Automation Finder

Solution Guide

Release: Advanced Process Automation Release 7.2

Document Revision: 7.2-A0
Distribution Status: Published
Publication Date: December 2019

For assistance, contact your local supplier or nearest NICE Customer Service Center:

EMEA Region Tel: +972-9-775-3800 Fax: +972-9-775-3000	**APAC Region** Tel: +852-8338-9818 Fax: +852-2802-1800	**North America** Tel: 1-800-663-5601 Fax: +201-356-2197	**International Headquarters-Israel** Tel: +972-9-775-3100 Fax: +972-9-775-3070
The Americas Region Tel: 1-800-6423-611 Fax: +720-264-4012	**Israel** Tel: 09-775-3333 Fax: 09-775-3000	**France** Tel: +33-(0)1-41-38-5000 Fax: +33-(0)1-41-38-5001	**Hong-Kong** Tel: +852-2598-3838 Fax: +852-2802-1800
United Kingdom Tel: +44-8707-22-4000 Fax: +44-8707-22-4500	**Germany** Tel: +49-(0)-69-97177-0 Fax: +49-(0)-69-97177-200		

For more information about NICE, visit www.nice.com

CONTENTS

1: Introduction to Automation Finder 5

Document Revision History 6
Scope of this Guide 7

2: Automation Finder Overview 9

Automation Finder Architecture 10
Automation Finder Flow 12
Automation Finder Performance Considerations 14
Automation Finder Report Guidelines 15
Automation Finder Security Overview 16

3: Automation Finder Deployment Workflow 17

4: System Configuration - Automation Finder 21

Enabling Automation Finder in the Automation Portal 22
Viewing the Authorization Policies for Automation Finder 24
Enabling and Customizing Automation Finder 26
Viewing the AI Server Config in Apache on Real-Time Server 38

5: System Admin - Automation Finder 39

Understanding the Collected Data 40
Automation Finder Database 49
Monitoring and Troubleshooting the AI Server 50
Changing the Size and Number of AI Server Log Files 55
Useful Automation Finder Scripts 59
Useful Automation Finder Folders 60
GDPR - Right to be Forgotten 61

Deleting Data from SQL 61
Deleting Data from Elasticsearch 62
Elasticsearch Example 64
GDPR - Right to be Informed 66
Finding Data in SQL Database 66
Finding Customer Data in Elasticsearch 67
Finding Agent Data in Elasticsearch 69

6: Automation Finder **71**

Automation Insight Workflow 72
Automation Insights Site Map 75
Running an Automation Insight Report 76
Report Management 79
Processes 81
Routines 83
Process Map 85
Variations 87
Instances 91
Actions 93

A: Modifying Real-Time Client Automation Finder Settings **95**

1

Introduction to Automation Finder

This document provides a guide to installing, configuring, and deploying NICE Automation Finder.

Document Revision History 6
Scope of this Guide 7

Document Revision History

Revision	Description
7.2-A0 December 2019 Advanced Process Automation 7.2	■ Renamed BlackList parameter to Filter Mode. See: ■ Enabling and Customizing Automation Finder on page 26 ■ Modifying Real-Time Client Automation Finder Settings on page 95 ■ Added new option to Data Sending Method. See Automation Finder on page 28. ■ New Terminal Finder for identifying window titles in Terminal data. See Finders on page 32. ■ New Monitor Clipboard Events parameter. See Enabling and Customizing Automation Finder on page 26.

Scope of this Guide

Automation Finder is a tool for use by Business Analysts.

Software Version

This guide is for Automation Finder.

What is included in this guide?

This guide is a comprehensive solution guide for Automation Finder.

What is not included in this guide?

Topic	Where to Find this Topic...
System and sizing requirements	*Site Preparation Guide*
Real-Time Server and AI Server installation	*Server Installation and Upgrade Guide*
Real-Time Designer and Real-Time Client installation	*Client and Designer Installation Guide*.
Configuration via the Real-Time Designer	*System Administration Reference Guide* *Designer User Guide*

[This page intentionally left blank]

2

Automation Finder Overview

Automation Opportunity Identification

Automation Finder helps you identify automation opportunities by automatically discovering repetitive sequences.

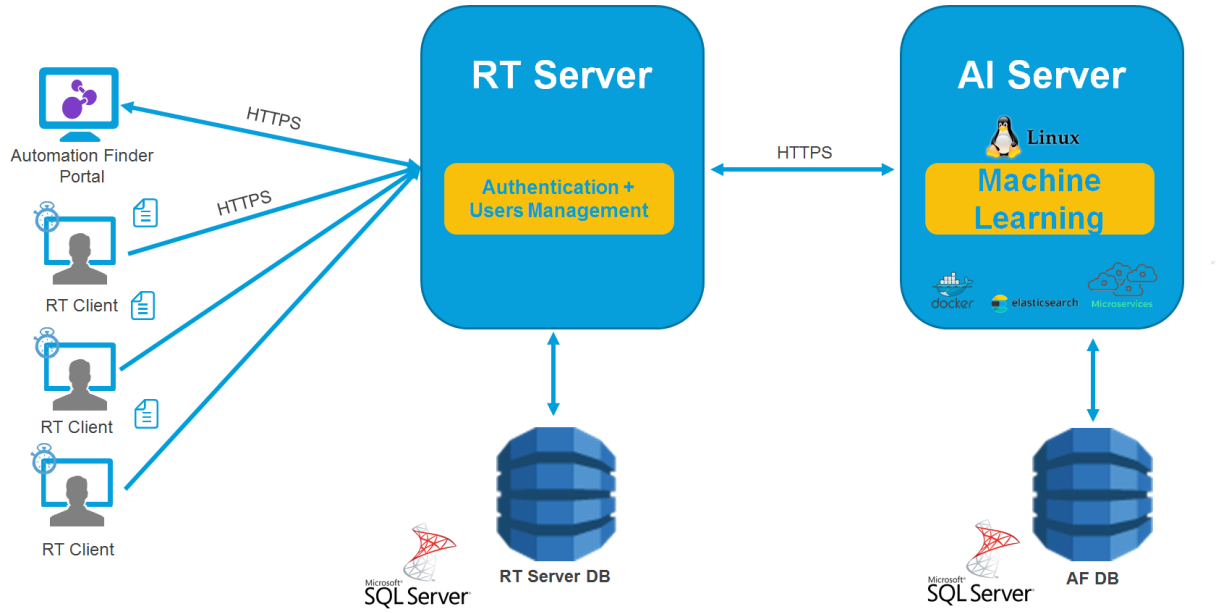
Automation Finder is a new capability within the NICE Advanced Process Automation (APA) solutions suite, introduced in v7.0. It assists organizations to accurately and efficiently identify automation opportunities with the highest ROI potential.

It does so by smartly collecting employees activities and then using unsupervised machine learning to analyze the data, the findings are then presented within the Automation Portal.

Automation Finder is commercialized as part of the Advanced Desktop Automation package.

Automation Finder Architecture

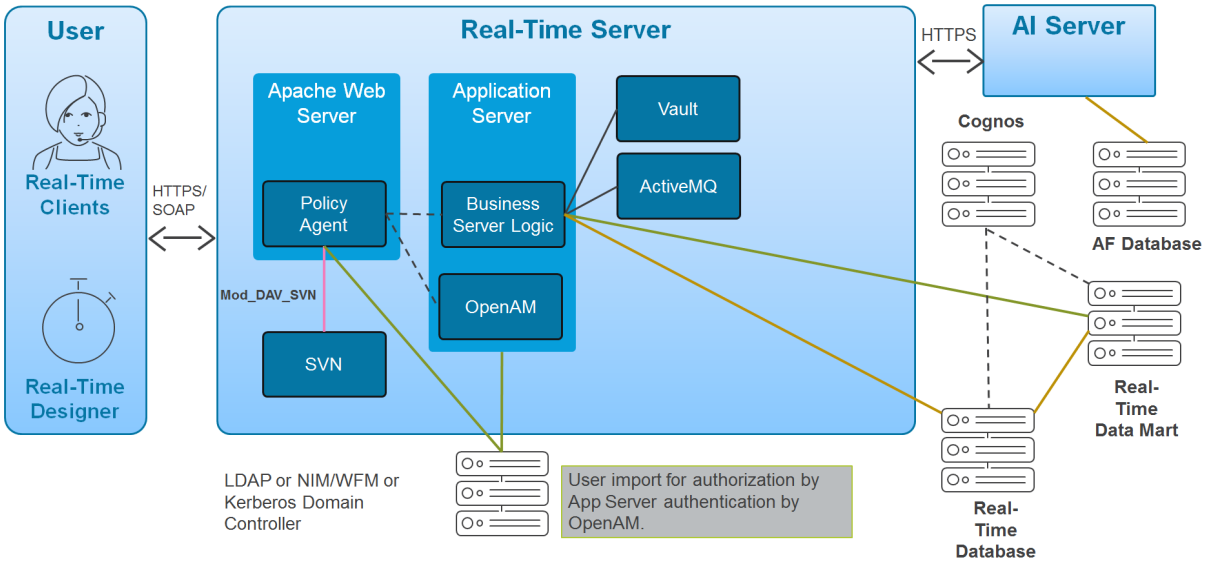
The following section details the Automation Finder architecture, and provides an overview of how the system works.



Automation Finder comprises the following components:

- **Automation Finder Portal:** Allows you to view and analyze the Automation Finder results.
- **RT Clients:** Employee desktops on which the Automation Finder client is installed.
- **AI Server:** Collects and analyzes the activity data from the monitored desktops.
- **Automation Finder DB:** Stores the Automation Finder data.
- **RT Server:** Provides the authentication and user management.

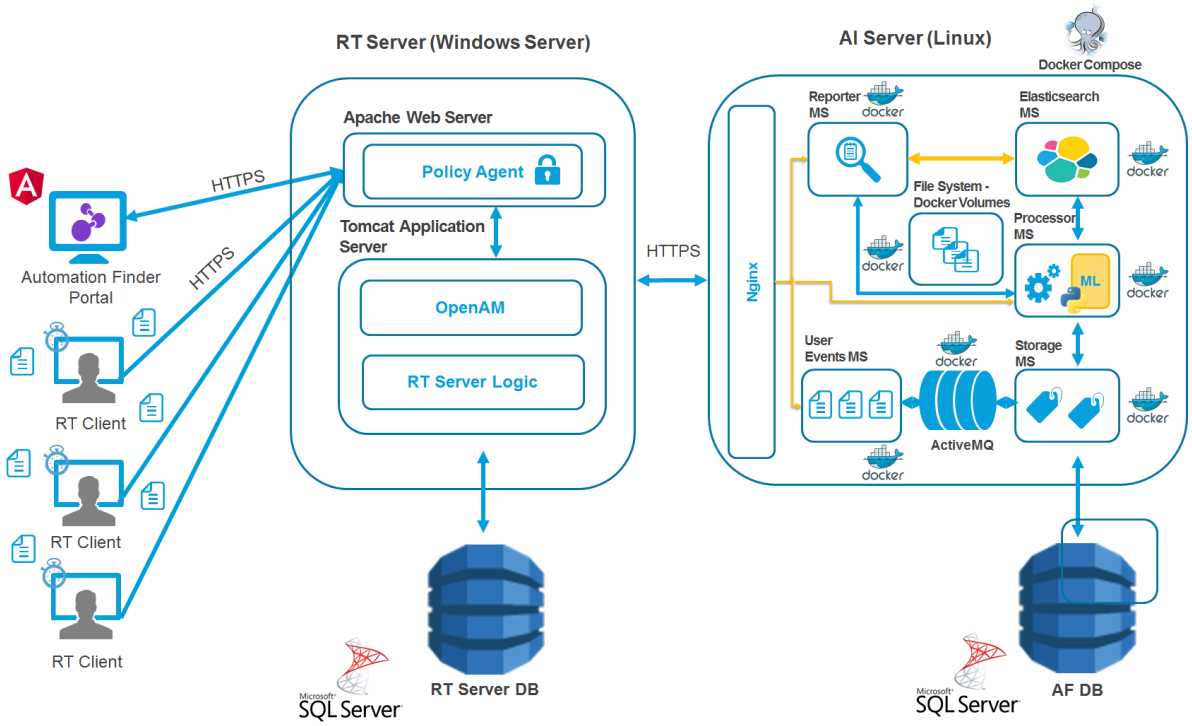
For context, the complete APA architecture is shown below. For more information on Real-Time Server, see the Real-Time Server documentation.



Automation Finder Flow

This diagram shows the logical components of the Real-Time Server and AI Server.

NOTE: This is not intended to be a schematic diagram.



Flow Description

1. The Automation Finder client collects user events and then sends this data (in JSON files) periodically to the Real-Time Server. A user event comprises 50 actions. These clients communicate with the Real-Time Server only, and are not aware of the AI Server. A user event may be a:
   - Mouse action.
   - Keyboard action:
     - Keyboard actions performed in separate fields are counted as separate actions.
     - Keyboard actions in the same field are counted as multiple actions only if a special key, such as Enter, is pressed in between actions.
   - Drag-and-drop action.

2. The Real-Time Server serves as a proxy for the AI Server. It receives the data, and then passes the files on to the AI Server.

3. Triggering the analysis of data for creating a new report is done through the Automation Portal.

Key System Components

- **Real-Time Server** is a Windows server with:
  - Apache Web Server configured as the proxy.
  - OpenAM authenticating and authorizing all the requests.
- **AI Server** is a Linux Server with:
  - Nginx as the Web and proxy server.
  - Docker, Docker Compose, and the various Docker Containers that contain Spring Boot microservices (Reporter, Elasticsearch, Processor (including the Python Machine Learning process), User Events, Storage, File System) and ActiveMQ.
- **AF Database** is an MS SQL Server installed on a separate server or on the Real-Time Server DB Server.

Automation Finder Performance Considerations

The Automation Finder solution is certified for 5,000 concurrent users, each sending one user event every 2.5 minutes. A user event consists of 50 user actions. So this is equivalent to 20 user actions per minute, and means that the server handles up to 2,000 transactions per second.

The mean user event size, of 50 user actions, is ~50KB.

When stored in the database, space considerations should be doubled. i.e., 100 KB per 50 user actions.

Automation Finder Report Guidelines

Report guidelines:

- It is recommended to run a report on data collected from employees who belong to the same team and perform similar tasks.
- It is recommended to run a report on data representing at least 200 workdays.

  Examples of 200 workdays:

  20 employees over 2 weeks (10 workdays)

  10 employees over 4 weeks (20 workdays)

  40 employees over one week (5 workdays)
- A typical report can run on a set of data representing up to 500 workdays.

  Examples of 500 workdays:

  50 employees over 2 weeks (10 workdays)

  100 employees over 1 week (5 workdays)
- When collecting data from more than one team of employees, it is recommended to run a dedicated report per team.

Data collection guidelines:

For the purposes of data collection, it is recommended to assign up to 100 employees, who perform similar tasks, per team. This will typically cover the insights that could be found for the daily work of the team. However, 100 employees per team is not a technical limit and data collection can be enabled for up to 5,000 concurrent users.

Automation Finder Security Overview

Automation Finder Network Security

The AI Server is an isolated machine at the network level. The only access to the AI Server at the IT level is from the Real-Time Server. There is no authentication or user management on the AI Sever, as this functionality is provided by the Real-Time Server.

All communication to and from the AI Server is proxied via the Real-Time Server Apache Web Server, and is fully secured via HTTPS. The Apache Web Server is configured as a proxy to the AI Server during installation. Automation Finder supports HTTPS by default and is configured with the certificate generated during the installation. You can also use your own SSL certificate. For more information, see Installing the Automation Finder AI Server in the *Server Installation and Upgrade Guide*. The AI Server to DB connection is also encrypted, that is, all data in flight is encrypted. The DB can be encrypted using TDE.

Three authorization policies for Automation Finder are installed on the Real-Time Server as part of the Real-Time Server installation. The policies are:

- **AIServerAdminActions:** Controls access to the Automation Finder module in the Automation Portal.
- **AIServerClientActions:** Controls the Real-Client users who can send data collection to the AI Server.
- **AIServerITActions**: This policy blocks all access to the AI Server APIs and ensures that the only way an IT user can access the AI Server is from the Real-Time Server.

NOTE: These Automation Finder policies are installed irrespective of whether or not the Real-Time Server is connected to the AI Server.

Information Security

When configuring the Real-Time Clients for installation options are provided determining how data is stored, and also for specifying applications whose data will be forcibly hashed. See Enabling and Customizing Automation Finder on page 26.

3

Automation Finder Deployment Workflow

The Automation Finder solution is installed as part of the Real-Time Server installation. The following deployment workflow details the system requirements and configurations needed for deploying Automation Finder on your system.

> **NOTE:** This solution guide contains all of the information that is specific to the solution you are deploying. You may also be referred to other NICE documentation for additional information. Please note that additional documentation may contain references to other NICE solutions and products that are not relevant to your solution.

Task	Description	Reference
Step 1: Verify that you have the required prerequisites (Audience: Installer/Business Partner)		
1.	Verify that all prerequisites are in place before beginning the deployment process.	See: ▪ **Prerequisites for the AI Server** in the *Server Installation and Upgrade Guide*. ▪ For all **sizing requirements**, see *RTI Design Document*.
Step 2: Install the AI Server (Audience: Installer/Business Partner)		
2.	Copy the installer file to the AI Server.	See **Preparing the AI Server** in the *Server Installation and Upgrade Guide*.

Task	Description	Reference
3.	Install the Docker infrastructure.	See **Installing the Docker Infrastructure** in the *Server Installation and Upgrade Guide*.
4.	Create the MSSQL DB Schema.	See **Creating the MSSQL DB Schema** in the *Server Installation and Upgrade Guide*.
5.	Install the AI Server including, generating the SSL key certificate for the NGINX secure connection.	See **Installing the AI Server** in the *Server Installation and Upgrade Guide*.
6.	Run product services as a non-root user.	See **Running Automation Finder as a Non-root User** in the *Server Installation and Upgrade Guide*.
Step 3: Connect the Real-Time Server to the AI Server (Audience: Installer/Business Partner)		
7.	▪ If the Real-Time Server is already installed, connect it to the AI Server. ▪ If the Real-Time Server is being installed now, connect it to the AI Server during the installation.	▪ See **Connecting Real-Time Server to Analytics Server** in the *Server Installation and Upgrade Guide*. ▪ See **Installing a Real-Time Server (Clean Installation)** in the *Server Installation and Upgrade Guide*.
8.	Test Automation Finder.	See **Testing Automation Finder with Small Data** in *Server Installation and Upgrade Guide*.
Step 4: Install the Real-Time Client including Automation Finder (Audience: Installer/Business Partner)		

Task	Description	Reference
9.	Install the Real-Time Client, including Automation Finder using a silent installation with the following Automation Finder parameters: ■ **AF_ENABLE**: Set to **True** to use Automation Finder. ■ **AF_HASHING**: Determines how data is stored. ■ **AF_SENSITIVEAPPS**: Lists applications to apply 'securehash' to. See Enabling and Customizing Automation Finder on page 26. **NOTE:** User events must only be sent to the AI Server after the DB is created (Step 4 above).	See *Client and Designer Installation Guide*.
Step 5: Verify the Configuration (Audience: Installer/Business Partner)		
10.	The OpenAM policies for Automation Finder are automatically installed with the Real-Time Server. **NOTE:** The customer is responsible for adding the users to the corresponding LDAP groups: ■ **AIServerAdmin** for the **AIServerAdminActions** policy ■ **AIServerClient** for the **AIServerClientActions** policy	See Viewing the Authorization Policies for Automation Finder on page 24.
11.	Verify that the Automation Finder is enabled in the Automation Portal.	See Enabling Automation Finder in the Automation Portal on page 22.
12.	Test Automation Finder using the sample data and script provided.	See **Testing Automation Finder with Small Data** in the *Server Installation and Upgrade Guide*.

Uninstalling Automation Finder

1. Disable Automation Finder data collection on the Real-Time Clients. To disable Automation Finder on a Real-Time Client, configure **afEnabled="false"**. Real-Time Client will run normally but Automation Finder will not.

2. Uninstall the AI Server. See **Uninstalling the AI Server** in the *Server Installation and Upgrade Guide*.

3. Remove the AI Database.

4. Remove Automation Finder from the Automation Portal. See Enabling Automation Finder in the Automation Portal on page 22.

5. Disconnect the AI Server from the Real-Time Server.

NOTE: There is no uninstall option for AI Server on Real-Time Server.

4

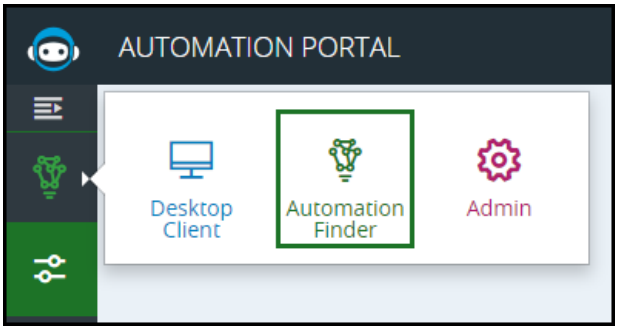
System Configuration - Automation Finder

You can verify various configurations for Automation Finder.

Enabling Automation Finder in the Automation Portal 22
Viewing the Authorization Policies for Automation Finder 24
Enabling and Customizing Automation Finder 26
Viewing the AI Server Config in Apache on Real-Time Server 38

Enabling Automation Finder in the Automation Portal

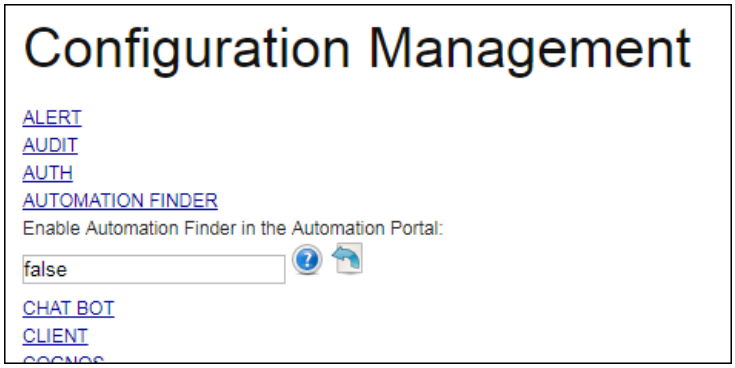
The Automation Finder portal is used to view your automation insights.



You can verify that this is enabled in the Configuration Management console.

To open the Configuration Management console:

1. Connect to the Real-Time Server.
2. On the Real-Time Server, open a web browser and type **http://<SERVER_IP>:1911/RTServer/console/configurationmanagement** (remember to replace <SERVER_IP> with the correct IP address).
3. In the login screen, enter the Username **RTIadmin**, and the password **admin123**.
4. The Configuration Management screen is displayed.
5. Click the **Automation Finder** link to configure the Automation Finder parameters.



Enable Automation Finder in the Automation Portal:

Show or hide the Automation Finder pane in the Automation Portal.

If an AI server is configured during Real-Time Server installation, then this parameter is set to True.

- **False** (default) = The Automation Finder pane is not accessible (even if the AI server is configured).
- **True** = The Automation Finder pane is accessible. If set to True without configuring an AI server, you will receive multiple errors.

6. Update the configuration as needed, and then click **Save**.

Viewing the Authorization Policies for Automation Finder

Authorization policies are automatically configured in policy sets. Automation Finder includes the following policies:

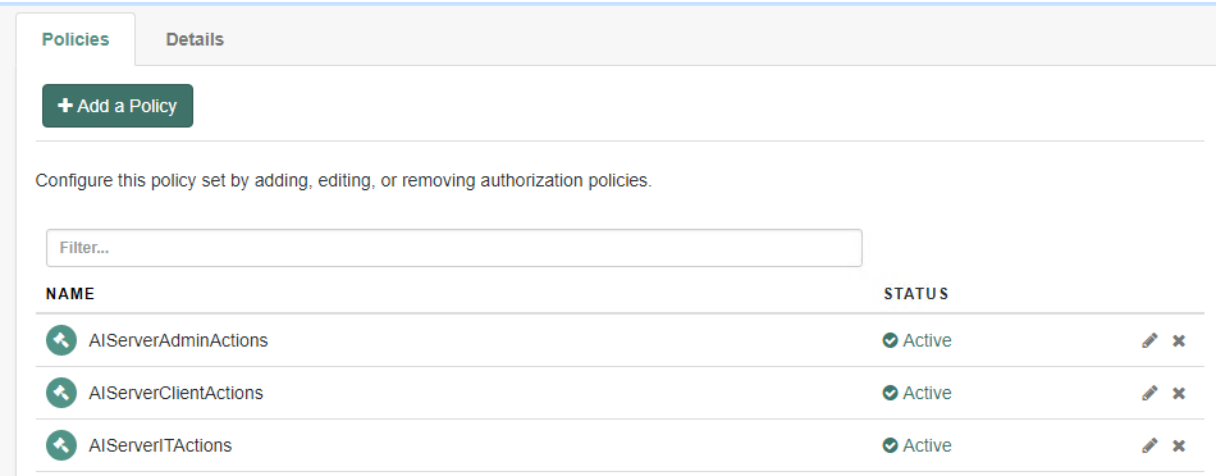
- **AIServerAdminActions:** Controls access to the Automation Finder module in the Automation Portal.
- **AIServerClientActions:** Controls the Real-Client users who can send data collection to the AI Server.

  NOTE: The customer is responsible for adding the users to the corresponding LDAP groups:
  - **AIServerAdmin** for the **AIServerAdminActions** policy
  - **AIServerClient** for the **AIServerClientActions** policy
- **AIServerITActions**: This policy blocks all access to the AI Server APIs and ensures that the only way an IT user can access the AI Server is from the Real-Time Server. To access the AI Server, log in to the Real-Time Server as the IT Admin, and use the AI Server IP or FQDN to connect to the AI Server.

These Automation Finder policies are installed irrespective of whether or not the Real-Time Server is connected to the AI Server.

To view the authorization policies:

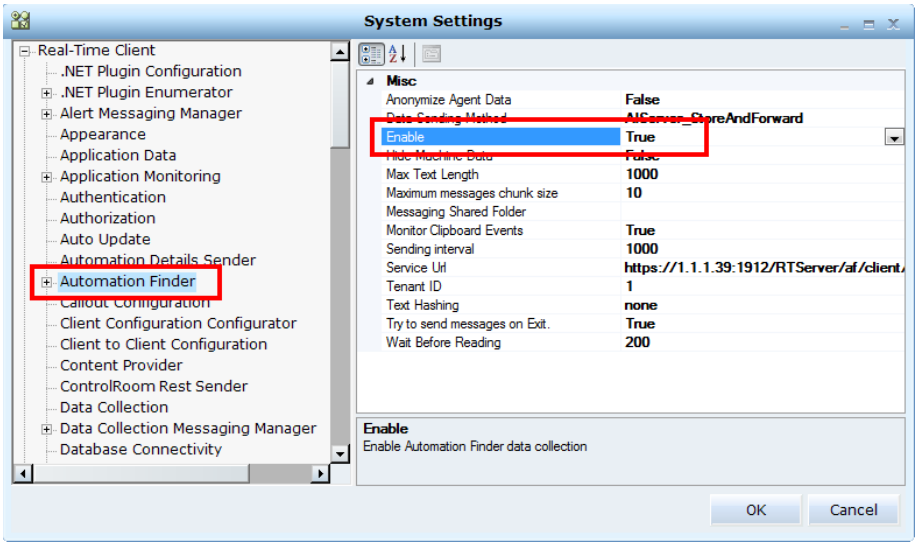
1. In the Real-Time Server machine, double-click the **OpenAM** link to open the OpenAM Console.
2. Log into OpenAM using the administrator user.
3. To view the policy set, navigate to **Main page** > **Authorization** > **Policy Sets**.
4. Select the required policy set.



5. To view the authorization policy details, click on the required policy.

Enabling and Customizing Automation Finder

Before you begin, you must enable Automation Finder: In the Real-Time Designer, open the System Settings window. Then go to **Real-Time Client** > **Automation Finder**. Change **Enable** to **True**.



Real-Time client-related settings are configured in one or more of these places:

- The **System Settings** window of Real-Time Designer.
- By **Silent Installation**. See the *Real-Time Client and Designer Server Installation Guide*.
- Directly in the **configuration file**. See Modifying Real-Time Client Automation Finder Settings on page 95.

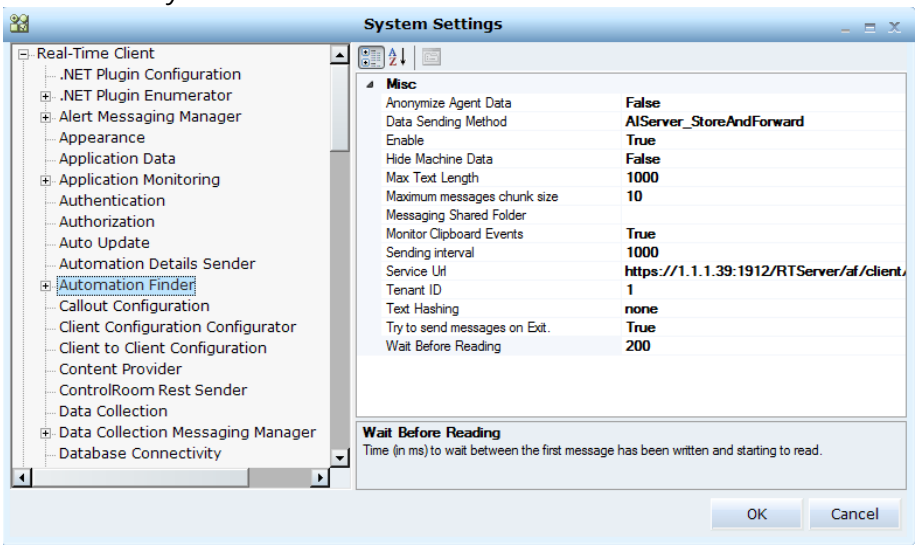
Configurable features of Automation Finder include:

Feature Description	See...
▪ **Exclude applications**: Determine for which applications to collect data.	ExcludedApplications on page 34
▪ **Hash sensitive data**: Determine for which applications to hash data and define patterns. ▪ Hashing data - set **Sensitive Applications** ▪ Patterns - set **Text Tokens**	SensitiveApplications on page 35 TextToken on page 33

Feature Description	See...
▪ **Anonymize employee data**: Define what to do with identifying data such as agent names and machine names. ▪ Agent names - set the Automation Finder parameter **Anonymize Agent Data** ▪ Machine names - set the Automation Finder parameter **Hide Machine Data**	Automation Finder on the next page
▪ **Low Impact applications**: Select applications where actions can be collected without components.	LowImpactApplications on page 36

NOTE: Some parameters can only be set directly in the configuration file. After updating the configuration file, you will see the changes in the System Settings window.

After making changes by any of these means, the configuration file, **RTClient.exe.config**, must be distributed to all user desktops for the new configurations to take effect. Preferably by the Auto Update feature. For more details about Auto Update, see **Running the Updater in Standalone Mode** in the *System Administration Guide*.



Automation Finder

Automation Finder		
Parameter	**Default**	**Description**
Anonymize Agent Data	**False**	**False** = Do not hash agent names. **True** = Hash agent names. Agent names appear in the data and as part of the file name. When you hash agent names, this also hashes the agent name in the file name.
Data Sending Method	**AIServer_ StoreAndForward**	Sets the method of forwarding the Automation Finder data. The data can be sent to a shared folder, or directly to the AI Server. **AIServer_StoreAndForward** = All messages are stored locally before being sent from the clients to the Real-Time server. If the server is down, messages will be saved locally. **AIServer Direct** = All messages are sent directly from the clients to the Real-Time server. If the server is down, messages are not saved locally, they are deleted and lost. This option provides added security. **SharedFolder** = Use a network shared folder. Typically this is used in a POC or when there is no Real-Time server.

Automation Finder		
Parameter	**Default**	**Description**
Enable	**False**	**False** = Do not enable Automation Finder data collection. **True** = Enable Automation Finder data collection.
Hide Machine Data	**False**	**False** = Leave machine names. **True** = Remove machine names. This removes the ClientID (machine name) from the data files and leave this field blank. Machine names are generally not needed to establish a routine.
Max Text Length	**1000**	Specifies the maximum length of any text field stored in the data.
Maximum messages chunk size	**10**	Specifies the maximum number of messages to be sent together.
Messaging Shared Folder		Defines the full path of the messaging shared folder (if specified in the Data Sending Method).
Monitor Clipboard Events	**True**	**True** = Copy and cut clipboard actions will be collected. **False** = Copy and cut clipboard actions will not be collected.
Sending interval	**1000**	Specifies the interval at which data is sent in milliseconds. Data is sent either when the interval passes or when the maximum number of messages in the chunk is reached.

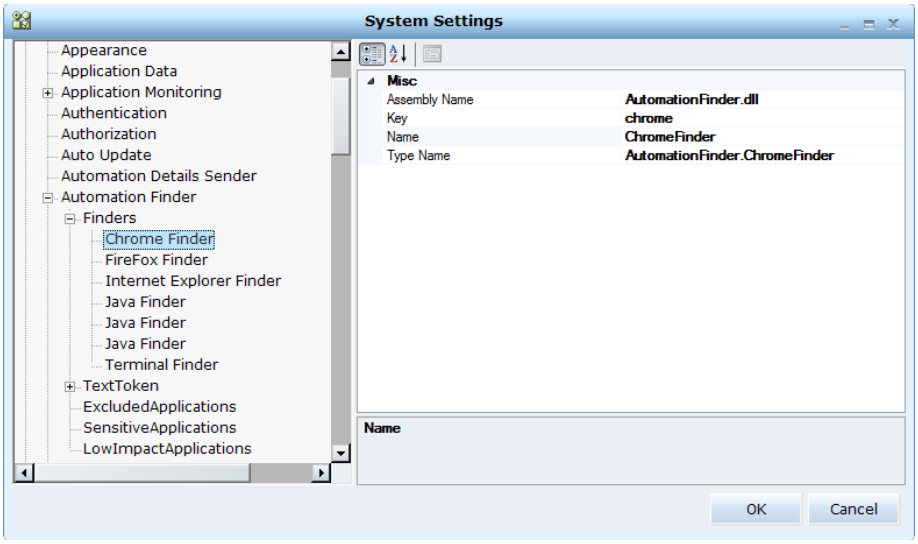
Automation Finder		
Parameter	**Default**	**Description**
Service Url		Specifies the URL to the Automation Finder Server.
Tenant ID	1	For multi-tenancy when working in the cloud. Default is 1.

Automation Finder		
Parameter	**Default**	**Description**
Text Hashing	**none**	Determines how data is stored. ■ **none:** ■ Save as plain text. ■ Hash anything that might be a password (length 8-16 characters with a combination of digits or symbols and upper and lower case letters). ■ **hide:** ■ Text is not saved. ■ **securehash:** ■ Text and url parameters are hashed. ■ Passwords are hashed. ■ Title of active window: Hash when there are more than 4 consecutive digits. ■ **mask:** ■ Text: replace digits with 'd', lower-case letters with 'c', and upper-case letters with 'C'. ■ Url: mask everything after '?'. ■ Title of active window:

Automation Finder		
Parameter	**Default**	**Description**
		▪ Hash when there are more than 4 consecutive digits.
Try to send messages on Exit	**True**	**True** = Send remaining messages when client is shut down. **False** = Any messages that were not yet sent when the client is shut down, will not be sent.
Wait Before Reading	**200**	Specifies the time (in ms) to wait before the first message has been written and starting to read.

Finders

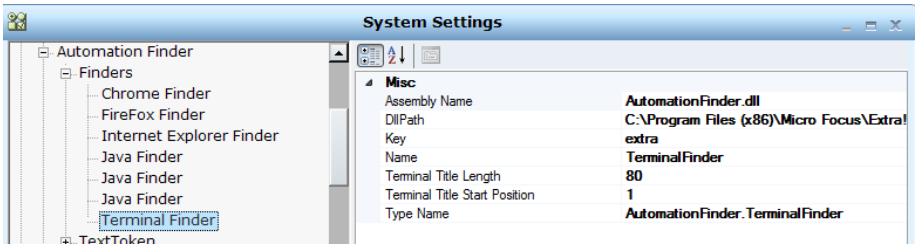
Finders are defined in the configuration file and are for internal use. You may want to adjust the parameters for the Terminal Finder as described below. Do not edit any of the other Finder entries.



Parameter	Description
Assembly Name	For internal use. Do not edit.
Key	The application's process name used by the Finder. Do not edit.
Name	For internal use. Do not edit.
Type Name	For internal use. Do not edit.

Additional parameters for **Terminal Finder** only

Terminal Finder allows you to collect the screen title from a terminal server. You can define the position and length of the title.



Parameter	Default	Description
DllPath		Path to the DLL with the API for the Terminal Emulator.
Terminal Title Length	80	The length of the string to capture.
Terminal Title Start Col	1	Position of the first column. Leftmost column is 1.
Terminal Title Start Row	1	Position of the first row. Topmost row is 1.

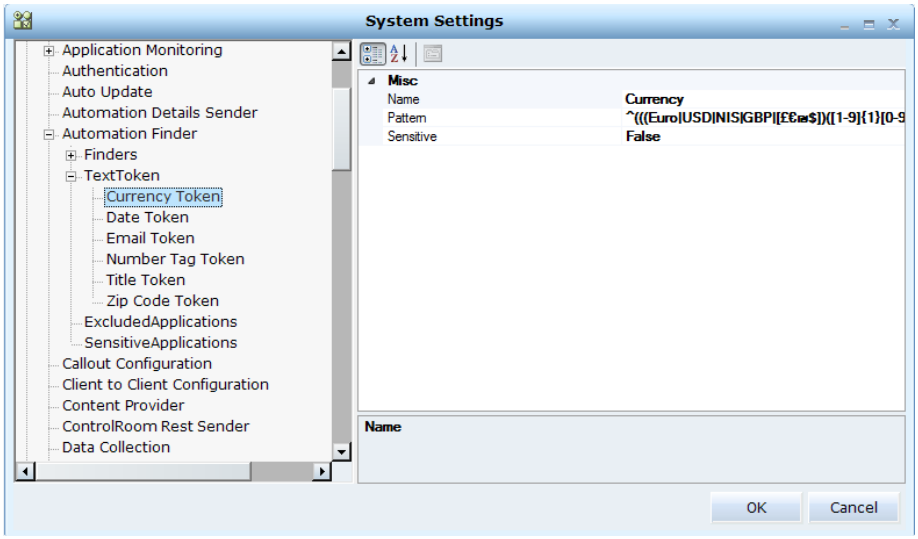
TextToken

Automation Finder comes with several default patterns used for identifying bits of data such as dates and titles (Mr, Mrs, Ms, Dr...). You can add more patterns as needed, such as credit card formats and phone numbers.

For example, a 'Credit card' pattern XXXX-XXXX-XXXX-XXXX

Each pattern is defined as a TextToken and has the following parameters.

Additional Text Tokens can be added during silent installation (AF_HASHING) or directly in the client configuration file. See Modifying Real-Time Client Automation Finder Settings on page 95.



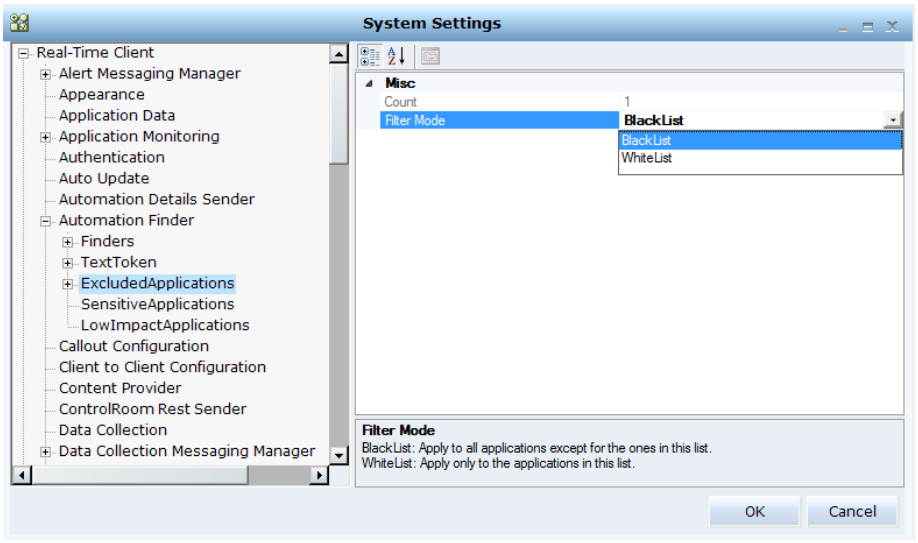
Automation Finder > TextToken		
Parameter	**Default**	**Description**
Name		A unique name for the token used for internal ID purposes.
Pattern		A regular expression that defines the pattern.
Sensitive	False	True = hash data collected for this token. False = do not hash this data.

ExcludedApplications

Excluded applications are not analyzed by Automation Finder.

If the excluded applications list is switched to a whitelist, then only the applications in this list will be analyzed by Automation Finder.

This must be configured directly in the configuration file. See Modifying Real-Time Client Automation Finder Settings on page 95.



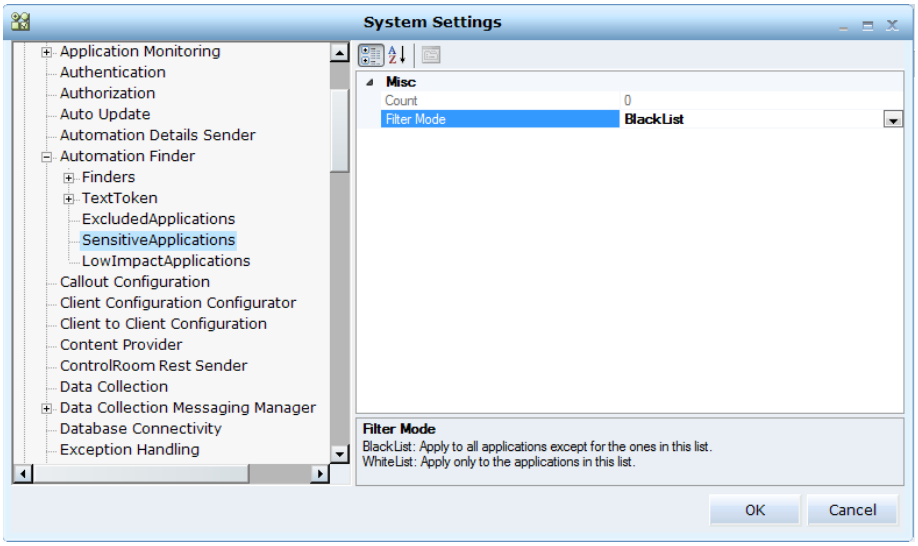
Automation Finder > ExcludedApplications		
Parameter	**Default**	**Description**
Filter Mode	BlackList	BlackList = Collect data from all applications except for the ones in this list. WhiteList = Collect data only from the applications in this list.
Count		The number of applications in the list.

SensitiveApplications

All data collected from sensitive applications is hashed.

If the sensitive applications list is switched to a whitelist, then the data from these applications will not be hashed. Data from all other applications will be hashed.

This must be configured directly in the configuration file. See Modifying Real-Time Client Automation Finder Settings on page 95.



Automation Finder > SensitiveApplications		
Parameter	**Default**	**Description**
Filter Mode	BlackList	**BlackList** = Hash data from these applications, regardless of the general hash settings. **WhiteList** = Hash data from all applications except for the ones in this list.
Count		The number of applications in the list.

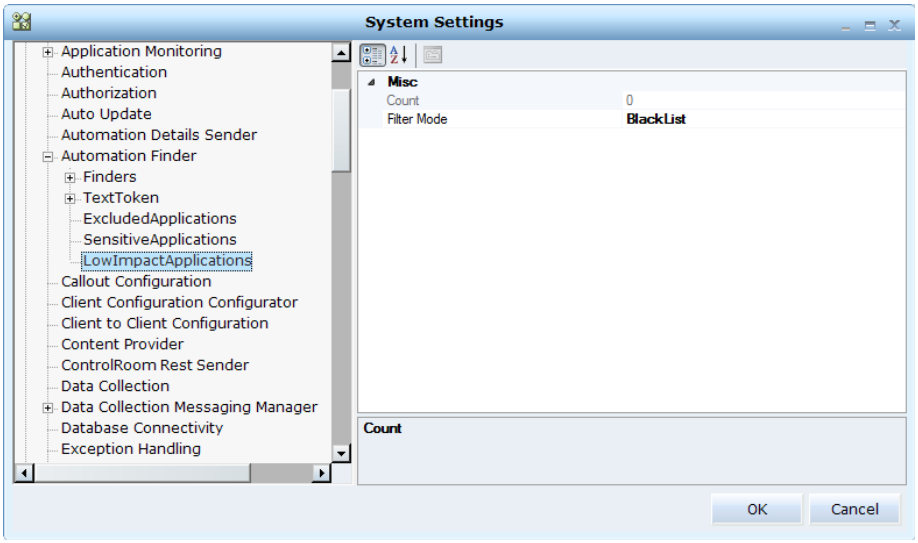
LowImpactApplications

Low Impact applications collect only actions, and not component information. For example, an action would be 'Click a button', The component, would be which button was clicked.

Important!

- Only desktop applications can be added to this list. Web applications cannot be configured as Low Impact.
- If an application on the Low Impact list is excluded by the Excluded Applications list, the excluded list takes priority and it will be excluded.

This must be configured directly in the configuration file. See Modifying Real-Time Client Automation Finder Settings on page 95.



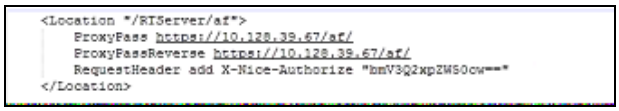
Automation Finder > SensitiveApplications		
Parameter	**Default**	**Description**
Filter Mode	BlackList	**BlackList** = Do not collect action component information from the applications in this list. **WhiteList** = Collect action component information only from the applications in this list (use as a whitelist).
Count		The number of applications in the list.

Viewing the AI Server Config in Apache on Real-Time Server

The Apache server acts as a proxy for the AI Server.

To view the Apache config:

1. Connect to the Real-Time Server.
2. On the Real-Time Server, open **nice_systems\RTServer\Apache\conf\extra\ncp.rts.conf**.



5

System Admin - Automation Finder

Understanding the Collected Data 40
Automation Finder Database 49
Monitoring and Troubleshooting the AI Server 50
Changing the Size and Number of AI Server Log Files 55
Useful Automation Finder Scripts 59
Useful Automation Finder Folders 60
GDPR - Right to be Forgotten 61
Deleting Data from SQL 61
Deleting Data from Elasticsearch 62
Elasticsearch Example 64
GDPR - Right to be Informed 66
Finding Data in SQL Database 66
Finding Customer Data in Elasticsearch 67
Finding Agent Data in Elasticsearch 69

Understanding the Collected Data

Data is collected in JSON files.

Key	Description	Example	Shown in Action Type
tenantID	For multi-tenancy when working on cloud. Default is 1.	1	Click, InputText, InputKey, DragAndDrop, Clipboard
clientID	Machine name concatenated with generated client run number. Changes every client run.	MICHALG-T460_ ac3cc26bf1284e3994792cd04a0fea09	Click, InputText, InputKey, DragAndDrop, Clipboard
Type	Click, InputText, InputKey, DragAndDrop, or Clipboard.	Click	Click, InputText, InputKey, DragAndDrop, Clipboard
actionTime	Time of action.	2018-03-19T13:46:42.5274115+02:00	Click, InputText, InputKey, DragAndDrop, Clipboard

Key	Description	Example	Shown in Action Type
MousePosition From	(X, Y, Title) start position of mouse right-click DragAndDrop, and if it exists, the title of the start position window.	"From":{"X":2323,"Y":788,"title":""}	DragAndDrop
MousePosition To	(X, Y, title) finish position of mouse right-click DragAndDrop. and if it exists the title of the finish position window.	"To":{"X":2268,"Y":788,"title":"Document2 - Word"}	DragAndDrop
MousePosition position	(X,Y) position of action relative to the screen.	position":{"X":1680,"Y":124} (use 2 screens , action happened in the right screen)	Click, InputText, InputKey
processName	Name of process.	Iexplore	Click, InputText, InputKey
className	Internal component name where the action occurred.	Usually empty	Click, InputText, InputKey
title	Name of window the action happened in.	NSC - NICE Shared Services Center	Click, InputText, InputKey
url	If the action happened in a Web page, the URL, when hash then the params values are hashed, when mask then mask everything after '?'.	https://www.nice.com/get-in-touch	Click, InputText, InputKey

Key	Description	Example	Shown in Action Type
int height int width int top int left	Action window location.	"height":932,"width":1676,"top":93,"left":1682	Click, InputText, InputKey
Identifier	Used as one common field for all actioncomponent components. The following fields are searched, in this order, and the first field with a value is copied to Identifier. ▪ Id ▪ Name ▪ ControlType ▪ ClassName ▪ ActiveWindow title	"Comments"	Click, InputText, InputKey
Name	Component Name taken from the element at the point of the action.	“Comments”	Click, InputText, InputKey
ControlType	Component ControlType taken from the element at the point of the action.	Edit/ button...	Click, InputText, InputKey

Key	Description	Example	Shown in Action Type
Id	Component Id taken from the element at the point of the action.	System.ItemNameDisplay	Click, InputText, InputKey
ClassName	Component ClassName taken from the element at the point of the action.	IEFrame	Click, InputText, InputKey
description	Short description of the action. Includes the action type, component name, active window title and process name.	"description":"User InputText on NSC - NICE Shared Services Center in NSC - NICE Shared Services Center - iexplore"	Click, InputText, InputKey
text	Action text, either from typing on the keyboard or from CTRL C/V. according to hashing config field. Hash or mask according to the configuration. None returns plain text. When configured to hide, does not collect any text	"text":"New York"	InputText, InputKey, or Clipboard Text
textLength	Length of text.	"textLength":18	InputText, InputKey, or Clipboard Text
numberOfWords	Number of words in the text.	"numberOfWords":4	InputText, InputKey, or Clipboard Text

Key	Description	Example	Shown in Action Type
tags	In text, looks for date, currency, Email, title, zipcode, number. When the text is hashed/masked, this indicates that tags were identified.	"tags": [{"type":"Currency","length":1,"startIndex":64}, {"type":"Email","length":20,"startIndex":0}	InputText, InputKey, or Clipboard Text
FinishTime	Typing finish time.	"FinishTime":"2018-03-19T17:25:39.7404115+02:00"	InputText
Code	ASCII keyboard value.	Code":86	InputKey
Ctrl	Boolean value if CTRL keyboard key was pressed.	True/false	InputKey
Alt	Boolean value if ALT keyboard key was pressed.	True/false	InputKey
Cmd	Key name.	Cmd":"Return"	InputKey

Tag Name	regex	Comments
Email	<text>@<text>.<text>	

Tag Name	regex	Comments
Date	dd\mm\yyyy dd\mm\yy dd.mm.yyyy dd.mm.yy dd-mm-yyyy dd-mm-yy	Also works if dd and mm order is reversed (such as in US dates)
Zip_Code	5 consecutive numbers	This is common in many countries, but not in all (UK has different zip code)
Currency		Look for USD ($) or Euro (€)
Title	Dr. Miss Mr. Mrs. Ms. Mstr. Prof. Rev. Sir Sister	

Tag Name	regex	Comments
Number_ Tag	#[0-9]+	Text contains some token of '#' followed by number, for example, 'Case #12' or 'Claim #321'

A sample of an event:


```
"tenantID":"1"
"clientID":"CPU-797845L3_371174884a1246f1a4a1563c54c9539d"
"userName":"ybailey"
"type":"InputKey"
"name":"V"
"actionTime":"2018-10-03T11:41:35.8409232+02:00"
"position":
"X":377
"Y":640
"activeWindow":
"processName":"iexplore"
"title":"Contact Edit ~ Salesforce - Professional Edition"
"url":"file://C:\\Phase1\\Salesforce\\Contact Edit.htm"
"height":629
"width":1366
"top":76
"left":0
"actionComponent":
"Identifier":"MailingCity"
```

"Name":"MailingCity"
"ControlType":"edit"
"Id":""
"ClassName":""
"UIStack":[
"Name":"MailingCity"
"Role":"edit"
"ClassName":""
"Name":""
"Role":""
"ClassName":""
"Name":""
"Role":"table"
"ClassName":""
"Name":"Contact Edit ~ Salesforce - Professional Edition"
"Role":"pane"
"ClassName":""
"Name":""
"Role":"pane"
"ClassName":""
"Name":"Contact Edit ~ Salesforce - Professional Edition - Internet Explorer"
"Role":"pane"
"ClassName":""
"Name":""
"Role":"pane"

"ClassName":""
"Name":"Contact Edit ~ Salesforce - Professional Edition - Internet Explorer"
"Role":"window"
"ClassName":""]
"description":"User InputKey(V) on MailingCity in Contact Edit ~ Salesforce - Professional Edition - iexplore"
"hash":"7DC40526168E7E3CD88644347F2395686E69B059F4C2BB4AEE63A7ED9FAB2382
C1624A26107E1A301A54E536E1313C121B4DB310913FE9C653CAF352645821A2
0670E06927819E2F50C08CD40A013B6EB2C8E627620C89021A2976302412A8AD"
"text":"Palm Beach Gardens"
"textLength":18
"numberOfWords":3
"tags":[]
"Code":86
"Ctrl":true
"Alt":false
"Shift":false
"Cmd":"V"

Automation Finder Database

The Automation Finder data is stored for a default period of 90 days.

NOTE: The **RETENTION_PERIOD_RAWDATA** parameter specifies the number of months that the raw data is kept in the DB. The parameter is set in the **Mngm_ConfigParameters** table. This parameter is inserted to the table during installation, and there is no user interface to change it.

Monitoring and Troubleshooting the AI Server

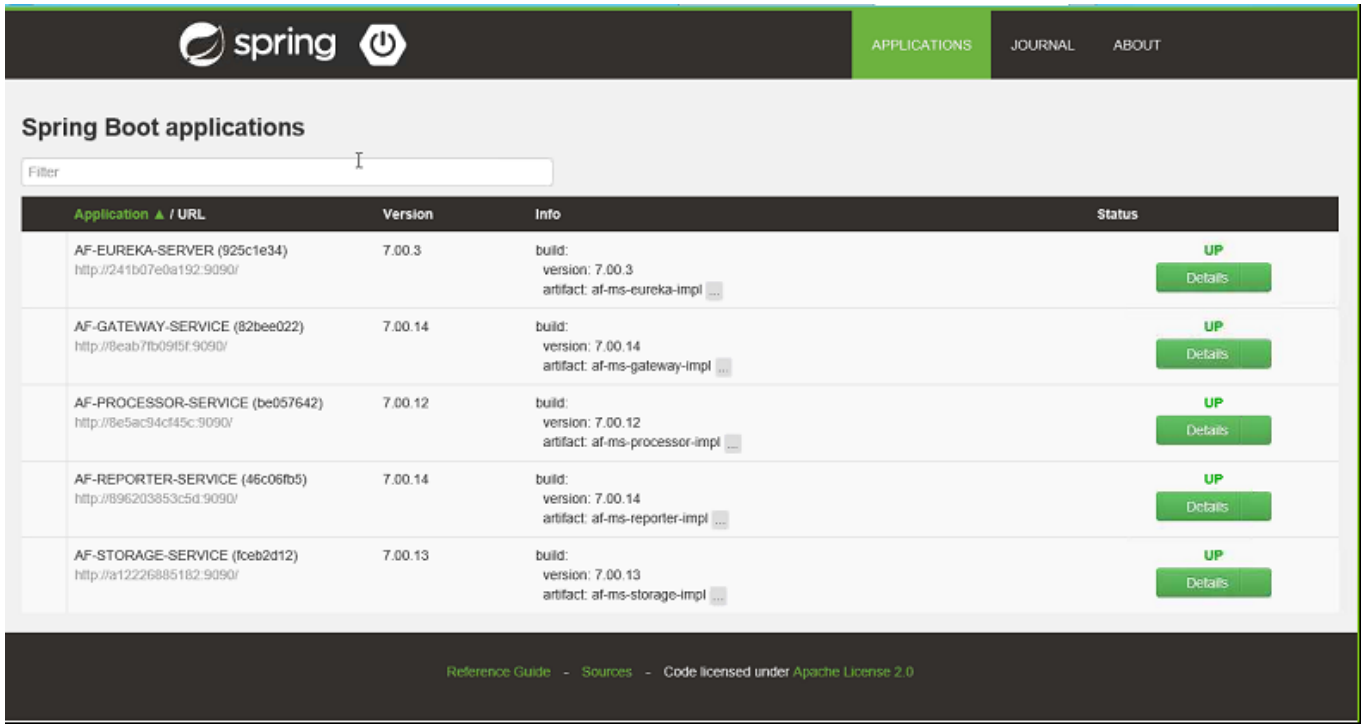
The Spring Boot Admin is used to monitor and troubleshoot the AI Server. This allows you to see information on the various microservices:

- **Eureka:** A technical service.
- **Gateway:** Receives the data from the clients.
- **Processor:** Runs the machine learning (ML).
- **Reporter:** Indexes the results of the ML into Elasticsearch.
- **Storage:** Stores the data in the AF DB.

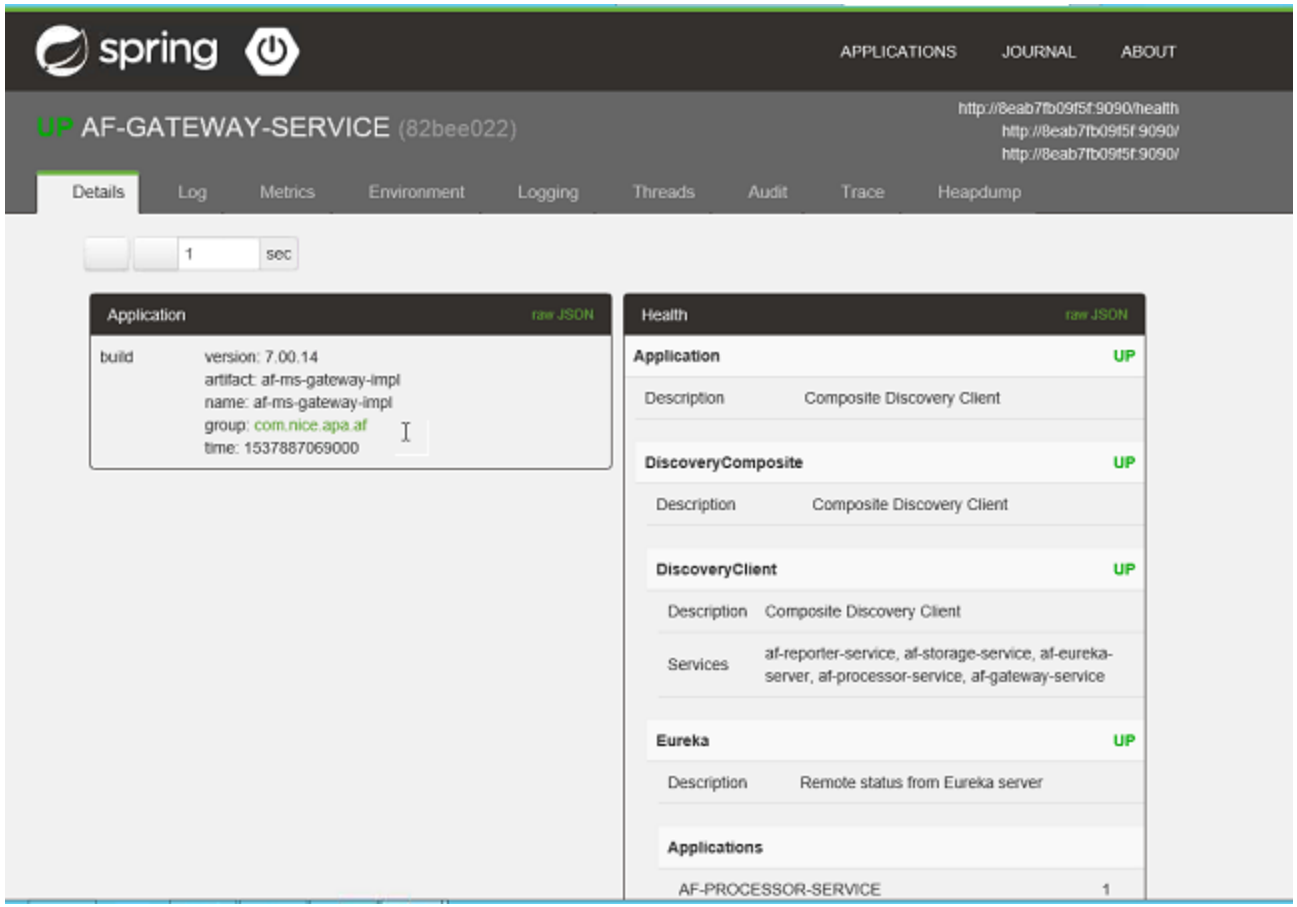
NOTE: The Spring Boot Admin can only be accessed from the Real-Time Server.

To connect to Spring Boot Admin:

1. Connect to the Real-Time Server.
2. On the Real-Time Server, open a web browser and type **Use https://<IP>.af/it**

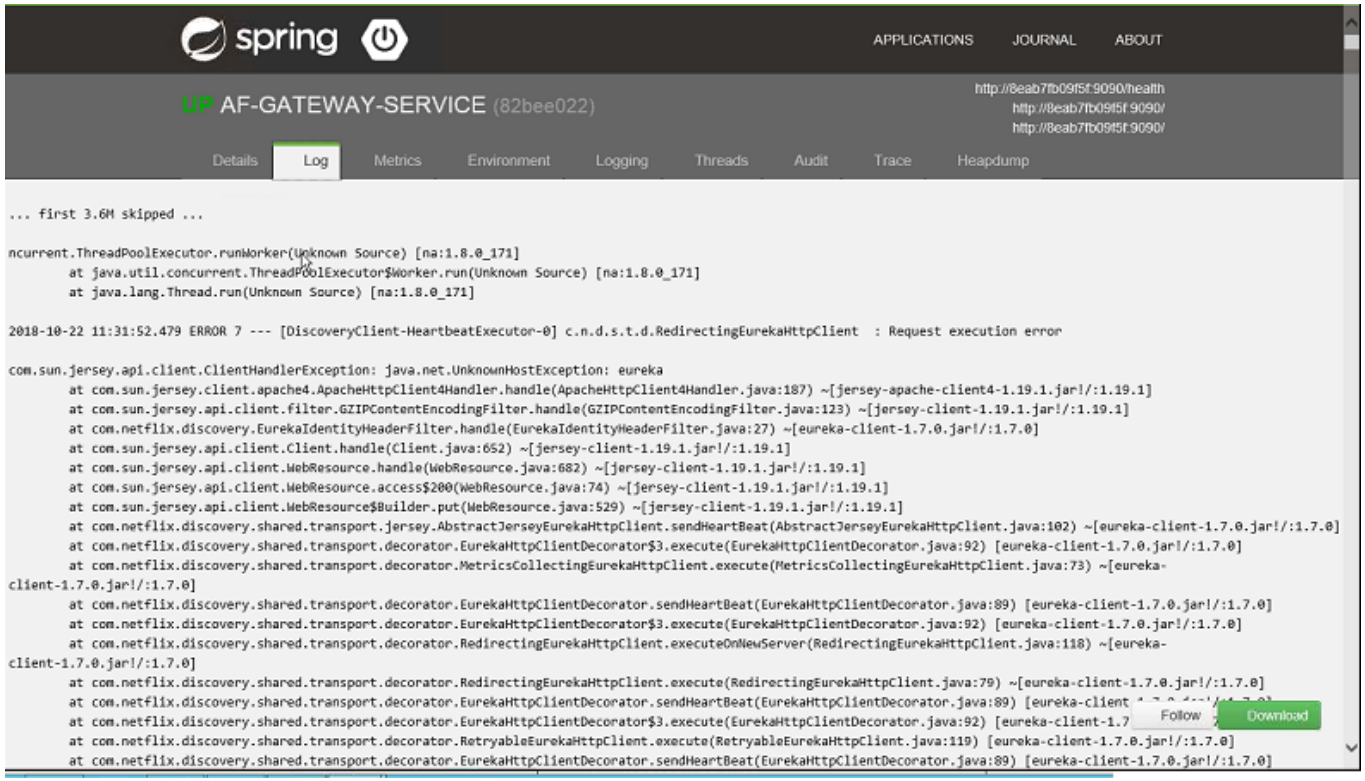


3. Click the microservice to display more detailed information.

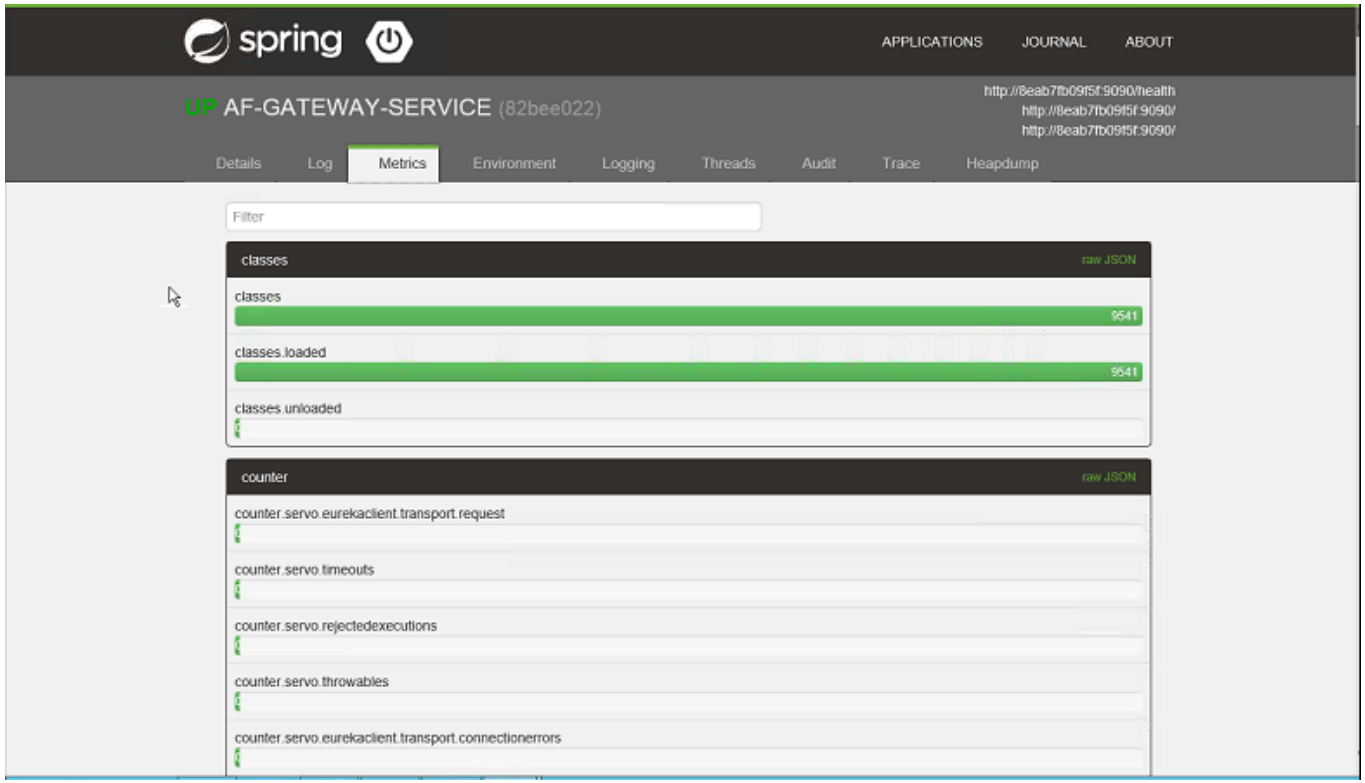


4. Click **Logs** to view the log details (and download the logs as required).

TIP: To change the log file size or number of log saved, see Changing the Size and Number of AI Server Log Files on page 55.



5. Click **Metrics** to view metrics.


spring
APPLICATIONS
JOURNAL
ABOUT
UP AF-GATEWAY-SERVICE (82bee022)
http://8eab7fb09f5f:9090/health
http://8eab7fb09f5f:9090/
http://8eab7fb09f5f:9090/
Details
Log
Metrics
Environment
Logging
Threads
Audit
Trace
Heapdump
Filter
classes
raw JSON
classes
9541
classes.loaded
9541
classes.unloaded
counter
raw JSON
counter.servo.eurekaclient.transport.request
counter.servo.timeouts
counter.servo.rejectedexecutions
counter.servo.throwables
counter.servo.eurekaclient.transport.connectionerrors

Changing the Size and Number of AI Server Log Files

If necessary, you can change the size of each log file and the number of log files created. Log file sizes and numbers can be different for each component.

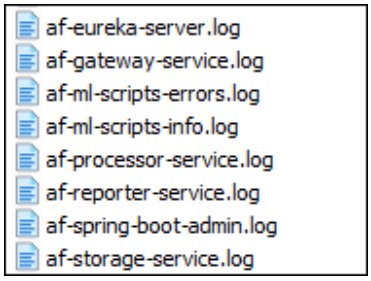
All log files are written to: **/opt/autoFinder/logs/** and start with the prefix **af-**

The log files names are: **af-<log name>-<log type>.log**

<log name> is the name of log

<log type> is the component type name, such as service, server, scripts, with an additional optional info/errors level suffix.

Examples: ***af-reporter-service.log*** *or* ***af-ml-scripts-errors.log***

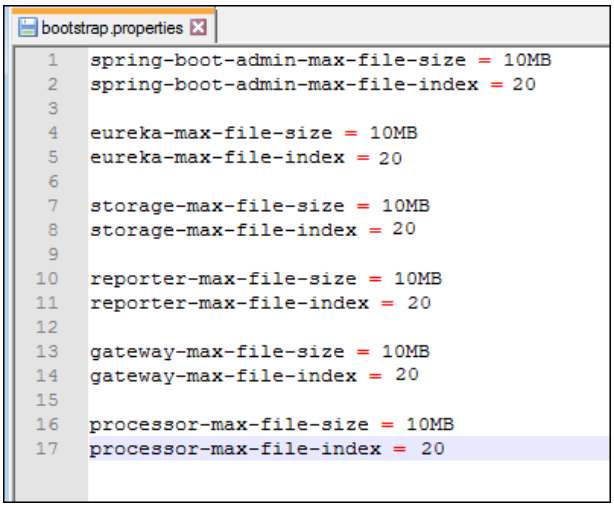


The defaults for each log file is 20 log files, each up to 10 MB, before they are overwritten.

Machine Learning (af-ml-scripts...) logs are configured in the logging.yaml file. See Configuring the logging.yaml file on page 57.

All other log files are configured in the bootstrap.properties file. See Configuring the bootstrap.properties file on the next page.

Configuring the bootstrap.properties file



To set log file parameters:

1. Log in to the AI Server.
2. Go to **/opt/autofinder** and backup and then open **bootstrap.properties** for editing.
3. Change the relevant properties. Each component can be set differently.

   file-size is the size of each log file, in megabytes

   file-index is the number of log files saved.

   For example, to generate 20 log files that are 20 MB each for the storage component, set:

   ```
   storage-max-file-size = 20MB
   storage-max-file-index = 20
   ```
4. Save and close the file.
5. Reboot the server to apply the changes.

Configuring the logging.yaml file

```
version: 1
disable_existing_loggers: True
formatters:
    simple:
        format: "%(asctime)s - %(levelname)s - %(message)s"
    module_name_simple:
        format: "%(asctime)s - %(name)s - %(levelname)s - %(message)s"

handlers:
    console:
        class: logging.StreamHandler
        level: DEBUG
        formatter: simple
        stream: ext://sys.stdout

    info_file_handler:
        class: logging.handlers.RotatingFileHandler
        level: INFO
        formatter: simple
        filename: /rts/logs/af-ml-scripts-info.log
        maxBytes: 10485760 # 10MB
        backupCount: 20
        encoding: utf8

    error_file_handler:
        class: logging.handlers.RotatingFileHandler
        level: ERROR
        formatter: simple
        filename: /rts/logs/af-ml-scripts-errors.log
        maxBytes: 10485760 # 10MB
        backupCount: 20
        encoding: utf8
```

To set log file parameters for machine learning (ml logs):

1. Log in to the AI Server.
2. Go to **/opt/autofinder/data/processor_scripts/cfg** and backup and then open **logging.yaml** for editing.
3. For **af-ml-scripts-errors.log**, edit the parameters in the **error_file_handler section**:
   a. To change the size of each log file, edit the **maxBytes** value (in bytes).
   b. To change the number of log files saved, edit the **backupCount**.

4. For **af-ml-scripts-info.log**, edit the parameters in the **info_file_handler section**:
   a. To change the size of each log file, edit the **maxBytes** value (in bytes).
   b. To change the number of log files saved, edit the **backupCount**.

   Example: To generate 20 log files that are 15 MB each, set:

   maxBytes: 15728640

   backupCount: 20

5. Restart the AI Server to apply changes.

Useful Automation Finder Scripts

Installation scripts

In **<installer folder>/resources**:

- **docker-install/docker-infra-install.sh:** Used to install docker infrastructure before starting the installation process (see the *Server Installation and Upgrade Guide*).
- **dbconfig/mssql-db-config.bat:** Used for configuring the Automation Finder database before starting the installation (see the *Server Installation and Upgrade Guide*).

  NOTE: This script must only be executed on a Windows machine and not on the AI Server which runs on Linux.
- **validate_install_requirement.sh:** Used to check if the server is ready for installation (see the *Server Installation and Upgrade Guide*).

Production scripts

In **/opt/autoFinder/bin**:

- **start-all-containers.sh:** Starts the AI Server.
- **stop-all-containers.sh:** Stops the AI Server.
- **restart-all-containers.sh:** Restarts the AI Server.
- **get-services-status.sh:** Gets the Automation Finder services status.
- **import-ssl-keys.sh:** Imports the SSL key (see the *Server Installation and Upgrade Guide*).
- **set-db-conection.sh**: Sets the database connection. Can be used to overwrite or change the configuration that is set during the installation (see the *Server Installation and Upgrade Guide*).

Useful Automation Finder Folders

The following folders are created on the AI Sever:

- **/opt/autoFinder/**: Main path to Automation Finder.
- **/opt/autoFinder/data/**: Automation Finder data folder.
- **/opt/autoFinder/conf/**: Automation Finder configuration.
- **/opt/autoFinder/logs/**: Automation Finder Logs.

GDPR - Right to be Forgotten

GDPR (General Data Protection Regulation) introduces a right for individuals to have personal data erased. This is known as 'the right to be forgotten'. Individuals can make a request verbally or in writing and you have a limited time to respond to the request.

In order to remove a person from Automation Finder you must delete the collected data from both the SQL Database and from Elasticsearch.

Deleting Data from SQL

In order to remove a person from Automation Finder you must delete the collected data from both the SQL Database and from Elasticsearch.

To retrieve the UserEventId:

- Run the following query with the required search string. In this example, the **UserEventId** is **153119**.

```
SELECT *
FROM
        user_events
WHERE
        user_events LIKE '%Rami%'
```

	user_event_id	last_user_event_time	first_user_event_time	user_events
1	153119	1519047441581	1519047441581	Rami{"tenantID":"1","clientID":"LIOREP-I460_...

To delete a record from the SQL DB:

- Run the following SQL query, replacing UserEventId with the user_event_id value of the record to delete (to find the records see GDPR - Right to be Informed on page 66).

```
DELETE
FROM
        user_events
WHERE
        user_event_id    = <UserEventID1>
        OR user_event_id = <UserEventID2>
;
```

To verify that the record is deleted:

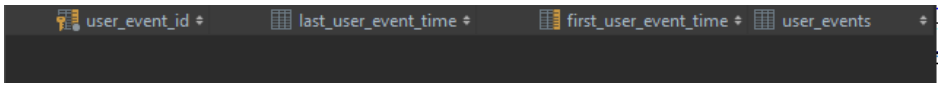
- Run the SQL query and verify that the query returns no records.

```
SELECT *
FROM
       user_events
WHERE
       user_event_id    = <UserEventID1>
       OR user_event_id = <UserEventID2>
;
```

Example:

```
SELECT *
FROM
       user_events
WHERE
       user_event_id = 153119
```

The expected result is that no records are returned:



Deleting Data from Elasticsearch

In order to remove a person from Automation Finder you must delete the collected data from both the SQL Database and from Elasticsearch.

To delete data from Elasticsearch you must open port 9200 on the AI Server.

To open the port on the AI Server:

1. Run **# vi /opt/autoFinder/docker-compose.yml**.
2. Locate the **elasticSearch** section.

```
elasticsearch:
  image: elasticsearch:2.4.6
  environment:
    - cluster.name=docker-cluster
    - bootstrap.memory_lock=true
    - "ES_JAVA_OPTS=-Xms512m -Xmx512m"
  ulimits:
    memlock:
      soft: -1
      hard: -1
  volumes:
    - esdata1:/usr/share/elasticsearch/data

traefik:
  image: 934137132601.dkr.ecr.us-west-2.amazonaws.com/autofinder-tra
  command: -c /dev/null --api --docker --docker.domain=docker.localh
```

3. Add the ports property with value **9200**.

```
elasticsearch:
  image: elasticsearch:2.4.6
  environment:
    - cluster.name=docker-cluster
    - bootstrap.memory_lock=true
    - "ES_JAVA_OPTS=-Xms512m -Xmx512m"
  ulimits:
    memlock:
      soft: -1
      hard: -1
  volumes:
    - esdata1:/usr/share/elasticsearch/data
  ports:
    - "9200:9200"
```

4. Save the file.
5. Run **# cd /opt/autoFinder/bin/**.
6. Run **# ./start-all-containers.sh**.
7. Wait until the script is done.
8. When you done deleting and refresh the index, remove the ports property and repeat steps 4-7.

To delete an Elasticsearch record:

- Use one of the following options, replacing **ID** with the **_id** record that you want to delete. (To find the records, see GDPR - Right to be Informed on page 66.)

- Run the following command from the Automation Finder AI Server:
  # curl -XDELETE localhost:9200/actions/actions/ID
- Send a delete request from the REST client:
  http://<AF-SERVER-IP>:9200/actions/actions/ID

To refresh the index:

- After you have deleted the required records, refresh the index by sending a Post request to:
  http://<AF-SERVER-IP>:9200/actions/_refresh

To verify that the record was deleted:

- Post request to:
  https://<AF-Server-IP>/af/admin/reports/actions/search
  With body:

```
{
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
    "filters": [{"type":"ContainsValuesFilter","fieldName":"id","values":[" ID "] }] ,
    "freeText": ""
}
```

  This should return a count of 0 in the response.

Elasticsearch Example

This Elasticsearch example shows how to retrieve the ID, delete and verify the deletion.

To retrieve the ID:

1. Post request:
   https://<AF-Server-IP>/af/admin/reports/actions/search

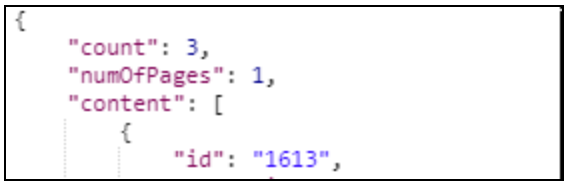
```
{
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
```

"filters": [{"type":"ContainsValuesFilter","fieldName":"text","values":["Desai"] }] ,

"freeText": ""

}

The following is returned (this is a partial extract and not the full response):



This shows that there are three records.

2. To delete record with **id 1613** send the following delete request:

   http://<AF-SERVER-IP>:9200/actions/actions/1613

3. Now refresh the index:

   http://<AF-SERVER-IP>:9200/actions/_refresh

4. Verify that the records are deleted:

   Post request: https://<AF-Server-IP>/af/admin/reports/actions/search

   With body:

   {

   "page": 0,

   "pageSize": 50,

   "sortFieldName": "startTime",

   "sortDirections": "ASC",

   "filters": [{"type":"ContainsValuesFilter","fieldName":"id","values":[" 1613 "] }] ,

   "freeText": ""

   }

   The count is now zero.

GDPR - Right to be Informed

Data is collected in both the SQL database and Elasticsearch. These procedures show you how to retrieve the data collected about the customer (end-client) and the agent in both these components.

Finding Data in SQL Database

These procedures show you how to retrieve the data collected about the customer (end-client) and the agent in SQL.

To find customer data:

- Run the following query with the required search string, replacing **IdentifierData** with data that identifies the customer, such as name, id, and address.

```
select *
from
       user_events
where
       user_events    LIKE '%IdentifierData1%'
       OR user_events LIKE '% IdentifierData2%'
       OR user_events LIKE '% IdentifierData3%'
```

To find agent data:

- Run the same query as for the customer, replacing **AgentUserName** with the agent name.

```
select *
from
       user_events
where
       user_events LIKE '%"userName":"AgentUserName"%'
```

Example 1:

```
select *
from
       user_events
where
       user_events    LIKE '%John%'
       OR user_events LIKE '% zarhin 13%'
       OR user_events LIKE '% 050123456789%'
```

Example 2:

```
select *
from
       user_events
where
       user_events     LIKE '%luffy%'
       OR user_events  LIKE '% zarhin 22%'
       AND user_events LIKE '% 0301003005008%'
```

Example 3:

```
select *
from
       user_events
where
       user_events    LIKE '%"userName":"gl0"%'
       OR user_events LIKE '% 050123456789%'
```

Example 4:

```
select *
from
       user_events
where
       user_events LIKE '%Rami%'
```

Finding Customer Data in Elasticsearch

These procedures show you how to retrieve the data collected about the customer (end-client) in Elasticsearch.

To find customer data:

- Send a Post request to the AI Server, replacing **IdentifierData** with data that identifies the customer, such as name, id, and address.

  Post request: **https://<AF-Server-IP>/af/admin/reports/actions/search**

  The body contains six properties:

  - **page:** Which page to retrieve (starting from 0, using the pageSize property and the count property from the response to create the pages).
  - **pageSize:** How many records to return in each page.

- **sortFieldName:** The field used to sort the records.
- **sortDirections:** Sort order (ascending or descending).
- **filter:** The actual query.
- **freeText:** Leave this empty.

NOTE: The relationship between the values in a filter is an OR query and the relationship between filters is an AND query.

Query 1:

The relation between **IdentifierData1** and **IdentifierData1** is an **OR** query.

```
{
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
    "filters": [{"type":"ContainsValuesFilter","fieldName":"text","values":["IdentifierData1",
    "IdentifierData2"] }] ,
    "freeText": ""
}
```

Query 2:

The relation between the filters is an **AND** query.

```
{
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
    "filters": [{"type":"ContainsValuesFilter","fieldName":"field1","values":[" IdentifierData1"]},
    {"type":"ContainsValuesFilter","fieldName":"field2","values":["explorer"] }] ,
    "freeText": ""
}
```

Example:

```
{
```

```
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
    "filters": [{"type":"ContainsValuesFilter","fieldName":"text","values":["Desai","Yazan"]},
    {"type":"ContainsValuesFilter","fieldName":"app","values":["explorer"] }] ,
    "freeText": ""
}
```

Finding Agent Data in Elasticsearch

These procedures show you how to retrieve the data collected about the customer (end-client) and the agent in Elasticsearch.

➡ **To find agent data:**

1. Send a Post request to the AI Server, replacing **AgentUserName** with the agent user name.

- Post request: **https://<AF-Server-IP>/af/admin/reports/actions/search**

  The body contains six properties:

  - **page:** Which page to retrieve (starting from **0**, using the **pageSize** property and the count property from the response to create the pages).
  - **pageSize:** How many records to return in each page.
  - **sortFieldName:** The field used to sort the records.
  - **sortDirections:** Sort order (ascending or descending).
  - **filter:** The actual query.
  - **freeText:** Leave this empty.

```
{
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
    "filters": [{"type":"ContainsValuesFilter","fieldName":"user","values":
    ["AgentUserName"] }],
    "freeText": ""
```

```
}
```

2. Review the following fields in the response:
   - **count:** The total number of records found.
   - **numOfPages:** The number of pages that contain all the data.
   - **content:** The field that contains all the data records.

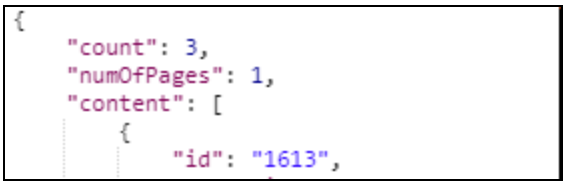
NOTE: Change the **page** property in the Post request body value to see the next records.

Example:

Post request: **https://<AF-Server-IP>/af/admin/reports/actions/search**

```
{
    "page": 0,
    "pageSize": 50,
    "sortFieldName": "startTime",
    "sortDirections": "ASC",
    "filters": [{"type":"ContainsValuesFilter","fieldName":"text","values":["Desai"] }] ,
    "freeText": ""
}
```

The following is returned (this is a partial extract and not the full response):

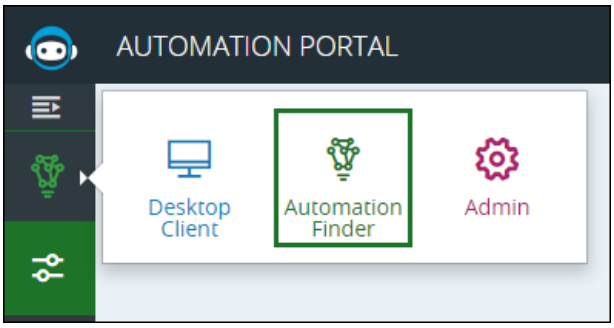


This shows that there are three records that contain '**Desai**' in the **"text"** field and there is one page.

6

Automation Finder

Automation Finder identifies repetitive tasks (routines) that are performed by your agents.



Numerous attributes and variables are used to identify potential processes for automation. You can then analyze these occurrences and determine which parts of your processes can be automated for efficiency.

To run and view Automation Insights you must have the following Roles and Permissions. These can be set in the Automation Portal.

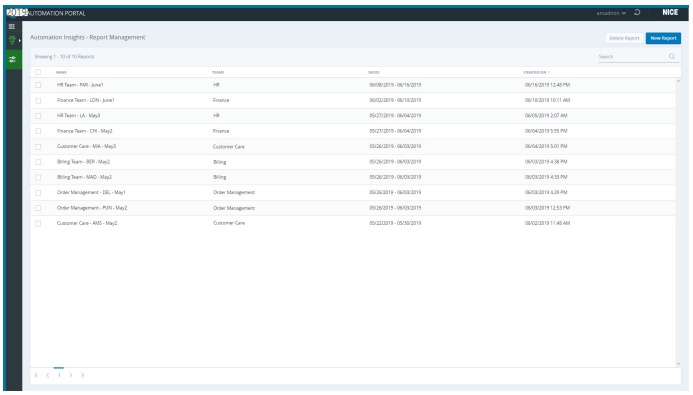
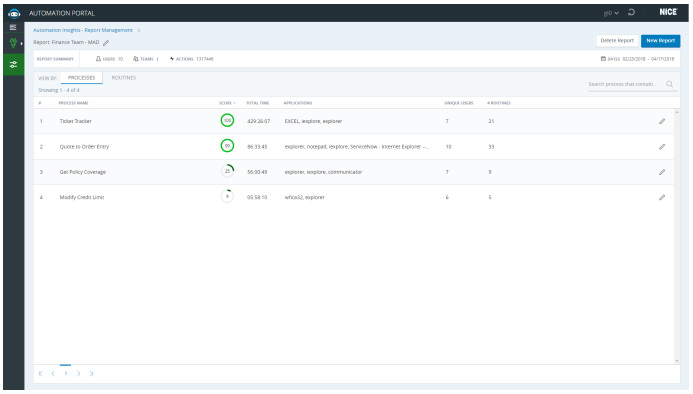
Contents

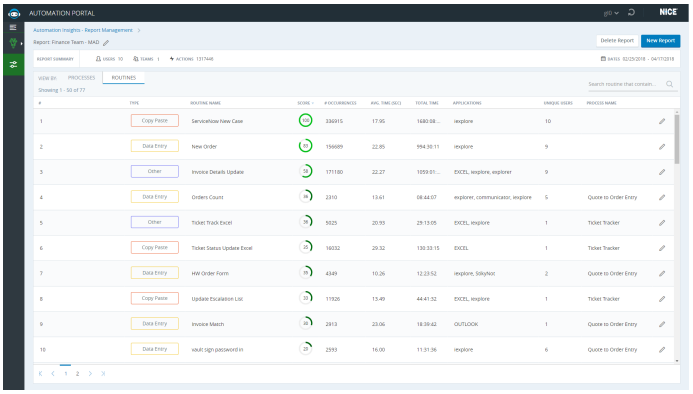
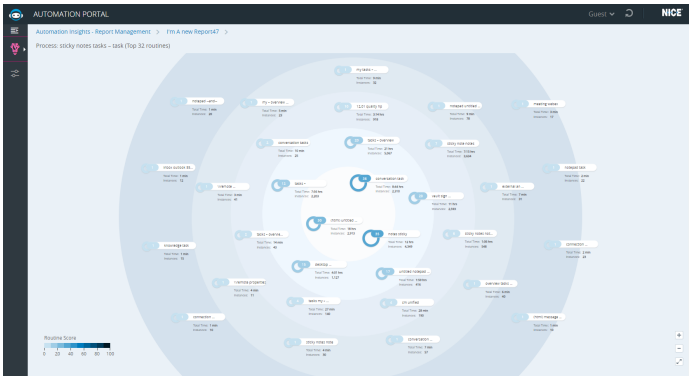
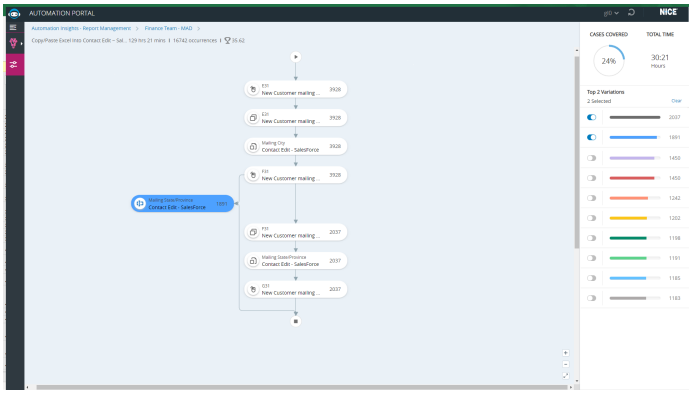
Automation Insight Workflow 72
Automation Insights Site Map 75
Running an Automation Insight Report 76
Report Management 79

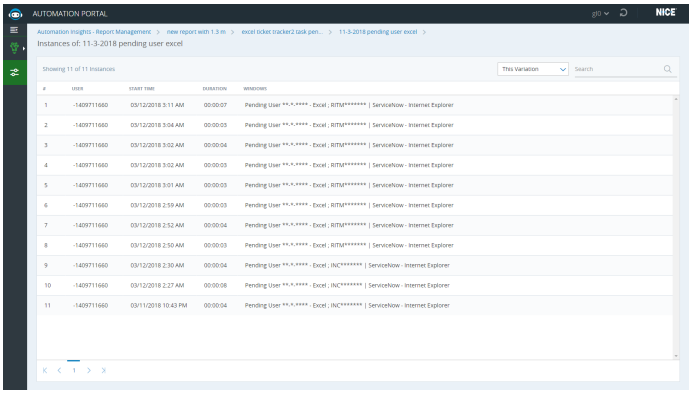
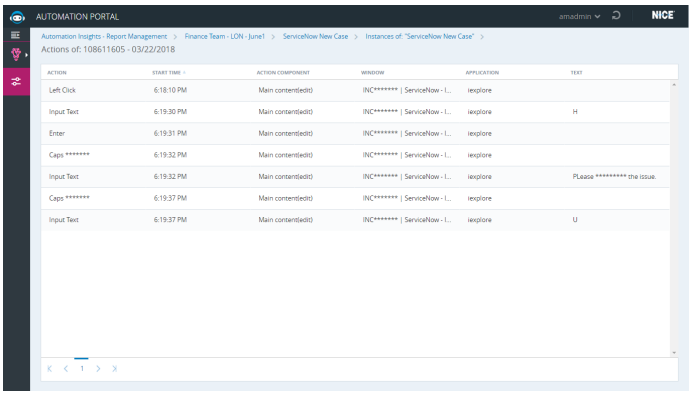
Automation Insight Workflow

Automation Insight is a tool for Business Analysts to provide insight into your organization and identify sequences of events with a high automation potential.

For a bird's eye view, see Automation Insights Site Map on page 75.

Level	Sample
Level 1: The **Report Management** view shows all currently available reports. Each report is a group of routines discovered within the specified timeframe and performed by the selected teams. ■ Click a Report to view its Processes or Routines. See Report Management on page 79.	
Level 2a: The **Process** view tab shows all the processes that make up the report. Each line in the report represents a process. A process is a set of routines which belong to a business task. ■ Click a Process to view a process map showing its routines. See Processes on page 81.	

Level	Sample
Level 2b: The **Routines** view tab shows all the routines that make up the report. Each line in the report represents a routine. Routines summarize the sequence of events that occurred. In this view, each line represents a set of actions. ■ Click a Routine to view its variations. See Routines on page 83.	
Level 3: The **Process Map** view gives a graphic representation of the routines that makes up the process. ■ Click a Routine to view its variations. See Process Map on page 85.	
Level 4: The **Variations** view gives a visual perspective of different variations on the same routine. For example, one variation might show entering a first and last name, while a second variation might show entering a first, middle, and last name. One is done in 2 steps and one in 3 steps, but both complete the task of entering a name. ■ Click a variation in the right pane to view its Instances. See Variations on page 87.	

Level	Sample
Level 5: Each **Instance** of a variation of a routine represents a completed occurrence of the routine. You can see which user completed the routine and when. ■ Click an Instance to view its Actions. See Instances on page 91.	
Level 6: The **Actions** view shows all the actions that make up the specific occurrence of the instance. In this view, you can see who performed the action, when, the duration, and in which window/application it was performed. This is the deepest Insight level. See Actions on page 93	

Automation Insights Site Map

This site map illustrates the Automation Insights information flow.

In each window:

- Double-click an entry to drilldown to the next level.
- Use the breadcrumbs to return to previous views.

For a descriptive flow, see Automation Insight Workflow on page 72.

Running an Automation Insight Report

A new report can be run from any view that displays the **New Report** button.

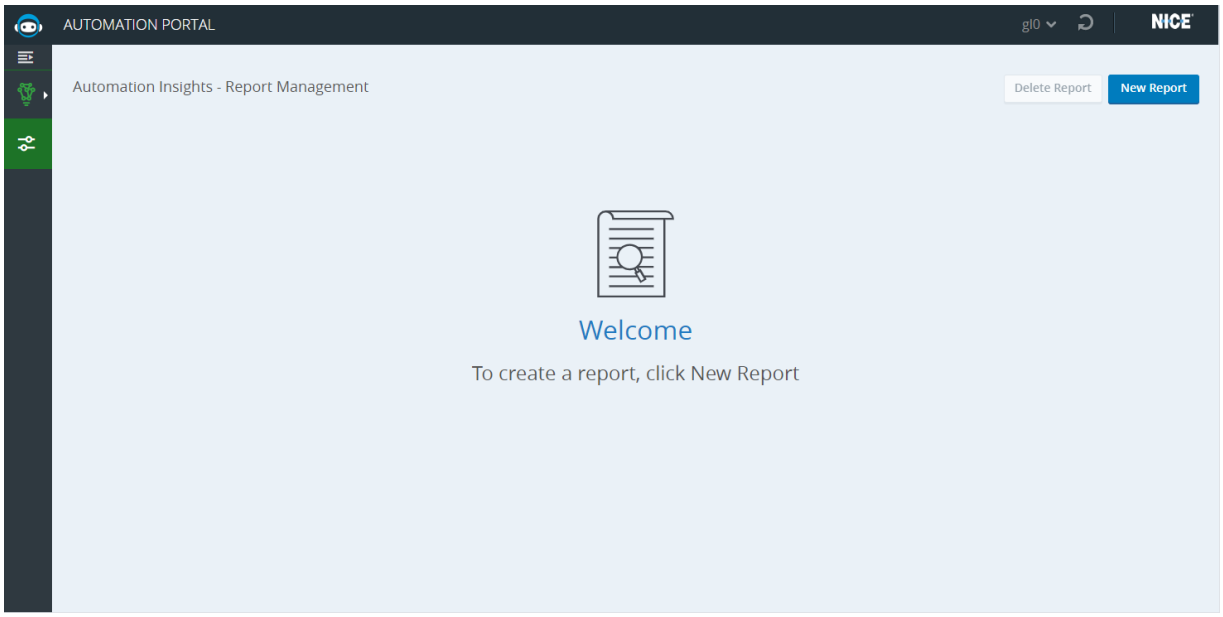
Running a report requires complex analysis and might take several hours. Only one report can run at a time. The results are saved, so that you can have several reports in the Report Management view. While a report is running, the rest of the portal becomes inactive.

To see previous reports, in the Report Management view, select a report. See Report Management on page 79.

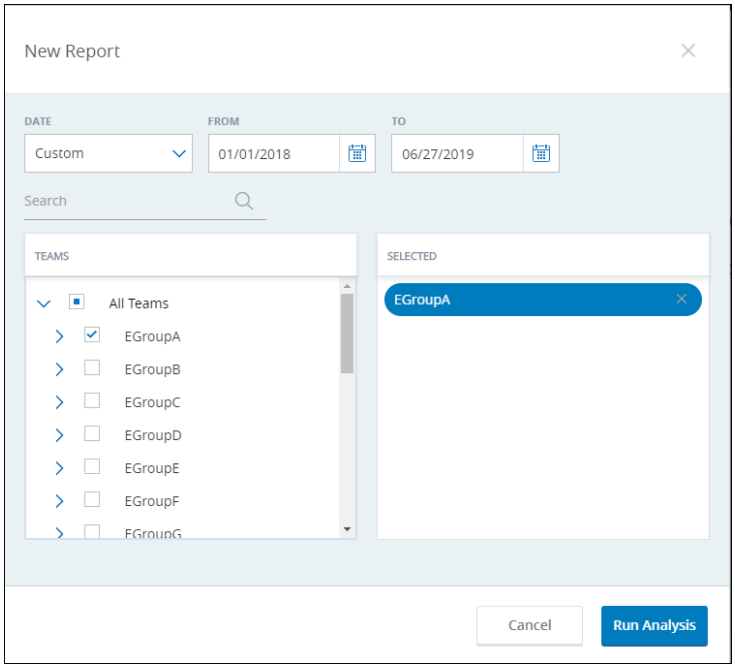
To run a report:

1. Click the module picker and select **Automation Finder**. Then select **Automation Insights**.

2. If there are existing reports, they will be in this view. If this is the first time you are running reports or you have cleaned out all your old reports, you will see the Welcome page.

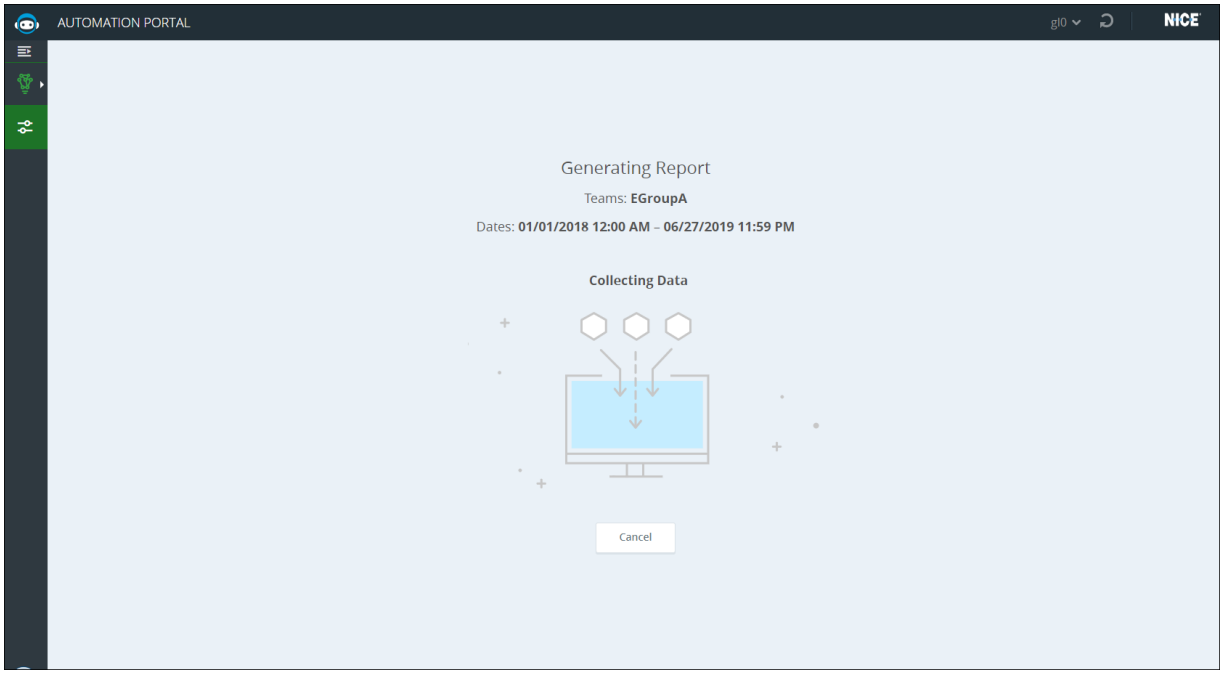


3. Click **New Report**.

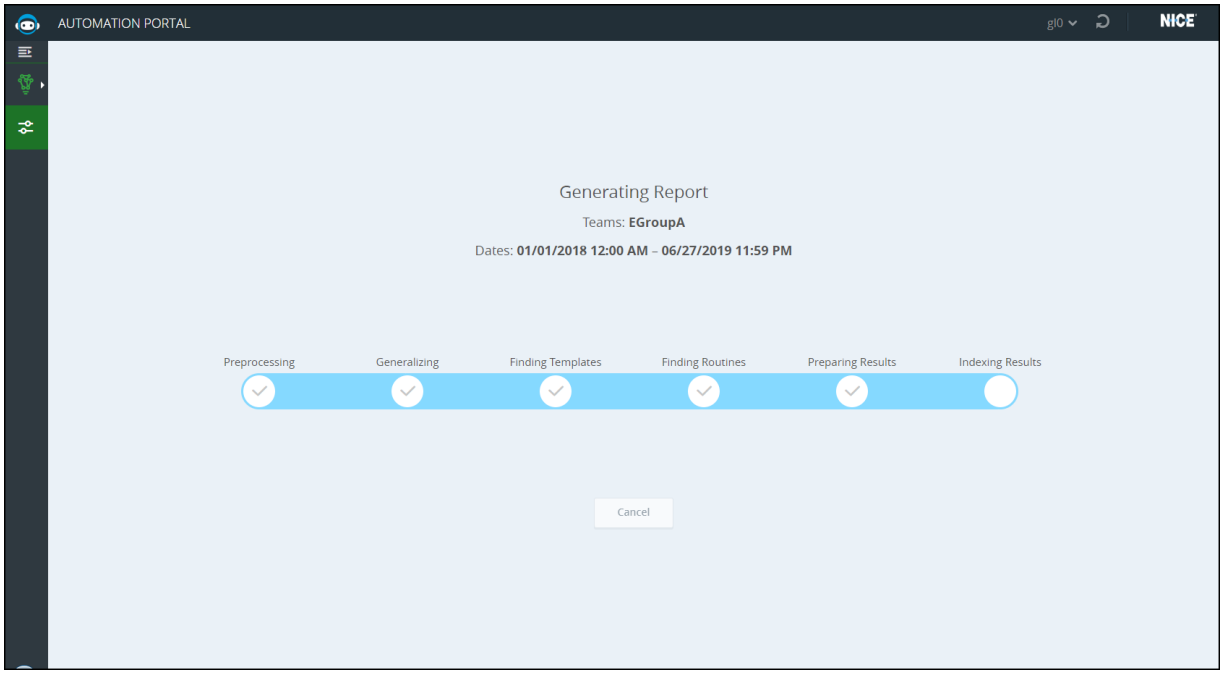


4. In the New Report window, select a range of dates and agent teams for the report.

5. Click **Run Analysis**.



Automation Finder goes through several stages.



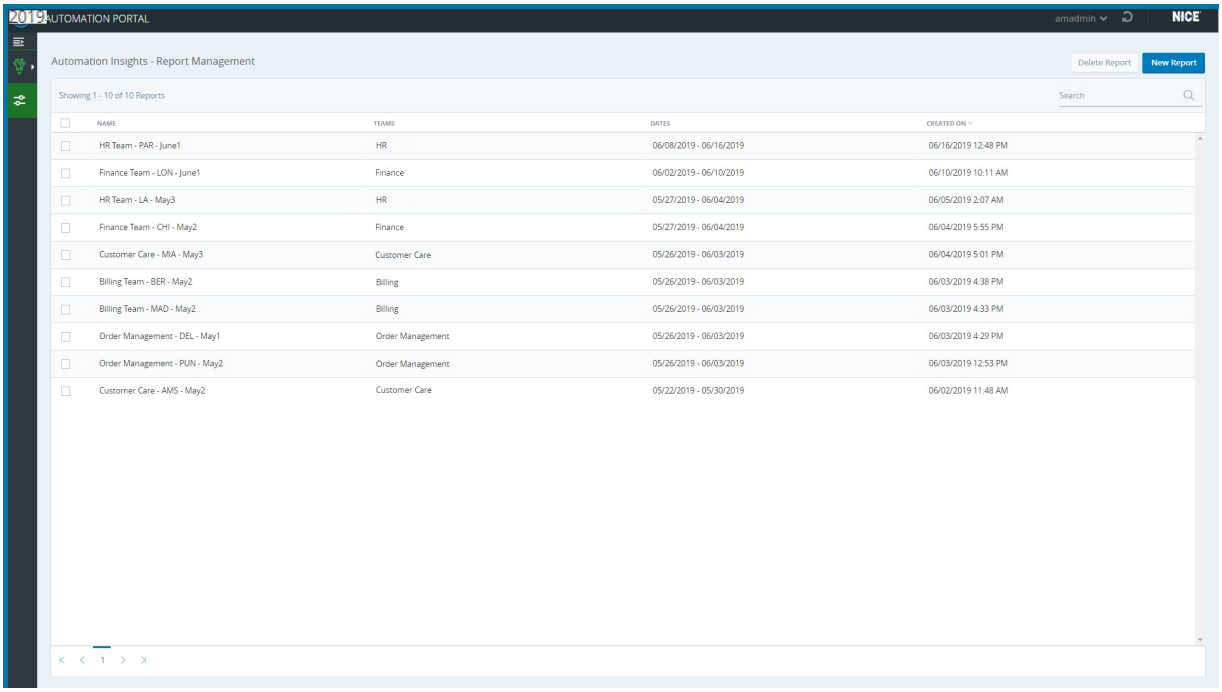
When the report is complete, a list of all routines that comprise the report appear. You can drilldown from there for more information. See Routines on page 83.

Report Management

The Report Management view shows all current reports.

Each report is a group of routines discovered within the specified timeframe and performed by the selected teams.

Up to 40 reports can be saved, after which you must delete reports in order to create new ones. A warning message appears after 35 reports are saved.



What you can do in this view

- **Search** for a report. The search field is not case-sensitive. Search matches partial words. If you search for more than one word, either one will be found. To clear the search results, click ✕.
- Create a **New Report**.
- **Delete** unnecessary reports - select one or more report and click **Delete Report**.
- Drilldown to the next level. By default the **Process** view is displayed. See Processes on page 81.

Shown are:

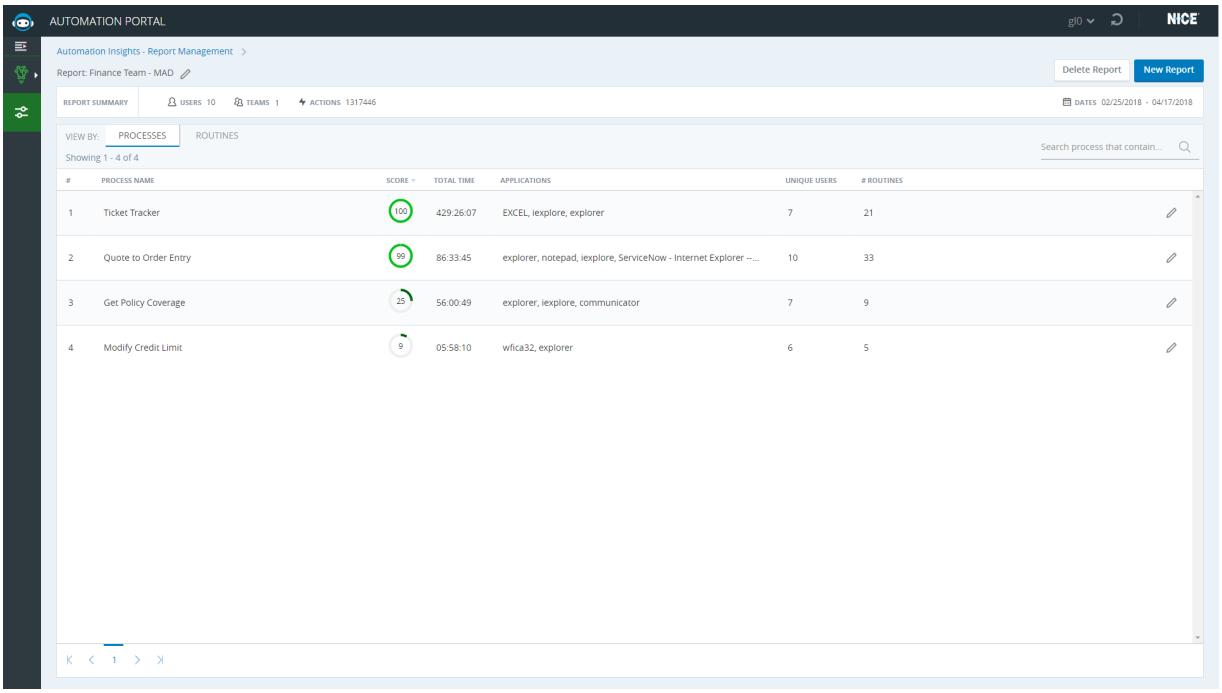
- **#**: The number of the row in the view. This number helps you to remember which row you last looked at after drilling down to see Processes. The number simply shows the position of the row in the currently displayed grid and is not linked to the actual instance shown in the row .
- **Name**: To rename a report, click it to open the edit box.

- **Teams**: The teams selected for analysis.
- **Dates**: The time range of the actions in the report.
- **Created On**: The date the report was created.

Processes

This level is opened by clicking a report in the Report Management view. By default the **Process** view is displayed. See Report Management on page 79.

Each row in this view represents a business process. A process can contain one or more routines.



What you can do in this view

- **Search** the data in this view. The search is performed across the **Process Name** and **Applications** columns.

  The search field is not case-sensitive. Search matches partial words. If you search for more than one word, either one will be found. To clear the search results, click ✕. The search results are retained if you drill down to the Process Map for a process and then return to this tab. The search results are not retained when you switch between the Processes and Routines tabs.
- **Rename** a process - click **Edit**.
- **Delete** this entire report - click **Delete Report**.
- Create a **New Report**
- Switch to the **Routines** view for this report. See Routines on page 83.
- Use your browser back button or click the link in the breadcrumbs to return to the Report Management view.
- Drilldown to the next level. See Process Map on page 85.

About the Process view

The Process view is divided into several sections:

- Report Summary
- Processes - Details of the Report

Report Summary

The numbers in the **Report Summary** bar represent the entire report.

- **Users**: The total number of different users in all the routines found in the report.
- **Teams**: The total number of different teams that executed the routines in the report.
- **Actions**: The total number of actions analyzed in creating this report.
- **Date**: The date range of the report.

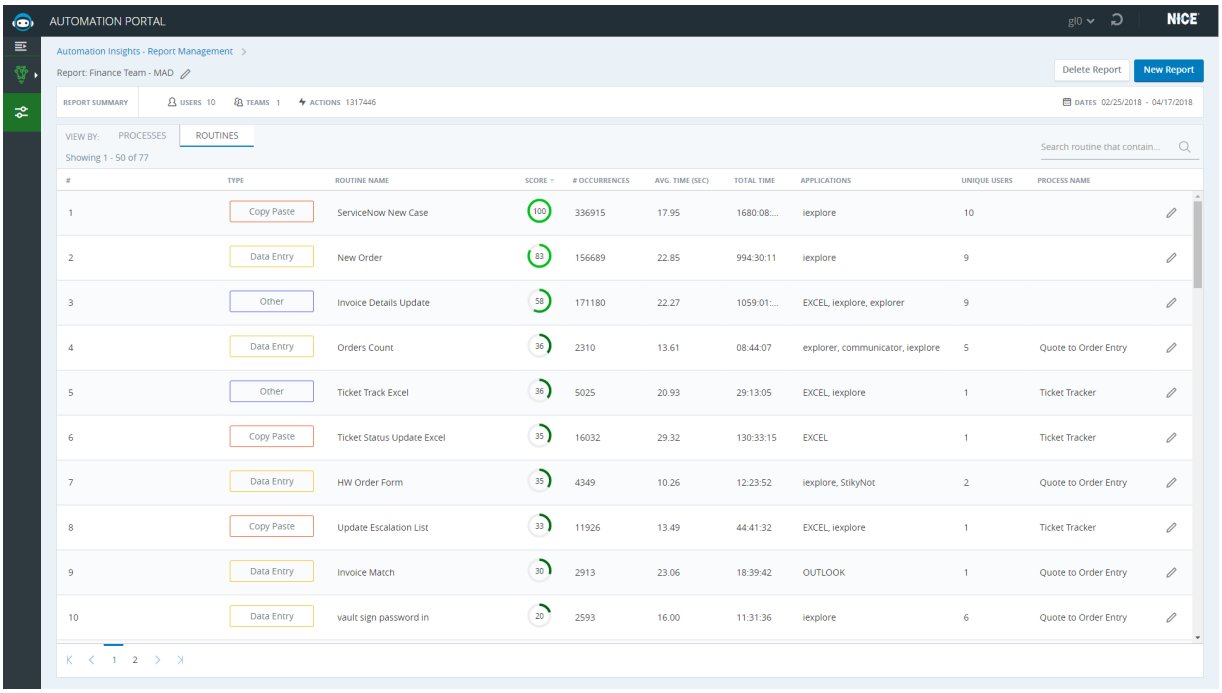
Processes - Details of the Report

- **#**: The number of the row in the view. This number helps you to remember which row you last looked at after drilling down to the Process Map. The number simply shows the position of the row in the currently displayed grid and is not linked to the actual instance shown in the row .
- **Process Name**: The name of the process. To rename the process, click **Edit**.
- **Score**: An indication on a scale of 0 to 100 of the automation potential of the process.
- **Total Time**: The total time of all routines in the process.
- **Applications**: The applications in all the routines of the process.
- **Unique Users**: The total number of users who executed routines in the process.
- **Routines**: The number of routines in the process.

Routines

This level is opened by clicking the **Routines** tab in the Process view. See Processes on page 81.

Each row in this view represents a set of routines. There can be several variations of the same routine.



What you can do in this view

- **Search** the data in this view.

  The search field is not case-sensitive. Search matches partial words. If you search for more than one word, either one will be found. To clear the search results, click ✕. The search results are retained if you drill down to see the variations for a routine and then return to this tab. The search results are not retained when you switch between the Processes and Routines tabs.

- **Rename** a routine - click **Edit**.
- **Delete** this entire report - click **Delete Report**.
- Create a **New Report**
- Switch to the **Process** view for this report. See Processes on page 81.
- Drilldown to see the variations in a routine. See Variations on page 87.
- Use your browser back button or click the link in the breadcrumbs to return to the Report Management view.

About the Routines view

The Routines view is divided into several sections:

- Report Summary
- Routines - Details of the Report

Report Summary

The numbers in the **Report Summary** bar represent the entire report.

- **Users**: The total number of different users in all the routines found in the report.
- **Teams**: The total number of different teams that executed the routines in the report.
- **Actions**: The total number of actions analyzed in creating this report.
- **Date**: The date range of the report.

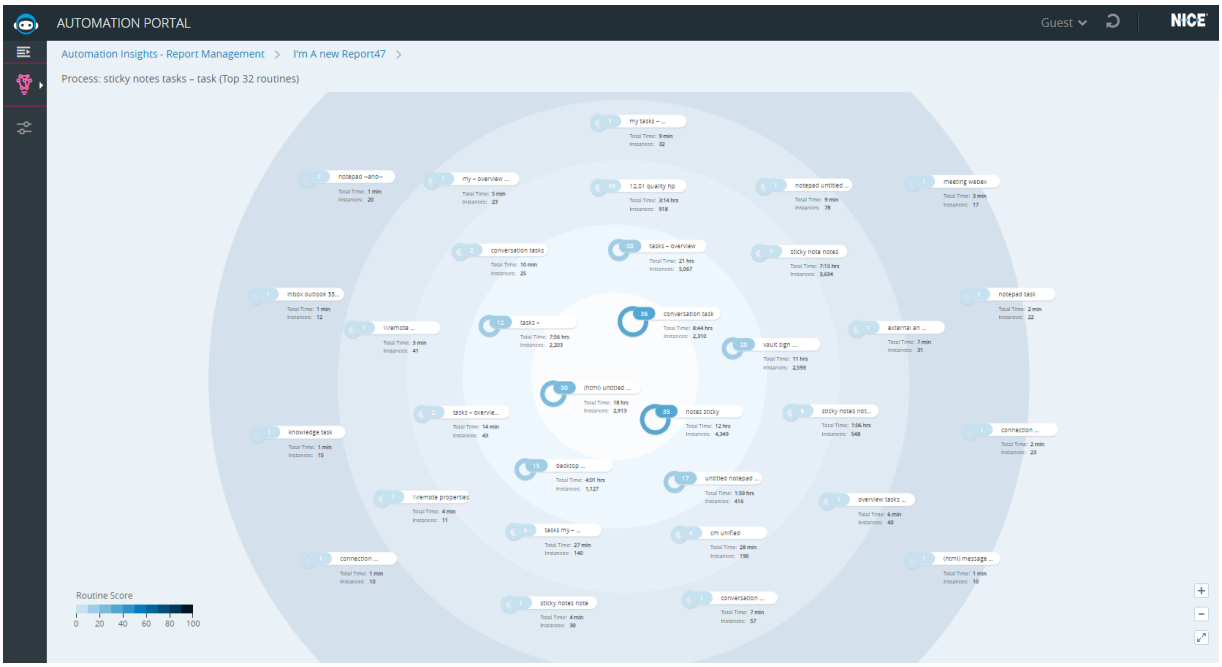
Routines - Details of the Report

- **#**: The number of the row in the view. This number helps you to remember which row you last looked at after drilling down to see Variations. The number simply shows the position of the row in the currently displayed grid and is not linked to the actual instance shown in the row .
- **Type**:
  - **Template**: A routine that consists of filling in a form.
  - **Copy Paste**: A routine that primarily consists of copy-paste actions.
  - **Data Entry**: A routine that primarily consists of text input actions.
  - **Other**: A routine that does not have any dominant text actions.
- **Routine Name**: The name of the routine. To rename the routine, click **Edit**.
- **Score**: An indication on a scale of 0 to 100 of the automation potential of the routine.
- **Occurrences**: The number of times that the routine was executed.
- **Avg Time (sec)**: The average time for each occurrence.
- **Total Time**: The total time of all occurrences.
- **Apps Used**: The applications in the routine.
- **Unique Users**: The number of users who executed this routine.
- **Process Name**: The process containing this routine. This column is empty when the routine is not included in any process.

Process Map

This level is opened by clicking a process in the Processes view. See Processes on page 81.

This view provides a graphic representation of the routines in a process showing details of each routine.



TIP: Zoom controls are in the lower left-hand corner of this window.

What you can do in this view

- Drilldown to see the variations of this routine. See Variations on page 87.
- Use your browser back button or click the links in the breadcrumbs to return to the previous level.

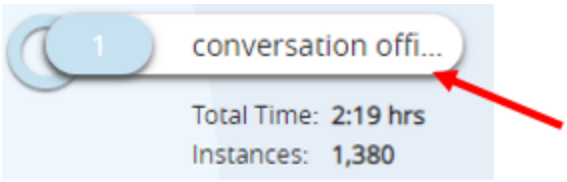
About the Process Map view

- The 32 routines with the highest scores are distributed across 5 rings, from highest to lowest, and clockwise within each ring as follows:

Center ring:	3 routines
Ring 2:	5 routines
Ring 3:	7 routines

Ring 4:	9 routines
Outer ring:	8 routines

- Routine scores are an indication on a scale of 0 to 100 of the automation potential of the routine.
- Scores of 20 or lower have a darker border



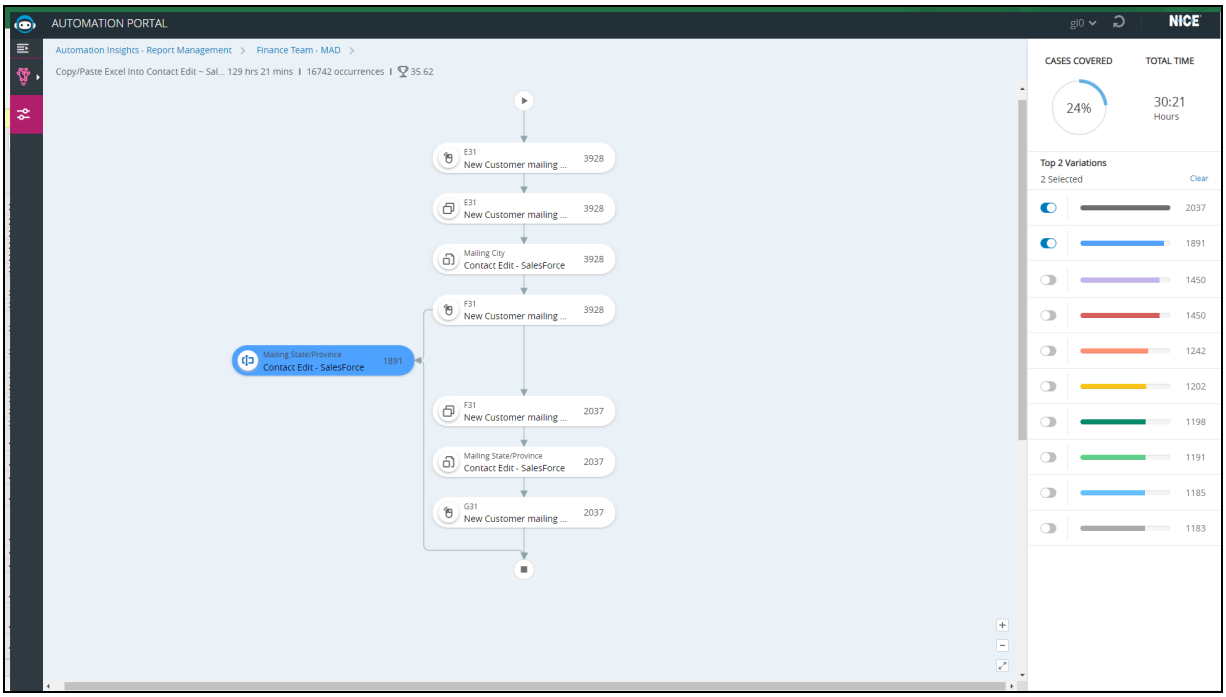
- Shown are:
  - Routine score
  - Routine name
  - **Total time** - The total time for all occurrences of the routine.
  - **Instances** - The number of times that the routine was executed.

Variations

The Variations view is opened by clicking a routine in the Routine or Process Map view. See Routines on page 83 and Process Map on page 85

This view allows you to line up and compare 2 variations of the same routine. Each variation is a different, but similar, sequence of actions.

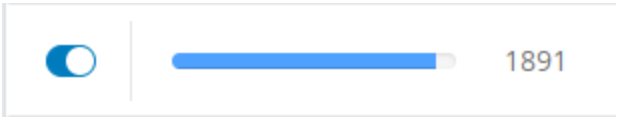
For example, a routine can be filling in the customer's name on a form. One variation might be entering only the first and last names (2 actions). Another variation might be entering first, middle, and last names (3 actions).



What you see in this view

- This view shows one routine and different variations of it.
- Each bar in the right-hand panel represents a different variation of the same routine. The number to the right of the bar is the total number of actions completed in the variation.

  For example, if the variation occurs 1891 times and it was done in exactly the same way then the number alongside the bar would be 1891.



- **Cases covered** is the percentage of occurrences of the selected variations compared to the total occurrences.

  For example, you have 10 variations and the total number of actions for all of them is 5,000. Then you select 2 variations and the total number of actions in the selected variations is 1,000. Cases covered would be 20% (1000/5000).

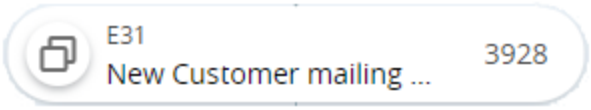
- **Total Time** shows you how much time is spent repeating the same routine using the selected variations.

  For example, if a variation takes 30 seconds to complete and was performed 600 times, Total Time would show one hour. When you select 2 variations, Total Time adds all the times together.

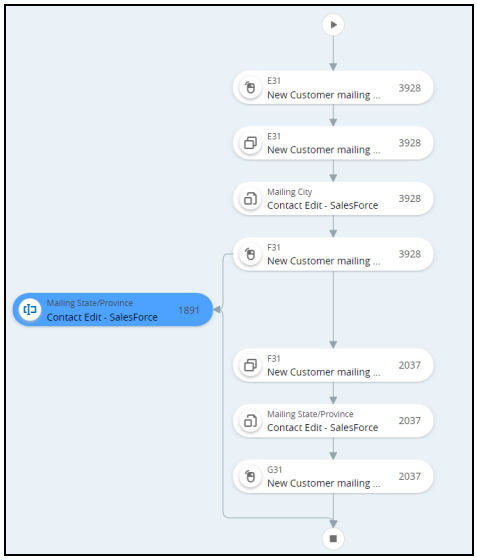
- A graphic view of the selected variations. You can select up to 2 variations.

How the graph works

1. From the right-hand panel, select a variation. Typically you will select the largest one.
   - The sequence of actions for the variation appears as a workflow and the cases covered and total time are adjusted.
   - The number next to each action shows how many time that action was repeated. Since only one variation was selected, this number will be the same for all actions.



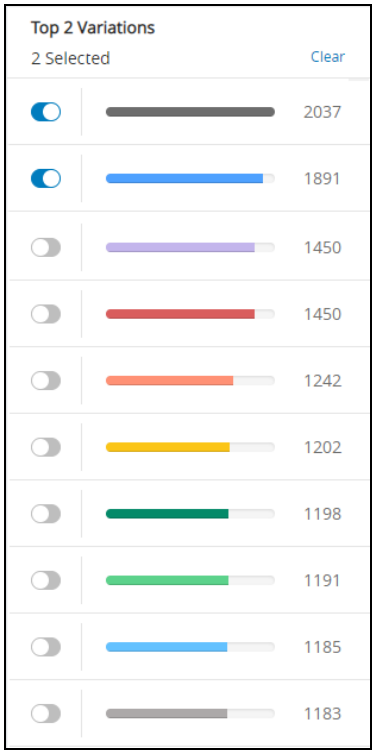
2. From the right-hand panel, select a second variation. The first variation is overlaid with the second. The variation with more actions is always set as the main one.
   - The difference between the two variations is shown as a bypass.
   - The numbers next to the actions that are part of both variations are adjusted to show the combined total for both variations.
   - The cases covered and total time are adjusted.



3. Click **Clear** to clear your selection.

What you can do in this view

- Compare variations by changing your selection.
- Rollover an action for more information.
- Drilldown to see the instances of a variation. To drilldown, click the color bar for the variation in the right-hand pane. See Instances on page 91.

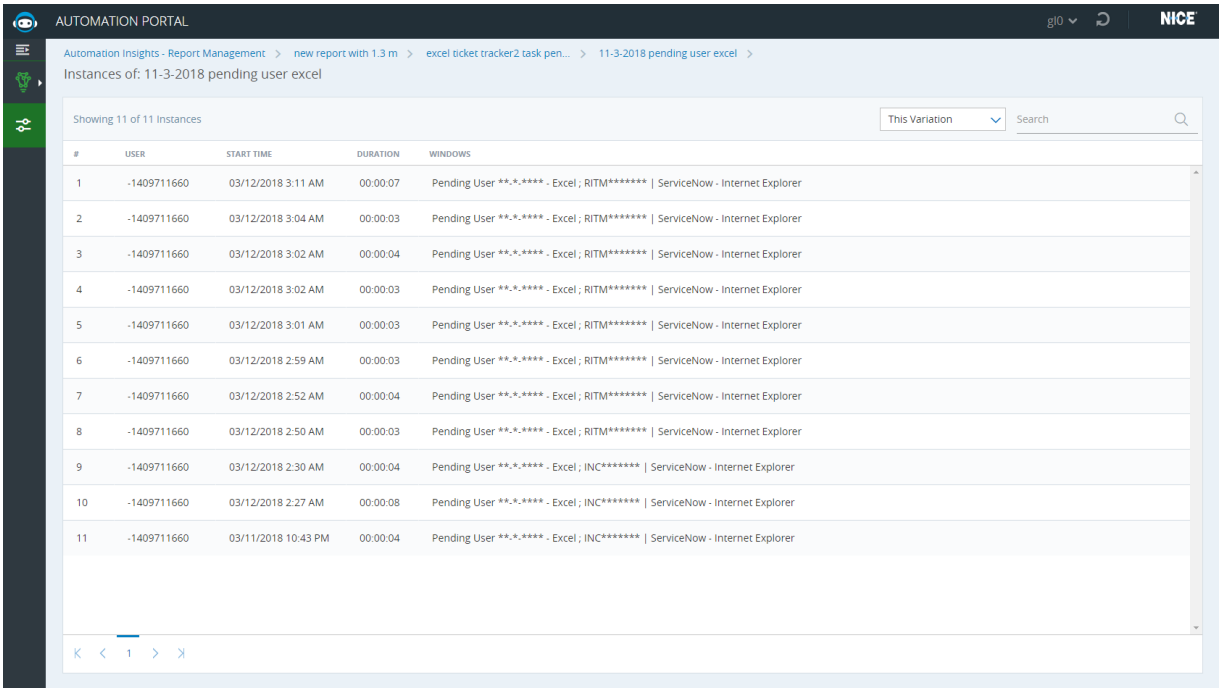


- Use your browser back button or click the links in the breadcrumbs to return to the previous level. If you display the view by clicking a routine on the Process Map view, the breadcrumbs include a link to the process containing the routine.

Instances

This level is opened by clicking a variation in the Routines view. See Variations on page 87.

Each line is an instance of the selected variation.



What you can do in this view

- Select one instance and drilldown to see the actions of the instance. See Actions on page 93.
- Use your browser back button or click the links in the breadcrumbs to return to the previous level.
- The **Search** feature in this view searches for matches in the **Windows** column of this view and in the **Text** column of the Actions view. You can search just **This variation** (and its actions) or **All variations** (and all their actions).

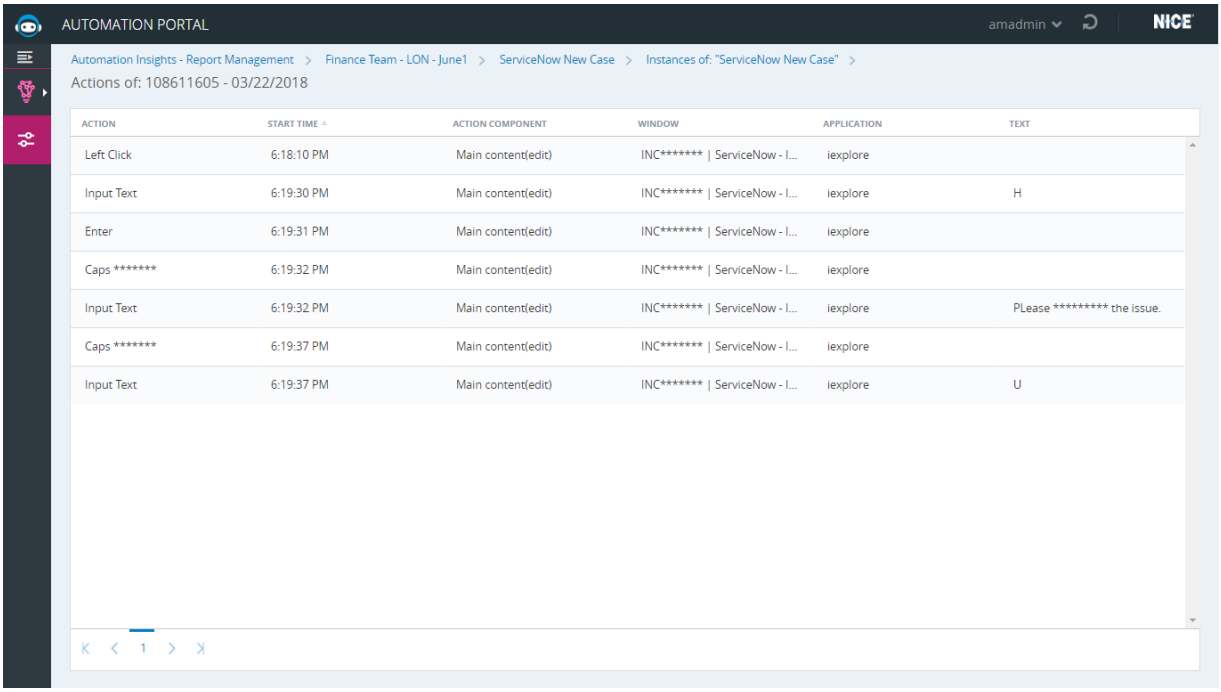
Shown are:

- **#**: The number of the row in the view. This number helps you to remember which row you last looked at after drilling down to see Actions. The number simply shows the position of the row in the currently displayed grid and is not linked to the actual instance shown in the row .
- **User**: The user ID of the user that executed this instance.
- **Start Time**: The time that the instance began.
- **Duration**: How long it took to complete the instance.

- **Windows**: The window and application where the action occurred. There can be more than one in the list.

Actions

This level is opened by clicking an action in the Routines view. See Variations on page 87.



What you can do in this view

- Use your browser back button or click the links in the breadcrumbs to return to the previous level.

Shown are:

- **Action**: The action type.
- **Start Time**: The time that the action started.
- **Action Component**: The field within the window where the action occurred.
- **Window**: The window within the application where the action occurred.
- **Application**: The application where the action occurred.
- **Text**: Shows a snippet of the text surrounding the action.

[This page intentionally left blank]

A

Modifying Real-Time Client Automation Finder Settings

Automation Finder can be fine-tuned with these parameters.

To modify any of the following settings, you must edit the configuration file directly.

> **Warning:** Editing a configuration file can harm your system and should be done only by authorized personnel.

These parameters can be modified as needed directly in the **RTClient.exe.config** file.

- **TextTokensConfiguration**
  - name – Give the new token a name.
  - pattern – Add your expression.
  - isSensitive – To hash this data, set to true. The default is false.
  - displayName – The name that appears in the Designer. If left blank, the token name will be used.
- **ExcludedApplications**
  - filterMode –
    - BlackList: Analyze all applications except for the ones in this list.
    - WhiteList: Analyze only the applications in this list.
  - name – The application name.
  - displayName – The name that appears in the Designer. If left blank, the application name will be used.
- **SensitiveApplications**
  - filterMode –
    - BlackList: Hash the applications in this list regardless of the general hash settings.
    - WhiteList: Hash all applications except for the ones in this list.
  - name - The application name.

- displayName - The name that appears in the Designer. If left blank, the application name will be used.

- **LowImpactApplications**
  - filterMode –
    - BlackList: Do not collect action component information from the applications in this list.
    - WhiteList: Collect action component information only from the applications in this list.

      NOTE: If an application on the Low Impact list is excluded by the Excluded Applications list, the excluded list takes priority and it will be excluded.
  - name - The application name.

    Only desktop applications can be added to this list. Web applications cannot be configured as low impact.
  - displayName - The name that appears in the Designer. If left blank, the application name will be used.
- **AnonymizeAgentData**
  - true: Hash agent names.
  - false: Do not hash agent names.
- **HideMachineData**
  - true: Do not save machine names.
  - false: Machine names can be saved.

Editing the configuration file

To edit the configuration file:

Important! All parameters in the configuration file are case-sensitive.

1. Each feature is configured in the configuration file:
   a. Click start, open the command line, and enter **%appdata%**.

   b. In the appdata folder, go to **Nice_Systems** > **Real-Time**.

   c. You will be editing the **RTClient.exe.config** file, so make a copy to save a backup before continuing.

   d. Open **RTClient.exe.config** for editing.

2. Edit all applicable parameters as described in the following sections.

3. Save and close the file.

   TIP: It is recommended to also save this file in the installation folder so that if you clean out your appdata folder, you will still have your Automation Finder settings. The original configuration file is at **C:\Program Files (x86)\NICE Systems\Real-Time Client**. Before overwriting a configuration file, always save a backup copy.

4. Remember, after all of your configuration changes, you must copy the new, modified configuration file to all client machines.

Excluded applications: Create a blacklist or whitelist

The list of excluded applications appears in the Designer > System Settings > Real-Time Client > Automation Finder > ExcludedApplications.

- A blacklist analyzes all applications except for the ones in this list.
- A whitelist analyzes only the applications in this list.

Open RTClient.exe.config and then...

1. Locate this section:

   ```
   <ExcludedApplications filterMode="BlackList">
   </ExcludedApplications>
   ```

2. To create a whitelist, change **filterMode**="BlackList" to "WhiteList"

3. Add applications using this format:

   ```
   <add name="" displayName=""/>
   ```

   name - The application name.

   displayName - The name that appears in the Designer. If left blank, the application name will be used.

   Example:

```
<ExcludedApplications filterMode="BlackList">
   <add name="RTClient" />
   <add name="outlook" />
   <add name="www.facebook.com" />
```

Important! For these purposes, 'https:...' and 'http:...' are not the same. If both are to be in this list, then add both. Also, if 'www' is displayed in your agent's browsers, then add it.

Low impact applications: Create a blacklist or whitelist

Only desktop applications can be added to this list. Web applications cannot be configured as low impact.

If an application on the Low Impact list is excluded by the Excluded Applications list, the excluded list takes priority and it will be excluded.

The list of low impact applications appears in the Designer > System Settings > Real-Time Client > Automation Finder > LowImpactApplications.

- A blacklist does not collect action component information from the applications in this list.
- A whitelist collects action component information only from the applications in this list.

Open RTClient.exe.config and then...

1. Locate this section:

   ```
   <LowImpactApplications filterMode="BlackList">
   </LowImpactApplications>
   ```

2. To create a whitelist, change **filterMode**="BlackList" to "WhiteList"

3. Add applications using this format:

   ```
   <add name="" displayName=""/>
   ```

   name - The application name. Only desktop applications can be added to this list. Web applications cannot be configured as low impact.

   displayName - The name that appears in the Designer. If left blank, the application name will be used.

Hash sensitive data: customized patterns

Automation Finder comes with several default patterns used for identifying bits of data such as dates and titles. You can add more patterns as needed, such as credit card formats and phone numbers.

First you must create the pattern using regular expressions.

Open RTClient.exe.config and then...

1. Locate this section:

   ```
   <TextTokensConfiguration>
   ```

   The default patterns will be there.

2. Add a new token using this format:

   ```
   <add name="" pattern="" isSensitive="" displayName=""/>
   ```

   name – The new token a name.

   pattern – Add your expression.

   isSensitive – To hash this data, set to true. The default is false.

   displayName - The name that appears in the Designer. If left blank, the token name will be used.

Hash sensitive data: Create a blacklist or whitelist

The list of sensitive applications appears in the Designer > System Settings > Real-Time Client.

- A blacklist hashes the applications in this list regardless of the general hash settings.
- A whitelist hashes all applications except for the ones in this list.

Open RTClient.exe.config and then...

1. Locate this section:

   ```
   <SensitiveApplications filterMode="BlackList">
   </ SensitiveApplications>
   ```

2. To create a whitelist, change **filterMode**="BlackList" to "WhiteList"

3. Add applications using this format:

   ```
   <add name="" displayName=""/>
   ```

   name - The application name.

   displayName - The name that appears in the Designer. If left blank, the application name will be used.

Anonymize employee data: hash agent names

The **anonymizeAgentData** parameter determines if agents names are hashed. If it is not added, the default is false and agent names will appear.

Open RTClient.exe.config and then...

1. Locate this line:

   ```
   < automationFinderConfigurator…..>
   ```

2. Add this parameter:

   ```
   < automationFinderConfigurator…..anonymizeAgentData="true" >
   ```

Anonymize employee data: remove machine names

The **hideMachineData** parameter determines if machine names are saved or removed. If it is not added, the default is false and machine names are saved.

➡ **Open RTClient.exe.config and then...**

1. Locate this line:

   ```
   < hideMachineData…..>
   ```

2. Add this parameter:

   ```
   < automationFinderConfigurator….. hideMachineData="true" >
   ```