. See *Configuring a Routing Plan* for instructions for each section.
5. Click **Clone**.

Before you can run a routing plan against a bucket, you must assign the routing profile that contains the routing plan to the bucket. See *Assigning a Routing Profile to a Bucket* for details.

Modifying a Routing Plan

You can modify a routing plan from the Routing Profiles screen.

1. Click **Company Settings.**
2. Select **Routing Profiles** from the drop-down menu. The list of routing profiles and routing plans displays. Find the routing plan that you want to modify.
3. Click **Modify** in the Actions column. The routing plan displays.



4. Change the values as necessary. See *Configuring a Routing Plan* for instructions for each section.
5. Click **Update**.

Note: Before you can run a routing plan against a bucket, you must assign the routing profile that contains the routing plan to the bucket. See *Assigning a Routing Profile to a Bucket* for details.

Activating and Deactivating Routing Plans

Active routing plans are used to route activities to resources. Inactive routing plans are not used.

You might decide to deactivate a routing plan if you want to save it for future use, but you don't want to use it right now.

To activate or deactivate a routing plan:

1. Click **Company Settings** and select **Routing Profiles** from the drop-down menu. The list of routing profiles and routing plans displays.
2. Locate the row for the routing plan that you want to activate or deactivate. Click **Modify** in that row.
3. Click **Routing plan** to expand the section.
4. Check or clear the checkbox next to **Active**.
5. Click **Update**.

Assigning a Routing Profile to a Bucket

You must assign a routing profile to the bucket so that the routing plans in that profile can run against the bucket.

To assign a routing profile to a bucket:

1. Select the bucket that you want to assign the routing profile to from the resource tree.
2. Open the **Dispatch** tab and select **Routing** from the drop-down.
3. Click **Change routing profile**. The **Select Routing Profile** screen displays.
4. Select the routing profile that you want to assign to this bucket from the drop-down.
5. Click **Update**.

Chapter 5

Configuring a Routing Plan

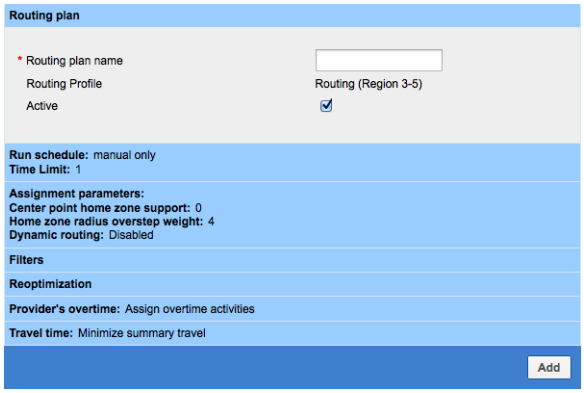
Topics:

After you add or clone a routing plan, you must configure it. This includes defining the run schedule and creating filters that will prioritize activities based on a variety of conditions and situational factors.

Configuring the Routing Plan Section of a Routing Plan

Provide general details about the plan including the profile on which it is based, the routing method and the number of minutes and seconds it will run.

1. Navigate to the routing plan that you want to configure.
2. Click **Routing Plan** to expand that section.



3. Identify the routing name and profile and provide other basic details.
   - **Routing plan name:** Enter a name that makes this plan easy to identify.
   - **Routing profile:** Identify the profile to which this routing plan belongs.
   - **Active:** Check the box to make this plan available for routing. Clear the check box to deactivate the plan. You can deactivate a routing plan to avoid running it accidentally. For example, if you have routing plans that you run during certain seasons or other busy times of the year, you can make them inactive until you are ready to use them.
   - **Time Limit:** The maximum number of minutes and seconds that the routing plan will run before producing a result. When ETAdirect launches a routing plan, it runs the plan over and over again until it either finds the best match or the time limit expires, whichever comes first.
   - Three minutes is usually sufficient. The maximum time limit possible is 20 minutes.
4. Click **Add.**

> **Tip:** If you find that routing is regularly running until the time limit, consider increasing the time limit and monitor the results to see if they are more efficient.

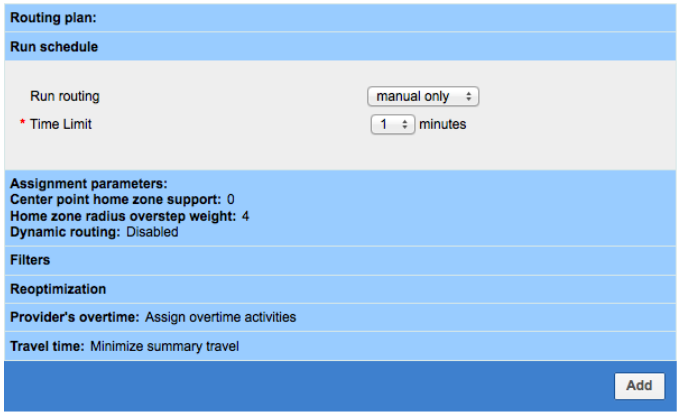
Configuring the Run Schedule for the Routing Plan

The run schedule identifies when you want the plan to run and how often you want to run it. You can also specify the day's activities to run the plan against.

> **Tip:** The run schedule that you choose has an effect on the information you can share with your customers through notifications. For example, if you want to launch a notification the afternoon before an activity, but you don't run routing until the evening, your notification will not include the time slot.

To configure the run schedule::

1. Navigate to the routing plan that you want to configure.
2. Expand **Run Schedule** section.



3. Select one of three options for running the plan:
   - **Manual only:** Routing can only be started manually. Routing is not performed automatically.
   - **Once a day:** Routing runs once each day at a specified time. You can specify the days of the week that it will run.
     If you choose to run routing once a day, verify that the value you enter in the **for __activities** field corresponds to the time of day field. For example: if you choose to run routing for today's activities, the time of day is typically in the morning. If you choose to run routing for tomorrow's activities, the time of day is typically in the evening.
   - **Recurrent:** Routing runs on a recurring basis throughout the day. You can specify the times, dates and days of the week that you want routing to run.
     When you choose to run routing recurrently, choose **today's** in the **for __ activities** field. This field specifies the day's activities to run the plan against.
4. Enter the Time Limit in both minutes and seconds.
5. Click **Add**.

Adding an Activity Filter to a Routing Plan

You can use filters to prioritize certain types of activities or resources over others during the routing process. Filters are an alternative to using another routing plan for prioritization.

Routing uses two different and very powerful filter to pritoritize activities based on value or cost.

- **Activity** – These filters prioritize certain types of activities for assignment based on order of consideration, late arrival penalties, lateness tolerance levels, and cost of non-assignment.
- **Resource** – These filters enable assignment decisions based on the cost differences between resources.

Note: When working with routing filters, it is important to understand how they influence processing and affect the assignment decisions that SmartRouting makes. For example: Pay attention to the order of multiple filters in a routing plan. The first filter that an activity encounters will determine how it is processed. Even though the activity might meet the criteria of more than one filter, the first one will override the others.

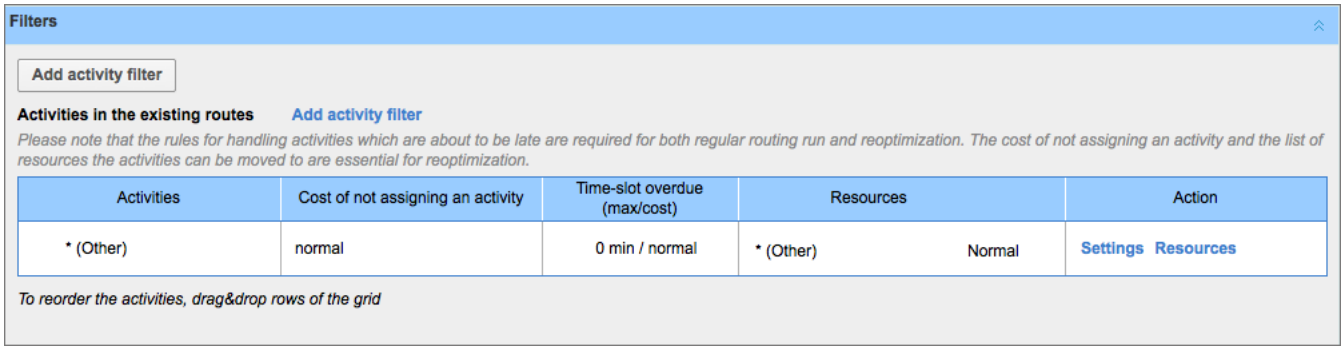
- The * (Other) filter, typically used to define the rules for "the rest" of possible activities (activities that do not match any of the filters), always displays last and cannot be re-ordered.
- Clicking Delete removes a filter from the specific routing plan only. It does not remove the filter from any other routing plans or from ETAdirect.

You must create the filter, set the conditions, and make the filter available for routing first. See *Creating a Filter* for more information.

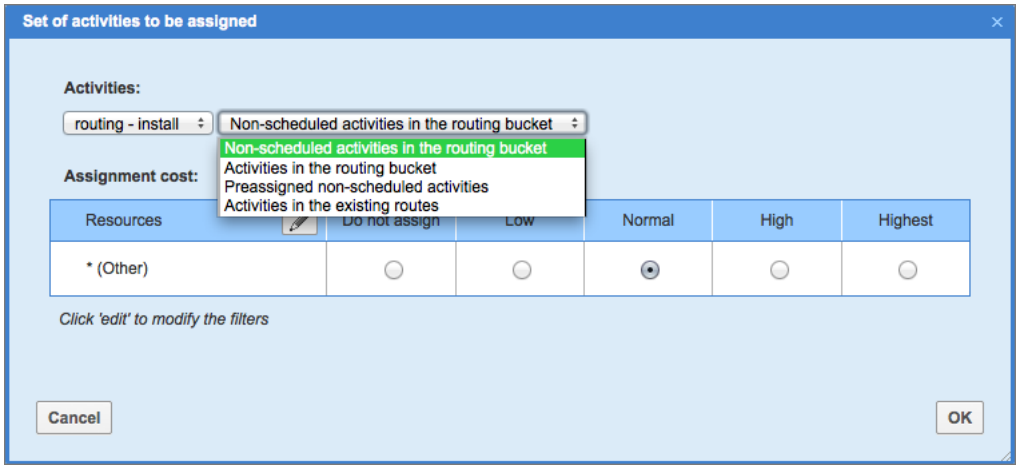
To add an activity filter to a routing plan:

1. Navigate to the Routing Profiles screen and find the routing plan that you want to add the filter to.

2. Click **Modify**.
3. Expand the **Filters** section of the **Edit Routing Plan** screen.



4. Click **Add activity filter.**The **Set of activities to be assigned** popup box displays.

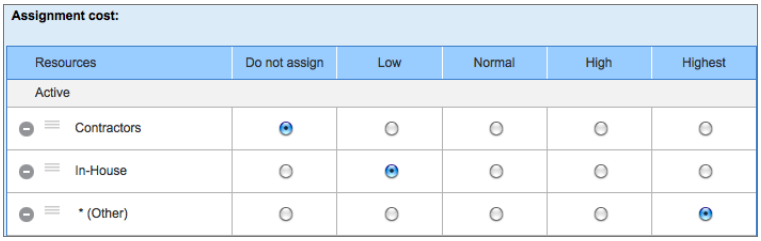


5. Select the filter that you want to add to the routing plan from the drop-down under **Activities**. In some cases, a second drop-down also displays.
6. Select from this second drop-down (if any) the type of activities to which the filter should be applied. The following options are available:
   - **Non-scheduled activities in the routing bucket**.These activities are not currently on any route. They are not assigned to time slots or resources. Routing will attempt to route them during the next run.
   - **Activities in the routing bucket**. These activities are not currently on any route. They are assigned to time slots, but are not assigned to resources. Routing will attempt to route them during the next run.
   - **Preassigned non-scheduled activities**. These activities are already assigned to resources, but they are not assigned to time slots. You can use reoptimization to automatically move these activities during the routing process.
   - **Activities in existing routes**. These activities are already assigned to resources and time slots. You can use reoptimization to automatically move these activities during the routing process.
7. **Optional:** Under Assignment Cost, assign a cost to this filter. In general, the higher the cost, the less desirable the assignment. If you select **Do not assign**, activities of that type can never be assigned to a resource that meets this filter condition.
8. Repeat these steps to add additional filters to the routing plan. Arrange the filters in the order that you want them to be applied using drag and drop. The filters are applied in chronological order starting at the top of the list. The * (Other) filter is always applied last.
9. Click **OK**.

Example: Assignment Cost for Multiple Activity Filters

In this example, the routing strategy is:

- Do not assign work to contractors.
- Assign activities to In-house resources before all others.



The contractor filter has the assignment cost “Do not assign” so that activities are never assigned to contractors. The In-House filter has a lower assignment cost than the * (Other) filter so that in-house personnel receive activities before all other resources.

Configuring an Activity Filter for Routing

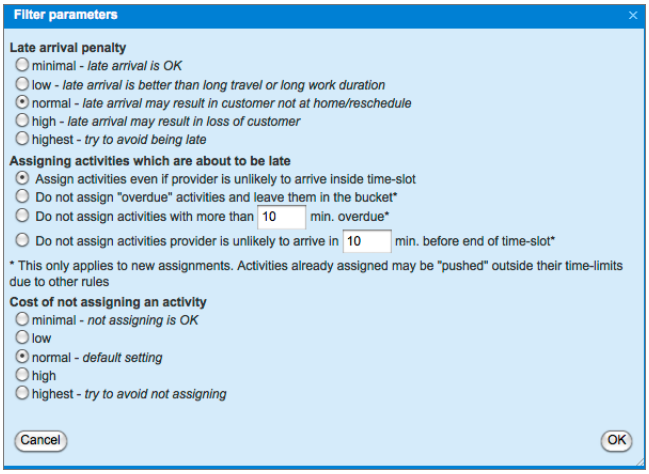
Once you have added a filter to a plan, you can adjust some additional settings that affect how the SmartRouting module processes the filtered activities.

Important: Carefully evaluate these settings before changing them. They add constraints to the routing process that can significantly restrict the number of activities that are assigned to routes.

To configure an activity filter:

1. Navigate to the Routing Profiles screen and click Filters to expand that section.
2. Find the filter that you want to configure and click **Settings**.

The **Filter Parameters** screen displays.



Select options for this filter based on your business goals.

- **Late arrival penalty:** The weighting options regarding lateness penalties range from “minimal” to “highest." Examples are provided to assist in selecting the best option. SmartRouting uses this information to weigh activity assignment decisions when there’s a chance that a resource will arrive late to an activity.
- **Assigning activities which are about to be late:** You can set a “lateness tolerance” that SmartRouting will accommodate when assigning new activities to resources.
- **Cost of not assigning an activity:** If there is a chance that an activity that meets the conditions of this filter might not be assigned, then this option provides SmartRouting with a setting that it will weigh against other considerations to determine who will be assigned which jobs – and which might remain in the bucket. In essence, this helps SmartRouting prioritize certain types of activities.

  Tip: The **normal** setting sometimes leaves too many activities unassigned. When this happens, test your results with the **high** setting or the **highest** setting.

Reoptimizing Routes through the Routing Plan

You can use reoptimization filters to make automatic adjustments to existing routes.

Reoptimization filters compare routing results with the activities in the bucket and reassign activities based on the priorities set in the new filters. Reoptimization gives you the chance to re-evaluate routes with another set of priorities and new activities.

The following examples illustrate situations in which reoptimization might be useful:

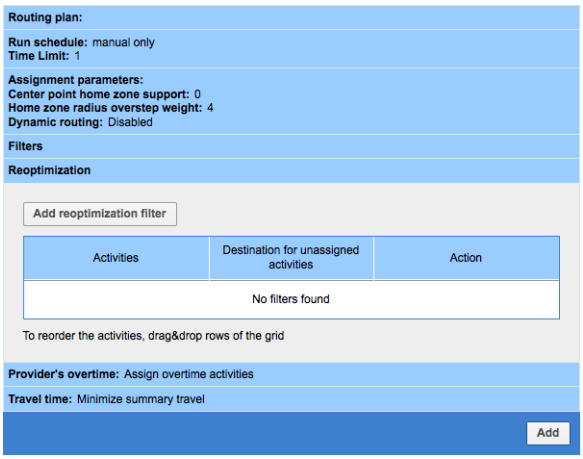
- When the bucket contains a small number of technicians, each with very different skills.
- When you receive emergency activities or other activities that must be prioritized above already routed activities.
- When you receive activities that require equipment that is only available in certain technicians’ inventory.

  Important: You cannot reoptimize mass activities or repeating activities.

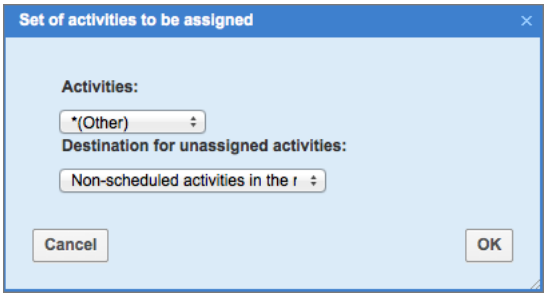
- You must create the filter, set the conditions, and make the filter available for routing first. See *Creating a Filter* for more information.
- You must assign the filter to the set of activities that you want to run it against. See *Configuring an Activity Filter for Routing* for details.
- Before activities can be reoptimized, you must enable the Activity Types to be moved and created. Under **Company Settings** on the **Activity Types** screen, verify that the following settings are selected:
  - Allow creation in buckets
  - Allow move between resources
  - Allow non-scheduled

To add a reoptimization filter to a routing plan:

1. Navigate to the Routing Profiles screen locate the routing plan to which you are adding a filter. Click **Modify**.



2. Click **Reoptimization** on the Edit Routing Plan screen, to expand that section Click **Add** reoptimization filter. The set of activities to be assigned screen displays.
3. Under Activities, select the filter that you want to run against the activities in the bucket. Under **Destination for unassigned activities**, select the status that you want to assign to activities that are not assigned to routes and are, instead, returned to the bucket.

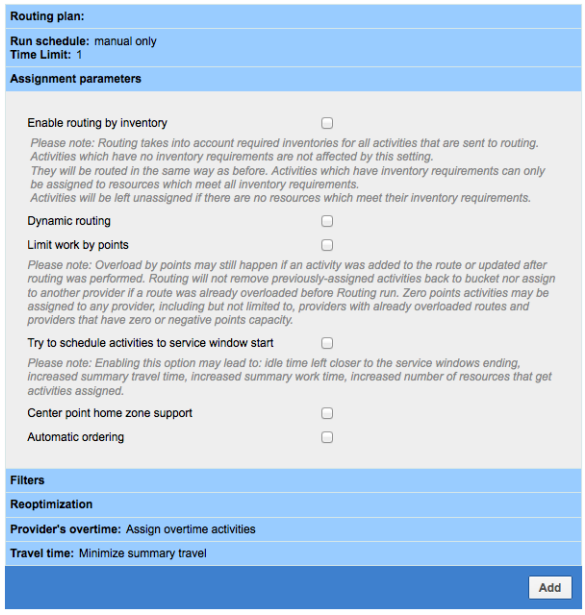


4. Click **OK**. The next time the routing plan runs, SmartRouting applies the reoptimization filter to the activities in the bucket.

Using Assignment Parameters to Fine-Tune the Routing Plan

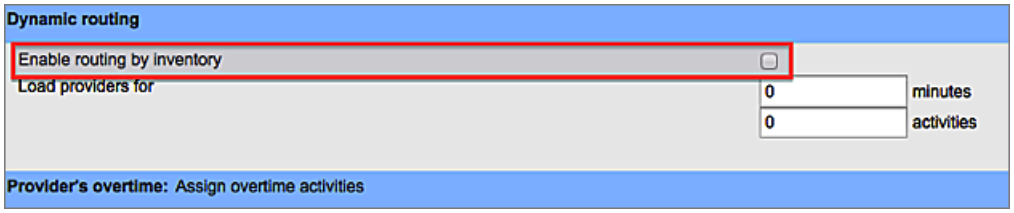
Set Assignment Parameters to further customize the routing process.

1. Navigate to the routing plan that you want to configure.
2. Expand the **Assignment Parameters** section.



Check or clear the options as necessary.

- **Enable Routing by Inventory:** Ensures that routing takes required inventory into account by assigning activities with required inventory only to resources that can meet these requirements. This could result in some activities left unassigned.
- **Dynamic Routing:** enables you to set limits on how long the module will run based on the number of minutes and/or the number of activities routed. The image (below) shows a different location for setting minutes/activities (described as the Dynamic Routing tab of the Add/Edit routing plan dialog).

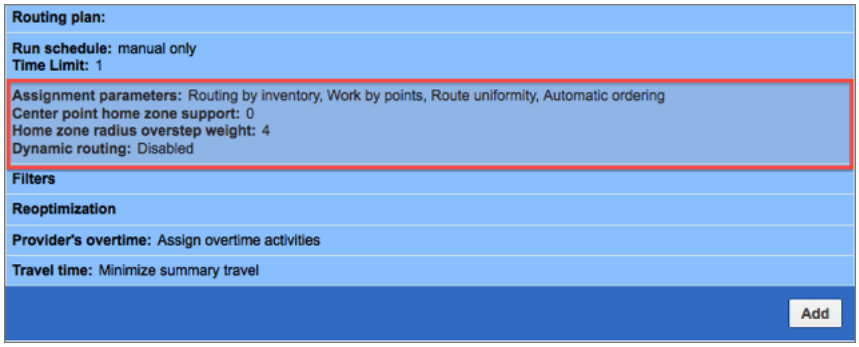


- **Try to schedule activities to service window start:** This option (formerly named Route Uniformity) instructs SmartRouting to schedule activities as close to the start of service windows as possible. As a result, routing options will typically include a broader selection of resources and the possibility of burdening some resources with many activities and under-utilizing others is minimized. Note, however, that there are consequences as described on the selection screen.
  - Idle time may collect closer to the end of the service window.
  - Summary travel time may increase.
  - Summary work time may increase.
  - Activities may be assigned to more resources .
- **Center point home zone support:** This option defines the home zone radius, that is, the number of miles in any direction from the starting point and the penalty to be applied if a resource must leave the home zone to complete an activity. The default penalty (**Overstep Weight**) is 4.
- **Automatic ordering:**This option places activities without service windows on the route in the most efficient order. If cleared, SmartRouting places these activities on the route, but does not assign a time slot. In this case, resources decide when to do the work.

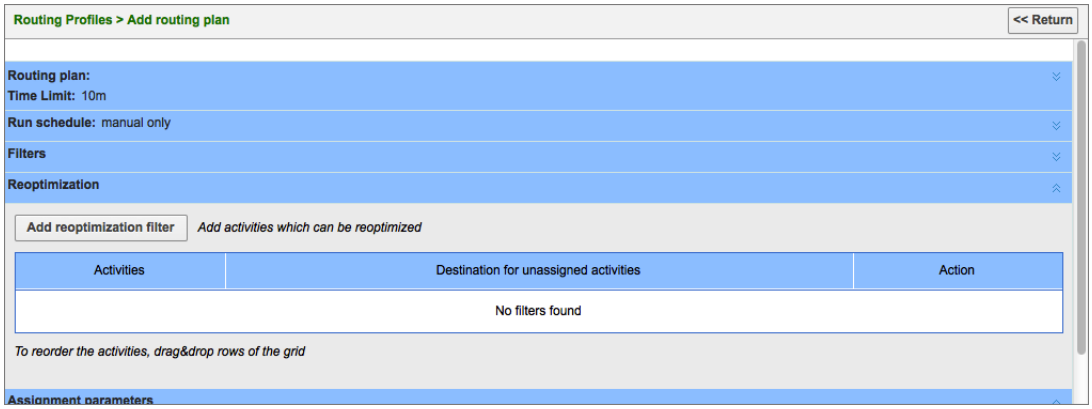
  Automatic Ordering can help you complete more activities over the course of the day, but it also reduces the resources' ability to use their own judgement in completing activities.

- **Limit work by points:** This option is only necessary if you use points to estimate activities. It limits the number of activities assigned to a resource based on the maximum points allowed within a resource's shift. You must also enable Points Support in Business Rules, enable a Points property, and send the point value for the activity to ETAdirect through the API.

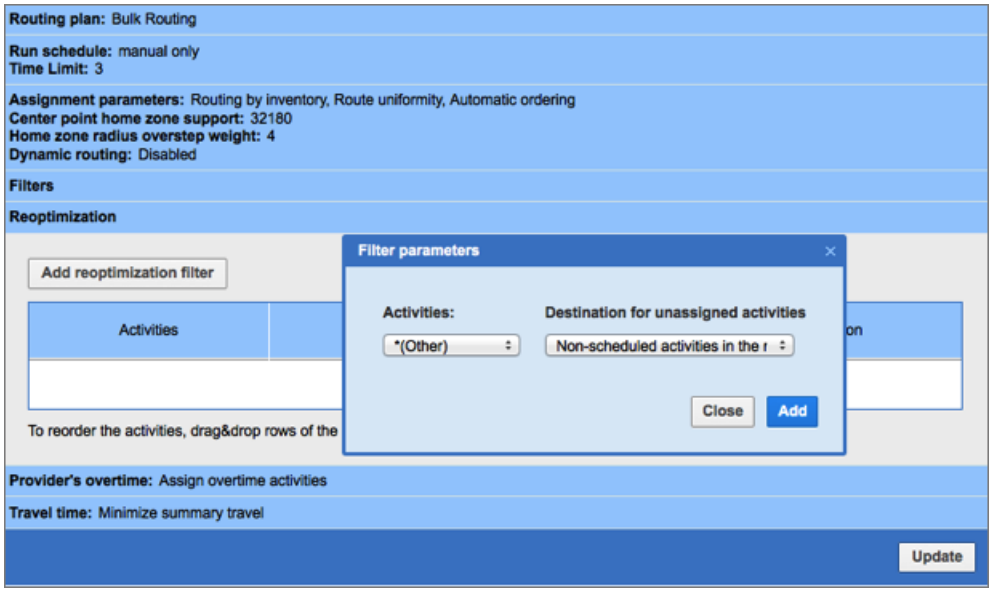
When you close **Assignment Parameters**, you'll see your selections summarized on screen.



1. **Open** the Reoptimization section of the Routing Plan.



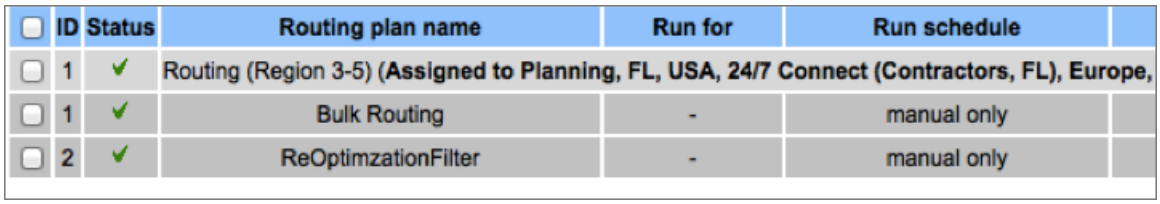
2. Click **Add reoptimization filter** to go back to the bucket and "re-balance" the route by favoring certain activities over others.



When the **Set of activities to be assigned** displays, use the drop-down to select the preferred Activities that should be given priority. Under Destination for unassigned activities let the system know what you want to do with the other activities, the ones that get bumped.

Then rerun the routing plan to see how the filter has changed your results.

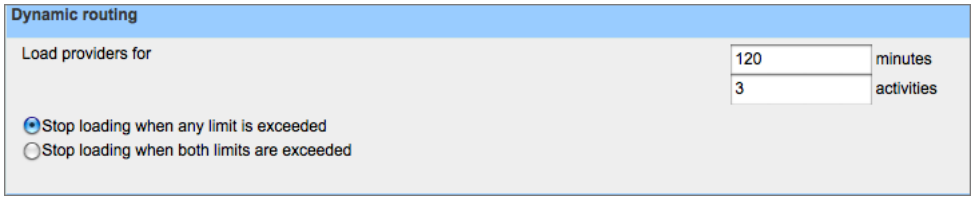
Note: Reoptimization does not change the original routing plan. It simply adds an additional filter – a mini-routing plan – that will be available the next time you want to reoptimize.



ID	Status	Routing plan name	Run for	Run schedule
1	✓	Routing (Region 3-5) (**Assigned to Planning, FL, USA, 24/7 Connect (Contractors, FL), Europe,**		
1	✓	Bulk Routing	-	manual only
2	✓	ReOptimzationFilter	-	manual only

Using Dynamic Routing on a Routing Plan

Dynamic routing enables you to control the number of activities or the amount of time on a resource's schedule that should be routed from this plan. Dynamic routing plans are typically run frequently throughout the day.



X number of minutes: This setting defines the number of minutes you want to fill in the resources' schedules. ETAdirect starts filling the schedule from the time the routing plan starts. If an activity is expected to start outside of this period, then it is not assigned to a resource. For example, if the routing plan runs at 8:00 am, the routing plan

runs immediately and adds activities to the resources' schedules that will start between 8:00 am and 10:00 am. If an activity is expected to start at 10:15, it is not added to a schedule.

Tip: When you specify the number of minutes to fill on the resources' calendars, be sure to run the routing plan frequently enough to ensure that resources do not run out of activities before you add more to the routes. For example, if you fill 120 minutes of the schedules with activities, you might want to run the routing plan every 30 to 60 minutes.

Note: When you use dynamic routing to limiting the number of activities being scheduled understand that it also affects what dispatch or resources can see i.e., they will see number of activities on the Gantt table. If you prefer to have an entire route scheduled – so dispatch can view the entire day - but limit the number of activities that a resource can see, then you can create a Display Profile for resources that shows them a limited number of activities at a time.

X number of activities: This restricts the number of 'pending' activities on a resource's route.

If both of these options are enabled, then an additional group of radio buttons that define how the restrictions should be combined will display:

- Stop loading when any limit is exceeded
- Stop loading when both limits are exceeded

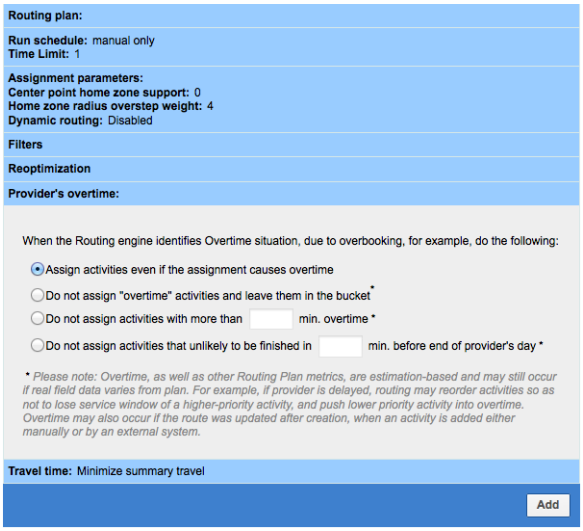
For example, if you load resources for 120 minutes (no activity load specified), then:

- If routing starts 120 minutes earlier than the resource's working day starts, then nothing will be added.
- If the resource has 120 minutes of work before routing starts, then nothing will be added.

Controlling Overtime (Resource Overtime) through a Routing Plan

Overtime is calculated differently by each organization. Therefore, the SmartRouting module does not calculate overtime as an absolute dollar value, but instead calculates it as time beyond a resource's assigned work schedule that might be required to fulfill an activity.

Using the **Resource overtime** options within the routing plan enables you to determine how SmartRouting should handle activities that, if assigned, might extend past the end of the resource's shift.



Choose from the following options:

- **Assign activities even if the assignment causes overtime:** This option provides the best chance of getting many activities assigned, though some may extend past the end of a shift.

For best results, do not use this setting if you have significantly more work than resources can complete in a regular workday. If you do the routing results will include a large amount of overtime. This setting is most useful for certain types of work where you are willing to incur the additional cost, for example VIP work.

- **Do not assign overtime activities and leave them in the bucket:** This means that any jobs that have service windows and/or predicted durations that could push a resource into overtime are left in the bucket.
- **Do not assign activities with more than _____ min. overtime:** This enables you to control the amount of overtime allowed, essentially extending a shift in order to accommodate more work assignments.
- **Do not assign activities that are unlikely to be finished ____ min. before end of resource's day:** This also limits the possibility of overtime, but with the consideration of whether a resource needs additional time (return to depot, drive home, etc.) before the end of their shift.

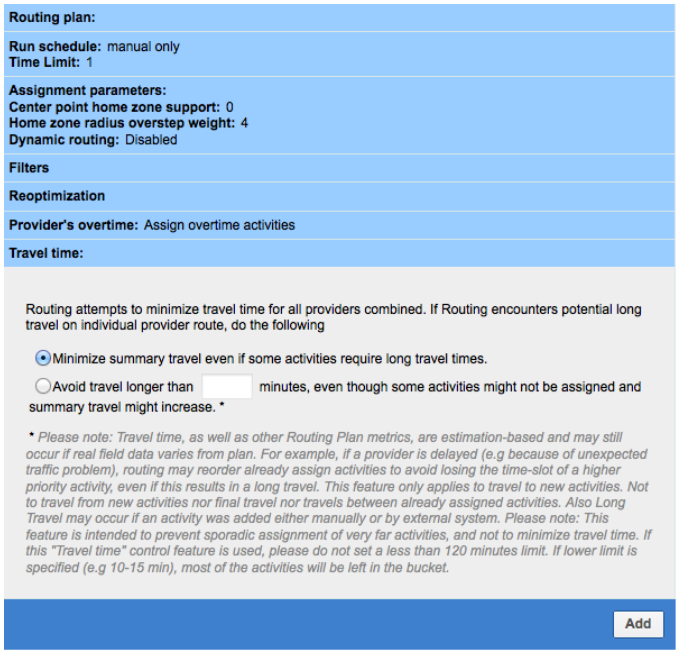
Note: SmartRouting finds fewer good matches when you use restrictive overtime settings. As a result, more activities could be left in the bucket to be routed manually.

Controlling Travel Time through the Routing Plan

This option enables you to limit the amount of travel time a resource should drive to reach an activity.

ETAdirect provides two options:

- **Minimize summary travel even if some activities require long travel times.** This option is the default option and results in the most optimized routes. A few activities might require lengthy travel, but the total travel time for the entire bucket is optimal.
- **Avoid travel longer than __ minutes, even though some activities might not be assigned and summary travel might increase.** This option enables you to limit the amount of time a resource can spend travelling for any one activity. This results in fewer assigned activities and less optimal routes, but eliminates any travel that is beyond the specified amount of time.



Chapter 6

Testing a Routing Strategy

Topics:

After you set up a new routing strategy or make changes to an existing routing strategy you can review the effectiveness using three different reports.

ETAdirect provides the following reports that you can use to assess your routing results and, if necessary, to decide what changes to make to your routing profiles:

- **Routing Execution Log:** This report displays the results of the routing run. See *Identifying Errors in a Routing Run* for more information.
- **Routing Comparison Report:** This report displays the same statistical data about two separate routing runs so that you can compare the results. See *Comparing two Routing Runs* for more information.
- **Routing Module Report:** This report displays statistics about the routing results so that you can assess the effectiveness of your routing strategy. See *Assessing Summary Data about Routing Strategies* for more information.

Note: Do not make changes to your routing strategy until you have accumulated at least five days of data. The more data the system has to interpret, the more meaningful the results are.

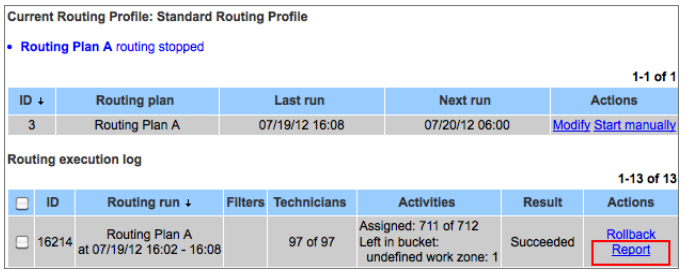
Note: Change one routing setting at a time. If you change more than one setting at a time, you cannot be sure which setting caused the effect you see in the results.

Identifying Errors in a Routing Run

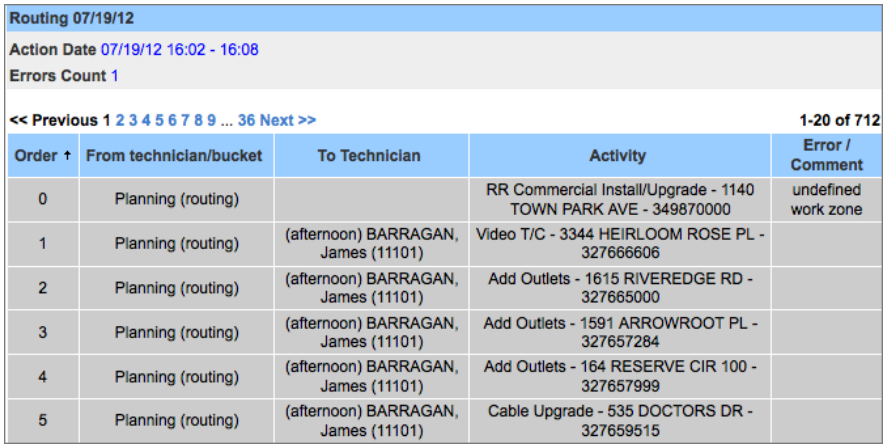
You can view routing results in the Routing Execution log, which is located in the lower part of the routing window. The report displays any errors that ETAdirect might have encountered during the routing process.

To view the results of a routing run:

1. In the Resource Tree, select the bucket that you are routing.
2. Navigate to the **Routing** screen.
3. Under **Routing execution log**, find the row for the run that you want to view and click **Report**.



The routing results screen is displayed, listing where each activity was routed from and which resource it was routed to. Errors are displayed at the top of this list. See *Routing Message Codes* for an explanation of each error code.



Routing Message Codes

The following message codes might be displayed in the Routing Execution Log:

Table 17: Error Codes

Error Code	Error	Explanation
6000	Dynamic cut	This is a common error that you can expect to see when using dynamic routing. It means the activity was filtered out because it falls outside the dynamic routing time or activity limitations. If you want to route the activity, change either the dynamic routing time or activity limitations, or turn dynamic routing off.
6001	Both work length and key are undefined	This is a data validation error. The SmartRouting module needs to know the estimated activity length. It can be specified either through stats or directly in

Error Code	Error	Explanation
		the case of activities. If this error message displays it means this value is not specified and therefore the activity cannot be routed. You should never see this error message under normal circumstances. To correct this error specify the estimated activity length.
6002	Negative cost is not allowed	This is a data validation error. Activity cost is used as a multiplier for all activity related penalties and to implement activity priorities. You should never see this error message under normal circumstances.
6003	No appropriate resources	This means that the activity has requirements that cannot be met by any available resources. This message does not necessarily indicate an error. It informs you that ETAdirect could not find a matching resource for the activity. Check the following settings to confirm that they are accurate for your mobile workforce: • Work Zones • Work Skills • Points (if you use them) • Resources Calendars
6004	Zero work length is not allowed	Unused. Left in place for compatibility by error codes. You should never obtain this error.
6005	Service window start is greater than service window end	This is a data validation error. The service window end time falls before the service window start time on the activity.
6006	Failed	Reserved code: SmartRouting does not currently use this code.
6007	Unacceptable overdue	The activity was not scheduled because it would be late and would start after the lateness settings specified in the filter parameters. Check the settings in the filter parameters. Go to the Filters section of the routing plan and click Settings to view filter parameters.
6008	Resource overloaded or has not enough resources	The activity was left unscheduled because of the Limit work by points parameter. The assignment of this job would have caused a tech to incur more points than his max threshold. You can adjust the resource's point allotment in Daily View.
6009	Resource workday stop	The activity was left unscheduled because it would have caused overtime for the resource. If you want to allow overtime for resources, change the Resource Overtime settings in the routing plan.
6010	Unacceptable travel time	The activity was left unscheduled because the travel time would have exceeded the maximum travel time allowed. If you want to allow longer travel, change the Travel time settings in the routing plan.
6011	Cascade over activity link	Activity was unscheduled due to the *master* activity in the linked activities (activity link) hierarchy.
6012	Link Cycle	Activity was unscheduled for break dependency cycle between linked activities (activity link).
6013	Unable to fit activity link	Activity was unscheduled because SmartRouting was unable to find route that didn't violate linked activity requirements.
6014	Effective service window start is greater than effective service window end	This is a data validation error. After applying all time related constraints, the activity should be ended before it can be started. Usually, this occurs because of a error in the data.

Error Code	Error	Explanation
6015	SLA window start is greater than SLA window end	This is a data validation error. Activity claims that the SLA window will end before/earlier than the SLA window will start. Usually, this occurs because of a error in the data.
6016	May cause SLA violation	Activity was unscheduled because it would cause a SLA violation by another following activity. It is normal to obtain this unscheduling reason when using SLA windows.
6017	Other	Reserved for cases where there are no other specific or precise unscheduling reasons. There is a very low chance to see this error code.
6018	Too expensive	Activity is found to be too expensive to be done by itself or by its consequences.
6019	Unacceptable SLA overdue	Corresponds to the *Unacceptable SLA Overdue* protection.

Comparing two Routing Runs

You can compare two runs on the same day to see which run was more optimal. This information can help you determine the routing strategy or routing settings that are best for your organization.

This report is most helpful when you use it to compare runs that use the same set of resources and activities. This minimizes the likelihood that influences other than the routing plan are affecting the results.

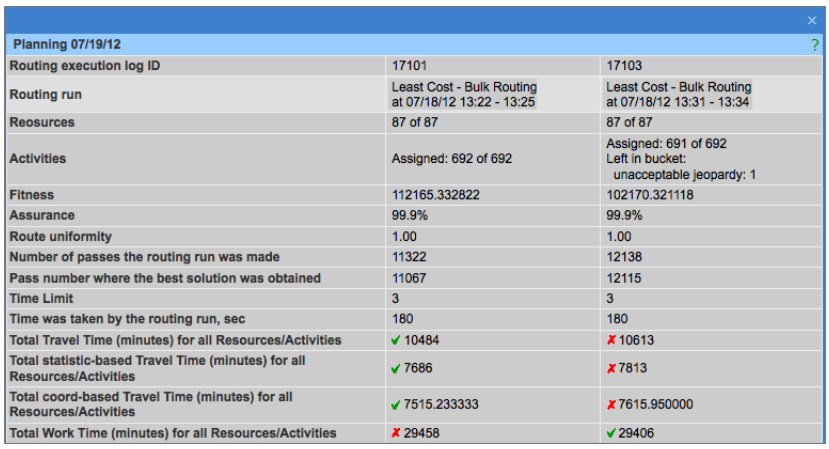
Note: Run this report in the Training instance where the set of activities and resources changes only once every 24 hours. Compare runs that have limited differences so that you can easily identify the setting having the desired effect.

- Run this report in the Training instance where the set of activities and resources changes only once every 24 hours.
- Compare runs that have limited differences so that you can easily identify the setting having the desired effect.

To compare two routing runs:

1. In the Resource Tree, select the bucket for which you want to see routing results.
2. Navigate to the **Routing** screen.
3. Select the day that the routing runs occurred.

   Note: A list of the routing runs displays under the Routing Execution Log. Find the rows for the routing runs that you want to compare and click the checkboxes.
4. At the top of the list, click **Compare**. The Routing Comparison Report displays.
5. Review the results. Results with a green checkmark are the most optimal. Results with a red X are the least optimal.



Planning 07/19/12		
Routing execution log ID	17101	17103
Routing run	Least Cost - Bulk Routing at 07/18/12 13:22 - 13:25	Least Cost - Bulk Routing at 07/18/12 13:31 - 13:34
Reosurces	87 of 87	87 of 87
Activities	Assigned: 692 of 692	Assigned: 691 of 692 Left in bucket: unacceptable jeopardy: 1
Fitness	112165.332822	102170.321118
Assurance	99.9%	99.9%
Route uniformity	1.00	1.00
Number of passes the routing run was made	11322	12138
Pass number where the best solution was obtained	11067	12115
Time Limit	3	3
Time was taken by the routing run, sec	180	180
Total Travel Time (minutes) for all Resources/Activities	✓ 10484	✗ 10613
Total statistic-based Travel Time (minutes) for all Resources/Activities	✓ 7686	✗ 7813
Total coord-based Travel Time (minutes) for all Resources/Activities	✓ 7515.233333	✗ 7615.950000
Total Work Time (minutes) for all Resources/Activities	✗ 29458	✓ 29406

Assessing Summary Data about Routing Strategies

The Routing Report provides statistics about the results of your routing runs. It is difficult to assess the success of your routing strategy when looking at individual runs or routes. This report consolidates the information from several runs and demonstrates the combined results so that you can measure productivity and drive time.

You can report on data over almost any time frame and include both historical data and future data.

Among other pieces of data, this report presents travel time, work time, and number of activities. This report displays route statistics for each resource in the bucket and a summary of the statistics for the entire bucket.

The report helps you:

- Determine the quality of routes.
- Understand past routing performance and the acceptability of future routes in an objective manner.
- Measure performance of the routing engine over time.

The Routing Report presents a summary of the following information about each resource's route:

- Minutes of travel
- Work
- Activity fit %
- Overtime
- Idle time

The report presents either the data for pending activities or the data for completed activities, depending on the time of day that you run it.

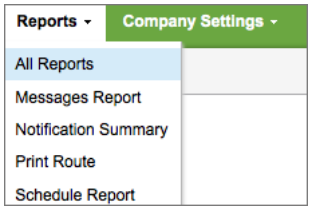
End of the day, or days later: Completed activities

Beginning of the day: Pending activities

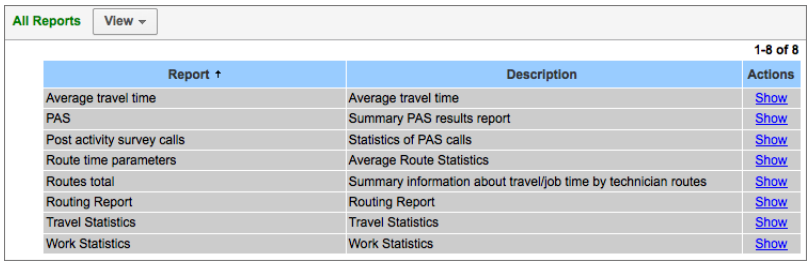
Mid-day: Part pending activities, part completed activities

To view the Routing Report:

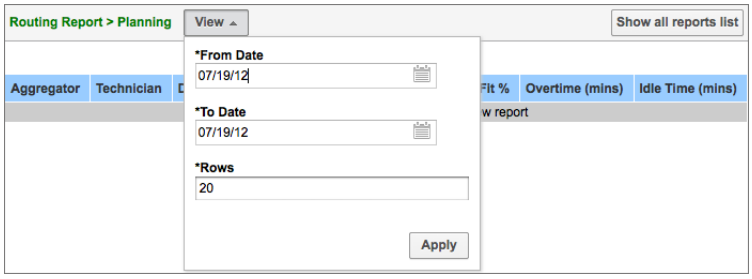
1. Select a routing bucket from the Resource Tree.
2. Click **Reports** and select **All Reports** in the drop-down list.



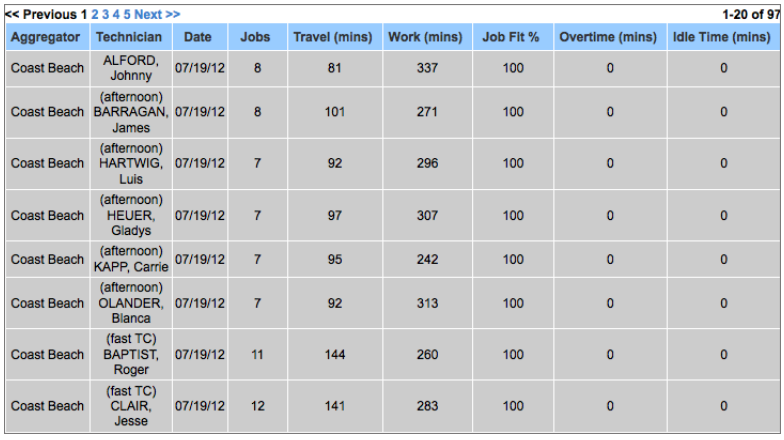
3. Locate **Routing Report** in the list and click **Show**.

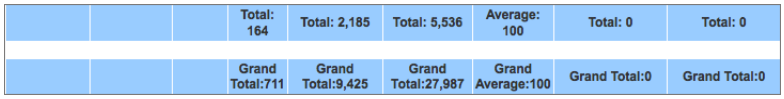


4. The report matrix displays. Click the **View** button and select the date range the report.



5. **Optional:** To change the number of visible report rows, change the value in the **Rows** field.
6. Click **Apply**.The **Routing Report** displays in the Work Area. At the bottom of the report, totals for both the page displayed and the report in aggregate displays.





This information is broken down by resource and includes the following sections:

Aggregator: The name of the group to which the resource is assigned.

Technician: Resource's name as it appears on the Resource Tree.

Date: Date of route in Month/Day/Year format.

Jobs: Number of jobs on the resource's route for that day.

Travel: Resource's travel time for the day.

Note: Travel time represents total travel time to and from known locations. If an activity (such as lunch) is not a known location, ETAdirect will not represent that time in travel time. Similarly, time spent on activities (meetings or lunch), is not represented in the Routing Report

Work: Resource's time spent working on activities for the day.

Job Fit %: Percentage of appropriate fit of resource based on his / her skills compared to the skills required by the activities.

Overtime: The number of minutes estimated to exceed the resource's shift for that day.

Note: ETAdirect defines overtime as any work performed outside the resource's shift for that day. ETAdirect does not take into account the hours worked earlier in the week or the length of shift scheduled for that day. ETAdirect just looks for work that is performed outside the shift represented in that day's working calendar.

Idle Time: The number of minutes on the route not allocated to activities or travel time.

Rolling Back a Routing Run

ETAdirect provides the opportunity to return your activities and resources to the state they were in before a routing run. This feature returns routed activities to the bucket and removes routes from resources' calendars. You might want to rollback a routing run during testing or when a configuration mistake causes routing results that are not optimal.

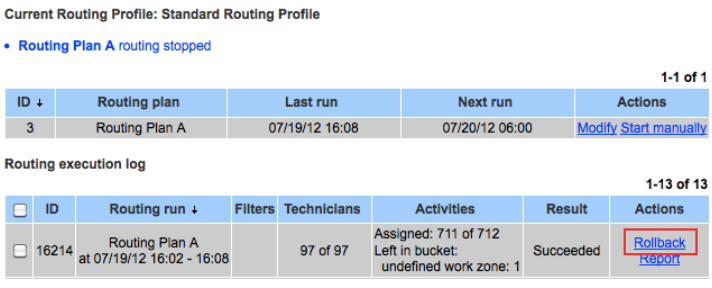
Important: The following conditions must be met for a rollback to be successful:

- The activities must still be in Pending status.
- The activities must still be assigned to the resources that ETAdirect assigned them to.

  Any activities that do not meet these conditions will remain in place on the resources' routes after the rollback. You can move them back to the bucket manually.

To rollback a routing run:

1. In the Resource Tree, select the bucket used for the routing run.
2. Navigate to the **Routing** screen. Under **Routing Execution Log**, find the row for the run that you want to roll back.
3. Click **Rollback**.



4. Click **OK**.

Receiving Routing Advice from TOA

TOA provides services to assist you in assessing your routing needs, developing a routing strategy, and implementing that strategy in ETAdirect. TOA representatives can also assess your current routing strategy and assist you in improving the results that you receive from ETAdirect. For details about these services, contact TOA support.

Chapter 7

Running and Managing Routing

Topics:

If your routing strategy includes running the routing module automatically, the routing process requires little in the way of management. In special circumstances, you might need to fine-tune the routing results, or run routing manually.

The section includes instructions for performing manual routing tasks.

Starting a Routing Plan Automatically

You can configure routing to run automatically.

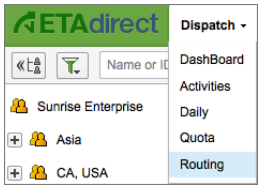
Starting a Routing Plan Manually

Routing is typically run automatically at specific times as determined by your business goals. On occasion, however, you may need to run routing manually.

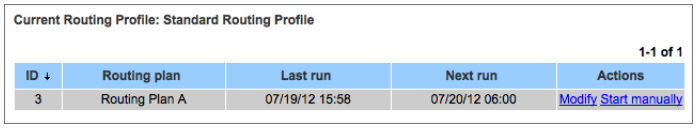
For example, you might want to run routing manually during the testing phase or if the bucket unexpectedly fills up mid-shift. You can manually run any routing plan, even a plan that is typically runs automatically or that is scheduled to recur.

To start routing manually:

1. In the Resource Tree, click the bucket for which you want to run routing. In the menu, choose **Routing**.



2. Locate the row for the routing plan that you want to start.
3. Click **Start manually**.



4. Click **OK**.
5. Review the routing results in the routing execution log to verify that there are no errors. See *Identifying Errors in a Routing Run* for detailed instructions.

Manually Routing an Individual Activity

If an activity is not routed during a routing run, or if you are not satisfied with the way it was routed, you can manually move it to a resource's route. For detailed instructions for moving an activity, see "Moving an Activity" in the **SmartManage User Guide**.

Important: If a scheduled activity is not completed before the end of the day, you must recreate it for the following day. The activity cannot be moved or routed after the end of the day.

Chapter 8

Trouble Shooting Routing

Topics:

If the routing results are not what you expect, try the solutions in this section.

Routing

Table 18: Resources

Symptom	Possible Explanations and Solutions
More than one resource is in the same neighborhood over the course of the day. How can this be the most efficient route? Resources are crossing paths over the course of the day. How can this be an efficient route? A resource is travelling a long distance to reach an activity even though another resource appears to be closer to the activity. How can this be an efficient route? A resource's activities seem to be all over the map. How can this be an efficient route?	• ETAdirect considers a number of factors when routing activities, including work skills and preferred resources. The resource that was already in the neighborhood might not be qualified to take the other activity in the neighborhood, or might be required on an activity at the same time in another location. • ETAdirect optimizes routing for the entire workforce, not just one or two individual resources. As a result, you might occasionally notice an individual route that seems to be less than optimal, but overall, the results of the entire routing run are optimized. • To verify the optimization of the routing run for the entire bucket, view the statistics in the Routing Report. See *Assessing Summary Data about Routing Strategies* for detailed instructions.

Table 19: Routing Results

Symptom	Possible Explanations and Solutions
When I ran routing a second time, the results were not the same.	• The SmartRouting module considers many factors when routing activities, many of which are continually changing. As the system learns more about your resources, their skill levels and your activities, it makes different, more informed, choices. • There are a high number of possible routing combinations. ETAdirect considers all of your business goals and then provides a routing result that is as close to your goals as possible. Sometimes there are several routing results that are equally efficient. The results of two routing runs are rarely exactly the same, even with all of the same inputs.

Table 20: Routing does not run

Symptom	Possible Explanations and Solutions
Routing does not run at the time of day or frequency that I expected	The Run Schedule is not configured correctly. See *Configuring the Run Schedule for the Routing Plan* for more information.

Table 21: Automatic: not all activities assigned

Symptom	Possible Explanations and Solutions
Automatic routing ran but not all activities were assigned to resources.	• ETAdirect did not find a resource whose qualifications and availability match the activity. • An error occurred during the routing process. • View the Routing execution log to view messages that can help you identify why the activities were not assigned to resources. See *Identifying Errors in a Routing Run* for more information.

Table 22: Activity not routed to the resource

Symptom	Possible Explanations and Solutions

An activity was not routed to the resource that I expected.	• The resource and the activity are not in the same bucket. Check the Resource Tree to verify that the resource is in the same bucket to which the activity was sent.
	• The resource is either not qualified or not available to take the activity. Verify that work zones, work skills, work skill conditions and resource calendars are all accurate. See the following sections for more information:
	  • *Preparing Work Zones for Routing*
	  • *Preparing Work Skills and Work Skill Conditions for Routing*
	  • *Preparing Resource Calendars for Routing*
	• ETAdirect uses a complex algorithm to optimize the routes for the entire workforce, not just individual routes. Also, ETAdirect considers a number of factors when routing activities. After considering all parameters for the entire workforce, that resource was not the best match.

Glossary

Action Link

A connection that opens a screen where you can perform an action in the ETAdirect system. Common examples include Add Activity, View Details, Delete, and Modify. Links are configured in *Action Management*

Action Management

A screen in ETAdirect where action links are Configured. The information in this screen determines which links appear in which locations in the interface.

Activate Queue

A link or button that starts the resource's workday in ETAdirect. For ETAdirect to monitor delivery in real time and respond to updates, a resource must activate his or her queue, or route.

Activity

Any time consuming work performed by a resource (such as: customer-related job, network maintenance, lunch break, warehouse visit, meeting, etc). Every Activity has Type, start and end time. Activity type defines specific parameters of the activity (flow, attributes, color on screen, etc)

- A ***Non-scheduled Activity*** is an Activity not assigned to a specific date.
- A **Not-ordered Activity** is an Activity that its order of execution in the queue is not defined at the moment, so it can be executed at any time during the working day; Not-ordered activities do not have ETA and Delivery window defined.
- An ***Ordered Activity*** is an Activity that its place in the queue is defined, and it has to be performed in the correspondent moment of the working day. Order of activities can be changed; Ordered activities can be set not-ordered and the other way round.

Activity Status

Defines a stage in the activity flow. Not to be confused with an *Activity type*. Possible values:

- *Pending:* Activity is planned to be executed, resource has not arrived on site yet. This is the initial status an activity has on creation. From this status, an activity can be started, canceled or deleted
- *Started:* Resource has arrived to the place of activity. Only one activity can be started in a resource's route at a given time. Started activities can change status either to suspended, completed or not done.
- *Completed:* Resource has successfully finished work. This is a final status and can't be changed (only the Reopen command can be applied for this activity)
- *Not done:* Resource could not finish work successfully. This is a final status and can't be changed (only the Reopen command can be applied for this activity)
- *Suspended:* Activity could not be finished successfully but resource plans to return later and resume work. Activity gets to this status using the Suspend command that creates a clone of this activity in the same queue (as a Not ordered activity with pending status)
- *Canceled:* Customer asked to cancel the activity or it was canceled for a different reason. This is a final status and can't be changed (only the Reopen command can be applied for this activity)

- *Deleted:* Similar to canceled but such activities are not shown in ETAdirect. They look like they have been physically erased.

Activity Type

A label that defines the specific parameters of the activity. Activities can be of one of the following types:

- *Regular:* Typical activity. Originally every work comes as regular activity (? this is not clear/Irad)
- *Prework:* Activity created by the Prework command. This command is applied to a regular activity and creates a clone of it with the type prework to distinguish between the two. Prework activities are created as already started (see activity status).
- *Reopened:* activity created by the Reopen command applied to some completed, not done or canceled activity (see activity status). This command clones the activity creating a new Not ordered activity with type reopen and status pending for the same resource.

The following activity types are used for the different entities that share the same database table:

- *Activity:* this is an activity that does not have a customer associated with it. Usually it is a break, assistance another resource or non-customer related work (network maintenance). See Activity for more details.
- *Team work:* this is specific type of activity where one resource assists another resource (is a member of the team). See Team work for details.

Add Time

A feature in ETAdirect that allows a resource or other user to add additional time to an activity when the activity extends beyond the estimated end time.

Agent

Any standalone application that interacts with the ETAdirect platform via the ETAdirect API or ETAdirect kernel

Aggregator

A high level entity on the resource tree that functions as a parent directory for other resources. An Aggregator cannot be assigned activities.

All Day Activity

An *activity* that can be done any time during the day without violating any obligations of the company. In ETAdirect terminology, All-day activities are activities without a Service window. Pay attention that sometimes people mix All-day activity (without service window) and Not ordered activity (without ETA).

API

An Application Programming Interface (API) is a particular set of rules and specifications that a software program can follow to access and make use of the services and resources provided by another particular software program that implements that API. It serves as an interface between different software programs and facilitates their interaction, similar to the way the user interface facilitates interaction between humans and computers. All ETAdirect APIs are based on standard protocol – SOAP (version 1. 1). The interfaces process SOAP requests received by HTTP protocol. APIs have no limitations on the location, technology or platform used for integration (i.e.: Java, . Net, C/C++ on Windows or Unix).

Appointment

See *Activity*.

Assigning

Attaching an individual activity or a queue of activities to a resource.

Assistant

In a Teamwork activity, the resource that assists another resource. In the Resource Tree, the arrow points away from the Assistant. See ***Teamwork*** and ***Team Leader*** for more information.

Billing System

System where customer details are held, customer billing takes place, and/or activities are entered.

Booked Activities

The number of activities that are either in an ETAdirect bucket or located on a route.

Bucket

Element of the Resource tree representing place where jobs are kept before they are assigned (manually or automatically) to specific resources.

Business Rules

A number of settings in ETAdirect that align the functions of the system with the strategies and practices of your company.

Calendar

A view of the schedule for a resource, group or bucket.

Capacity

The workforce with the necessary work skills to manage the *activities* of a defined period of time

Capacity Bucket

Bucket used for Quota management

Capacity Categories

A set of work skills and time slots that are bundled together to estimate the time and skills required for a particular task. This information is sent through an API to your company's activity system so that agents can tell whether qualified resources are available before they book an activity.

Capacity Management

A process of managing a workforce to ensure that a company has enough people with the specific skills to do a certain amount of work. There is a related process, *Quota management*, that defines the reverse relationship.

Company Boundaries

The area where your company performs customer service. Company boundaries are defined under Business Rules. Use the coordinates of the upper left corner and the lower right corner to define the area.

Company Settings

A screen in ETAdirect that contains many of the configuration settings. Companies may have different access levels to affect company settings. If you are unable to change your configuration settings, contact TOA support.

Compliance

Following the route as predicted by ETAdirect. A resource is in compliance if he or she starts the activity at the estimated arrival time, completes the activity at the estimated completion time, has minimal idle time, and does not detour from the calculated driving directions.

CSR

Customer Service Representative. A person who speaks with customers and sets activities.

Customer-Facing Activity

A task that must be performed at the customer's home or business. Examples include installations, upgrades, and deliveries. See ***Activity*** for more information.

Daily View

A view that shows the calendar of a resource, group, or bucket for a whole week. This view is useful for making small changes to individual calendars in the current week.

Delivery Window

The time that ETAdirect estimates that the resource is expected to arrive at the customer's home or business. The window includes a buffer to account for travel time and the potential for delay. This timeframe is shorter than the Service Window.

Dispatcher

A person who allocates activities and monitors the progress of activities and resources.

Display

A screen in ETAdirect that contains configuration settings used to control what properties and layout structures users can see within the forms of the interface. These settings also control the format of some information, for example, the first day of the week in calendar views.

Equipment

See ***Inventory*** .

Estimation

A term used in Capacity Management also referred to as "capacity estimation" which determines the number of man-minutes available for a particular time slot based on resource calendars.

ETA

Estimated Time of Arrival The time that ETAdirect predicts that the resource will arrive at the customer's location. ETA for pending activities is calculated dynamically from historical data. For completed activities, the ETA is the time when the resource actually arrives at the customer's location.

Field

Property present in the system by default

Filters

A set of parameters used to reduce the results of a search. Filters are also used in routing plans to predefine the information that routing uses to distribute activities to resources.

Forecasting

New feature of ETAdirect allowing to forecast the company workload on the basis of historical data

Glossary

The configuration dictionary that maps default names, labels, and phrases used in the interface to the client's preferred names, labels, and phrases. **Note:** Property names are managed in the Properties screen.

GUI

Graphical User Interface, allowing people to use software by manipulating images rather than by issuing text commands.

Group

A container in the *Resource Tree* used to sort and organize the other items in the Resource Tree. Groups are typically used to sort resources by location. Groups cannot own a route and you cannot assign activities to them.

Hint

A pop-up window that displays additional information about the activity or resource that you select. Hints also contain actions links that can take you directly to the action that you want to perform on the item.

Historical data

Data of the past periods available in the database or from other sources

Holidays

A screen in ETAdirect where you can define the dates that outgoing communications of notifications are blocked, due to customer unavailability on that date.

Idle Time

Any time that a resource spends not in transit or not working on an activity.

Internal Activity

A task that is not performed directly for the customer. Internal activities typically do not take place at the customer's home or business. Examples include vehicle maintenance and company meetings. See ***Activity*** for more information.

Inventory

A list of items managed within ETAdirect and can include various inventory pools as well as serialized and non-serlialized parts. See ***Inventory Pools*** , ***Trunk stock*** , ***Non-serialized Inventory*** , and ***Serialized Inventory*** for more information.

Inventory Pools

Items associated with a resource, typically ***Trunk stock*** , end customer, or warehouse.

Jeopardy Situation

A situation in which ETAdirect predicts that the activity will miss its promised service window. Predicted jeopardy situations are colored pink in the ETAdirect interface.

List View

A chronological list of the day's activities for the selected resource, group or bucket. Activities are ordered by estimated start time.

Login Policies

A screen in ETAdirect that sets the requirements for logging in and for usernames and passwords.

Manage

The core module of ETAdirect. Includes all of the main functions including monitoring, routing, and reporting.

Map View

A view of the day's activities for the selected resource, group, or bucket. This view displays the activities on a map.

Mass Activity

An activity involving 2 or more resources.

Max Available

The maximum capacity available by calendar on the selected day, time slot or capacity category

Message Scenarios

A set of rules that specifies how to process a message notification or transaction. Message Scenarios are launched by Notification Triggers. See ***Notification Triggers*** for more information.

Min quota

The minimum number of minutes to be allocated for booking of the activities belonging to the selected time slot (only on time slot and capacity category level).

Mobility

The user interface for ETAdirect that is accessed through a mobile device. Field service representatives typically use this interface. It is a separate module of ETAdirect.

Non-Instantiated Activities

All activities not part of quota management (for which no capacity category associated with work skills exists)

Non-Scheduled Activity

An activity that is not assigned to a specific date.

Non-Serialized Inventory

Inventory associated with a part that is generically defined within ETAdirect so that Trunk stock might be decremented based on required inventory associated with activities. (Note: Any part can be defined as "non-serialized inventory" even those parts with serial numbers on them. For example, a cable modem with a serial number, can be "Non-seralized inventory" within ETAdirect so that Trunk stock inventory levels can be managed daily and associated with a route). See ***Serialized Inventory*** and ***Required Inventory*** for more information.

Non-Working Reasons

A calendar setting used when a resource is absent. Typical non-working reasons include illness, vacation and bereavement.

Not Done Activity

A status used to identify an activity that cannot be completed today. For activities that cannot be completed right away, but can be completed today. See ***Suspend*** for more information.

Not Ordered activities

Activities that do not have ETA. Resource, dispatcher or routing may define the order (for example command change order in mobile interface or edit activity command in web interface).

Notification

Message activity related information sent by ETAdirect to a customer, a resource, a dispatcher, or another system. Notification can be received through telephone, email or SMS.

Notification Triggers

Workflow events that invoke Message Scenarios when a particular internal event occurs. As a result, messages are delivered to customers. For example, if you use a post activity survey, you might have a notification trigger to launch the post activity survey message. In this case, when a customer-facing activity is completed, a Notification Trigger launches a Message Scenario that sends the post activity survey message to the customer. See ***Message Scenarios*** for more information.

Ordered activities

Means that the order of execution is defined - resource, SmartRouting or dispatcher have already defined that this activity will be executed after another defined activity. In this case activity gets an estimated time of arrival and is classified as ordered.

Other activities

All repeating, mass and shift activities, including those without instances, which are not part of Quota management

PAS

Post Activity Survey. A survey that you might send to your customer after the activity is completed to measure their satisfaction.

Pending Activity

An activity status used for activities that are scheduled but not yet started.

Percent Quota

Percent of the capacity that is available for booking.

Percentage to Stop Booking

The percentage of the used quota at which activities booking is to be stopped.

Permissions

A screen in ETAdirect where you can configure which features users can see and use. Permissions are applied to Profiles, not individual users. See ***Profiles*** for more information.

Placeholder ID

A number used to identify names, labels, and phrases used in the ETAdirect interface. Each name, label, and phrase has a unique number.

Planning

Company's estimation of the workforce or workload required at a certain moment.

Profiles

A screen in ETAdirect where you can configure groups of users. Those groups are then assigned Permissions to control which features they can see and use. See ***Permissions*** for more information.

Properties

A screen in ETAdirect where user interface fields are defined. You can specify details such as field length, field type, and valid values.

Provider

See ***Resource***

Quota

A limitation set on the number of activities booked within a selected day, time slot or capacity category.

Quota Management

A process of defining the amount of work (per work skill and time slot) that a company should perform for a specific area (example: bucket) for a specific day. There is a related process, *Capacity management*, that defines the reverse relationship.

Quota Matrix

Grid that displays Quota and Capacity information for a period of time defined by the user. Data can filtered and displayed by day, time slots, or capacity categories.

Regular Work Zone

A region where a resource's activities are typically located.

Repeating Activity

An *activity* recurring with a predefined frequency in a predefined period.

Required Inventory

When a particular resource's route includes activities associated with non-serialized inventory, ETAdirect can highlight where Trunk stock is insufficient. In the event that a resource's Truck stock is insufficient for a particular route, required inventory highlights the job and indicates which Non-serialized inventory components are missing.

Resource

An element in the resource tree representing a defined company asset. A Resource is the ETAdirect entity representing someone (or something) which provides service on behalf of the company.

Resource Calendars

A view that displays the details about an individual resource's schedule. This view is useful for making changes that involve more than one day or more than one resource. See ***Calendar*** and ***Daily View*** for more information.

Resource Tree

A hierarchical view of the organization's resources, typically sorted by geographical region. It is displayed on the left side of the screen in Manage.

Resource Types

A set of characteristics that you can apply to a resource. Default Resource Types are Groups, Buckets, and Resources. See ***Group*** , ***Bucket*** , and ***Resource*** for more information. If you want to change the Resource Types that you use in ETAdirect, contact TOA support.

Route

A list of activities assigned to a resource for a specific date, or a list of non- scheduled activities assigned to a resource.

Route by Inventory

A concept within ETAdirect that limits routing options based on each resource's trunk stock and those activities associated with non-serialized inventory.

Routing

The act of assigning activities to resources. ETAdirect routes activities to resources using a sophisticated algorithm that considers a number of factors including calendars, work zones, and work skills.

Routing Plans

Provides the rules that ETAdirect uses to route activities to resources. Routing plans work together with the other ETAdirect components to apply your business goals and strategies to the routing process.

Routing Profiles

Containers that hold routing plans. Routing Profiles can be assigned to buckets. You can use Routing Profiles to assign several routing plans at once.

Scheduled Activity

An activity that is assigned to a particular day and a particular time slot.

Scheduled, Not Ordered Activity

An activity that is assigned to a particular day, but is not assigned to a particular time slot.

Serialized Inventory

Inventory parts that are unique and cannot be decremented based on a route's activities. See also: Non-serialized inventory, Required inventory.

Service Level Agreement

The time window that the activity must be completed in. This window is promised to the customer.

Service Window

The time window that the activity must be started in. This window is promised to the customer. This time frame is longer than the Delivery Window.

Shifts

Patterns of working time. You can create separate shifts for each of the different working time patterns within your organization.

SmartCollaboration

A separate module for ETAdirect that provides a real-time, context-aware collaboration tool for all ETAdirect users. A user can, for example, locate nearby, working resource and share details about a resource, activity, or inventory item. Also, SmartCollaboration supports a confirm-receipt process for moving an activities or inventory which is always valuable but even more so when resources are in remote locations and potentially off line.

SmartLocation

SmartLocation uses geo-location information to display a resource's actual location on a map in real time. In addition, the feature can compare the resource's actual route to the projected route within ETAdirect. Resource location can be derived either from a vehicle-installed GPS device communicating via API to ETAdirect and / or through a GPS-enabeled mobile phone with an open HTML5 browser.

Statistical Parameters

A screen in ETAdirect where you can configure the elements used when collecting and analyzing statistics. ETAdirect uses statistical data on actual activity and travel duration to calculate estimated time of arrival and delivery window. Additionally, Routing uses the statistics to assign activities to resources in the most effective manner.

Status

A term with specific and different meanings depending on the ETAdirect module used.

- Capacity and Quota management status refers to a specific work zone and whether it is open or closed.
- SmartManage and SmartMobility, the term "activity status" (but sometimes shortened to "status") refers to whether a routed job is pending, started, completed, not done, suspended, canceled, or deleted. See *Activity Status* for more information.

Suspend

An activity status that allows an activity to be postponed if the work cannot be completed right away. Suspend allows the activity to be completed at a later time during the day. For activities that cannot be completed in the same day. See ***Not Done Activities*** for more information.

Team Leader

In a Teamwork activity, the resource who is being assisted. In the Resource Tree, the arrow points to the Team Leader. See *Teamwork* on page 75 and *Assistant* for more information.

Teamwork

An activity that is performed by two resources. One resource is the Team Leader and the other resource is the Assistant. See ***Team Leader*** and ***Assistant*** for more information.

Technician

A resource that performs technical services on behalf of the company.

Time Slots

Intervals that define when an activity has to be started; this time is typically agreed to between the customer and client.

- A fixed service window defined with a name and label, specifying when certain types of activities can be performed.
- Service Window (if the activity type does not support time slots)

Time View

A view of the day's activities for the selected resource, group or bucket on a Gantt table. Activities are displayed on timelines, with each activity as a block of time.

Travel Areas

Define the maximum allowed travel territory for a company.

Truck

A default Resource Type. See ***Resource Type*** for more information.

Trunk Stock

Inventory carried in a vehicle. See ***Inventory pools***) for more information.

Unscheduled Activity

An activity that could take more than one day to complete.

Used

A term in Capacity and Quota management representing the duration of all activities booked for the selected day, time slot or capacity category.

Used Quota Percentage

The percentage of the quota used by the booked activities.

User

A person who uses ETAdirect, or an entity used for authentication and authorization, allowing people or external software to access ETAdirect.

Visit

A group of activities that are all performed at the same location on the same day.

Web Services Description Language

WSDL, an XML-based interface description language that is used for describing the functionality offered by a web service. A WSDL description of a web service (also referred to as a WSDL file) provides a machine-readable description of how the service can be called, what parameters it expects, and what data structures it returns.

Work Schedules

Work schedules are templates made up of a combination of shifts and non-working times. When grouped as a work schedule, these shifts and non-working times can be applied all at once to a bucket or to an individual resource. To change, add, or remove Work Schedules, contact TOA support.

Work Skill

Work skills are sets of skills or competencies that resources are qualified to perform. Companies may have different access levels to affect Work Skills. If you are unable to change, add, or remove Work Skills, contact TOA support.

Work Skill Conditions

The data that ETAdirect uses to assign work skills to activities.

Work Skill Levels

ETAdirect matches resources to activities through shared work skills and work skill levels. As a result, the way you configure work skills and work skill levels has a direct impact on the matches that ETAdirect creates between resources and activities.

- An activity that a resource is qualified to perform (resource property)
- The qualification required to perform an activity (activity property)

Work Zone

The defined geographical area in which a resource can perform an activity.

Work Zone Dictionary

A screen in ETAdirect where Work Zones are defined. The Work Zone Dictionary lists all defined work zones and their associated keys. To add, change, or remove work zones, contact TOA support.