



ETAdirect Linked Activities
for



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1 Introduction

1.1 Document Scope and Purpose

The purpose of this document is to introduce the concept of Linked Activities as well as the basics of its work. The document includes theoretical information along with examples.

The document is up-to-date with ETAdirect version 4.5.14 functionality.

1.2 Basic Terms and Concepts

Below is the list of terms and concepts that may be mentioned in the document and will provide a better understanding of this feature. Please note: The reader, hereinafter, may be addressed as "you".

Term	Description
Activity	Any time-consuming work performed by a resource
Linked Activities	Linked activities are two separate and distinct activities but the completion of one is dependent on the completion of another
Delivery window	Statistically calculated time period in which a resource is expected to start an activity
ETA	Predicted time at which a resource will arrive to the customer and start an activity, calculated dynamically for current and historical data
Not scheduled	An activity not assigned to a specific date
Ordered	An activity with a defined place in a queue, which must be performed at a specified time of day. The order of activities can be changed; ordered activities can be changed to not-ordered activities, vice-versa.
Property	Field and field value, assigned to an entity in ETAdirect (to user, resource, activity or inventory). There are fields and custom properties.
Queue	A list of activities assigned to a resource for a specific date, or a list of non-scheduled activities assigned to a resource
User	1) A person using ETAdirect 2) An entity used for authentication and authorization, allowing people or external software to access ETAdirect
Resource	Resource is the ETAdirect entity representing someone (or something) which provides service on behalf of the company.
Work Skill	1) An activity that a resource is qualified to perform (resource property); 2) The qualification required to perform an activity (activity property)
Work Zone	The defined geographical area in which a resource can perform an activity

2 Getting Started

2.1 Linked Activities

In our day and time careful business planning is crucial. With variety of projects with different timelines, critical situations, etc., poor or inefficient planning may result in problems for the company.

This is why ETAdirect made sure to provide a feature called Linked Activities. This is an updated feature from previous versions.

Its main purpose is to ensure scheduling and detailed planning for complicated, multi-step tasks, which may potentially involve different resource types, different times, and time constraints.

Configuring all these link constraints in a multi-step task allows our routing engine assign and schedule activities while meeting all of the requirements.

Therefore these tasks should be carried out in a perfectly planned sequence, and take into consideration every little aspect of a multi-step task:

- nature of the work
- delivery time
- time between the tasks
- issues that may arise during the task completion
- identify and prevent jeopardy situations
- ensure timely delivery

Different situations may arise during the completion of the multi-step task (completing the task is taking longer than expected, technician responsible for completing the task can no longer work on it, etc.)

ETAdirect always has a backup plan for these types of situations. If a dispatcher notices a jeopardy situation, for example technician responsible for a task cannot fulfill it, the dispatcher drops the task back into the bucket, and our Routing organizes it accordingly while taking into consideration that this task is a part of the linked activity sequence.

The example below will help to better illustrate the concept of a multi-step task and how Linked Activities work in this case.

Example:

The tractor digs the trench (Figure 1).

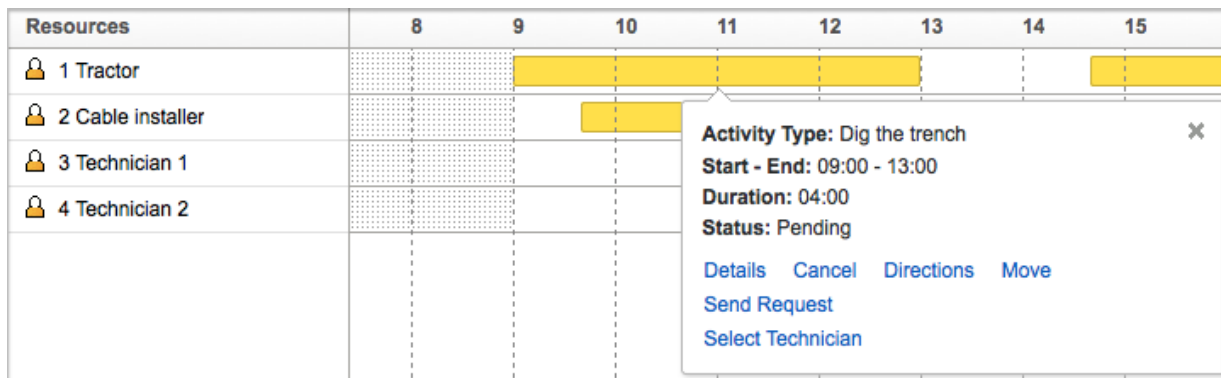


Figure 1: Tractor job

40 minutes after the tractor started digging, the cable installer starts installing the cable in the trench (Figure 2).

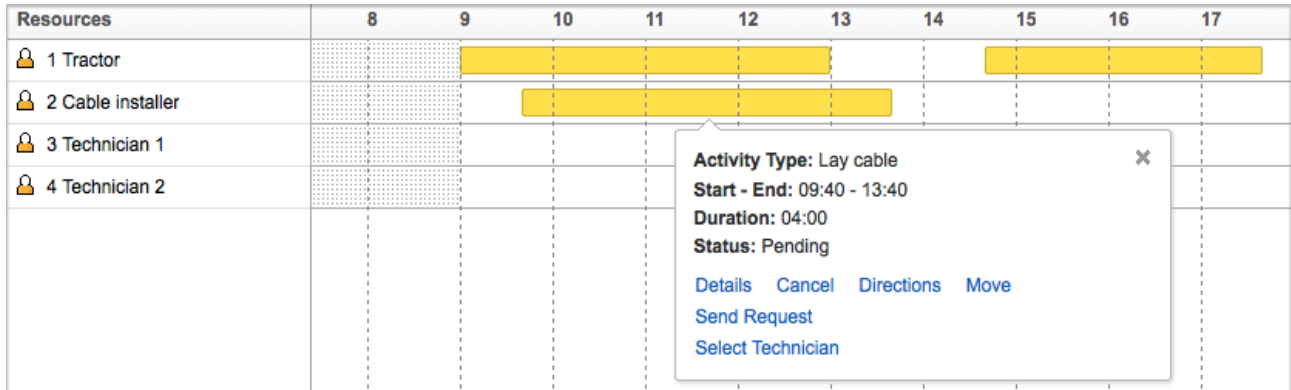


Figure 2: Cable installer job

Then after the preliminary actions have taken place, 2 technicians start testing the cable. The first technician sends the signal to the cable (Figure 3), while the second technician measures it (Figure 4).

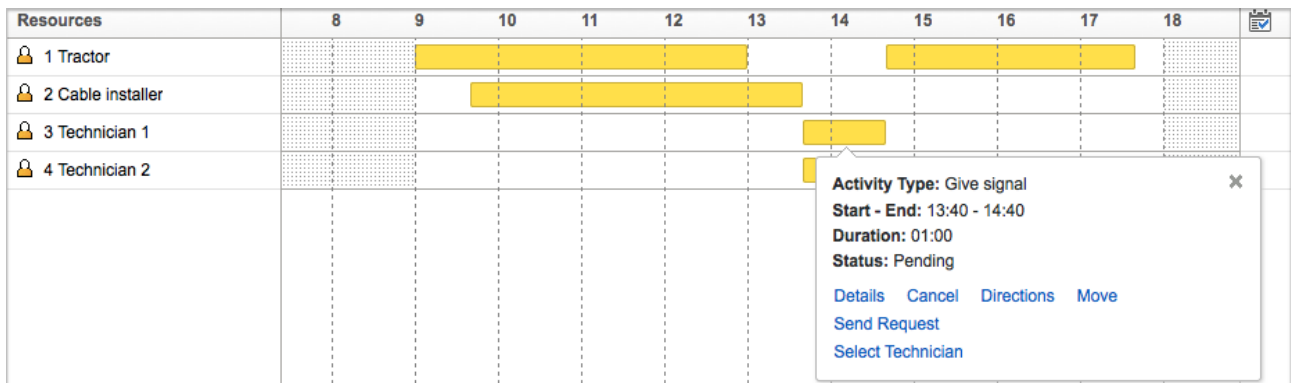


Figure 3: Technician 1 job

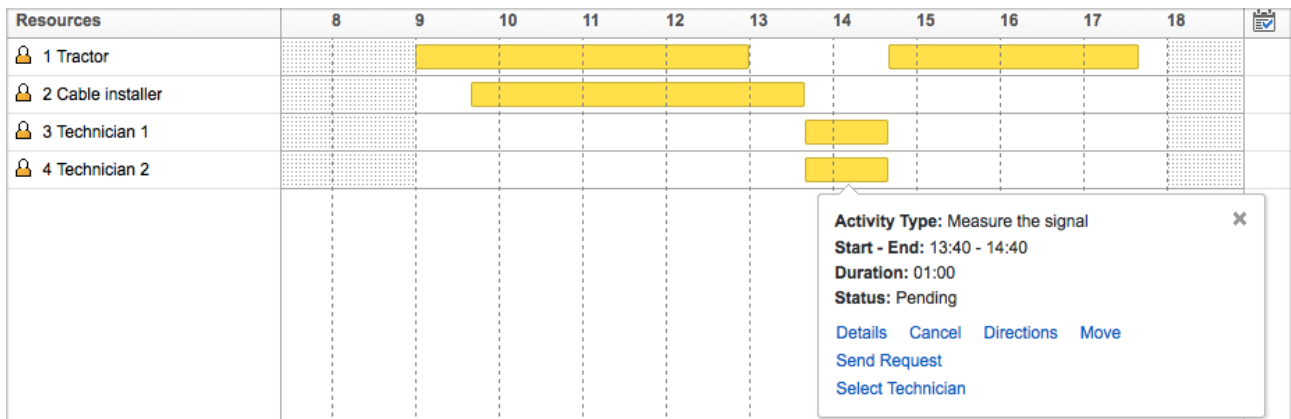


Figure 4: Technician 2 job

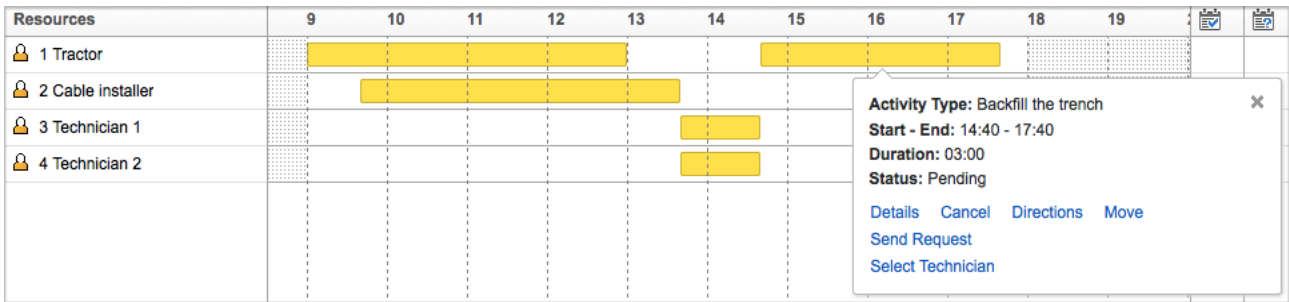


Figure 5: Tractor job

After the technicians made sure that the cable is working correctly, the tractor covers the trench (Figure 5).

The example above clearly illustrates a task, that has to involve several steps and resources in order for it to be completed, therefore it requires careful planning and organization (Figure 6).

The cable installer obviously cannot install a cable without a trench, and the technicians cannot measure a signal without the cable installed.

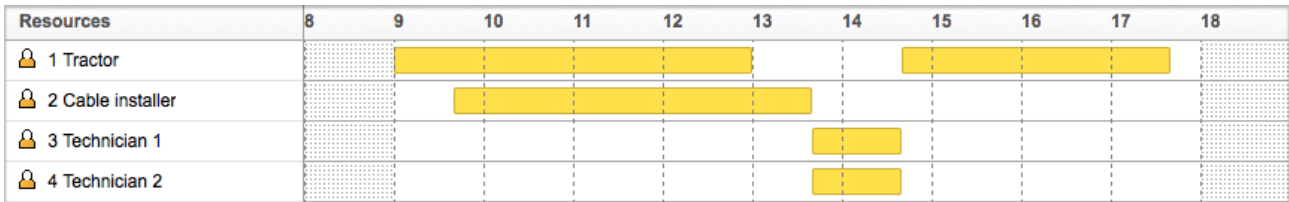


Figure 6: Multi-step job layout

This document will explain in detail the types of linked activities as well as when and how they are used.

2.2 Linked Activities Changes

In version 4.5 updates to Linked Activities functionality have been implemented, which provided more flexibility in defining activity dependencies and constraints.

In previous ETAdirect versions there were three types of dependencies for linking activities, which helped to identify the order in which the work needed to take its course.

- that should be finished before
- that should be started after
- that should be started simultaneously

In version 4.5 Linked Activity types feature with the following dependencies has been introduced:

- start-to-start
- finish-to-start
- simultaneous
- related

It offers a more sophisticated way of setting-up the order of multi-step jobs and provides the following additional settings:

- *minimal and maximal time interval can be adjusted*
- *assignment and scheduling constraints*

The main goal behind the updates to this functionality is to:

- support new types of activity links
- provide a simple and flexible method to operate with activity links

2.3 Adding Link Templates

Links between the activities are created with the help of Link Templates.

Link Templates are link profiles containing link type, time between activities constraints, scheduling constraints, and assignment constraints.

The **Link Templates** screen includes the list of link types that exist in the system, as well as allows to edit particular links and add the new ones. Note that existing activity link type cannot not be removed from the system (Figure 7) but can only be deactivated.

ID	Link for the first activity / label	Link for the second activity / label	Status	Constraints	Actions
1	Current activity starts before / start-before	Current activity starts after / start-after	✓	 Min. interval 10 mins	Modify
2	Start simultaneously with / start-simultaneously	Start simultaneously with / start-simultaneously	✗		Modify
3	Current activity is a parent of / parent-of	Current activity is a child of / child-of	✓	 Different resources, Same day	Modify

Figure 7: Link Templates screen

Clicking the **Add Link Template** button, located at the top left corner of the Link Templates Screen opens the pop-up window for adding a new link template (Figure 8). The window contains 4 buttons with icons for 4 different link templates types respectively. Representation of how the two activities (1st and the 2nd) will be linked to each other is also displayed.

Figure 8: Adding new link template

Different settings can be configured depending on the selected link type.

Once the changes have been made, press the Save button.

NOTE: Please refer to the [Appendix](#) section of this document for settings that are needed prior to working with Linked Activities.

2.3.1 Filtering Link Templates by Status

For more effective management of the Link Templates that have been created, it is possible to filter them by status. Inactive templates are hidden by default. In order to be able to view them, click View on the Link Templates screen and uncheck the 'Hide inactive templates' box. Or visa versa, if you want to hide the inactive templates, check the same box. Once you have made your selection, click 'Apply' (Figure 9).

Figure 9: Filtering Link Templates by status

2.4 Activity Link Types Settings

Activity link types have the following settings with the exception of *Simultaneous* and *Related* activity link types.

- **Minimal interval** between activities with 2 options:
 - Adjustable with default value in minutes
 - Non-adjustable with predefined value in minutes
- **Maximal interval** between activities with 3 options:
 - Adjustable with default value in minutes
 - Non-adjustable with predefined value in minutes
 - Unlimited which lifts restrictions

- **Assignment constraints**

If this field is not checked, then there will not be any assignment constraints for these 2 activities and they can be assigned to any resource (same or different ones). If it is checked, then 2 options appear:

- Different resources – activities should be assigned to different resources
- Same resource – activities should be assigned to the same resource

- **Scheduling constraints**

If this field is not checked, then there will not be any scheduling constraints for these 2 activities and they can be scheduled for any date (same or different ones). If it is checked, 2 options will appear:

- Different days – activities should be scheduled to the different days
- Same day – activities should be scheduled for the same day

- **Link for the First Activity**

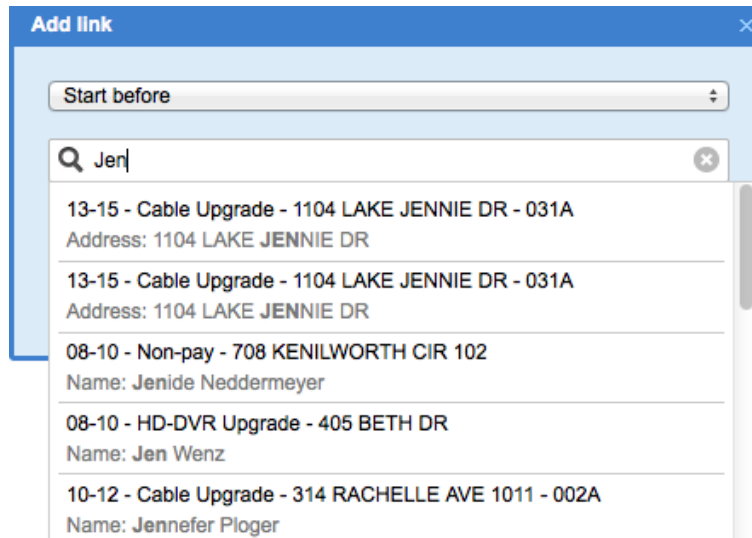
- Link for the first activity includes edit-boxes for specifying translations for that link. English is set as a default language, unless other languages are specified.
- Has edit-box for specifying label which will be used by external systems for this link.

- **Link for the Second Activity**

- Link for the second activity includes edit-boxes for specifying translations for that link. English is set as a default language, unless other languages are specified
- Link for the second activity includes the edit-box for specifying label for this link which will be used by external systems.

- **Status**

Check-box Active is selected by default. It means that this particular activity link type will be available for addition in the pop-up window **Activity details / Links -> Add link** (Figure 10).



Simultaneous link template doesn't have neither scheduling nor assignment constraints, as well as interval settings;

Related link template doesn't have interval settings, therefore minimal and maximal interval settings don't apply.

2.5 Finish-To-Start Link Template

This type of activity link implies that after finishing the first activity, the second activity starts within some specified interval (Figure 11).

[See section 2.4 for settings description.](#)

The screenshot shows a 'New Link Template' dialog box with the following configuration:

- Diagram:** Four icons at the top show different link types. The selected one shows activity 1 ending and activity 2 starting, with a solid arrow from the end of 1 to the start of 2.
- Description:** 'Second activity starts after the first one is finished (Finish-to-Start)'
- Time interval between activities:**
 - Minimal interval: Adjustable (dropdown), 0 min (input)
 - Maximal interval: Unlimited (dropdown)
- Constraints:**
 - Assignment constraints
 - Scheduling constraints
- Link for the first activity:**
 - Name: *English: e.g. Start before (input)
 - *Spanish: (input)
 - *French: (input)
 - *Dutch: (input)
 - *German: (input)
 - *Romanian: (input)
 - *Russian: (input)
 - *Portuguese: (input)
 - *Label: e.g. Start before (input)
- Link for the second activity:**
 - Name: *English: e.g. Start after (input)
 - *Spanish: (input)
 - *French: (input)
 - *Dutch: (input)
 - *German: (input)
 - *Romanian: (input)
 - *Russian: (input)
 - *Portuguese: (input)
 - *Label: e.g. Start after (input)
- Status:** Active
- Buttons:** Discard changes, Save

Figure 11: Finish-to-start link template

Example: Two technicians are scheduled to deliver and install new windows to a client. Second technician can only start with the installation only after the first one has delivered the windows. The interval between the jobs depends on the activity settings.

2.6 Start-To-Start Link Template

This link template implies that right after starting the first activity, the second activity should be started within some configured interval (Figure 12). Specifying minimal/maximal interval in this case means an interval between start time of the first activity and start time of the second one.

[See section 2.4 for settings description.](#)

Example: There are two tasks on the construction site: 1 – pour concrete and 2 – level it. The construction worker cannot level concrete, until it has been poured, but he can start leveling it shortly

after without waiting for the first task to be finished.

New Link Template

Second activity starts after starting the first one (Start-to-Start)

Time interval between start of the first activity and start of the second one

Minimal interval: Adjustable 0 min

Maximal interval: Unlimited

Assignment constraints

Scheduling constraints

Link for the first activity		Link for the second activity	
Name		Name:	
*English:	e.g. Start before	*English:	e.g. Start after
*Spanish:		*Spanish:	
*French:		*French:	
*Dutch:		*Dutch:	
*German:		*German:	
*Romanian:		*Romanian:	
*Russian:		*Russian:	
*Portuguese:		*Portuguese:	
*Label:	e.g. Start before	*Label:	e.g. Start after

Status: Active

Discard changes Save

2.7 Simultaneous Link Template

This link template implies that both activities should be started simultaneously by different resources (Figure 13). This link type has the same name regardless of what activity (for the first or the second one) it is used for. This means that there is only one section for translation, and it is *Link for both activities*. The concept of its work is the same as the link for the first activity one. Since both activities need to be started at the same time on the same day and by different resources, there are no interval, assignment, and scheduling settings.

New Link Template

Both activities should be started simultaneously by different resources (Simultaneous)

Link for both activities

Name:

*English:

*Spanish:

*French:

*Dutch:

*German:

*Romanian:

*Russian:

*Portuguese:

*Label:

Status: Active

Figure 13: Simultaneous activity link template

Example: During road construction, while one constructor is working on the road, the other one is directing traffic.

2.8 Related Link Template

There are no interval settings in Related Activity Type, but there are assignment and scheduling constraints, links for the first and second activity, label, and status. This type of link implies that there are no restrictions on the order of the activities start or completion (Figure 14).

New Link Template

Activities related to each other (Related)

Assignment constraints

Scheduling constraints

Link for the first activity

Name

*English: e.g. Start before

*Spanish:

*French:

*Dutch:

*German:

*Romanian:

*Russian:

*Portuguese:

*Label: e.g. Start before

Link for the second activity

Name:

*English: e.g. Start after

*Spanish:

*French:

*Dutch:

*German:

*Romanian:

*Russian:

*Portuguese:

*Label: e.g. Start after

Status: Active

Discard changes Save

Figure 14: Related activity link template

Example: A maintenance technician has an assigned district where he needs to perform water system check-ups. The order of the houses is not relevant.

3 Using Activity Links

Once the link templates have been pre-configured, next step is to proceed with linking activities.

In order to link two activities the following steps need to be taken:

On Activity Details / Links tab, currently viewed activity can be linked to other activity by clicking the "Add link" button. Dialog box will appear which allows to select a link template from the drop-down list. If for the selected link type there were minimal and/or maximal intervals configured as "Adjustable" with some default value, appropriate Minimal/Maximal interval fields filled with configured default values will appear respectively.

In order to search for an activity to link the current one with, start typing keyword(s) in the search box at the bottom of the window, and the autocomplete will provide the list of activities which correspond to the search criteria.

Once all the preparations for linking the two activities are complete, click "link" for changes to take place (Figure 15).

Activity Details (RAYNER, Faye) Cancel Suspend Directions Move Send Request

Status: Pending Position in route: After 10-12 - Other - 4565 SHADY CREEK CV 103 - 008A Work Zone: OVIEDO
 Activity Type: Telephony Unwired Installs Time Slot: 10-12 Work Skill: Deinstall(1/1)
 W/O Type: DI Delivery Window: 14:00 - 15:15
 Work Order: #137163472 Start - End: 14:38 - 15:15
 * Name: Jenna Swett Duration: 37min.

Customer info | Service info | Completion Info | Equipment | Provider Preferences | Messages | History | **Links**

Add link

Links

Start after	08-10 - Cable Upgrade - 128 CARMEL BAY DR (#3952012)	Planning	pending	09/11/13	- Unlink Details List view
Start simultaneously	13-15 - Multi-type Prewired / Reconnects - 280 LAKESHORE DR (#3969540)	HAMEL, Henry	pending	14:38	- Unlink Details List view

Add link ×

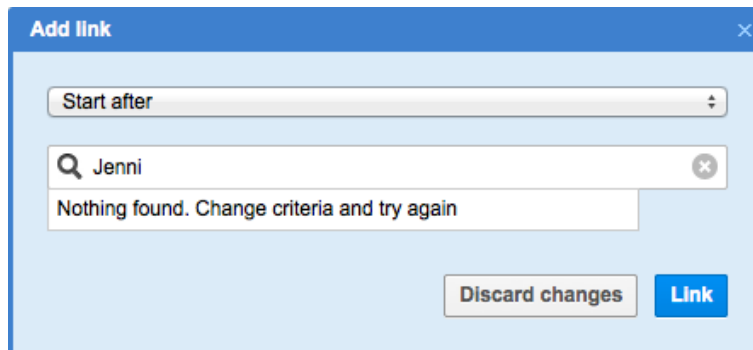
Start after

* within to minute interval

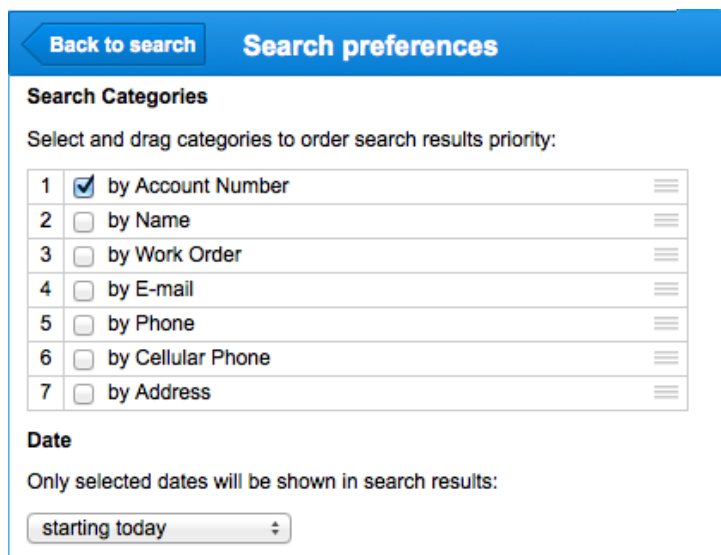
Discard changes Link

4 Q&A

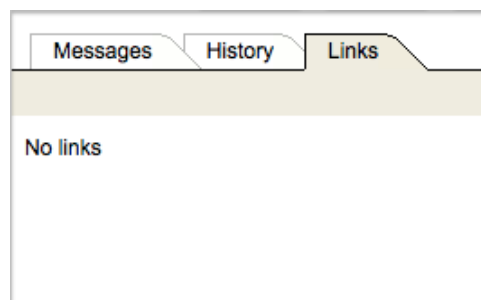
Q: When searching for an activity to link the current activity with, I get an error saying that there is no data by that name, when I know there is (Figure 16) How do I solve this?



A: The search field in the Activity Links has the same fields as your main Activity Search. Go back to the Activity Search settings and see you if have a particular field checked (Figure 17).



Q: I don't see the 'Add link' button (Figure 18) Why is that?



A: The 'Add Link' button appears only if you have at least one active link template present (Figure 19). Permissions should be set to ReadWrite. This can be done by going to: Permissions>Manage>Activities>Linked Activities.

ID	Link for the first activity / label	Link for the second activity / label	Status	Constraints	Actions
1	Start before / start-before	Start after / start-after	✓		Modify
2	-	Start simultaneously / start-together	✗		Modify

Q: 'Details' and/or 'List view' actions of the linked activity are not available (Figure 20). Why?

Simultaneous

Start simultaneously	15-17 - Video T/C - 1810 LAKESHORE CIR - 023A	BAYLESS, Tony	pending	16:14	Unlink
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Successors

Start before	10-12 - HSD / High Speed Data install - 933 S PINE RIDGE CIR C3 - 013A	VALENTINO, Dennis	complete	10:11	Unlink
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A: The linked activities you're inquiring about are probably assigned to resources that are not visible to you. In order to view Detail and List view action of the particular linked activity, the resource assigned to this activity needs to appear in your resource tree. Please contact your administrator.

Q: I don't see the Links tab on Activity Details. Why is that?

A: There are 3 reasons this may happen:

1. The type of currently edited activity doesn't support links. To enable link support for this type, go to Company Settings > Activity Types and find your activity type, click Modify and make sure that "Support of links" checkbox is enabled (Figure 21).

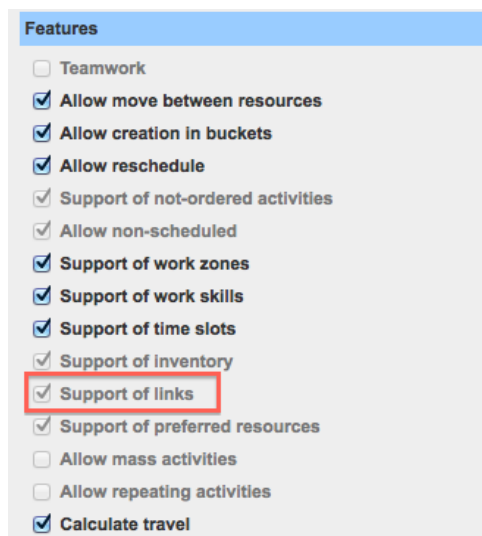


Figure 21: Activity Type features

2. Make sure the visibility is configured for a particular predefined Links tab. This can be done by taking the following steps:

Company Settings > Display> Select display profile > Add activity/Activity details > Structure.

Then locate Links in the table, or add to the table (Click to add), select Links and set ReadWrite visibility (Figure 22).

[Links] field visibility

[Add new visibility](#)

<input type="checkbox"/>	Access	Conditions	Action
<input type="checkbox"/>	ReadWrite	*	Modify

Figure 22: Visibility Configuration

3. Permissions. Linked Activities should not be hidden for your profile.

Company Settings > Permissions > Manage > Activities > Linked Activities (Figure 23).

ID	Profile Name ↑	Denied from level	Status	<input type="radio"/> ReadWrite	<input type="radio"/> ReadOnly	<input type="radio"/> Hidden
71	Admin		✓	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
69	CSR		✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
66	Dispatcher		✓	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
72	File upload	Manage, Activities	✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
70	Manager		✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
115	Routing Manager		✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
68	soap	Manage, Activities	✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
67	Technician		✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
73	Users Admin	Activities	✓	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Reset Save

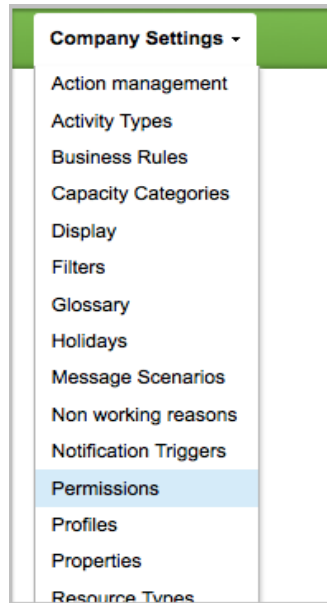
Figure 23: Display profile permissions for linked activities

5 Appendix

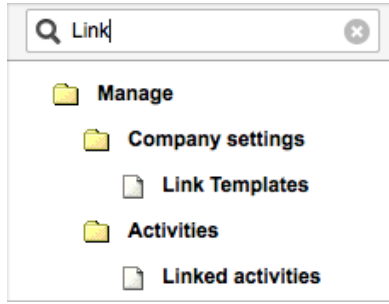
5.1 Setting Up Activity Links Permissions

To start working with the Link Templates, the first step is to set permissions. Steps that are needed to be taken in order to do so, are described in detail below.

Go to Company Settings and select Permissions (Figure 24).



When redirected to the Permissions tab, find and select the Link Templates module from the column located on the left side of the screen (Figure 25). The search can be conducted either by browsing through the list of available modules, or by typing the criteria into the Search field at the top. After clicking on Link Templates, the table which allows to enable this permission will appear on the right (Figure 26).



ID	Profile Name ↑	Denied from level	Status	<input type="radio"/> Show	<input checked="" type="radio"/> Hidden
71	Admin		✓	<input checked="" type="radio"/>	<input type="radio"/>
69	CSR	Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>
66	Dispatcher	Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>
72	File upload	WEB interface, Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>
70	Manager	Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>
115	Routing Manager		✓	<input checked="" type="radio"/>	<input type="radio"/>
68	soap	WEB interface, Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>
67	Technician	Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>
73	Users Admin	Company settings	✓	<input type="radio"/>	<input checked="" type="radio"/>

Reset Save

Select the profiles for which this permission needs to be activated and click Save.

5.2 Adding Link Templates to the Main Menu Screen

After the permissions have been set, it is recommended to place Link Templates on the main menu screen for more convenience and better usability.

Detailed instructions on how to add Link Templates to the main menu screen are as follows.

Go to Company Settings on the main menu and select Display from the drop-down list (Figure 27).

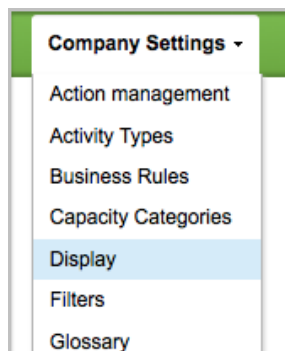


Figure 27: Display

Under display profiles, select a necessary profile and double click on it (Figure 28).

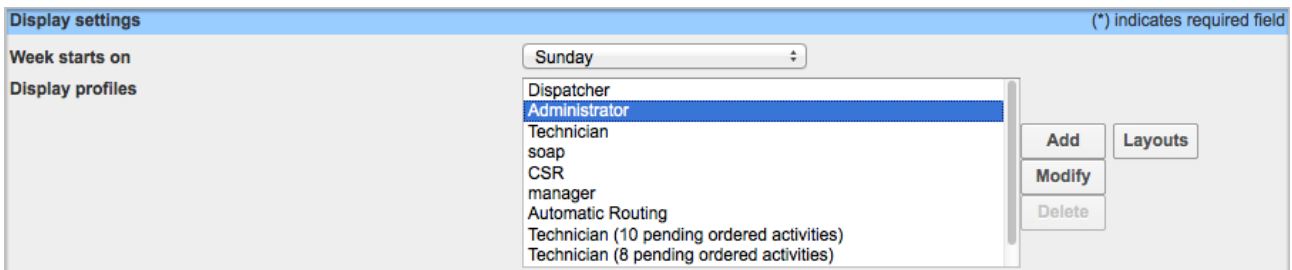


Figure 28: Selecting a display profile

After being redirected to the list of items, locate Main menu items. This can be done by browsing through the entire list or by using the search. To use the search, go to view, located on the top panel and type in the search criteria in the "find" field, then click Apply (Figure 29).

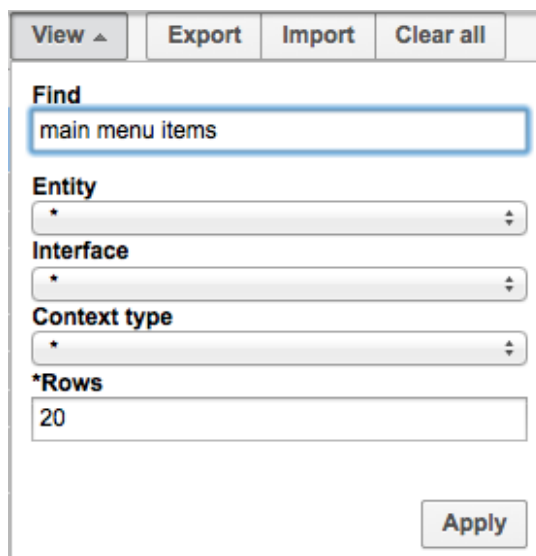


Figure 29: Locating Main Menu items

The table with the main menu items options will appear, click Structure to proceed with the set-up (Figure 30).

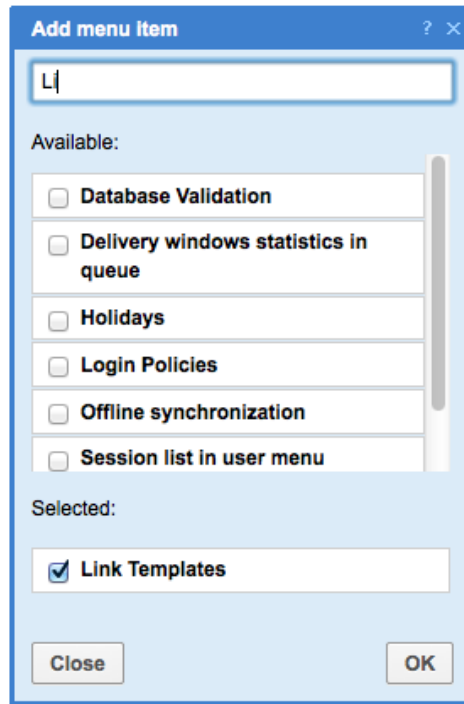
Context ↑	Entity	Interface	Context type	Also used in	Action
Main menu items	-	WEB	menu		Change Erase Structure

Figure 30: Main Menu items table

After clicking on Structure, you will be redirected to the Layout structure table. At the bottom of the page locate and press the 'click to add' button (Figure 31).



Pop-up with the items that the user can add to the menu will appear. You can browse through the list, or use the search at the top of the window to locate Link Templates. Click on the checkbox next to the item. Press ok (Figure 32).



To refresh the data on the screen, click Recalculate Structure in the right bottom corner of the page (Figure 33).



Once all the steps that have been described above are taken, Link Templates will appear in the Main Menu view (Figure 34).

