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Automated Route Planning: Master Data and Settings

Relevance

This documentation is relevant for:

- SAP S/4HANA for waste and recycling, environmental services add-on by PROLOGA
- Cloud SAP S/4HANA for waste and recycling, environmental services add-on by PROLOGA
- SAP S/4HANA Cloud for waste and recycling, private edition, environmental services add-on by PROLOGA

Whenever SAP S/4HANA for waste and recycling, environmental services add-on by PROLOGA is referred to in the following, the mentioned products above are always meant as well. To ensure a better overview when reading the document, SAP S/4HANA for waste and recycling, environmental services add-on by PROLOGA is used as a reference of all products.

Document History

Before you start the implementation, make sure you have the latest version of this document. You can find the latest version at the following location: SAP S/4HANA for waste and recycling, environmental services add-on by PROLOGA

The following table provides an overview of the most important document changes.

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Table 1: Most important document changes

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Automated Route Planning: Master Data and Settings

1 Introduction

*SAP Waste and Recycling, automated route planning option by PROLOGA* is a cloud solution, which provides functions for automated planning of service orders in a commercial route collection scenario. *SAP S/4HANA for waste and recycling* can be used as a source system that provides the orders.

This document describes the settings to be made in the SAP system to be able to use the *Automatic Route Planning* application once it has been configured successfully. Find an overview of the specific transactions and the maintenance of the master data and settings required.

For more information see also:

*Automated Routeplanning Configuration Guide*

*SAP Waste and Recycling, automated route planning option by PROLOGA*
2 Master Data and Settings

2.1 Planner Group

Transaction: /WATP/TP_PLNGRP_MSK

Planner groups are defined for individual planning areas in route planning. In the special case of Automatic Route Planning, the following criteria must be maintained:

2.1.1 Planner

Only SAP users who are entered under Planner can view the corresponding planner group, their scenarios, and solutions in the ARP Cloud.

2.1.2 Plants

The general parameters (such as times) are configured under Resources > Plants. The term Plants refers to the depots from which the vehicles leave.

2.1.3 Aspects

On this tab, you control whether a planner group is used for Automatic Route Planning. Only planner groups with the characteristic Automatic Route Planning are transferred to the ARP Cloud and can be used during planning.
2.2 Waste Disposal Facilities

Transaction: *EWAEL04*

The following criteria must be maintained for the waste disposal facilities.

### 2.2.1 Opening Hours

Opening hours refer to the times at which the disposal facility is open.
2.2.2 Service Times
Service times are the length of time a vehicle spends in the waste disposal facility on average.

2.2.3 Material Assignment
The assignment of materials (EWC codes) to the disposal facilities regulates which materials can be transported by the vehicles to which waste disposal facility.

2.3 EWC: Material Assignment
Transaction: /WATP/ARB_AVV
A material assignment to the corresponding EWC code must be made in the EWC catalog.
2.4 Material Group

Transaction: **MM02**
The material group is a data element in materials management. The material group can be used to control which materials can be transported together in one vehicle. All materials that are assigned to a certain material group (for example, different types of cardboard and paper) can then be transported together.

![Image of material group in transaction MM02]

2.5 Assignment Material Group <> Fraction

Transaction: **/WATP/ATPFRACTIONMAT**
This transaction can be used to define materials for waste fractions. Disposal costs for each material can be maintained in transaction **EWAC003**. However, since there is also an assignment of material to the material group in transaction **MM02**, the price for the entire material group can be maintained.

![Image of material group assignment in transaction WATP/ATPFRACTIONMAT]

2.6 Vehicles

Transaction: **IE01** (Create equipment) / **IE02** (Change equipment)
The weight for the maximum load (field Load_WGT) can be specified for the vehicle.
2.7 Assignment Vehicle Category <> Container Category

Transaction: **EWABEHVEH**

In this transaction, the existing container categories must be assigned to the vehicle categories with which they can be transported.
2.8 Container Location

Transaction: ELOC

2.8.1 Opening Hours
Opening hours refer to the times at which the container location is open.

2.8.2 Service Duration
Service times are the length of time a vehicle spends at a container location on average and are maintained for each service frequency.
Field: PLANNED_DURT
2.8.3 Disposal Quantity
The expected quantity can be entered in the MNAMIN field. The total weights for all container locations and containers for a tour must not exceed the maximum load of the vehicle.

2.9 Routes
Transaction: EROUTE

2.9.1 Assignment of Vehicle and Work Center

2.9.2 Assignment Material Group
The assignment of the material group is optional and is only required if the vehicle is only allowed to transport certain types of waste.
2.10 Costs Centers

The costs for personnel, materials or plant prices and vehicles can be maintained via transaction WATP/ATP_COSTS. The prices stored here are used by the optimizer to determine the expected costs of the waste disposal orders. The views all have a Valid to column and a Valid from column, which are taken into account in relation to the execution date of the route.

An entry in the Valid from column can be used to invalidate an existing record if required. Example: The data record is valid until 31.12.2021 but will only be valid from 31.12.2022. This constellation will invalidate this data record altogether and it will no longer be used for cost calculation.

2.10.1 Logistic Costs

Costs for vehicles are maintained in transaction WATP/ATP_COSTS in the overview Costs vehicle-vehicle type.

For the cost calculation, the system will first search for the most specific entry for which the vehicle and vehicle type can be determined and uses this for the calculation together with the specified validity. If no vehicle type (column Vehicle type) is specified, the cost calculation is carried out using the specified vehicle (column Equipment). Only routes where exactly this vehicle (Equipment) is found will be used.

If only one vehicle type is specified, the same price is used for all equipment of this vehicle type.

The column Fixed costs defines a price that is always charged, no matter if and how much time was spent.

The Currency column must be maintained consistently in one currency type, since different currencies are not converted.

In the column Unit all time units can be selected, these are converted. Time-dependent vehicle costs are forwarded to the optimizer in "cents per hour".

Costs for personnel or the work center are maintained in transaction WATP/ATP_COSTS in the overview Costs personnel / work center.
For the calculation of the personnel costs, the system first checks whether a personnel number is maintained on the \textit{EWA\_ORDER\_RESOBJ}. Based on the execution date of the route, it is determined which cost rate is relevant for this personnel number, defined in the column \textit{Cost rate per hour}.

For working overtime, a different cost rate can be specified in the column \textit{Cost rate per overtime hour}.

The \textit{Currency} column must be maintained consistently in one currency type, since different currencies are not converted.

If there is an \textit{EWA\_ORDER\_RESOBJ} without personnel number, but with work centers, the work center records (column \textit{Work center}) are used and cumulated additively.

If the \textit{EWA\_ORDER\_RESOBJ} does not provide any information about the work center either, the first work center from the route is used.

If none of the above cases apply, the cost calculation does not provide any results and data may have to be subsequently maintained or corrected.

Personnel costs cannot be specialized by jobs and vice versa. The first hit in the period is valid for the personnel or the work center. No personnel is read from the work center (via the assignment work center/personnel). Also the relationship of vehicle/workplace is not read out.

\subsection{2.10.2 Disposal Costs}

Disposal costs are maintained in transaction \textit{WATP/ATP\_COSTS} in the overview \textit{Costs disposal facility- material costs}: 

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|}
\hline
PenNo & Work center & Valid to & Cost rate per hour & Cost rate per overtime & Currency \\
\hline
0 & 00000001 & 31.12.9999 & 1,000,000 & 1,671,000 & EUR \\
0 & 00000002 & 31.12.2020 & 100,000 & 125,000 & EUR \\
0 & 00000003 & 31.12.2021 & 200,000 & 235,000 & EUR \\
0 & 00000004 & 31.12.2022 & 500,000 & 750,000 & EUR \\
0 & 00000005 & 31.12.2023 & 1,500,000 & 2,200,000 & EUR \\
0 & 00000006 & 31.12.2024 & 3,000,000 & 4,500,000 & EUR \\
0 & 00000007 & 31.12.2025 & 6,000,000 & 9,000,000 & EUR \\
0 & 00000008 & 31.12.2026 & 12,000,000 & 18,000,000 & EUR \\
0 & 00000009 & 31.12.2027 & 24,000,000 & 36,000,000 & EUR \\
0 & 00000010 & 31.12.2028 & 48,000,000 & 72,000,000 & EUR \\
\hline
\end{tabular}
\end{table}
The system first checks whether the validity area applies. The material corresponds to the material in the waste disposal order. The material number is transferred to the material class (column Material group). If a disposal facility can still be determined in detail for this, then this entry is used. The specialization of the entry is relevant, because the most exact entry is used for the calculation.

If only one material group is maintained that has not been assigned to a disposal facility, the price entered is used as the default price for the entire material group.

If only one disposal facility is maintained without a material group, then the specified price is the universal price of all materials at the disposal facility.

The Currency column must be maintained consistently in one currency type, since different currencies are not converted.

In the column Unit all weight units can be selected, these are converted.

2.11 Geocoordinates

All container locations, waste disposal facilities and plants must have valid geocoordinates.