

# **RES Automation Manager 2011 Release Notes**



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# 1. Important Changes

## Connectors: Small Business Server Connectors

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In order to execute SQL Statement Tasks, Exchange Mailbox Tasks and Active Directory Tasks on database servers, directory servers and Exchange servers, three types of Connectors are required:

- A Database Server Connector, which requires 1 RES Automation Manager license
- A Mail Server Connector, which requires 16 RES Automation Manager licenses
- A Directory Server Connector, which requires 32 RES Automation Manager licenses

However, in many (smaller) environments, these services are often installed on the same machine. For this purpose, a new connector type has been added to RES Automation Manager at **Infrastructure > Datastore > Setup > Connectors: Small Business Server Connector**.

A Small Business Server Connector is a shared connector for SQL Statement Tasks, Exchange Mailbox Tasks and Active Directory Tasks that are executed on the same machine. Instead of three Connectors, each with their own RES Automation Manager license requirements, only one Connector is required. A Small Business Server Connector requires 33 RES Automation Manager licenses.

## Licensing: new licensing model

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The licensing model of RES Automation Manager has been changed.

- The number of licenses that are required for Agents installed on workstations has been halved: one RES Automation Manager license can service two Agents installed on workstations.
- RES Automation Manager licenses are now also used to service users in Service Orchestration for RES Automation Manager.

This allows you to start using Service Orchestration for RES Automation Manager without having to purchase additional RES Automation Manager licenses, or to use twice the amount of Agents installed on a workstation with the same amount of licenses.

### License requirements for RES Automation Manager Agents

- An Agent installed on a workstation requires 1/2 license: with one RES Automation Manager license, two Agents installed on a workstation can be serviced.
- An Agent installed on a server requires 4 licenses.
- An Agent installed on a Terminal Server requires 8 licenses.

Service Orchestration licensing is based on serviced users. A serviced user is a user to whom one or more services have been delivered. As soon as a service has been delivered to a user, any further services to this user do not require additional licenses. Service Orchestration claims these licenses from the RES Automation Manager Datastore to which the Service Orchestration environment connects.

## License requirements for Service Orchestration

- If the user is not yet a serviced user and a sufficient number of required RES Automation Manager licenses is available, **one** RES Automation Manager license will be claimed per **two** serviced users. The number of required licenses is rounded down: for example, 7 serviced users require 3 licenses.
- If the user is a serviced user, a RES Automation Manager license has already been claimed and no additional licenses are needed.

## RES Wisdom renamed to RES Automation Manager

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As of this version RES Wisdom has been rebranded to RES Automation Manager.

## Service Orchestration for RES Automation Manager

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RES Automation Manager provides Task Automation and Resource Provisioning for Microsoft Windows systems. Service Orchestration for RES Automation Manager is an extension of RES Automation Manager and adds orchestration capabilities. It allows IT professionals to invoke Task Automation and Resource Provisioning based on services and business rules, by providing users with an IT service catalog for self-servicing or automatic delivery.

Users can interact with the IT service catalog from their desktop, with a web browser and from their Apple iPhone or iPad, in the languages English, French and Dutch.

Service Orchestration for RES Automation Manager also integrates with RES PowerFuse by managing User Workspace content based on the same services and business rules.

Service Orchestration for RES Automation Manager is available as a separate download.

For more information about Service Orchestration for RES Automation Manager, the following documents can be downloaded from <http://support.ressoftware.com>, at the **Downloads** section:

- **Introduction to Service Orchestration for RES Automation Manager:** this document explains the concept behind Service Orchestration.
- **Getting started with Service Orchestration for RES Automation Manager:** this document describes how to set up a Service Orchestration environment.

## Integration of Service Orchestration in RES Automation Manager Datastore

Service Orchestration now stores its information in a RES Automation Manager Datastore, instead of in a separate Service Orchestration Datastore. Service Orchestration can connect to existing Datastores based on RES Automation Manager 2011 IR2 5.4.2.1 (or later) and Microsoft SQL Server 2000 databases (or later).

When the Service Orchestration site connects to a RES Automation Manager Datastore for the first time, the RES Automation Manager Datastore is extended with additional tables containing Service Orchestration information. In a RES Automation Manager Console that connects to the same Datastore as the Service Orchestration site:

- **Infrastructure > Datastore > Settings > Audit Trail** now also shows when the database tables were created for Service Orchestration.
- **Infrastructure > Datastore > Setup > Licensing** now also shows how many RES Automation Manager licenses are available and how many are used by Service Orchestration. See Licensing.
- **Infrastructure > Consoles** now also shows the Service Orchestration Control Centers that manage the Service Orchestration site that connects to the RES Automation Manager Datastore.
- **Infrastructure > Engines** now also shows the Service Orchestration Transaction Engine and Catalog Services that connect to the RES Automation Manager Datastore.

## 2. New Technologies

### Dispatchers: master caching

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Resources are files that are used in the execution of Tasks and can be stored in the Datastore. For example, a Task **Perform Unattended Installation** may use an application executable that is stored as a Resource in the Datastore. Depending on the global settings in your RES Automation Manager environment, each Dispatcher caches this Resource, so that it can be downloaded by Agents to execute a certain Task. This can be a problem if the bandwidth in your RES Automation Manager environment is limited: if many Dispatchers connect to the Datastore simultaneously to download the Resource to their cache, the download speed will decrease and the maximum bandwidth capacity may be reached, especially if the Resource is large.

It is now possible for Dispatchers to share a common Resource cache in RES Automation Manager on a specific site. Master caching makes it possible to assign a master Dispatcher that downloads Resources from the Datastore and stores them in its cache, after which other Dispatchers can download the Resources from the master Dispatcher. This reduces bandwidth consumption between the Dispatchers and the Datastore, and so improves the reliability of the connection with the Datastore and increases the overall speed at which Resources are downloaded.

You can set up a master Dispatcher with the following registry setting:

System key: HKEY\_LOCAL\_MACHINE\SOFTWARE\RES\AutomationManager\Dispatcher

Value Name: DispatcherPort

Data Type: REG\_DWORD (Binary)

Value Data: Port number

You can redirect a Dispatcher to a master Dispatcher with the following registry settings:

System key: HKEY\_LOCAL\_MACHINE\SOFTWARE\RES\AutomationManager\Dispatcher

Value Name: MasterCacheDispatcherList

Data Type: REG\_SZ

Value Data: the address of the master Dispatcher.

- and -

System key: HKEY\_LOCAL\_MACHINE\SOFTWARE\RES\AutomationManager\Dispatcher

Value Name: MasterCacheDispatcherPort

Data Type: REG\_DWORD (Binary)

Value Data: Port number of the master Dispatcher

See the RES Automation Manager Help for more information about the configuration of master caching.

## Global Settings: Job Notification

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At **Infrastructure > Datastore > Settings > Global Settings**, two settings have been added: **Send mail message** and **Send SNMP trap**. These settings make it possible to send notification messages about the status of a Job when it has been executed.

You can send notification messages based on the following Job statuses:

- Completed
- Completed with Errors
- Cancelled
- Aborted
- Failed

### Send mail message

With this global setting, you can send notification e-mails (SMTP) to one or more e-mail addresses after a Job has been executed. This global setting is closely related to the Task **Send E-mail**:

- With the global setting **Send mail message**, you can specify whether RES Automation Manager sends an e-mail for **every** Job that is executed.
- With the Task **Send E-mail**, you can send an e-mail **only** for the Job in which the Task is included.

### Send SNMP trap

With this global setting, you can send SNMP traps after a Job has been executed. These SNMP traps can be received by third-party SNMP managers, such as HP OpenView or CA Unicenter. This global setting is closely related to the new Task **Send SNMP trap** ("SNMP trap (Send)" on page 12):

- With the global setting **Send SNMP trap**, you can specify whether RES Automation Manager sends an SNMP trap for **every** Job that is executed.
- With the Task **Send SNMP trap**, you can send an SNMP trap **only** for the Job in which the Task is included.

You can find the settings **Send mail message** and **Send SNMP trap** in the RES Automation Manager Console in the node **Infrastructure > Datastore > Settings > Global Settings**, under the section **Job notification**. Both settings are disabled by default.

## Example

By enabling job notification using e-mail for Job with the status "Cancelled", "Aborted and "Failed", RES Automation Manager will send an e-mail to the specified e-mail address for each executed Job that has the status "Cancelled", "Aborted or "Failed".

This e-mail can contain a message like:

```
Job:                Query event logs
Scheduled datetime: Immediately
Status:            Completed
Start:            09-07-2009 14:17:16 (DD-MM-YYYY HH:NN:SS) (UTC)
Stop:            09-07-2009 14:22:48 (DD-MM-YYYY HH:NN:SS) (UTC)
Duration:         00:05:32
What:            Query event logs
Who:            QA-2K3NLRB; QA-XPX64RB; T23-VISTARB; VM11-XPRB
```



### Note

- RES Automation Manager uses its own mechanism when sending SNMP traps and therefore does not require the installation of SNMP agent software on the computers that run RES Automation Manager.
- RES Automation Manager supports SNMPv1 and SNMPv2c.
- You can send the SNMP traps to one or more specific IP addresses, or broadcast the trap on the local network.
- Job notifications will be sent using a Dispatcher.

## Global Settings: Remote Console

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At **Infrastructure > Datastore > Settings > Global Settings**, a new global setting has been added: **Remote Console**.

With this option, it becomes possible to enable or disable the Remote Console functionality in RES Automation Manager. The option **Remote Console** is enabled by default.

It is also possible to set security permissions on the Remote Console functionality. See "Security Roles: permissions on Remote Console functionality" on page 21.

## Global Settings: Update of detailed Task results

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At **Infrastructure > Datastore > Settings > Global Settings**, a new global setting has been added: **Update of detailed Task results**.

During the execution of a Job, you can view the detailed results of the Tasks in the Job while they are executed. If the Task results are updated real time, the results are updated in the Datastore immediately after a Task is executed by an Agent. This increases bandwidth consumption and can slow down the Datastore connection if the bandwidth in your RES Automation Manager environment is limited, especially if a Job contains many Tasks.

With the new global setting **Update of detailed Task results** it is now possible to specify when the detailed results of Tasks are to be updated. This allows you to reduce overall bandwidth consumption.

- **On Job completion:** If this option is selected, the detailed Task results will be updated in the Datastore after all Tasks in a Job have been executed. This reduces bandwidth consumption, as the detailed Tasks results only needs to be updated once: when the Job has been executed. This is the default setting.
- **On Task completion:** If this option is selected, the detailed Task results will be updated in the Datastore immediately after a Task in a Job has been executed. This allows you to get a real time overview of the detailed Task results while the Job is executed, but it increases bandwidth consumption.

The setting **Update of detailed Task results** can also be used at Teams and Agents to create Team-specific settings and Agent-specific settings.

## Global Settings: Wake-on-LAN

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At **Infrastructure > Datastore > Settings > Global Settings**, the setting **Wake-on-LAN** has been added.

When you schedule a Job immediately, at a specific time, or recurringly, the option **Use Wake-on-LAN when Job starts** allows RES Automation Manager to execute Jobs on Agents that may be sleeping, hibernating or turned off at the time of Job scheduling. With **Wake-on-LAN**, it is now possible to specify which broadcast address should be used to broadcast the "wake-up" packet. You can choose between a global broadcast address for Wake-on-LAN or a subnet broadcast address.

### Broadcast method

By default, the default global broadcast address is 255.255.255.255. Using a subnet broadcast address may be useful in environments in which Wake-on-LAN does not function correctly when using a global broadcast address. When using the subnet broadcast address, RES Automation Manager will broadcast the "wake-up" packet to the last known subnet broadcast address of the Agent that executes the Job (for example, 172.31.255.255).

### Port

The default port that RES Automation Manager uses for Wake-on-LAN is port 3163. However, you can select an alternative UDP port number if necessary.

## Support for executing scripts on remote hosts and for sudo commands in Task "Execute Secure Shell (SSH) Commands"

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The Task **Execute Secure Shell (SSH) Commands** has been enhanced with two new options:

- The option **Create script on remote host** allows you to run specified Secure Shell commands as a script on a remote host, instead of executing them per command. If this option is selected, RES Automation Manager will create a script file in the user's home directory on the remote host.
- The option **Run script with sudo**, which can be used in combination with the option **Create script on remote host**, allows you to run scripts with sudo. The sudo command is a program for certain Unix and Linux operating systems that allows a permitted administrator to run commands with the security privileges of another user (normally the root). Before you select this option, please make sure the sudoers configuration file permits access to execute the su command to the relevant user account.

## Support for Microsoft Exchange Server 2010

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RES Automation Manager now fully supports Microsoft Exchange Server 2010. When configuring an Exchange Mailbox Task to create, manage, move, export, or delete Microsoft Exchange Server mailboxes, it is now possible to choose whether the Task applies to Microsoft Exchange Server 2000, 2003 or 2007 or to Microsoft Exchange Server 2010.

See the RES Automation Manager Help for information about the prerequisites for Microsoft Exchange Server 2010.



### Note

Tasks **Move Exchange Mailbox** that move mailboxes from older versions of Microsoft Exchange Server to Microsoft Exchange Server 2010 or vice versa should only be scheduled on Agents running Microsoft Exchange Server 2010.

## Support for Microsoft SQL Server Native Client 10.0

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RES Automation Manager now fully supports Microsoft SQL Server Native Client 10.0.

## Support for Microsoft Windows 7 and Windows Server 2008 R2

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RES Automation Manager is now fully compatible with the Microsoft Windows 7 and the Windows Server 2008 R2 platforms.

Support for these platforms is also reflected in Conditions: it is now possible to configure Condition expressions based on Operating System Version **Microsoft Windows 7** and **Windows Server 2008 R2**.

## Tasks: evaluators for Queries

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For a number of Tasks that query objects, it is now possible to configure evaluators. Evaluators are very similar to conditions, but where a condition determines what actions should be taken before a Task is executed, an evaluator does this afterwards: An evaluator contains one or more expressions that determine whether the evaluator can be satisfied based on the query results. Upon this, the evaluator takes a certain action, either continue or fail the query. This makes it possible to let the execution of succeeding Tasks depend on the results of a query. You can also use evaluators, for example, to check whether a server meets the compliancy rules of your organization.

You can use evaluators in the following Tasks:

- Query Computer Properties
- Query Disk Space
- Query Installed programs
- Query Service Properties
- Query TCP/IP Properties

### Example

Suppose you want to install RES PowerFuse using a Task **Install Windows Installer Package**, but only on Agents that have sufficient disk space:

1. Create a Module containing a Task **Query Disk Space** and a Task **Install Windows Installer Package**.
2. Configure an evaluator for the Task **Query Disk Space** that defines that the Task should fail if the target disk on the Agent has less than 100 MB free space available.
3. Configure a condition for the Task **Install Windows Installer Package** that defines that the Task should only be executed if the previous Task completed.

You can also use evaluators to check Agents on compliancy. For example, you can configure an evaluator to check whether a certain service is running on an Agent, whether a minimum amount of disk space is available, or whether a certain application version has been installed.

### Parameters

Optionally, you can set a parameter as part of the action of an evaluator. This allows you to use a value that is returned by an evaluator in a succeeding Task, for example as part of a condition on this Task.



#### Notes

- When viewing the detailed Job results of these Tasks, you can use the option **Only show data returned by evaluator** to filter the results of the query.
- Because an evaluator can specify that a query should fail, the Tasks that can be configured with an evaluator now also contain error control settings. The default value of error control for these Tasks is **Continue Job on error**, whereas the default value of other Tasks is **Stop Job on error**.

## Team Rule: First Accessed Dispatcher

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It is now possible to add a Team Rule at **Infrastructure > Teams > Add/Edit Team > Members**, that is based on **First Accessed Dispatcher**. When an Agent registers to RES Automation Manager, the Agent can now automatically be added to a Team based on the Dispatcher used by the Agent. This allows for automatic grouping of Agents per Dispatcher. The first accessed Dispatcher is now also displayed on the **Properties** tab of an Agent.

## Team settings

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At **Infrastructure > Teams**, it is now possible to configure settings for Teams. This makes it easier to configure settings for Team members that deviate from the global settings. The following changes have been made to RES Automation Manager:

### Settings tab for Teams

The **Add/Edit Team** window, which opens when configuring a Team in the node **Infrastructure > Teams**, has been enhanced with a **Settings** tab. For each Team setting, you can choose whether to use inherited settings or Team specific settings. For this purpose, **default settings** have been renamed to **inherited settings**.

- Team specific settings are exceptions to global settings.
- Inherited Team settings are inherited from the global settings.

### Primary Teams

Teams can now be set as a primary Team. Primary Teams are Teams whose settings can be inherited by each Agent that is a member of the Team.

For each Agent, you can choose whether to use inherited settings or Agent specific settings. Inherited Agent settings are inherited from:

- the global settings, if it is not a member of a primary Team.
- the primary Team, if it is a member of this Team.

You can set a Team as a primary Team on the **Members** tab in the **Add/Edit Team** window and on the **Teams** tab in the **Agent Properties** window.

## 3. New Tasks

### Citrix Workflow (Invoke)


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At **Repository > Modules**, a new Task has been added to RES Automation Manager: **Invoke Citrix Workflow**.

Citrix Workflow Studio is an infrastructure process automation platform that integrates components across the Citrix Delivery Center, including Citrix XenApp, XenDesktop, XenServer and Netscaler. Citrix Workflow Studio enables you to create, schedule, run, and manage workflows related to administrative tasks that span multiple products. With the Task **Invoke Citrix Workflow**, it is possible to schedule Citrix workflows using RES Automation Manager.

Using RES Automation Manager to handle Citrix workflows makes it easy to schedule Citrix workflows on many computers (Agents). The same version of the Citrix workflow is executed in the same manner across the entire set of Agents, ensuring consistent results. Citrix workflows can be scheduled in RES Automation Manager by creating a workflow in Citrix Workflow Studio, exporting it as a .ZIP file and storing it as a RES Automation Manager Resource.

The Task **Invoke Citrix Workflow** supports the use of Citrix Workflow properties.

**Notes**

The Task **Invoke Citrix Workflow** requires the following software on an Agent:

- Citrix Workflow Studio 2.0.1 runtime
- Citrix Workflow Studio 2.0.1 Activity Libraries

### Job (Postpone)

---

At **Repository > Modules**, the Task **Perform Wait** has been renamed to **Postpone Job** and has been enhanced with the option to allow interaction by console users.

The new option **Let console user continue Job** allows console users to decide, through a popup window, whether the execution of a Job should continue or postponed temporarily. If allowed, console users can also use this popup window to cancel the Job.

Postponing the execution of the Job temporarily can be useful if it is more convenient for console users that the Job is executed at a later stage, for example if the bandwidth at the user's location is not sufficient to install certain software or if the Job is executed during a company-wide presentation.

The Task **Postpone Job** can be found in the folder **Advanced Tasks**, when selecting Tasks for a Module.

## Printer (Add, Remove, Query)

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At **Repository > Modules**, a new set of Tasks has been added to RES Automation Manager:

### Add Printer

With this Task, you can add local printers and network printers and, if necessary, install their associated printer drivers.

### Remove Printer

With this Task, you can remove printers from Agents.

### Query Printer

With this Task, you can query the printers that are installed on Agents.

## Printer Permissions (Set, Query)

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At **Repository > Modules**, a new set of Tasks has been added to RES Automation Manager:

### Set Printer Permissions

With this Task, you can manage security permissions and access rights on a specific printer for specific users and groups.

### Query Printer Permissions

With this Task, you can search for printer permissions on a specific printer on Agents.

## SNMP trap (Send)

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At **Repository > Modules**, a new Task has been added to RES Automation Manager: **Send SNMP trap**. With this Task you can send SNMP traps, which can be received by third-party SNMP managers, such as HP OpenView or CA Unicenter.

This Task is especially useful when combined with other Tasks in a Module. For example, you can configure this Task to send an SNMP trap if a certain Task in a Module fails.

This Task is closely related to the new global setting **Send SNMP trap** ("Global Settings: Job Notification" on page 5):

- With the global setting **Send SNMP trap**, you can specify whether RES Automation Manager sends an SNMP trap for **every** Job that is executed.
- With the Task **Send SNMP trap**, you can send an SNMP trap **only** for the Job in which the Task is included.

**Notes**

- RES Automation Manager uses its own mechanism when sending SNMP traps and therefore does not require the installation of SNMP agent software on the computers that run RES Automation Manager.
- RES Automation Manager supports SNMPv1 and SNMPv2c.
- You can send the SNMP traps to one or more specific IP addresses, or broadcast the trap on the local network.

## 4. Enhancements

### Conditions based on the existence of specific registry settings

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It is now possible to set a condition on a Task, Module or Run Book Job that checks whether a certain registry setting exists. This can be useful for example, if a Task should only be executed if a specific version of an application has been installed, but this information is only stored as a registry key. You can then set a condition on the Task that checks whether this registry setting exists.

#### Example

Adobe Acrobat Reader stores its version number (for example, 9.0) in the registry as `HKEY_CURRENT_USER\SOFTWARE\Adobe\Acrobat Reader\9.0\`.

If a certain Task should only be executed if Adobe Acrobat Reader 9.0 has been installed, you can set a condition for this Task based on the registry key `HKEY_CURRENT_USER\SOFTWARE\Adobe\Acrobat Reader\9.0\`. If you then use the operator **Exist** with the value **True**, RES Automation Manager will check the existence of this key in the registry of the Agents that perform the Task. If the condition returns **True**, this means that the registry key exists and thus that Adobe Acrobat Reader 9.0 has been installed.

### Input mask for parameters

---

By default, a parameter value can be any combination and number of characters. This may be undesirable, for example if the parameter specifies a phone number and you want all your phone numbers in Active Directory to have a specific format. In such cases, an input mask can be set, on the **Input** tab of the parameter.

An input mask defines which characters are allowed where in the parameter's value. Each mask character acts as a placeholder for one character of a specific type. For example, if a parameter specifies a phone number, you can set an input mask to enforce the input of exactly ten numbers. At the input moment, RES Automation Manager will translate the mask characters into underscores where the user is to provide input. If you set an input mask `1234560000`, this will be shown as `123456____` in the input field (because 0 is a mask character, whereas the other characters are not). The user will be able to enter numbers where the underscores are shown, but not other characters.

An input mask consists of two parts: the **Mask** and the **Literal**:

- The **Mask** contains mask characters. Each mask character acts as a placeholder for one character of a specific type. For example, 0 stands for a number between 0 and 9, and L stands for a lowercase or uppercase letter. Optionally, the mask may also contain regular characters that do not function as placeholders, but that are included in the parameter value.

- The **Literal** is filled automatically on the basis of the mask information. The literal shows where a user will be able to provide input by translating the mask characters into underscores. If a mask character has been translated into an underscore but should be kept as a regular character, you can toggle it back using the arrow up and down keys.

For example, RES Automation Manager sees H as a mask character. This means that if you specify an input mask `PHONE: 073-000000`, this will be shown as `P_ONE: _73-_____` in the literal. Using the arrow up and down keys, you can toggle the relevant underscores, so that RES Automation Manager treats H as a regular and the literal shows as `PHONE: 073-_____`.

See the RES Automation Manager Help for more information, including an overview of all mask characters that can be used.



#### Note

You can test your input mask by clicking **Show preview**.

## Job Scheduling: notification about scheduled Jobs after modifying Modules, Projects and Run Books

---

At **Repository > Modules**, at **Repository > Projects** and at **Repository > Run Books**, a notification window will now be shown after a Module Project or Run Book is modified, and the Module, Project or Run Book is used in a scheduled Job. From this notification window, it is possible to open the scheduled Job and reload the relevant Tasks, if necessary.

## Job Results: export Job results per Agent

---

When exporting the Job results to an XML file, at **Job Execution > Job Results**, it is now possible to export Job results per Agent, by selecting the option **Export results per Agent**. This creates a separate XML file for each Agent, including the name of the Agent. This is useful when you want to keep a separated administration for each Agent.

You can find the option **Export results per Agent** by right-clicking a Job in the **Job Results** node in the RES Automation Manager Console and selecting **Export Job Results**.



#### Note

When exporting Job results per Agent, any existing XML files for these Agents will be overwritten.

## Job Results: export Job results using a generic command line


---

At **Job Execution > Job Results**, it is now possible to export Job results using a generic command line. You can use this command line in a Task **Execute Command** to automate the export of the results of a Job.

For this purpose, two options have been added: **Replace GUID with function** and **Add command line parameter to wait for job to finish**. You can find these options by right-clicking a Job in the **Job Results** node in the Console and selecting **Export Job Results**).

When exporting the results of a Job, the **Command line** box shows the command line that you can use to generate the XML file:

- With the option **Replace GUID with function**, you can replace the GUID in the command line with which a Job is identified with the new function `@ [MASTERJOBGUID]`. This creates a generic command line that you can use in a Task **Execute Command** to export the results of the Job in which it is used automatically.
- When you combine the option **Replace GUID with function** with the option **Add command line parameter to wait for job to finish**, you can create a command line that you can use in a Task **Execute Command** that waits with exporting the Job results until all running Tasks have been executed. This can be the Tasks of the same Job to which the Task **Execute Command** belongs, but also Tasks belonging to a previous Job that is still running.



**Note**

- The function `@ [MASTERJOBGUID]` cannot yet be used for Run Books.
- You can only execute a command line that exports Job results on Agents on which a RES Automation Manager Console has been installed.

## New functions

At the **Repository**, several new functions have been added. Functions generate (partial) input for text-based properties of Tasks. This makes it possible to create information in fields automatically. The following new functions have been added to RES Automation Manager:

Function	Returns	Example
<code>@ [MIN (&lt;num1&gt;, &lt;num2&gt;)]</code>	the minimum value of two specified values.	If <code>@ [GET-MEMORY]</code> returns "2145456128", then <code>@ [MIN (4000000000, @ [GET-MEMORY])]</code> returns "2145456128"
<code>@ [MAX (&lt;num1&gt;, &lt;num2&gt;)]</code>	the minimum value of two specified values.	If <code>@ [GET-MEMORY]</code> returns "2145456128", then <code>@ [MAX (4000000000, @ [GET-MEMORY])]</code> returns "4000000000"
<code>@ [CALC (&lt;num1&gt;, &lt;{+, -, *, /, ^}&gt;, &lt;num2&gt;)]</code>	a calculated value.	If <code>@ [GET-MEMORY]</code> returns "2145456128", then <code>@ [CALC (@ [GET-MEMORY], *, 2)]</code> returns "4290912256"
<code>@ [FINDINFILE (&lt;filename&gt;, &lt;search&gt;, &lt;return offset&gt;, &lt;return length&gt;)]</code>	a string in a specific file.	Use this function as a "grep", for example to search for an IP address in a host-file.
<code>@ [FILEVERSION (&lt;filename&gt;)]</code>	the file version of the specified file.	"1.00.0001"
<code>@ [REGISTRY (&lt;registry value&gt;)]</code>	the value of the specified registry value name.	If the database type in your environment is MSSQL:  <code>@ [REGISTRY (HKEY_LOCAL_MACHINE\SOFTWARE\RES\AutomationManager\WMC\DBType)]</code> returns "MSSQL"

@ [GET-IPV4]	the IP address of the Agent that executes the Task. If an Agent has multiple network cards, RES Automation Manager will return the first IP address of the Agent as defined by its Network Connections settings.	"172.16.41.20"
@ [GET-IPV4ALL]	all IP addresses of the Agent that executes the Task. If the Agent has multiple network cards, multiple entries will be returned, if the Agent only has one network card, only one IP address will be returned.	"172.16.41.20;192.168.140.1;192.168.186.1"
@ [GET-MEMORY]	the amount of memory installed on the Agent.	"2145456128"
@ [GET-ASSETTAG]	any asset tag of the producer of the computer of the Agent.	
@ [GET-COMPUTERFUNCTION]	the type of software the computer of the Agent is running.	RES Automation Manager can recognize the following computer functions: <ul style="list-style-type: none"> <li>• "Microsoft SQL Server"</li> <li>• "Primary domain controller"</li> <li>• "Backup domain controller"</li> <li>• "Running the Timesource service"</li> <li>• "Apple File Protocol server"</li> <li>• "Novell server"</li> <li>• "LAN Manager 2.x domain Member"</li> <li>• "Sharing Print queue"</li> <li>• "Running dial-in service"</li> <li>• "Xenix server"</li> <li>• "Microsoft File and Print for Netware"</li> <li>• "Running a Browser service as backup"</li> <li>• "Running the master Browser service"</li> <li>• "Running the domain master Browser"</li> <li>• "Terminal Server"</li> </ul>
@ [GET-FQDN]	the fully qualified domain name of the Agent.	"NYHQS01.D-ENERGY.res.nl"
@ [GET-COMPUTERNAME]	the computer name of the Agent.	"NYHQS01"

@ [GET-OS-SUITES]	the product suites available on the operating system of the Agent.	RES Automation Manager can recognize the following product suites: <ul style="list-style-type: none"> <li>• "BackOffice components installed"</li> <li>• "Windows Home Edition"</li> <li>• "Windows Server Compute Cluster Edition"</li> <li>• "Windows Server Datacenter Edition"</li> <li>• "Windows Server Enterprise Edition"</li> <li>• "Windows Server Web Edition"</li> <li>• "Windows Small Business Server"</li> <li>• "Windows Storage Server"</li> <li>• "Windows XP Embedded"</li> </ul>
@ [GET-OS-VERSION]	the version number of the operating system of the Agent.	If the operating system of the Agent is Microsoft Windows XP: @ [GET-OS-VERSION] returns for example "5.1.200"
@ [GET-OS-BIT]	the bit version of the operating system of the Agent.	"32"
@ [GET-OS-TYPE]	the computer type of the Agent.	"WORKSTATION"

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## Only show offline Agents option

At **Datastore > Agents** it is now possible to enable the **Only show offline agents** option. This option allows for easier overview of Agents in a offline state. It is possible to generate an Instant Report of this view.

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## Paste option to specify Agents when configuring Run Book Jobs or scheduling Jobs

When configuring a Run Book Job or when scheduling a Job, it is now possible to specify Agents by copying them from a list of Agents separated by semi-colons (";"), commas (","), or tabs and pasting them directly into the **Who** field. It is not possible to specify Agents by typing them into the **Who** field.

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## RES Automation Manager license verification method has been improved

The license verification method that RES Automation Manager uses to check the authenticity of the product's license has been improved. As a result, the time to log on to the RES Automation Manager Console has been drastically reduced for systems that have never been connected to the Internet.

## Resources: option "Parse variables, parameters and functions in contents of this file" available for any file type

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In previous releases of RES Automation Manager, the Resource option **Parse variables, parameters and functions in contents of this file** (at **Repository > Resources**) was only available for a limited number of file types. To facilitate the growing number of file types that can contain variables, parameters and functions, this option is now available for any file type.

If a file contains variables, parameters and/or functions, you can use this option to replace them with the corresponding values that apply to the Agent that executes the Task in which the Resource is used.

For example, an application that is installed on a computer may need a specific INI file that contains the computer name. With this option, you can use a variable for the computer name in the INI file, which is replaced by an actual value when the Task in which the INI file is used is executed by an Agent. As a result, each Agent that executes the Task will contain an INI file that refers to its computer name.

## Run Books: Use Run Book parameter for Who field

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It is now possible to select the option **Use Run Book parameter** when adding Jobs to a Run Book at **Repository > Run Books**. This option shows a dropdown list with available Run Book parameters. By selecting a Run Book parameter from this dropdown list, the **Who** field is no longer selectable, and is variable, since it is filled by a selectable Run Book parameter. This parameter may contain a number of Agents, separated by a semi-colon. This functionality allows you, for instance, to provide multiple **Who** fields through the Service Orchestration action **Invoke Runbook** and choose the Agents without having to edit the Run Book in the RES Automation Manager.

## Search for Agents and Teams

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The method to search for Agents and Teams has been changed, to make it easier to find Agents and Teams in large environments.

### Agents

At Infrastructure > Agents, an overview of all Agents is no longer automatically shown. Instead, you can find Agents by entering search criteria.

- Search in Teams: When searching for Agents in Teams, you can choose to search in all Teams or in a specific Team. If a Team is a member of another Team, you can also search in subteams.
- Search in Job History: When searching for Agents in the Job History, you can search for all Agents that executed a specific Project or Module.
- Only online and licensed Agents: optionally, you can choose only to include online and licensed Agents in the search results.

## Teams

At Infrastructure > Teams, an overview of all Teams is no longer automatically shown. Instead, you can find Teams by entering search criteria.

When searching for Teams, you can choose to search for all Teams or all Teams in a specific Team. If a Team is a member of another Team, you can also search in subteams.

## Job Scheduling

The method to select Agents or Teams during Job Scheduling has also changed significantly.

- Search in Teams: When searching for Agents and/or Teams, you can choose to search in all Teams or in a specific Team. If a Team is a member of another Team, you can also search in subteams.
- Search in Job History: When searching for Agents in the Job History, you can search for all Agents that executed a specific Project or Module. It is not possible to search for Teams in the Job History.
- Only online and licensed Agents: optionally, you can choose only to include online and licensed Agents in the search results.
- Only show first 20 results: optionally, you can choose to limit the search results. If you select this option, RES Automation Manager will take 20 Agents and/or Teams at random, depending on the other search criteria.

## Security Roles: Agents can inherit access permissions from primary Teams

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When configuring a security role, at **Infrastructure > Datastore > Security**, the option **Inherit explicit access from primary team if no explicit access has been set** is now available on the **Permissions** tab, when setting access permissions on the **Agents** node.

With this option, it becomes much easier to assign access permissions to sets of Agents: by assigning explicit access permissions to a Team, all Agents that use the Team as their primary Team and for which no explicit access permissions have been set, will inherit the access permissions of the Team. This makes it possible to configure security roles that only grant access to Agents that belong to the Team to which the user has access permissions.

## Security Roles: improvements in processing login accounts and security roles

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The way in which login accounts and security roles are processed by RES Automation Manager has been improved.

## **Security Roles: limit Task details when "read" permissions are set**

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When configuring a security role, at **Infrastructure > Datastore > Security**, the option **Limit task details when read permissions are set** is now available on the **Permissions** tab, when setting access permissions on the node **Repository > Modules**. With this option, it is possible to hide detailed information of Tasks when a security role only has **Read** permissions to the **Modules** node. This is useful to prevent unqualified personnel from obtaining crucial information about scripts and other Tasks.

The option **Limit task details when read permissions are set** does not apply to Queries.

## **Security Roles: permissions on folders in "Repository" nodes**

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When configuring a security role, at **Infrastructure > Datastore > Security**, it is now possible to set access permissions on folders in the nodes **Resources, Modules, Projects** and **Run Books**.

With this option, it becomes much easier to assign access permissions to sets of Resources, Modules, Projects or Run Books: by assigning access permissions to a folder, all objects in this folder will inherit its access permissions. This makes it possible to configure security roles that grant access to objects in certain folders only.

## **Security Roles: permissions on Jobs**

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In the **Job Execution** nodes, the permissions on a Job are now determined by the permissions on the Agent(s) or Team(s) on which the Job is scheduled and by the permissions on the Module(s), Project or Run Book in the Job.

## **Security Roles: permissions on Remote Console functionality**

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When configuring a security role, at **Infrastructure > Datastore > Security**, the option **Allow Remote Console** is now available on the **Permissions** tab, when setting access permissions on the **Agents** node. With this option, it becomes possible to allow the Remote Console functionality in RES Automation Manager for certain security roles only.

The option **Allow Remote Console** is disabled by default for new security roles. For backwards compatibility with previous versions of RES Automation Manager, the option is enabled for existing security roles.

This option can also be set as a global setting. See "Global Settings: Remote Console" (on page 6).

## Task "Execute Command": support for scripts

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The Task **Execute Command** can be used to run a command on Agents. This allows you to schedule any action that can be performed by a command line. It is now also possible to refer to scripts in the command line. For this purpose, the Task **Execute Command** has been enhanced with a **Script** tab.

Using RES Automation Manager to handle your scripts makes it easy to execute and schedule scripts on many Agents. The same version of the script is executed in the same manner across the entire set of Agents, ensuring consistent results.

### Configuration

- You can enter the script directly on the **Script** tab.
- The file extension of the script will be used by RES Automation Manager to save the script as a script file in the specified format in the temporary folder on the Agent that executes the Task.
- In the command line on the **Settings** tab, you can use the function `@[SCRIPT]` as a placeholder for the script file.
- When the Task is executed by an Agent, the function `@[SCRIPT]` in the command line will be replaced by the path to the script file in the temporary folder on the Agent.



### Note

You can use RES Automation Manager functions, RES Automation Manager parameters and environment variables in scripts.

## Task "Execute Windows PowerShell Script": use 32-bit PowerShell on 64-bit operating systems

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In the Task **Execute Windows PowerShell Script**, the option **Use 32 bits PowerShell (on x64)** has been added.

With this option, it becomes possible to execute PowerShell cmdlets in the 32-bit version of PowerShell on 64-bit operating systems.

## Tasks: Ability to query on empty Active Directory properties

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It is now possible to query on empty Active Directory properties with Active Directory Tasks.

## Tasks: Active Directory Tasks now support advanced Active Directory Properties

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The standard set of Active Directory properties, that is selectable when performing Active Directory Tasks, has been enhanced with an **Advanced Properties** set. This set is available if you select the **Show Advanced Properties** option that is located at the bottom of the properties selection screen. This set contains all Active Directory properties, including custom Active Directory properties that were not selectable before.

Distinguished Name properties are supported as well. These are properties such as "CN=John Doe,OU=Development,DC=D-ENERGY,DC=local". If a property of the type "DN" is filled with an Active Directory Task, RES Automation Manager will first verify if the value to be set is indeed a Distinguished Name. If not, RES Automation Manager will interpret the value as an account name and try to fetch the distinguished name based on the account name.

Distinguished Name properties are displayed in the list of Advanced Properties with an additional "(DN)".

## Tasks "Add Share" and "Remove Share": support for printers

---

The Tasks **Add Share** and **Remove Share** have been enhanced with support for printers:

- When configuring a Task **Add Share**, it is now possible to choose to create a file share or a printer share.
- When configuring a Task **Remove Share**, it is now possible to choose to remove a file share or a printer share.

## Tasks "Invoke SoftGrid Client" and "Query SoftGrid Client" renamed to "Invoke Microsoft App-V Client" and "Query Microsoft App-V Client"

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The Tasks **Invoke SoftGrid Client** and **Query SoftGrid Client** have been renamed to **Invoke Microsoft App-V Client** and **Query Microsoft App-V Client**.

## Tasks "Manage Windows Firewall Settings" and "Query Windows Firewall Settings": enhanced support for Microsoft Windows Vista and higher

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The Tasks **Manage Windows Firewall Settings** and **Query Windows Firewall Settings** have been improved, to enhance the support for computers running Microsoft Windows Vista or higher.

## Tasks "Reboot Computer" and "Shutdown Computer": wait for Agent to come back online

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The Tasks **Reboot Computer** and **Shutdown Computer** have been enhanced with the option **Wait for Agent to come back online**.

In combination with the option **Reboot computer after shutdown**, this option makes it possible to specify whether a Job should wait after a reboot with continuing with the next Task in the Job until the Agent has come back online. This option is enabled by default.

It can be useful to disable the option **Wait for Agent to come back online** in scenarios in which the computer on which the Agent is running switches to a different OS after a reboot and a different Agent comes online. This prevents RES Automation Manager from waiting until the original Agent comes back online.

## Word wrapping disabled in various Tasks

---

Word wrapping has been disabled in the following Tasks:

- Execute Windows PowerShell Script
- Execute Secure Shell (SSH) Commands
- Execute SQL Statement
- Query SQL Statement
- Apply Registry Settings

## 5. Known Issues and Limitations

### Importing Building Blocks requires full access to all "Repository" nodes

Importing a Building Block from the RES Automation Manager Management Console requires full access to all **Repository** nodes.

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