# EWM RF Performance Monitoring Tool User Guide

<table>
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<th>Version</th>
<th>Status</th>
<th>Date</th>
<th>Comment</th>
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<tr>
<td>1.0</td>
<td>Initial Version</td>
<td>17/4/2012</td>
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1 Overview

1.1 Purpose
Purpose of this implementation is to provide a tool which tracks RF response times in the productive
EWM system on a scale. It interacts with the existing framework in EWM to implement RF transactions
(EWM RF Framework). It shall provide statistical relevant data for analysis of RF response times. It is
not intended for detailed trace analysis or single user traces.

1.2 Updated Documentation
Latest documentation on this is available in SAP Note 1595305 - “Measuring runtimes for RF devices
in SAP EWM” on SAP Service Market Place (http://service.sap.com/notes).
2 Monitored Response Times

2.1 Response Time Details

Below graphic shows the different components a RF response time can be split into and the corresponding times that can be analyzed.

![Figure 1: RF Response Times](image)

2.1.1 RF Function Module Time & RF Custom Transaction Time

For each function module executed in the RF environment the execution time is stored. The sum of all function modules executed during one request is considered the response time for the RF Custom Transaction.

The RF Function Module Time and RF Custom Transaction Time do not provide details on where (DB, RFC, ABAP, Update) the time was consumed.

2.1.2 STAD Response Time

The monitoring environment offers a link to the STAD records related to the execution of a RF Function Module or RF Custom Transaction. The STAD records do contain information about the distribution of runtime (DB, ABAP, RFC, Update) and can be used for detailed analysis.

The response times shown in the STAD records are higher than the RF Custom Transaction times. This is due to additional RF framework processing performed which is contained in the STAD record but not part of the RF Custom Transaction Time or RF Function Module Time.

STAD Response Time is not directly shown in the analysis tool but can be accessed via link to transaction STAD.

2.1.3 ITS Response Time

The ITS Response Time is the time it took the ICM to receive the request, get it processed by the backend and send the response back to the frontend device.
Runtimes are taken from the ICM log file available via transaction SMICM.

2.1.4 GUI Response Time
The GUI Response Time is the total time measured on the RF device to process an entire HTTP request/response cycle. This Response time is mostly influenced by network time. Network time defines the time to send the request and receive the data via the network infrastructure.

2.1.5 GUI Rendering Time
The GUI Rendering Time represents the time after which the data for a given screen can be processed by the user.
3 Required prerequisites

3.1 SAP Note 1690850 - “Measuring runtimes for RF devices in SAP EWM”
To enable SAP EWM to persist runtimes in the RF transactions to a database on the EWM system you have to implement SAP Note 1690850 - “Performance measurement in RFUI”. Before continuing with this documentation you have to make sure that the SAP Note is properly implemented in your system.

3.2 SAP Note 1595305 – “Measuring runtimes for RF devices in SAP EWM”
If you require logging of ITS/ICM runtimes or plan to upload frontend data to your backend system please refer to SAP Note 1595305 – “Measuring runtimes for RF devices in SAP EWM” for details.

3.3 SAP Note 1306862 - "RF [web-based] E2E Tracing Documentation [ITSmobile]"
SAP has a script to measure frontend runtimes on RF devices operating Naurtech browser. This script can track runtimes on the frontend device. The data is stored locally on the device. SAP does not provide a standard path to upload this data to the backend. However an interface is available to store the frontend data via a Form routine. This SAP Note is not a prerequisite for implementation of the backend measurements.

3.4 ST/A-PI version 01P or later
The analysis utility is shipped with ST/A-PI version 01P or greater. Please refer to SAP Note 69455 for information how to install the latest ST/A-PI on your EWM system.
4 Using the EWM RF Analysis Tool in ST/A-PI 01P

4.1 Enabling runtime measurements for a resource

After implementing SAP Note 1690850 you will find a check box assigned to each resource in your warehouse (/SCWM/RSRC – Maintain Resource). To enabled logging for a resource flag the logging check-box for the resource.

The logging will only become active after the resource has logged off and logged in again. In the written data records not the resource is persisted but the user is stored that was logged on to the resource.

4.2 Starting the analysis tool

The Tool to view and customize the measurements is available with ST/A-PI. To enter the tool perform the following steps:

1. Enter transaction ST13 – Analysis & Monitoring tool collection
2. From the available Tools select Performance Tools - PERF_TOOL
3. From the list of available Performance Tools select EWM_RF_Analysis - EWM RF Analysis

This will bring you to the entry screen of the RF Performance Analysis Tool.

4.3 Custom Transactions

4.3.1 Definition of "Custom Transactions"

The enhancement implementations log runtimes on a per function module basis. This provides a very detailed view for analysis of function modules included in different logical RF transactions defined in the RF customizing in IMG. One screen change for the end user can consist of multiple function calls in the backend. This has been configured in the IMG RF customizing. The enhancement allows grouping function calls per screen change. This allows to map the measured runtimes in the backend to the activities carried out by the user. Screen changes are called "Custom Transactions".

Grouping is done based on a configuration table defining the custom transactions you are interested in monitoring (e.g. a custom transaction called "PICK_01" could group the function modules executed for the first screen processed during a picking transaction). Entries for this will be maintainable via the analysis utility and are stored locally on the EWM system.

**Note:** If function modules or RF transaction flows are changed the customizing made for Custom Transactions has to be adapted to the changes performed in the IMG customizing.

4.3.2 Initial Setup of Custom Transactions

Customizing of Custom Transactions can be accessed via button Customizing in the RF Analysis Tool.
Figure 3: Custom Transactions Maintenance

The Columns have the following meaning:

- **Custom Transaction**: Freely defined name under which the identified function modules should be grouped. E.g. “PICK_01” could indicate that this group represents the first screen change in the picking process.
- **Log. Transaction**: Logical Transaction as defined in the IMG RF customizing for the first function module executed after a user input on a screen.
- **Log. Step**: Logical Step as defined in the IMG RF customizing for the first function module executed after a user input on a RF screen.
- **# Steps**: Number of function modules executed within one screen change.
- **Func. Modul**: First two function modules executed within one screen change.
- **Max. Resp. Time**: The minimum response time that the total screen change has to have so that it is aggregated by the tool.

The grouping rules are applied to the function modules executed at runtime. So it is not possible to apply the rules defined in IMG RF customizing to the Custom Transaction settings in the RF Runtime Analysis Tool.

The following steps can be carried out to define the custom transactions that should be grouped:

1. Perform single user executions of the relevant steps on an RF device (or via /SCWM/RFUI)
2. Only execute the screen change you are interested in.
3. Display the detail records for the user using the RF Performance Analysis Tool
4. Based on the information recorded (Log. Transaction, Log. Step, Function Modules) for the last step for this particular user you can then set up the filtering for the Custom Transactions.

### 4.3.3 Display Detail Information (per Function Module)

The tool provides a detailed view on the executed Function Modules. This view is available via button Details.
Choosing *Details* will show the maximum granularity measurements taken. Entries in this view are on a per Function Module basis.

It shows the processing time per Function Module. The STAD Column allows to navigate to the technical STAD records related to the Function Module execution. (STAD records are deleted after 2 days).

### 4.3.4 Display of aggregated „Custom Transactions“

Detail information often provides too much information for a quick overview on the most critical steps in the RF implementation. The RF Analysis Tool offers an aggregated view on a per “Custom Transaction” basis via button *Transactions*.

This view will apply the customizable filter of Custom Transactions to the existing measurements and only show an aggregated view to the user. One line in this view corresponds to one “Custom Transaction” maintained in the Customizing. The times shown here are the sum of all function modules executed for this “Custom Transaction”.

Via the column *Cust. Trans.* you can jump into the detailed function modules executed for this particular custom transaction. The picture below shows the details for the “01_LOGON” transaction at 13:15:26.
4.3.5 Integration of Frontend Data

If you are storing Frontend Runtimes via Form Routine ewmrf_store_gui as described in SAP Note 1595305 - “Measuring runtimes for RF devices in SAP EWM” you have the possibility to merge existing frontend data with existing Backend Data. This can be done for the selected timeframe using the Button Load GUI. This will attempt to merge frontend data with backend data and add frontend runtimes to existing backend runtimes.

4.3.6 Deletion of RF Performance Data

To retain the related tables to a certain size the following two options are available to delete outdated data regularly:

- Manually via the RF Analysis Tool – Button Delete for the selected timeframe
- Regularly via Background job for report /SCMB/PFM2_DELETE. Selection options:
  
<table>
<thead>
<tr>
<th>APPL</th>
<th>RFUI</th>
</tr>
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<tbody>
<tr>
<td>ACTIVITY</td>
<td>RFUI</td>
</tr>
<tr>
<td>Start Date</td>
<td>&lt; 3-5 days ago</td>
</tr>
</tbody>
</table>

Running this report will delete all corresponding transactional data in the related tables.

Note: Detailed data on the EWM system not be kept longer than 3-5 days to avoid unnecessary data growth.

4.3.7 Integration of ITS Response Times

ICM provides the possibility to log response times on a per request basis to a log file. This log file is available via transaction SMICM. Structure of the log file depends on the configuration of parameter icm/HTTP/logging_0. For the ICM configuration to work properly the following two parameters have to be written to the log file:

- %r or %r1: 1. Line of an HTTP request with original path and form fields: for example, GET /sap(bD1kZSZjPTAwMA==)/bc/ping?lang=de HTTP/1.0
- %L: The duration of a request in milliseconds

We recommend setting the logging format to default format “SAP”. The following configuration proposal can serve as a starting point:

icm/HTTP/logging_0  PREFIX=/EWMRF, LOGFORMAT=SAP, LOGFILE=http_log-%d, MAXSIZEKB=2500, FILEWRAP=on


Note: Depending on the ICM logging configuration log files are overwritten or replaced by a new file. The function module always only reads the current file. So if old runtimes are overwritten before the file is read no ICM runtimes can be extracted.
Please configure the file size and rotation model for the ICM log files according to the expected workload on your RF devices to ensure that a maximum of performance information is available when the ICM log file is evaluated for the RF Analysis tool.
5 Activation/Deactivation of RFUI Monitoring

To activate the logging SAP Note 1690850 must be implemented in the SAP EWM System. Runtime tracking for RF transactions can be enabled on a per resource basis. The activation can be done on the fly in transaction /SCWM/RSRC. For details on how to enable the logging please refer to SAP Note 1690850.