



blueprism

The Operational Agility Software Company

Blue Prism

Guide to the Scheduler

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1 Introduction

This document is a guide to using the scheduling feature of Blue Prism, including timetables and scheduler reports.

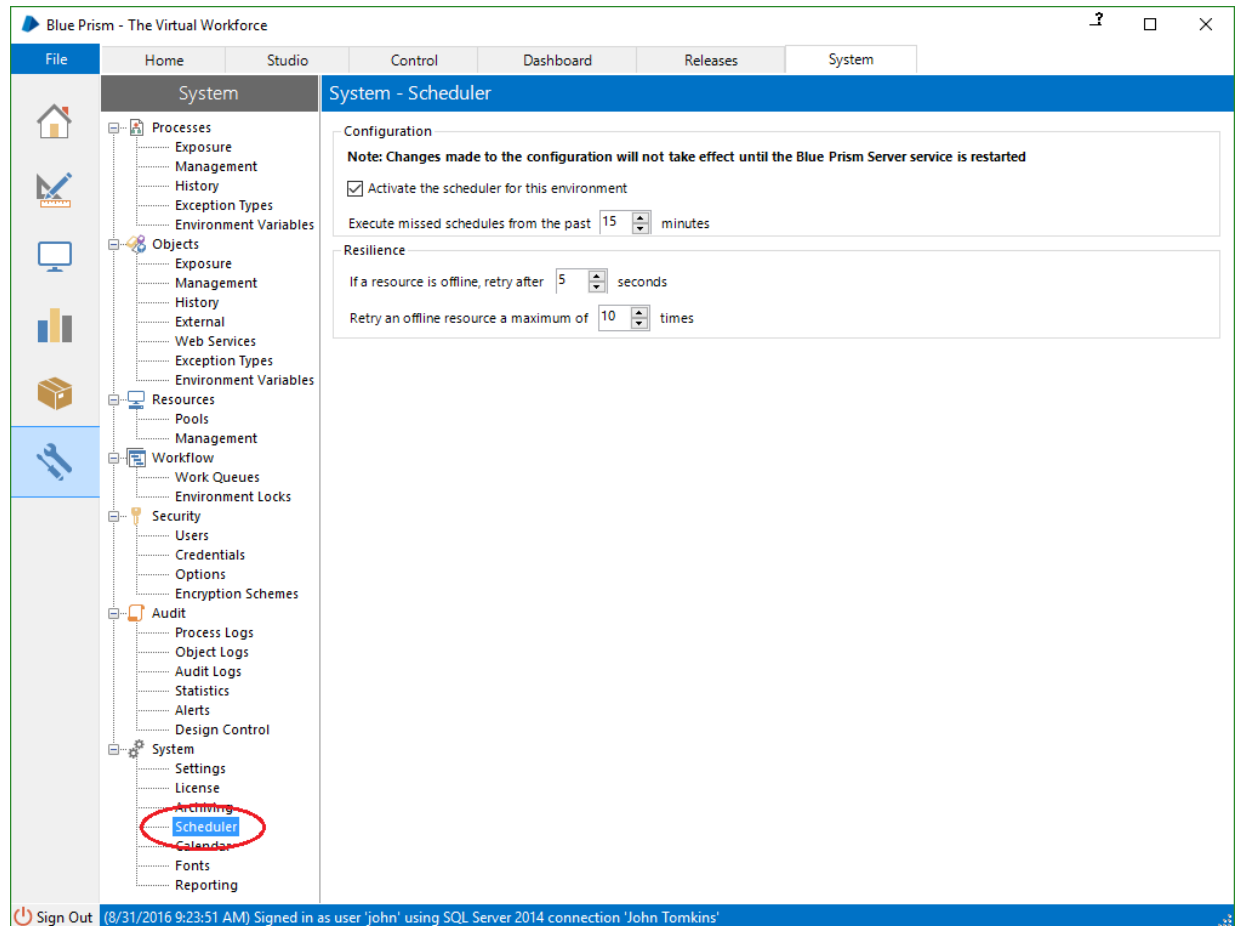
The scheduler allows Blue Prism to execute processes at specified times and repeat their execution at various intervals. The scheduler is a background process which waits for the next schedule activation time and then activates any schedules due to run at that time.

A schedule represents the point of execution of a set of tasks. Each schedule is self-contained and contains various data such as a name & description, timing data and a set of tasks to perform. A task represents a component of a schedule. It defines a set of sessions which are set to be performed on particular resource PCs. A task also defines the next task for the schedule to execute on completion or failure of the current task.

The schedules can be configured to run once, or be repeated at minutely, hourly, daily, weekly, monthly or yearly intervals. Calendars can be employed to cause the schedule to run only on working days, skipping specific certain weekdays and/or public holidays.

2 Configuring the Scheduler

To change the scheduler settings, navigate to System Manager and select the 'System' option.



To enable the scheduler, tick the “Activate the scheduler for this environment” box. Untick the box to disable the scheduler.

- ★ *The BP Server Service must be restarted to ‘activate’ changes made on this scheduler configuration screen. Therefore to activate the scheduler, the box must be ticked and the Blue Prism Server Service must be restarted.*

When the scheduler is started up, it can check back for recent schedules which should have executed when the scheduler was not running.

To configure how far back the scheduler will check, enter the number of minutes into the “Execute missed schedules from the past n minutes” box.

- ★ *The setting is only effective when the scheduler is starting up. It has no effect on a running scheduler.*
- ★ *To set the scheduler to not look back at all, enter 0 (zero).*

- * *If a schedule has been missed multiple times during the configured period, it will only be executed once.*
- * *Schedules which have successfully executed in the configured period will not be executed again*

If a resource is discovered to be offline when the scheduler attempts to run a process on it, it will wait and retry the resource after a defined number of seconds.

To configure the number of seconds to wait before retrying, enter the number of seconds into the 'if a resource is offline, retry after n seconds' box.

To configure the number of times to retry the resource enter the number of times into the 'Retry an offline resource a maximum of n times' box. For an unreliable network, configure this value to a high number.

- * *To configure the scheduler not to retry resources discovered to be offline, enter 0 (zero) into the 'Retry an offline resource a maximum of n times' box.*

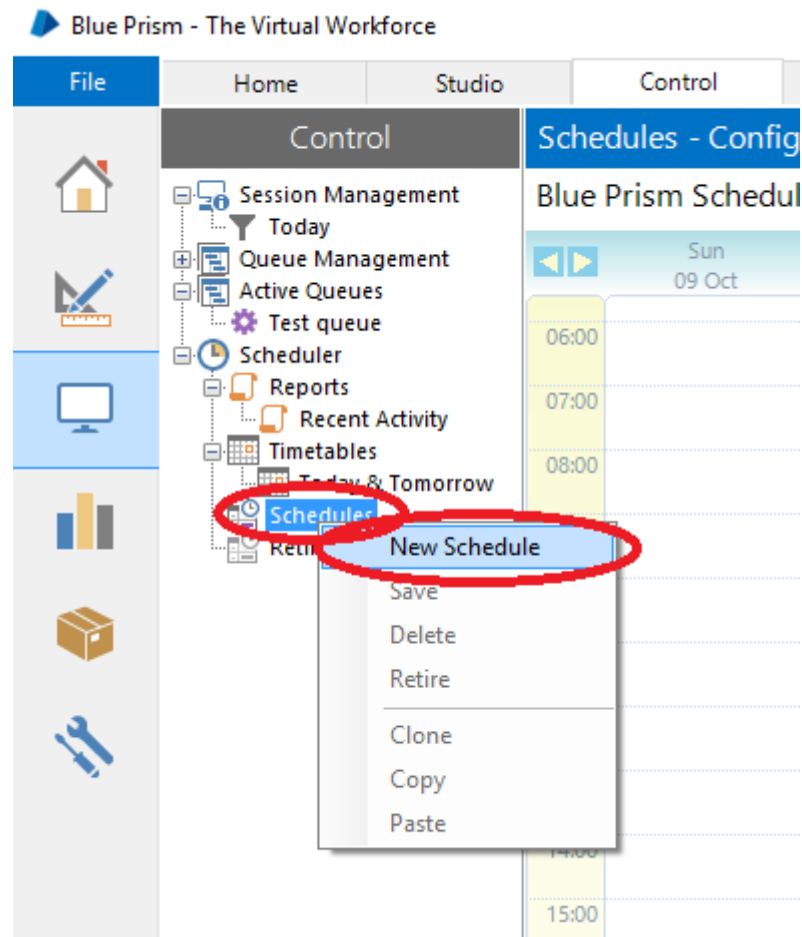
Resilience

If a resource is offline, retry after seconds

Retry an offline resource a maximum of times

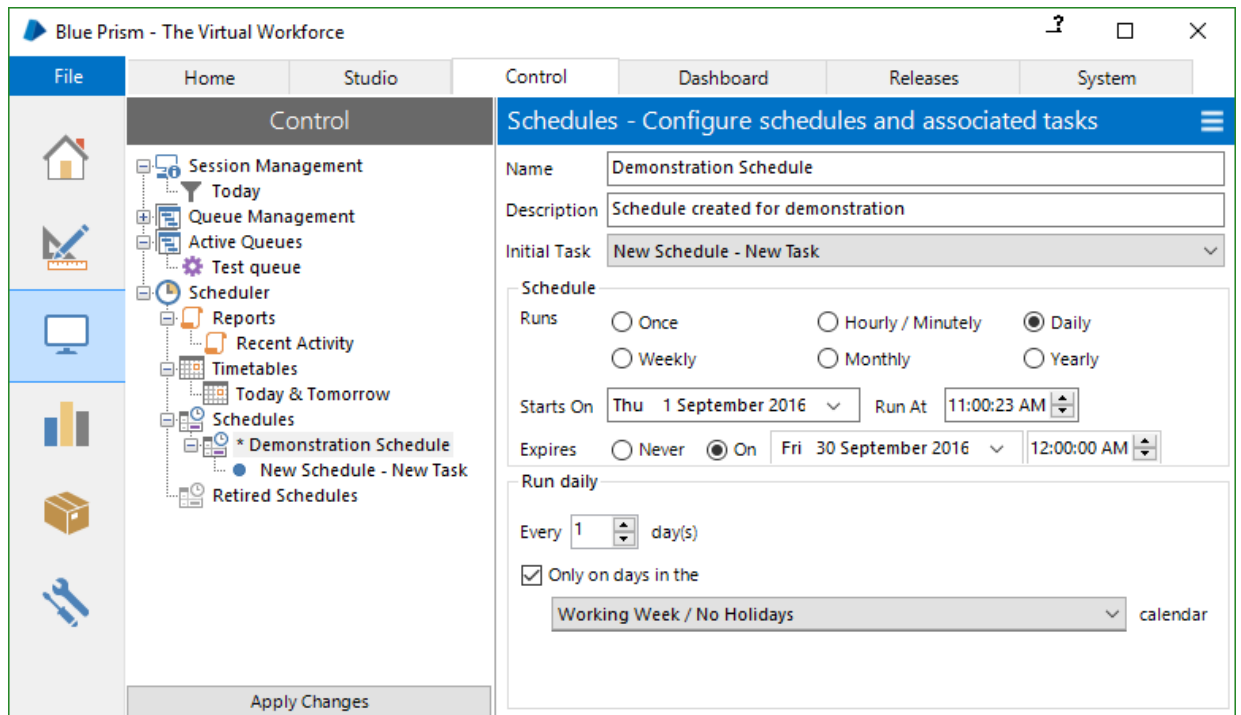
3 Schedules and Tasks

Schedules are created and amended on the Scheduler section of Control Room. To create a new schedule, right click on the 'Schedules' tree element of the Control Room tree and select 'New Schedule'.



You can then give the schedule a name and description. When a schedule is executed, its initial task is executed first. When a new schedule is created, a new task is automatically created within the schedule. The task becomes the default 'initial task' for the schedule.

If the name of the automatically created task is amended within the task, the name will automatically change within the Initial Task field of the schedule. As new tasks are added to the schedule, they become options that can be selected within the Initial Task drop down list.



A schedule can be configured to run once, hour/minutes, daily, weekly, monthly or yearly. To select the schedule's frequency, select the appropriate radio button. The start date and time can be configured. In addition, for all frequencies other than 'once' an end date and time can be configured

- ★ *The default setting is for schedules never to expire*

Schedules can be configured at an interval from every 1 to 999 weeks. The schedule will default to running on the same day as the start date. The day on which the schedule will be run can be configured to be the first or last working day in the week as specified in the chosen calendar.

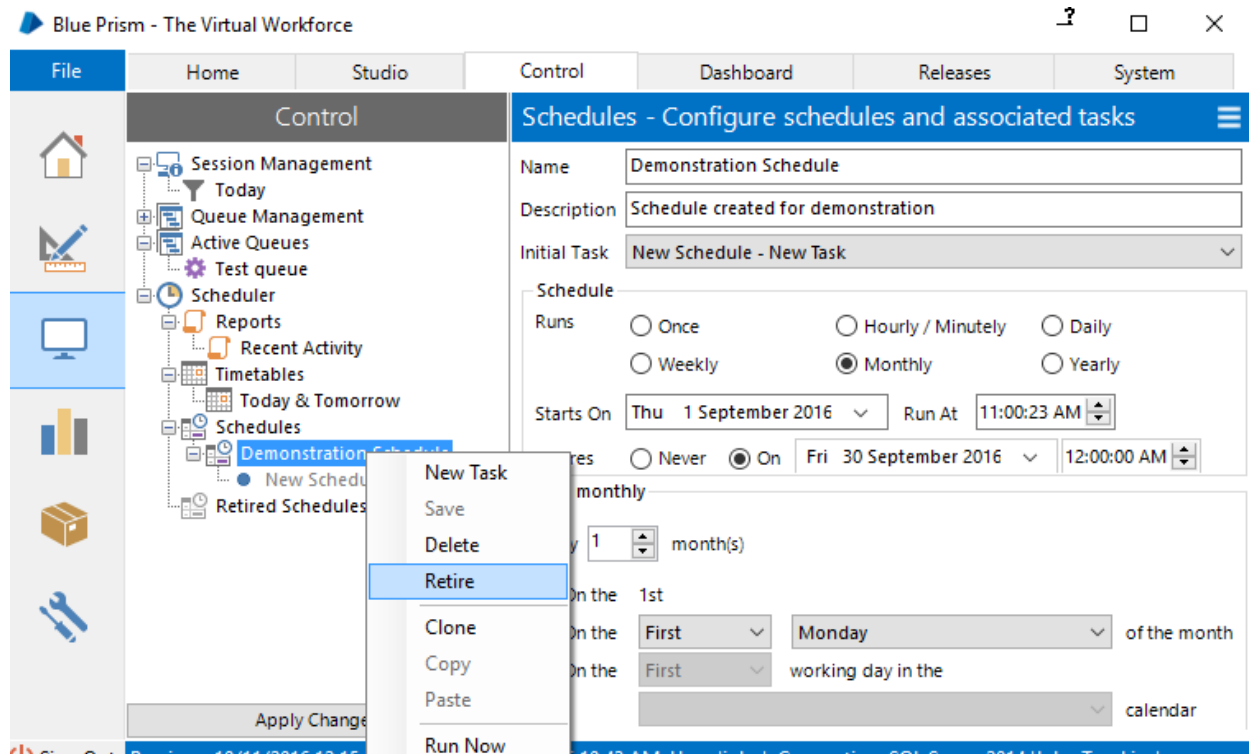
- ★ *The first day of the working week in a Blue Prism calendar is considered to be Monday, so if, for example, a calendar is configured to work from Sunday to Friday, Monday will be considered the first working day and Sunday will be considered the last working day of any given week (other holidays aside).*

Schedules can be configured at an interval from every 1 to 999 months. The schedule will default to running on the same day as the start date. The schedule can be configured to run on the first, second, third, fourth, fifth or last occurrence of a specified day in the month. The scheduler can be configured to be run on the first or last working day of a month according to a specified calendar.

- ★ *A schedule will skip any months in which the specified date doesn't exist. For example, a schedule configured to run on the 31st of each month will not execute in any months with less than 31 days. Consider using the last working day functionality instead.*

To save any changes to your schedule either right click on the schedule name in the Control Room tree to bring up the context menu, where you can select save. You can also click the Apply changes button found at the bottom left hand side of the screen instead.

You can delete a schedule via the same context menu but if you want to temporarily suppress the schedule you can “Retire” the schedule instead. Once retired, the schedule can still be selected and viewed from the Control Room tree but cannot be edited.



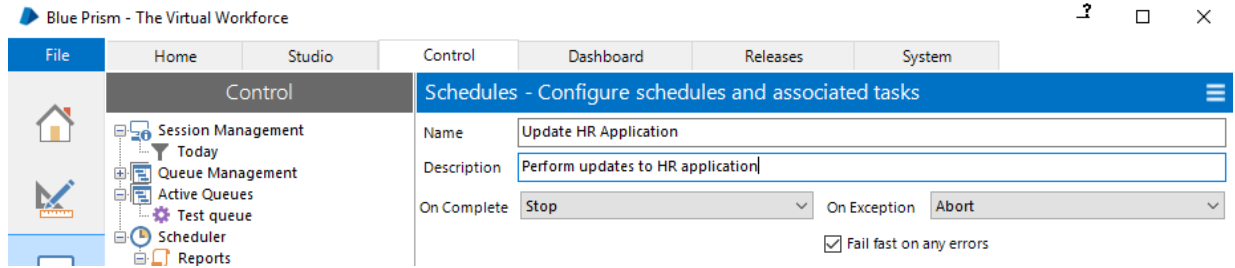
A retired schedule will be moved under the Retired Schedules tree item. A retired schedule can be made active again by un-retiring it. Once restored the schedule will be activated by a running scheduler at its next trigger point.

A schedule can be triggered manually regardless of its timing settings by right clicking on the schedule and clicking ‘Run Now’.

** It might take up to 30 seconds for the schedule to trigger*

A scheduler is of little use without any tasks within it. Tasks tell the schedule what processes to run and on what resources.

When a schedule is created, a task entitled ‘New Schedule – New Task’ is automatically created within the schedule. The initial task within the schedule defaults to this task. Before adding further tasks, edit the New Schedule – New Task. First give the task a name and description.



To add further tasks, right click on the schedule and select 'New Task'.

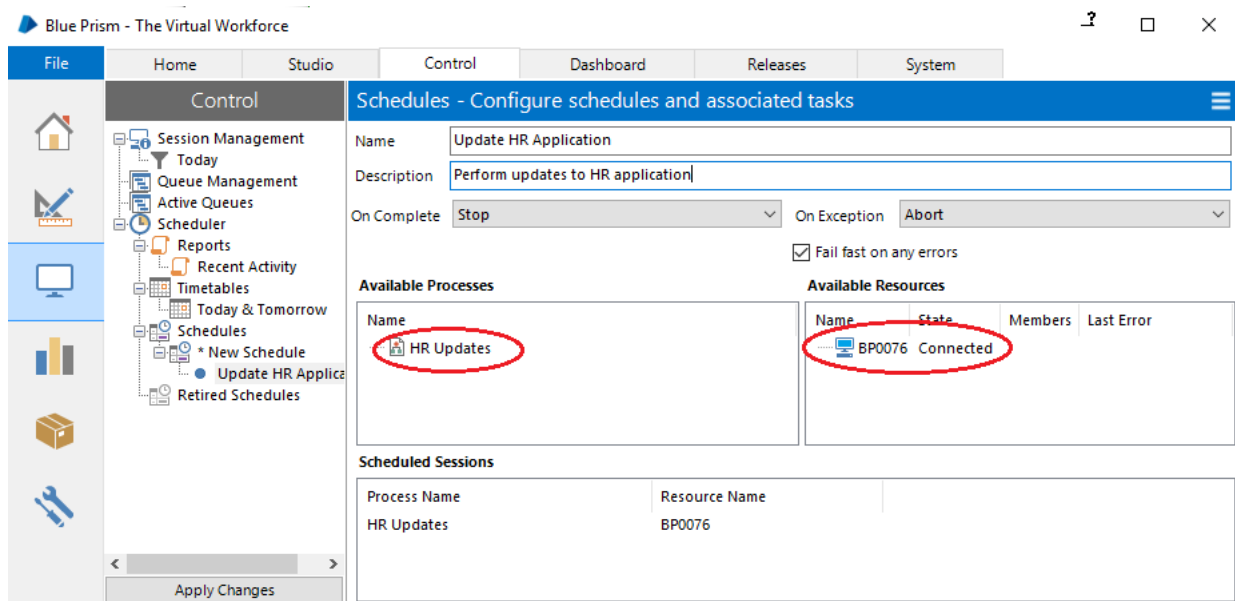
A task can be configured to instigate another task on successful completion, or on exception, of the existing task. The available actions to the task are held within the 'On Complete' and 'On Exception' drop down lists.

There may be a requirement to start several processes within the same task and where one of the processes fails, all processes should be stopped by Blue Prism and the task considered a failure. IF this is the case, use the "Fail fast on any errors" option to stop all sessions within the task.

If this option is enabled, a failure of any session within a task will cause the whole task to fail. Therefore, if multiple sessions are scheduled, a failure of any of these sessions will cause all the other sessions to terminate.

If this option is not checked, session failures will be logged but the task will only be considered a failure if all sessions fail.

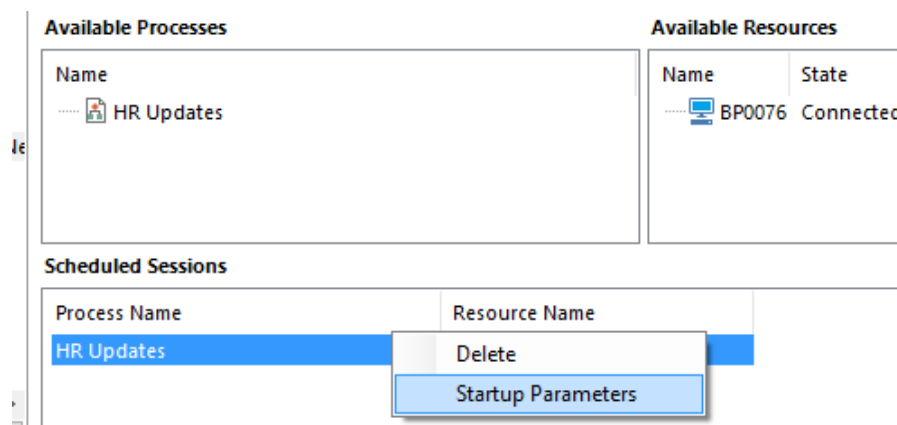
Sessions are scheduled by dragging a published process onto a resource (or resource pool) or vice versa, in the same way sessions are started manually in Control Room. Once a session has been created it will be listed in the 'Scheduled Sessions' list.



There are no restrictions on the number of sessions within a task. Multiple sessions can be created within a task across available resources and multiple processes can be scheduled to run on the same resource.

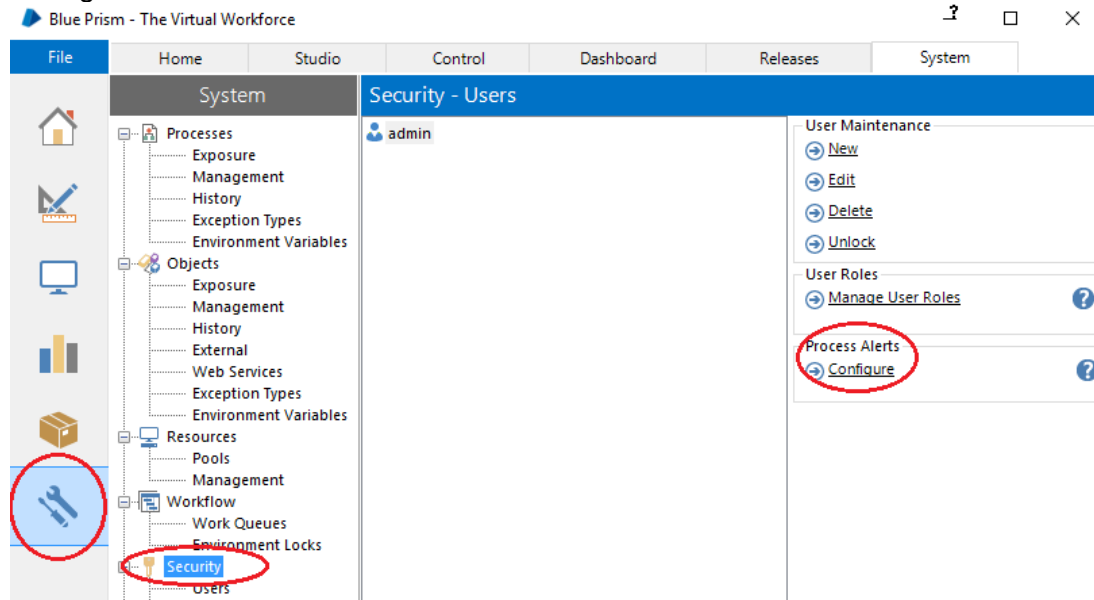
- * *The scheduler can only create and run sessions on public resource PC's (i.e. resource PCs started with the "public" switch e.g. Automate.exe /public /resourcepc*
- * *If multiple processes are scheduled to run on the same resource, and any of the processes are exclusive, the task will be terminated as the resource is too busy to run anything other than the exclusive process.*
- * *Consider scheduling sessions to run on resource pools rather than individual resources. Resource pools give the benefit of greater reliability to schedules as Blue Prism has several available resources to choose from, rather than having a single resource to depend on.*

If a process in a session requires start-up parameters, they can be configured by right clicking the appropriate session and selecting 'Startup Parameters'.



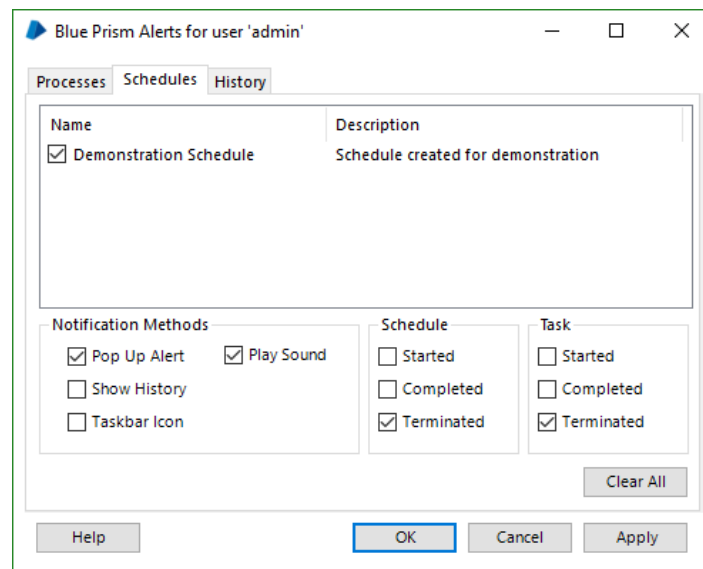
4 Alerts

It is possible to configure alerts to be sent a specified stages of a schedules execution. To configure schedule alerts, navigate to the Security option in System Manager and select the Configure link under Process Alerts.



★ Ensure you select the user you with you configure alerts for

To configure schedule alerts, first select the Schedules tab. Next select the schedule you with you receive alerts for by selecting the tick box next to the schedule name. Then select the notification method of the alert by selecting the appropriate tick box.

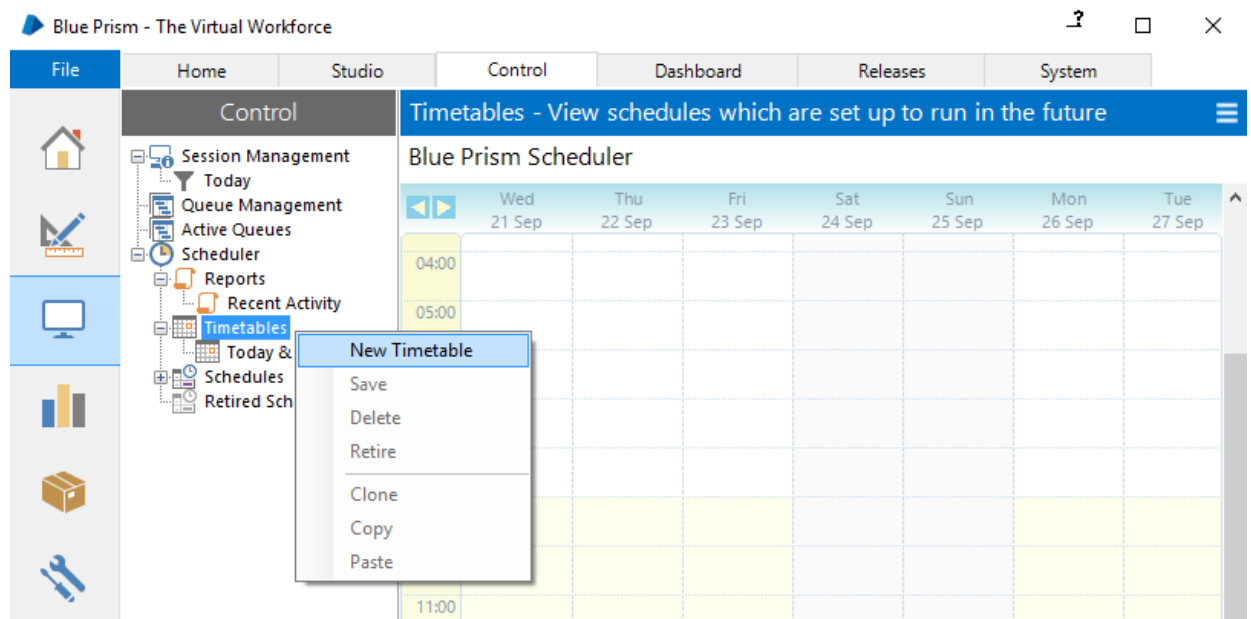


Alerts can be configured at both schedule and task level. Alerts can be sent on start-up, completion and termination of a schedule or task.

5 Timetables

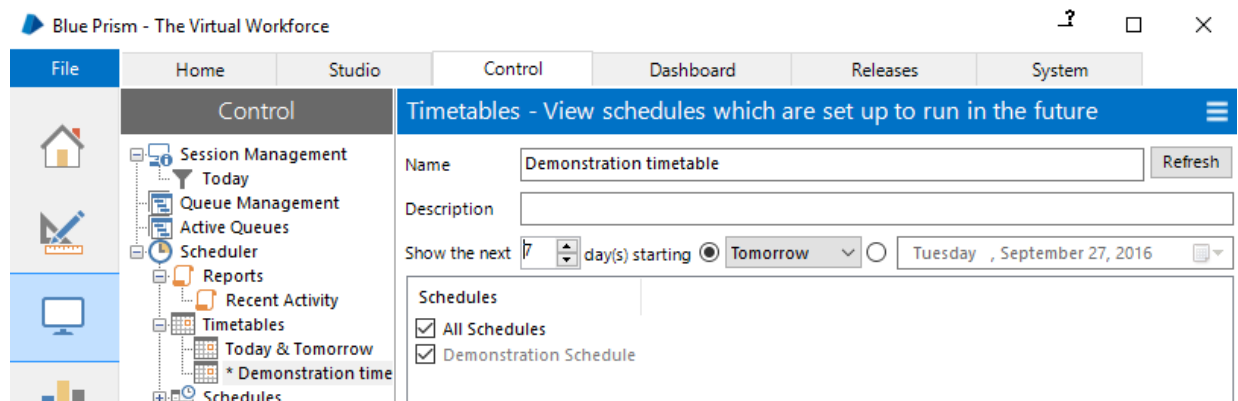
Timetables provide a filtered list of schedules and their calculated execution time within a specified date range. A default timetable called 'Today and Tomorrow' is created when Blue Prism is installed. This will present a list of all schedules which have activation times failing on today's or tomorrow's date. For some users, the 'Today and Tomorrow' timetable will be sufficient. It is also possible to create and configure additional timetables.

To create a new timetable, right click on the 'Timetables' element of the Control Room tree and select 'New Timetable'. Then you can give the timetable a name and description.



The timetable can be configured to display any number of days, up to 999, of schedule information, starting on a specific day.

The specified day can be configured to yesterday or today by enabling the radio button next to the Yesterday/Today dropdown and selecting the correct value. Alternatively, the specified end day can be configured to a fixed date by checking the radio button next to the date picker and selecting a date.



To select a schedule to be included in the timetable, tick the adjacent checkbox. Any number of active or expired schedules can be selected.

- ★ *If the 'All Schedules' checkbox is ticked, the timetable will automatically include any further schedules which are created following the configuration of the timetable. If each checkbox is ticked individually, additional schedules will not be added automatically*

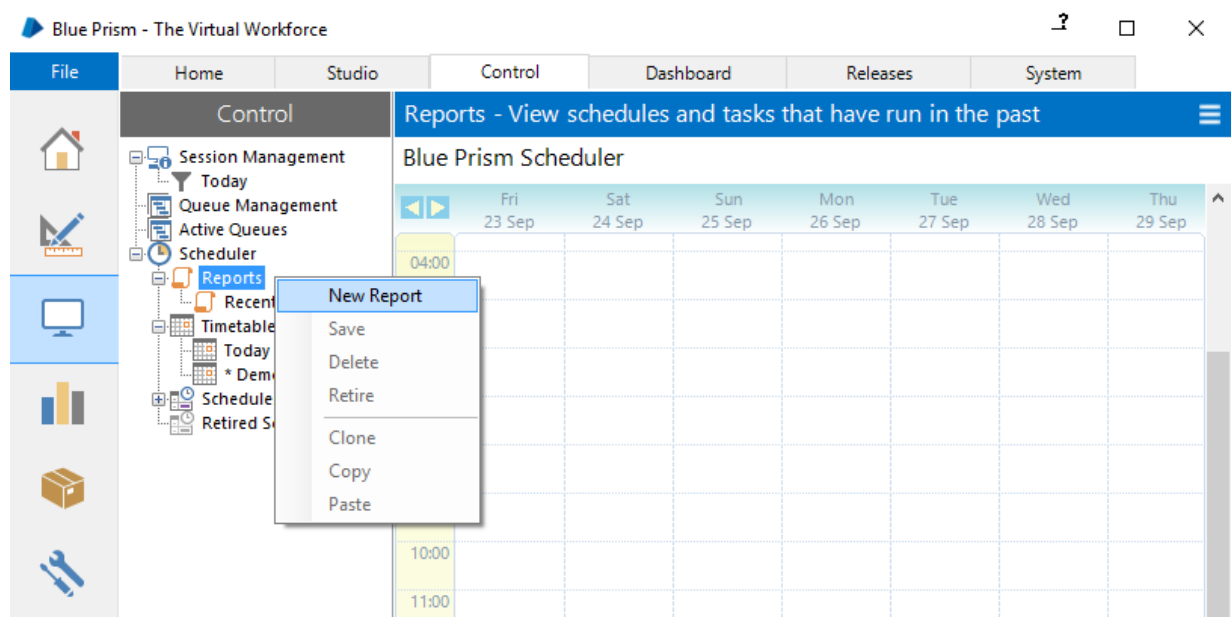
A timetable can be saved in one of three ways. A timetable can be saved by right clicking on the timetable to bring up a context menu and clicking 'Save'. The timetable will also be saved by clicking the 'Apply Changes' button. This will save all changed schedules, tasks, reports and timetables. Another method of saving the timetable is by clicking the refresh button to the right of the Name field. The timetable is run as it is saved.

The timetable contains a list of schedule activations which are configured to occur within the specified date range. It will show the schedule name, the time at which the schedule is configured to execute and provides a link to the schedule that time timetable event refers to, which can be activated by clicking the link.

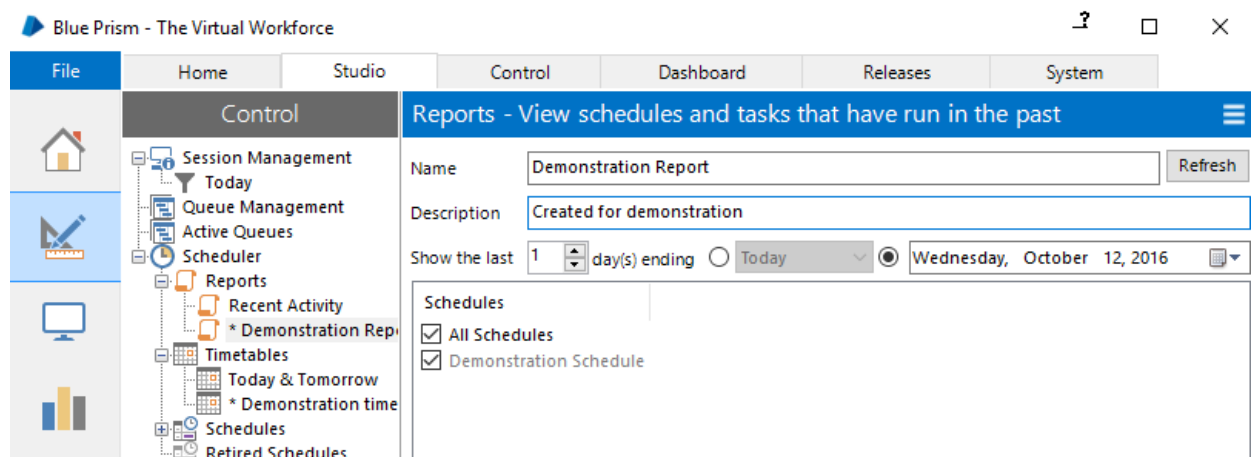
6 Reports

Schedule reports provide a filtered list of active schedules which have been activated within a specified date range. A default report, called 'Recent Activity' is created when Blue Prism is installed. This will present a list of all schedules which have been executed either yesterday or today. For some users, the Recent Activity report will be sufficient, but it is possible to create and configure additional reports.

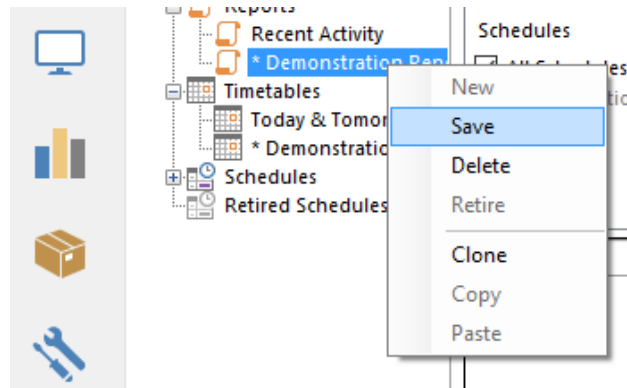
To create a new report, right click on the 'Reports' element of the Control Room tree. You can then give the report a name and description.



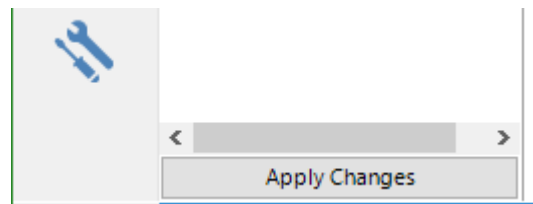
The report can be configured to display any number of days, up to 999, of schedule information, ending on a specified day. The specified day can be configured to be yesterday to today by clicking the radio button next to the Yesterday/Today dropdown and selecting the correct value. Alternatively, the specified end day can be configured to be a fixed date by checking the radio button next to the date picker and selecting a date.



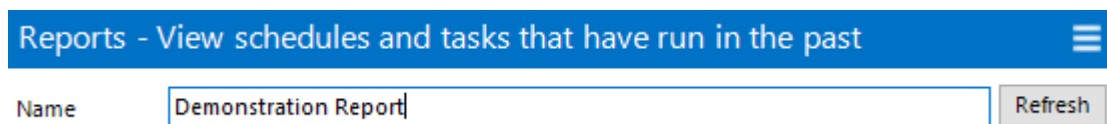
A report can be saved in one of three ways. A report can be saved by right clicking on the report and clicking 'Save'.



Another way to save the report is to click the 'Apply Changes' button. All changed schedules, tasks, reports and timetables will be saved.



The 'Refresh' button to the right of the Name field will also save the report when clicked.



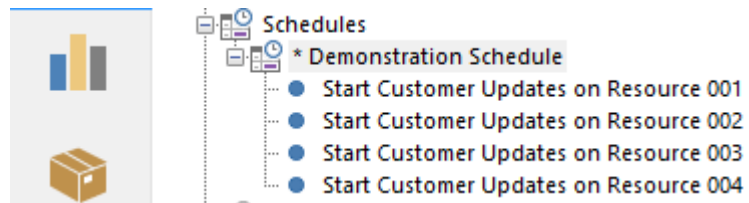
The report is run as it is saved. The report contains a list of schedule activations which occurred within the specified date range for the selected schedules. It will show the schedule name, the time it was executed, the time it completed and links to the schedule log and the schedule itself.

** And end time of 31/12/9999 indicates the schedule is currently running*

7 Tips and Troubleshooting

Infinite loops

An infinite loop can be configured within a schedule where a dependant task is configured to return to the initial task, typically on exception. For example in the schedule below, tasks 2, 3 and 4 have been configured to start the Blue Prism process on an alternative resource when the previous task it an exception.



We could configure task 4 to call task 1 “On Exception”. However, if a scenario emerges that causes the process to fail instantly, e.g. missing credentials, then the number of fails process sessions and scheduler updates will cause the Blue Prism database to fill up with log entries. This puts other running processes at risk and could slow overall Blue Prism performance. The only way to “kill” such an infinite loop is to take down the Blue Prism server.

A better design would be for task 4 in our example to call a process that sends and email alert or create further tasks (5, 6, 7 etc.) to start the process.

I am unable to configure the scheduler in System Manager

Ensure that you have the correct permissions to perform this action. Contact your system administrator to check/add permissions.

I have made changes to the Scheduler configuration in System Manager, but they don't appear to be having any effect

Ensure that the Blue Prism Server service has been restarted since you made your changes. The changes will not be activated until the service it restarted. Remember to ensure that no sessions are running before restarting the service.

I am unable to create schedules and tasks in Control Room

Ensure that you have the correct permissions to perform this action. Contact your system administrator to check/add permissions.

Expected schedules have not executed

- Ensure the Blue Prism Server service is running. This is required to trigger schedules
- Ensure the resource(s) on which the task(s) are scheduled to run were online at execution time

- Ensure the resource(s) on which the task(s) are scheduled to run are public resource PC's
- Ensure the schedule isn't configured to run on a date that doesn't exist in the month (e.g. configured to run on the 31st of the Month and it was not executed in April)
- Ensure the schedule is configured to run on the correct day of the week. Remember, to Blue Prism, the first day of the week is always Monday and the last day of the week is always Sunday
- Ensure the day(s) on which the schedule has executed is (are) configured to be a working day(s) in the calendar being used by the schedule
- Has the resource on which the session has been scheduled been subsequently moved to a Resource Pool? A schedule can only be run on a Resource Pool or a specified resource that is not part of a Resource Pool. A schedule originally configured to run on a specified resource which has subsequently been moved to a Resource Pool will fail.
- Ensure that multiple processes that are scheduled to run on the same resource concurrently are able to do so. If multiple processes are scheduled to run on the same resource and any of the processes use any objects with a run mode set to exclusive, the task will be terminated as the resource is too busy to run anything other than the exclusive process.
- Ensure the domain on which the target resource PC is hosted is included in the application server's domain suffix search list. The Blue Prism Scheduler runs on the application server. When a schedule is triggered, the scheduler sends a TCP/IP message to the resource to start the schedule using the host name of the resource. If the resource PC is hosted on a different domain to the application server, the host cannot be found if the domain on which the target resource PC is hosted on it not included in the application server's domain suffix search list.

A number of sessions started via a schedule have terminated unexpectedly

Do the sessions all belong to the same task? A failure of any session within a task will cause the whole task to fail. Therefore, if multiple sessions are scheduled, a failure of any of these sessions will cause all the other sessions to terminate. Uncheck the "Fail fast on any errors" option.

A process started by the scheduler is not performing as expected

Ensure the start-up parameters have been input correctly in the task.