GENESYS™

Genesys Rules Authoring Tool Help

Genesys Rules System 8.5.3

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Genesys Rules Authoring Tool Help

The Genesys Rules Authoring Tool (GRAT) is a browser-based application that enables you to create and edit business rules. Business rule authors use this tool to create, edit, or delete rules, and deploy them to either production or lab systems. The rules you create in the GRAT are based on rule templates that are either:

- Created by business rule developers using the Genesys Rules Development Tool (GRDT); or;

- Developed externally and imported directly into GRAT

All the functionality described here is available only to users who have the relevant permissions configured using role-based access control. Consult your system administrators if you do not have the permissions you need.

New in Release 8.5.3

8.5.303

- **Undeploy a Rules Package**—A new **Undeploy** button has been added to the Outstanding Deployments tab for users with the appropriate permissions. Such users can now select a target GRE or cluster and undeploy a package from that location/cluster. Deployment history will show the undeployment. Partial undeployment—the mirror of partial deployment— is also supported. See Deploying a Rules Package for details. The Undeploy feature is not available for the Genesys Web Engagement rules engine or for deployments of rules packages that are based on the Complex Event Processing (CEP) template.

- **Automated snapshots on deployment**—GRAT can now be configured to take snapshots automatically at deployment. In the **Deploy** dialog, a **Create snapshot to deploy** check box is now displayed for only the LATEST version of a rules package. This checkbox might be pre-selected and disabled so that users cannot change its value, if configuration option **force-snapshot-on-deployment** is set to `true`.

  Previously if **force-snapshot-on-deployment** was `true`, users could not select the LATEST version for deployment. Now, when **force-snapshot-on-deployment** is `true`, users can select only the LATEST version for deployment and force the snapshot.

- **Test scenario enhancements**—Tooltips in the Add Given and Add Expectation drop-down menus in Test Scenarios now display the **Fact** field description as defined in the template.

- **Package History enhancements**—Click here.

- The maximum limit of 6 segments (text plus variables) on Conditions or Actions in linear rules has been increased to 9 in release 8.5.303. An error message is displayed if this limit is breached.

8.5.302

In release 8.5.302, role-based access control is extended to the rule package level. Administrators can configure specific access to specific rule packages. A **Check My Permissions** button appears now at the rule package level too. See Check My Permissions.

8.5.301

- Your instance of GRAT can now be a member of a cluster of GRAT servers, which deliver much greater resilience and availability, enabling instant switchovers between GRAT nodes that are members of the cluster. See Using GRAT Clusters for HA and Load Balancing (new document).

- The maximum number of columns supported in Decision Tables and Test Scenarios is increased from 30 to 50.

8.5.300

A/B/C Split Testing allows you to compare the business outcomes of alternative rule scenarios before rolling out significant changes to the way you make your business decisions. With Split Testing you can make, test and review changes incrementally to test their effects before committing to a particular change set.

See A/B/C Split Testing.

Rules Package Overview

Rule packages are bundles of rules. Rule packages are used to group, manage, and deploy rules. The rules in a rule package provide a set of functionality (like an iWD solution). The Genesys Rules Authoring Tool (GRAT) allows you to create, edit, and delete rule packages.

Rule packages provide the following capabilities:

- The ability to partition rules and facts so that they are small, well-defined, and apply only to a particular application or use. This makes them easier to debug and understand. The fact model is a description of the data. It contains field names and types which are grouped into tables/classes. Facts are input/output to rule execution and are instances of the tables/classes defined in the fact model.

- The ability to isolate rule packages from one another when executing rules. This also improves performance because the Rules Engine has fewer candidates to examine during the evaluation.

- The ability to update individual rule packages without affecting other deployed packages.

- The ability to import and export an entire rule package containing the rule definitions, business calendars, and also the templates that the rule package is dependent on.

- A rule package contains one or more rules plus the fact model that is needed to support the rules. You deploy rule packages individually to the Rules Engine.

When you select an existing rule package in the Explorer Tree, four tabs are displayed in the Details Panel:

- The **General** tab displays the basic information for the rule package, such as name, type, and the associated templates.

- The **Rules** tab allows you to create, edit, and view rules. When you click the rule package node and then the Rules tab, you can create, edit and view rules at the global level for that package. Clicking on the other nodes (which represent various business contexts) enables you to modify the rules defined for that specific business context.

- The **Audit** Trail tab allows you to view the history of the individual rules, such as when they were updated or deployed, and by whom.

- The **Package History** tab allows you to view the history of a package and its versions and snapshots, including changes to rules, templates, calendars, test scenarios, imports/exports and deployments. History for all packages across one tenant can also be displayed at the tenant level.

Check My Permissions

To check all the permissions granted to you under role-based access control:

1. In the Explorer Tree, select the **Tenant** tab.
2. Click the **Check My Permissions** button.

This page shows you:

- Which tenants you have access to
- Which role permissions you have
- Which templates you can access

Role-Based Access Control in release 8.5.302

In release 8.5.302, role-based access control is extended to the rule package level. To check all the permissions granted to you under role-based access control:

1. In the Explorer Tree, select the **rule package** name.
2. Click the **Check My Permissions** button.

If you don't see the rule package name, you cannot view or edit it.

This page shows you:

- Which role permissions you have for the selected rule package. If the rule package is not mapped to a role, then the permissions shown here will match those at the GRAT level.

To see how permissions are allocated and maintained, click **here** (new document).

Creating Rules Packages

Follow these steps to create a new rule package:

1. Select the node in the business hierarchy to which this rule package will belong from the drop-down list. Rule packages can belong to any node in the hierachy from release 8.5.1. In releases before 8.5.1, you can only select the **Tenant** to which this rule package will belong.

> ## Important
>
> Package names must be unique across nodes or tenants. Package names should follow a naming convention such as including the node/tenant name, or company name, in their package names to avoid conflict.

2. In the Explorer Tree, select **New Rules Package** under the appropriate node or **Solution**. You must have appropriate permissions for this option to display.

3. In the **Details Panel**, enter a name property for the new rule package.

> ## Important
>
> There are two name properties for a rule package: **Package Name** and **Business Name**.
> > **Package Name** must conform to Java package naming conventions. Generally speaking, the package name should be in all lower case, can contain digits but must not start with a digit, and "." should be used as a separator, not spaces. For example, **my.rules** and **myrules1** are both valid names, but **My Rules** and **1my.rules** are not valid package names. Each organization should establish its own naming conventions to avoid name collision. Additionally, Java keywords must be avoided in package names. For example, **my.package** or **new.rules** are not valid package names. A list of Java keywords can be found **here**.
> >
> > **Business Name** allows you to provide a user-friendly name for the rule package, as it appears in the GRAT Explorer Tree. For example, **Acme Rules** is not a valid rule package name, but you could use **acme** as the **Package Name** and **ACME Rules** as the Business Name.

4. Select which type of rule package you are creating. The drop-down list shows which types are already in the repository for the selected tenant. As you change the type, the list of templates for that type will be displayed.

5. Enter a description for the rule package. The available rule templates (that were created for the node/Tenant and match the type selected in Step 4) will appear in the table. Templates prefixed with "(*)" are templates that were created in the **Environment Tenant** and can be used by all **Tenants**. Rule

developers create rule templates and publish them to the rules repository by using the GRDT.

Important

The access permissions configured in Configuration Server can also affect which templates are displayed.

Important

GRAT users can select between multiple versions of templates, which are displayed on the enhanced **Template Selection** dialog along with version comments created by the template developer to help identify differences between the versions. The number of versions of a template that are displayed is configured in Genesys Administrator.

6. Select the template(s) you want to include and click **Save**.

7. The new rule package will appear in the Explorer Tree. Expand the new rule package, and the following options (subject to the permissions set for your user ID) will appear under the rule package folder:

- Split Test Configuration—Use this node to create rules that enable you to control how Split Testing applies to rule at the rule package level.

- Business Calendars

- Test Scenarios

- Deploy Rules

- Search

You will also see the business structure nodes to which you have access permission.

8. You can now create rules for your rule package.

Editing Rules Packages

Follow these steps to edit an existing rule package:

1. Select the node (post-8.5.1) or **Tenant** (pre-8.5.1) to which the rule package belongs from the drop-down list.

2. In the Explorer Tree, select the name of the rule package.

3. In the **Details Panel**, you can modify the **Description** field, and update which template(s) to include in the rule package. You cannot edit the **Package Name** and type, but you can edit the **Business Name** of the rule package. Click **Save**.

    ### Important

    If you want to update the rule package by selecting a newer version of a template that is already associated with the package, you must deselect the current version of that template before saving your changes. You can only have one version of a particular rule template associated with a package at any time.

    ### Warning

    Be careful when changing templates or template versions as it could affect existing rules. For example, an existing rule might use a condition that does not exist in a different version of the template. Consult with the rule template developer to ensure that you are choosing the correct templates/versions for your application. Multiple versions of templates are available for selection.

4. To edit the Global rules that are configured for the rule package, select the name of the package in the Explorer Tree, and then click the **Rules** tab. To edit the rules created for a specific business context, select the node in the Explorer Tree.

5. You can also edit the **Business Calendars** that are configured for your rule package.

Deleting Rules Packages

> ### Important
> When a package is deleted, all references to it in **Package History** are also deleted.

Follow these steps to delete an existing rule package:

1. Select the node (post-8.5.1) or **Tenant** to which the rule package belongs from the drop-down list.
2. In the Explorer Tree, select the name of the rule package.
3. In the **Details Panel**, click **Delete**. A confirmation dialog box will appear.
4. Click **OK** to confirm the deletion of the rule package, and its associated rules and business calendars.

> ### Warning
> From release 8.5.303, if you attempt to delete a rule package that is still deployed, you are warned before committing the delete action. This gives you the opportunity to undeploy the rule package. Once the rule package is deleted from GRAT, you can no longer use the Undeploy feature to undeploy it. In that scenario, you would have to manually remove the files from all GREs.

Deploying / Undeploying Rules Packages

Summary

In order for rules to be invoked by Genesys applications, you must deploy the rule package to one or more Genesys Rules Engines (or for Genesys Web Engagement, to the GWEB backend server). The deployment process (whether you choose to deploy immediately or to schedule the deployment for later) attempts to compile the rule package and informs you of the result via the **Deployment Pending** pop-up message. You can check on the status of your deployment by looking at the **Deployment History** tab, which shows the status **Pending**. When a deployment is in pending status, you will not be able to cancel or undo it.

This process enables you to correct any errors before deployment. In addition, if you attempt a deployment that would duplicate either;

- An already scheduled deployment or;
- An attribute of an already scheduled deployment, such as;
  - The same rule package
  - For the same snapshot
  - For the same destination server/cluster

an appropriate message is displayed. You can then either change the attributes of your deployment, or go to **Deployment History** and change/delete the scheduled deployment.

> ### Important
> In release 8.5.301+, if your GRAT instance is part of a GRAT cluster, you can also view, edit, delete or re-schedule deployments that have been scheduled by other members of the same GRAT cluster (the **Deployment History** tab now has a **Deployed From** field showing which GRAT last scheduled the deployment). As soon as any GRAT instance that did not originally schedule a deployment makes any changes to a scheduled deployment, it takes over responsibility for the deployment.

To use the deployment screen, you must have deploy permissions set up in Genesys Administrator.

> ### Important
> The Undeploy feature is available from release 8.5.303.

To deploy a rule package:

1. Select the Tenant to which the rule package belongs from the drop-down list.

2. In the Explorer Tree, select the name of the rule package.

3. Under the rule package, select **Deploy Rules**. (The number of rules as yet not included in a snapshot appears in parentheses.) The **Details Panel** contains two tabs:

- The **Outstanding Deployments** tab allows you to select from a list of snapshots of the package including the LATEST version of the package (if configured by an administrator), create a new snapshot, export a snapshot (as an XML file downloadable to the user's local file system), delete a snapshot, deploy the rule package, schedule a deployment to occur at a future time, and show the source of the package. (**Show Package Source** displays the actual contents of the package snapshot you are deploying. The fact model, calendar definitions, and rule definitions will be coded into the rule language and displayed.)

Important

When you create a snapshot, you can choose to check the **Run as Background Task** option. For very large rule packages, it can take a long time to create a snapshot. When this option is checked, this operation will be completed in the background. This allows you to do other things or log off. When the snapshot is complete, it appears under **Package Snapshots**.

Even if **Run as Background Task** is checked, the package will first be built and validated to ensure there are no errors. Once the validation is successful, the snapshot will be queued to a background task.

You cannot delete the LATEST snapshot, and you cannot delete a snapshot for which there is a scheduled deployment.

- The **Deployment History** tab shows details about when the package snapshot was deployed in the past, and by whom. Failed deployments also appear in the list. In addition, the **Deployment History** displays scheduled deployments, and allows you to cancel or change the schedule of upcoming deployments.

To deploy the package immediately:

1. Select the package snapshot, or the LATEST version (if available).

Important

The LATEST version is available only if configured in Genesys Administrator. Your organization may choose not to make it available because its contents may vary over time, for example between scheduled deployments.

2. Click **Deploy Now** in the **Outstanding Deployments** tab.

3. Select the **Location** to which the package snapshot will be deployed. Locations can include standard application clusters configured in Genesys Administrator, special smart clusters based on the `Genesys_Rules_Engine_Application_Cluster` application template, or the GWEB backend server for Genesys Web Engagement.

4. Enter some comments about the deployment (these will appear in the Deployment History).

5. Click **Deploy**.

A message will be displayed indicating whether the deployment was successful, failed, or partial. A partial deployment means that not all nodes in the cluster successfully received the deployed rules package.

To deploy the package later:

1. Click **Schedule Deployment** in the **Outstanding Deployments** tab.

2. Select the **Location** (the name of the Rules Engine application or application cluster, or the GWEB backend server for Genesys Web Engagement) to which the package snapshot will be deployed.

3. Enter the date and time you would like the package snapshot to be deployed.

4. Enter some comments about the deployment (these will appear in the **Deployment History**).

5. Click **Schedule**.

A message will be displayed indicating whether the deployment was successfully scheduled.

If you wish to reschedule a previously scheduled deployment, or wish to cancel a scheduled deployment, you may do so from the **Deployment History** tab.

To refresh the display of a deployment history, click the **Refresh** button, or click in the relevant node in the Explorer Tree.

To display details of a deployment to a cluster:

If you are deploying to a cluster, you can now display a detailed report of the deployment, whether it was successful, failed or partial. This gives useful information on how a deployment has progressed: you can click the **Deployment Status** result to see, for example, whether a server connection was temporarily down at a critical moment, or whether a server timeout setting might need to be changed. Where a deployment shows as partial, you can click the **Partial** link in the **Deployment Status** panel to display details of individual GREs, whether and when they have auto-synchronized subsequently.

If partial deployment is NOT configured

When deploying to a cluster, GRAT uses a two-phase commit protocol to ensure that all GRE nodes running in the cluster are running the same version of the deployed rule package. If any of the nodes in the cluster fails during Phase 1, the Phase 2 is not committed.

- Phase 1 - (Deploy) All GREs in the cluster are notified about the new rule package. Each GRE downloads the new rule package and compiles it.

- Phase 2 - (Commit) Once all GREs have successfully completed Phase 1, GRAT notifies each GRE to activate and commit the new rule package.

The Deployment Status shows the detail of each node in the cluster and whether or not any errors occurred.

If partial deployment IS configured

GRAT attempts to deploy the rules package to all GRE nodes running in the cluster. If any nodes are down, or disconnected, or the deployment fails for any reason, the rules package is still deployed to the remaining nodes in the cluster. The GREs in the cluster can be configured to auto-synchronize when disconnected nodes are reconnected, or when new nodes are added to the cluster.

GRAT still uses a two-phase commit protocol. The only difference is that in a partial deployment case, we continue to Phase 2 for GREs which successfully complete Phase 1. Overall Status is set to `Partial` when 1 or more (but not all) of the GREs in the cluster fails the deployment.

- Phase 1 - (Deploy) All GREs in the cluster are notified about the new rule package. If any GRE fails to respond successfully, the overall deployment status is set to `Partial`.

- Phase 2 - (Commit) For GREs that have successfully completed Phase 1, GRAT notifies each GRE to activate and commit the new rule package.

To show the deployment report:

1. Click the **Failed/Successful/Partial** link in the **Status** column.

2. The details of each deploy action to each server in the cluster are displayed, including:

- The GRE Server Name

- The server status

- The success or error message generated by the server

- The Phase 1 and Phase 2 deployment times in seconds

- Whether and when the GRE was auto-synchronized and from which other member of the cluster the rules package data was received (if the auto-synchronization feature is configured).

Important
The time zone for scheduled deployments is always the time zone of the server on which the Genesys Rules Authoring Tool is installed.

Undeploying a rules package (8.5.303+)

For users with the correct privileges, an **Undeploy** button now displays on the **Outstanding Deployments** tab. This button lets you undeploy a rules package from a single GRE or cluster (but not from a GWE back-end rules engine or cluster).

To undeploy a rules package:

1. Click the **Undeploy** button. This displays the **Undeploy** dialog.

2. Select the single GRE or cluster from which to undeploy the rules package and click **Undeploy**.

3. If partial undeployment is enabled, the details in the **Deployment History** tab might show where a partial undeployment has taken place. Click the **Failed/Successful/Partial** link in the **Status** column to display the Undeployment report. **Partial** status indicates that one or more GRE nodes were offline when the rule package was undeployed. When those nodes come back online, and if auto-synchronization is enabled, they will automatically synchronize with the other GRE nodes and undeploy the package.

Important

If you try to undeploy a package that has a pending deployment, a warning message displays. Either cancel the undeployment or wait until the deployment has completed before attempting another undeployment.

If partial undeployment IS enabled:

GRAT attempts to undeploy the rules package from all GRE nodes running in the cluster. If any nodes are down, or disconnected, or the undeployment fails for any reason, the rules package is still undeployed from the remaining nodes in the cluster. The GREs in the cluster can be configured to auto-synchronize when disconnected nodes are reconnected, or when new nodes are added to the cluster.

Overall Status is set to `Partial` when 1 or more (but not all) of the GREs in the cluster fails the undeployment.

If partial undeployment is NOT enabled

When undeploying from a cluster, GRAT only undeploys the rules package if all the members of the cluster are active. If any node is inactive the undeployment fails and the rules package remains deployed at all nodes in the cluster.

Audit Trail

The **Audit Trail** tab allows you to view the history of the individual rules, such as when they were updated or deployed, and by whom.

The **Audit Trail** tab lists the rules that exist for the selected rule package, or for the selected business context (node), depending on where you access the Audit Trail. The **Audit Trail** tab shows the history of the currently selected rule.

You can select the **Rule ID/Name** drop-down to select another rule. For each rule you can view the history of the rule, including different versions that have been saved, and the configured actions, conditions, parameters and comments.

If a particular revision of a rule was saved as part of a snapshot, the snapshot name appears in the **Last Snapshot Name** column. This enables you to determine the content of the rule when the snapshot was taken. You can filter the list of rule versions by **Last Snapshot Name**, **Action** (**Created**, **Modified**, and so on), and by the user name of the person who made the changes (**Taken By**). You can sort the list by clicking a column name, displaying the results in ascending or descending order by the selected column.

You can export the history of the rule into a file (spreadsheet format). Select the rule from the list, and click **Export Rule History**. You can choose to open the file that is created, or save it.

You can revert back to a previous version of a specific rule: select the version to which you would like to revert, and click **Revert**. The revert operation will create a new version of the rule containing the same contents as the older version that you selected. The original versions and audit history will be preserved. Revert may also be used to restore a previously deleted rule. To do this, select the **Rule ID/Name** from the drop down and then revert the deleted version.

Displaying Package History

GRAT tracks all changes made to a package and displays them in a tab called **Package History**. This tab displays the package history at either individual package level or across a Tenant. At the Tenant level, the tab displays a history of all changes to all packages for that Tenant.

You can filter by package name, snapshot name, description of change or by the user who made the change, and you can sort by any column, either the entire results or within a filtered subset.

Every saved change made to a package causes a new package version to be generated. This package version is displayed on the **Package History** tab, as well as on the **Deployment History** view.

Changes in 8.5.303

In release 8.5.303 the following changes are implemented:

- A new **Business Hierarchy** column is introduced that can now display the business hierarchy node that the rule package or rule package item is related to—for example, **Houses > Sales > Closing**. This information is only generated for changes to the packages that occur post-8.5.303—previous data is not available.

- Package history now shows only changes in the business structure nodes to which the user has access.

- The **Change By** column is visible only to users with relevant role privileges.

- The **Snapshot Name** column now shows the name of the snapshot in which a change was made.

Importing Rules Templates

> ## Important
> A template exported with a pre-8.1.2 version of GRAT cannot be imported with release 8.5.x. You must republish such a template from GRDT once GRAT 8.5.x is running.

You can import rule templates from an .XML file. Rule templates are stored in the repository as separate assets, so they can be used by multiple rule packages. The rule templates are not part of the rule package themselves; the rule package refers to the rule templates that it needs.

If it is necessary to import the rule templates, you should import them prior to importing the rule packages, since the rule packages make references to the templates that they use.

It is not necessary to import the rule templates if you are importing from the same system (for example, backing up or restoring a rule package) or from an equivalent system (for example, a lab versus a production environment). However, if you are moving a rule package to a new system or sending it to Genesys for service, you should import both the rule templates and the rule packages so that, when imported, all referenced templates are available in the target system.

Refer to **Importing Rules Packages** for details on how to import rule packages.

> ## Important
> To import a rule package template, you must have **Create Template** permission.

To import a rule package template:

1. In the Explorer Tree, select the **Tenant** tab.
2. Click **Import Rule Templates**. A dialog box opens in which you select the `.xml` file to import.

> ## Important
> Clicking **Replace existing templates in repository** clears the repository of any previous versions of each template before the new ones are imported into the target system. If this option is not enabled and an existing template with the same name is found in the repository, an error message appears and the import is terminated.

Warning

Be careful when changing templates or template versions as it could affect existing rules. For example, an existing rule might use a condition that does not exist in a different version of the template. Consult with the rule template developer to ensure that you are choosing the correct templates and versions for your application.

Important

In release 8.5.3 a new template—GRSSplitTest_template.xml—is available for import. This template contains conditions and action that enable the A/B/C Split Testing feature.

Importing Rules Packages

You can import an entire rule package containing the rule definitions, business calendars and test scenarios for that rule package, from an .XML file.

If it is necessary to import the rule templates, you should import them prior to importing the rule packages, since the rule packages make references to the templates that they use.

It is not necessary to import the rule templates if you are importing or exporting from the same system (for example, backing up or restoring a rule package) or from an equivalent system (for example, a lab versus a production environment). However, if you are importing the rule package to a new system or sending it to Genesys for service, you should export both the rule templates and the rule packages so that, when imported, all referenced templates are available in the target system.

Important

The **last-modified-by** date and all rule audit history are not part of the rule package (or rule) export. So, when re-importing an exported rule package, the user doing the importing becomes the new owner of each rule created. Package and rule history are not maintained. The imported rules is considered a new rule package with new history starting from the point of import.

Refer to Importing Rule Templates for details on how to import rule templates.

Importing rule packages enables you to do the following:

- Copy an entire rules configuration from a test environment to a production environment.

- Perform a backup of the entire rules configuration before performing a Genesys Rules System upgrade

Important

To import a rule package, you must have Create Package and Create Business Calendar permissions.

To import a rule package:

1. Select the Tenant to which the rule package belongs from the drop-down list.

2. In the Explorer Tree, select **New Rules Package** under the appropriate Solution.

3. Click **Import Rule Package**. A dialog box opens in which you to enter the **Package Name** and the **Business Name**, and select the .xml file to be imported.

4. Check **Auto-save each rule** to auto-save each rule on import. This option should only be used if the
    rule package is known to be valid on the target system, such as when copying between two identical
    systems (a lab versus a production environment). Auto-save commits each rule in the package without
    validating that it matches the underlying templates. If you do not use this option, each rule is imported
    in the draft state and must be saved manually. This method shows any validation errors and gives the
    rule author the opportunity to fix them before deployment.

5. **If your business hierarchy is non-nested,** check **Auto-create business hierarchy during import**
    to tell GRAT to automatically create any missing nodes in your business hierarchy for rules that are
    contained within the .xml file. For example, if this option is selected, during the import if there is a rule
    that is associated with the "Widget Sales" department, but no such department is defined in the
    business hierarchy, GRAT will attempt to create it during the import operation. The GRAT user who is
    performing the rule package import must have permission to create this folder. If the box is not
    checked and there are rules associated with missing nodes, the import will fail.

    If your business hierarchy is nested, and you select the **Auto-create business hierarchy during
    import** during the import process, GRAT ensures that both business structures are compatible, and
    prevents an import if it they are not, and displays an error message informing you that the business
    hierarchy is not compatible with the imported rule package.

    > ## Important
    >
    > Even if the **Auto-create business hierarchy during import** button is selected,
    > GRAT prevents the same node name from being created anywhere in the
    > hierarchy—uniqueness of business node names across the entire hierarchy is still
    > enforced.

6. Click **Import**.

Exporting Rules Templates

You can export rule templates to an .xml file. Rule templates are stored in the repository as separate assets so they can be used by multiple rule packages. The rule templates are not part of the rule package themselves; the rule package refers to the rule templates that it needs.

It is not necessary to import or export the rule templates if you are importing or exporting to the same system (for example, backing up or restoring a rule package) or to an equivalent system (for example, a lab versus a production environment). However, if you are moving the rule package to a new system or sending it to Genesys for service, you should export both the rule templates and the rule packages so that, when imported, all referenced templates are available in the target system.

Refer to **Exporting Rule Packages** for details on how to export rule packages.

> ## Important
> To export a rule template, you must have **View Template** permission and **Read** access for the Script objects that represent the templates being exported.

To export a rule template (up to 8.5.302.xx)

1. In the Explorer Tree, select the **Tenant** tab.
2. Click **Export Rule Templates**. The .xml file is generated.

> ## Important
> You must export all versions of the templates so that on the target system, the repository can be reconstructed with the same version numbering as on the source system.

> ## Warning
> Be careful when changing templates or template versions, as it could affect existing rules. For example, an existing rule might use a condition that does not exist in a different version of the template. Consult with the rule template developer to ensure that you are choosing the correct templates and versions for your application.

To export a rule template (from 8.5.303.xx)

1. In the Explorer Tree, select the **Tenant** tab.

2. Click **Export Rule Templates**.

3. Select the individual template or templates that you wish to export. All versions of the selected templates will be exported in order to maintain the version sequence at the target system.

4. The .xml file is generated.

Exporting Rules Packages

You can export an entire rule package containing the rule definitions, business calendars, and references to the templates and versions that the rule package is dependent on, to an .XML file.

It is not necessary to export the rule templates if you are exporting to the same system (for example, backing up or restoring a rule package) or to an equivalent system (for example, a lab versus a production environment). However, if you are moving the rule package to a new system or sending it to Genesys for service, you should export both the rule templates and the rule packages so that, when imported, all referenced templates are available in the target system.

Important
The **last-modified-by** date and all rule audit history are not part of the rule package (or rule) export. Package and rule history are not maintained.

Refer to **Exporting Rule Templates** for details on how to export rule templates.

Exporting rule packages enables you to do the following:

- Copy an entire rules configuration from a test environment to a production environment.
- Perform a backup of the entire rules configuration before performing a Genesys Rules System upgrade.

Important
In order to export a rule package, you need to have **View Rule** and **View Business Calendar** permissions.

To export a rule package:

1. Select the **Tenant** to which the rule package belongs from the drop-down list.
2. In the Explorer Tree, select the correct node (the level at which the rule package was defined).
3. Click **Export Rule Package**. The selected rule package is exported to a single `.xml` file.

Important
This .xml file contains overall package information (name, type, description, and list of templates and versions), a list of rules (decision tables and linear rules), and a list of

business calendars and calendar rules associated with the rule package. This `.xml` file does not contain the template contents, but does contain a reference to the template names and versions used.

Rules Overview

A business rule is a piece of logic that defines, on a small scale, what a business does. For the Genesys Rules System, a rule is an external piece of logic that can be customized by business analysts, and invoked by applications. This allows you to tune specific business behaviors as needed.

Types of Rule

GRAT allows you to configure two types of rules:

Linear rules follow the following basic format:

```
WHEN {condition} THEN {action}
```

When the condition is true, the action will occur. This form of rule is best for simple actions, such as assigning a value to return back to the application. Note, however, that linear rules can have multiple conditions and actions, or only actions with no conditions. The conditions and actions that are available depend upon the rule templates that are included in the rule package.

Decision tables allow you to join a number of Linear Rules with the same set of conditions (when) and actions (then) to be used for a complex (structured) business case. Use decision tables to avoid dozens of linear rules with identical structure in the system.

Order of Execution

You can configure rules for various business contexts (nodes representing the various elements in your business structure hierarchy), or, for global rules, at the rule package level. In the Explorer panel, each business context within the configured business structure is represented at a different node level. The order of execution of rules within a rule package depends on the node level: rules execute first at package/global level, then at each level of the hierarchy in turn.

So if you have defined this hierarchy:

- Package
  - Sales Department
    - Finance

and during execution, you specify "Sales Department" / "Finance", then the order of execution is:

1. Rules at Package level (according to priority).
2. Rules at Sales Department (according to priority).
3. Rules in Finance (according to priority).

Within a given node, you can modify the order of execution by using the up ▲ or down ▼ arrows on each rule.

Only rules on a particular node path are executed in any given rules run. The path of execution is determined by input to the Rules Engine on the execution request.

Important

The business structure is defined in Configuration Manager or Genesys Administrator.

Important

Before release 8.5.0, rules in Decision Tables were executed from the bottom up. From release 8.5.0, system administrators can configure rule execution to be "bottom-up" or "top-down". The **Rule Evaluation Order** indicator at the bottom of the screen shows you which of these is selected, and a ToolTip is available when you hover your cursor over this indicator. Any changes made to this configuration will apply dynamically, but only take effect after a restart or a browser refresh.

Locking of Rules

When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time. The unsaved changes icon will appear on the **Rule Summary** to alert you that you need to save your changes. For any other user, the **Lock** icon appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

You can modify multiple rules at a time, without explicitly saving your changes as you move from one rule to the next. The **Rule Summary** will indicate whether there are any unsaved changes that need to be saved. Once the rule is saved, it is "unlocked" and other users will be able to modify it. You can also **Cancel** any unsaved changes, reverting the rule back to the last saved state.

If you log out of your session, you will be prompted if you have unsaved changes. You may then either go back and save your changes, or continue with the logout. In the latter case, the changes you made will be lost and not committed, and the rules will be unlocked.

Audit Trail

The **Audit Trail** tab allows you to view the history of the individual rules, such as when they were updated or deployed, and by whom. When accessed within a business context (a node on the Explorer Tree), the **Audit Trail** tab lists the rules that exist for that business context.

Linear Rules Overview

A linear rule follows the following basic format:

```
WHEN {condition} THEN {action}
```

When the condition is true, the action will occur. This form of rule is best for simple actions, such as assigning a value to return back to the application. Note, however, that linear rules can have multiple conditions and actions, or only actions with no conditions.

The conditions and actions that are available depend upon the rule templates that are included in the rule package.

The following topics explain how to work with linear rules in GRAT:

- **Creating Linear Rules**
- **Updating Linear Rules**
- **Copying Linear Rules**
- **Importing Linear Rules**
- **Exporting Linear Rules**
- **Deleting Linear Rules**

Creating Linear Rules

Follow these steps to create a linear rule:

1. Navigate to the rule package to which the new rule will belong in the **Explorer Tree** (verify that you have selected the correct Tenant from the Tenant drop-down list). Navigate to the correct node of the business structure under the rule package, which will define the node at which your linear rule will be created. If you create the linear rule at the rule package level, it will be a global rule. Select the node in the Explorer Tree and click the **Rules** tab.

2. Click **New Linear Rule**.

3. In the **Rule Summary**, the **ID** field is populated automatically. It cannot be edited.

4. Enter a **Name** for the rule (for example, Gold).

5. Enter a brief **Description** for the rule (for example, If the customer is a Gold member, then increase the priority).

6. Select the **Phase** at which this rule will be applied (classification, prioritization, or archiving for iWD. Refer to the Genesys Rules System Deployment Guide for more information about phases).

7. Select the **Business Calendar** to use with this rule (optional).

8. The **Pending Snapshot** field is displayed with a tick symbol indicating that the contents of this rule have not yet been included in a package snapshot. See Deployment for details of how to work with snapshots.

9. Enter a **Start Date** and an **End Date** for the rule (optional). If the **End Date** is earlier than the current date, the rule is marked with a flag ( ) to indicate that the rule is out of date.

10. In the lower panel, fill in the **When** and **Then** rows.

    a. To add a Condition (When), click **Add Condition** and select from the list (for example, a condition for this scenario might be When the customer is a Gold member). The rule condition includes the name of the rule template from which the condition is derived.

    b. To add an Action (Then), click **Add Action** and select from the list (for example, an action for this scenario might be Increase the priority by 100). The rule action includes the name of the rule template from which the action is derived.

    > ## Important
    > The maximum limit of 6 segments (text plus variables) on Conditions or Actions in linear rules has been increased to 9 in release 8.5.303. An error message is displayed if this limit is breached.

    c. Insert values for the parameters into the table under the **Condition** and **Action** columns. Depending on how the parameters were configured by the rule template developer in GRDT, there may be constraints on the values that can be entered.

4. Click **Validate** to validate the syntax of the linear rule. The **Validate** option appears in the drop-down located in the lower left side of panel.

5. Click **Save** to save your changes.

> ## Important
>
> When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time. The unsaved icon will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon appears on the rule summary and the Save and Cancel buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Updating Linear Rules

Follow these steps to update an existing linear rule:

1. Navigate to the rule package to which the linear rule belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

> ### Important
> You can also use the **Search** feature to locate rules.

2. Locate the linear rule in the list and update the information as needed. Refer to **Creating Linear Rules** for details about the fields that can be updated. Any changes that you make to the **Rule Summary** are saved automatically. Click **Save** to save any changes made to the body of the rule. Provide a check-in comment that summarizes the changes you made. This will appear in the **Audit History**.

> ### Important
> When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time.
>
> The unsaved icon ⧉ will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon 🔒 appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When you are editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Copying Linear Rules

You can copy a linear rule and paste that copy in the same rule package, either on the same or a different node. Follow these steps to copy a linear rule:

1. Navigate to the rule package to which the linear rule belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

2. Locate the rule in the list, select it, and select **Copy Rule** from the drop-down in the lower panel.

3. If you want the copy to be in the same node, click **Paste Rule**.

4. If you want the copy to be in a different node, select that node in the Explorer Tree, click the **Rules** tab, and click **Paste Rule**.

> ## Important
>
> If you wish to move the rule to another location, first copy, then paste, then go back and delete the original. The system will not allow you to paste a rule after it has been deleted from the repository.

5. Update the information as needed and click **Save**. Refer to **Creating Linear Rules** for details about the fields that can be updated.

> ## Important
>
> When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time. The unsaved icon 🖫 will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon 🔒 appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Importing Linear Rules

You can import linear rules in GRAT.

> ### Important
> You can import an entire rule package, containing the rule definitions, business calendars, and references to the templates and versions that the rule package is dependent on. Refer to **Importing Rule Packages** for details.

Follow these steps to import a linear rule:

1. Navigate to the rule package to which the linear rule will belong in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule will be defined) and click the **Rules** tab.

2. Click **Import Rule**.

3. Browse to the location of the linear rule file.

4. Enter a comment.

5. Click **Import**.

6. The linear rule will appear in the list of rules. Edit the fields as necessary. Refer to **Creating Linear Rules** for details about the fields that can be updated. Click **Save**.

> ### Important
> When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time. The unsaved icon 🖫 will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon 🔒 appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Exporting Linear Rules

You can export linear rules in GRAT. You might want to export your rules to back them up or move them to another server, and then import them back in.

You can export an entire rule package containing the rule definitions, business calendars, and references to the templates and versions that the rule package is dependent on. Refer to **Exporting Rule Packages** for details.

To export a linear rule:

1. Navigate to the rule package to which the linear rule belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

   > **Important**
   >
   > You can also use the **Search** feature to locate rules.

2. Locate the rule in the list, select it, and select **Export Rule** from the drop-down in the lower panel. There is an option to save the exported rule as an .xml file only.

3. You can either **Open** or **Save** the exported rule file.

Deleting Linear Rules

Follow these steps to delete a linear rule:

1. Navigate to the rule package to which the linear rule belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

> **Important**
> You can also use the **Search** feature to locate rules.

2. Locate the linear rule in the list and click .

Deleting Rules Created in Error

If you accidentally create a rule and wish to delete it, add the two mandatory values (**Name** and **Phase**) before attempting to delete it. You cannot delete a rule unless the mandatory values are supplied.

Decision Tables Overview

Decision tables allow you to join a number of Linear Rules with the same set of conditions (when) and actions (then) to be used for a complex (structured) business case. Use decision tables to avoid dozens of linear rules with identical structure in the system.

Important

Choices in decision tables need to be mutually exclusive to avoid ambiguity. This ensures that there is only one outcome per evaluation. If the choices are not mutually exclusive, multiple rows can be executed, in no guaranteed order. The last row executed will determine the final result.

Disclaimer

From release 8.5.301, the maximum number of columns supported in Decision Tables is increased from 30 to 50.

The following topics explain how to work with Decision Tables in GRAT:

- **Creating Decision Tables**
- **Updating Decision Tables**
- **Copying Decision Tables**
- **Importing Decision Tables**
- **Exporting Decision Tables**
- **Deleting Decision Tables**

Creating Decision Tables

Follow these steps to create a new decision table:

1. Navigate to the rule package to which the new decision table will belong in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Navigate to the correct node of the business structure under the rule package, which will define the node at which your decision table will be created. If you create the decision table at the rule package level, it will be a global rule. Select the node in the Explorer Tree and click the **Rules** tab.

2. Click **New Decision Table**.

3. In the **Rule Summary**, the **ID** field is populated automatically. It cannot be edited.

4. Enter a **Name** for the decision table (for example, `Status`).

5. Enter a brief **Description** for the rule (for example, Adjust the priority, depending upon the customer's status).

6. Select the **Phase** at which this rule will be applied (classification, prioritization, or archiving for iWD. Refer to the Genesys Rules System Deployment Guide for more information about phases).

7. Select the **Business Calendar** to use with this rule (optional).

8. Enter a **Start Date** and an **End Date** for the rule (optional). If the **End Date** is earlier than the current date, the rule is marked with a flag ( ) to indicate that the rule is out of date.

9. Use the up and down arrows in the far right-hand column to control the ordering of the decision table rows. In some complex cases, rules can be designed so that multiple rows will evaluate as true. In this case, the order of the rows becomes important, so in release 8.5.0 you can re-order the rows when creating and editing a decision table.

> ### Important
> By default, up to release 8.5.0, rules were executed from the bottom up. In release 8.5.0, your system administrators can configure rule execution to be "bottom-up" or "top-down". The **Rule Evaluation Order** indicator at the bottom of the screen shows you which of these is selected, and a ToolTip is available when you hover your cursor over this indicator. Any changes made to this configuration will apply dynamically, but only take effect after a restart or a browser refresh.

10. Add **Conditions** and **Actions** in the lower panel.

> ### Important
> In release 8.5.001, you can now use a wildcard symbol (*) in row data in a decision table (if the feature is configured by administrators). The wild card indicates that, for this row, the value for the parameter where it is used is

unimportant and not to be evaluated. A wildcard selection now appears at the top of all lists, regardless of whether they are enumerations, business attributes, Configuration Server, database, and so on. In the case of numeric parameters, you must type in the wildcard value—GRAT now accepts that as a valid number field. For any condition that contains one or more wildcards, its evaluation will not be considered in the rule logic. There are some restrictions:

- The wildcard values will work only for strings and numeric fields—fields of type date, time and Boolean are not supported.

- Wildcard values are "all or nothing" for conditions with multiple parameters. For example:

```
Customer age is between 40 and 60
```

is ONE condition, and it will be excluded for that row if one or more of the fields contains a wildcard value.

   a. Select one or more **Conditions** from the list (for example, a condition for this scenario might be named `Customer's age is ...`).

   b. Select one or more **Actions** from the list (for example, an action for this scenario might be named `Increase priority by xxx`).

   c. Insert values for the parameters into the table under the **Condition** and **Action** columns. Depending on how the parameters were configured by the rule template developer in GRDT, there may be constraints on the values that can be entered.

   d. Repeat Step c, adding more condition and action values.

   e. Re-order the rows as appropriate.

6. Click **Validate** to validate the syntax of the linear rule.

7. Click **Save** to save your changes.

Important

When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time.

The unsaved icon will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

Important

When editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Important

The **Pending Snapshot** field indicates whether any snapshot of this rule has yet been created. See Deploying Rule Packages for information on snapshots.

Updating Decision Tables

When editing or updating a decision table rule, you can insert or remove condition or action columns only after all of the data in the table has been validated (no red lines are visible). This restriction prevents you from losing unsaved data that you have just entered. If you accidentally insert the wrong condition or action, or accidentally delete a condition or action column, you can click **Cancel** to revert the rule back to the last saved version.

> **Important**
>
> Clicking **Cancel** results in the loss of any data that has been entered into the table, but not saved.

When adding rows to a decision table rule, it is important to fix all of the validation errors on that row before attempting to add or delete any new condition or action columns, to prevent loss of data in the row on which you are working.

To update an existing decision table:

1. Navigate to the rule package to which the decision table belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

    > **Important**
    >
    > You can also use the **Search** feature to locate rules.

2. Locate the decision table in the list and update the information as needed. Refer to **Creating Decision Tables** for details about the fields that can be updated. Any changes that you make to the **Rule Summary** are saved automatically. Click **Save** to save any changes made to the body of the rule. Provide a check-in comment that summarizes the changes you made. This will appear in the **Audit History**.

    > **Important**
    >
    > When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time. The unsaved icon 💾 will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon 🔒 appears on the

rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When you are editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Copying Decision Tables

You can copy a decision table and paste that copy in the same rule package, either on the same or a different node. Follow these steps to copy a decision table:

1. Navigate to the rule package to which the decision table belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

   ## Important

   You can also use the **Search** feature to locate rules.

2. Locate the decision table in the list, select it, and select **Copy Rule** from the drop-down in the lower panel.

3. If you want the copy to be in the same node, click **Paste Rule**.

4. If you want the copy to be in a different node, select that node in the Explorer Tree, click the **Rules** tab, and click **Paste Rule**.

   ## Important

   If you wish to move the rule to another location, first copy, then paste, then go back and delete the original. The system will not allow you to paste a rule after it has been deleted from the repository.

5. Update the information as needed and click **Save**. Refer to **Creating Decision Tables** for details about the fields that can be updated.

   ## Important

   When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time. The unsaved icon ![icon] will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon ![icon] appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

Importing Decision Tables

You can import decision tables in GRAT.

> ## Important
> You can import an entire rule package, containing the rule definitions, business calendars, and references to the templates and versions that the rule package is dependent on. Refer to **Importing Rule Packages** for details.

Follow these steps to import a decision table:

1. Navigate to the rule package to which the decision table will belong in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule will be defined) and click the **Rules** tab.

2. Click **Import Rule**.

3. Browse to the location of the decision table file. Decision table files can be in either `.xml` or `.xls` format.

4. Enter a comment.

5. Click **Import**.

6. The Decision Table will appear in the list of rules. Edit fields as necessary. Refer to **Creating Decision Tables** for details about the fields that can be updated. Click **Save**.

> ## Important
> When you make any modifications to the body of a rule, you "lock" the rule, which prevents others from being able to make changes to the same rule at the same time.
>
> The unsaved icon will appear on the rule summary to alert you that you need to save your changes. For any other user, the locked icon appears on the rule summary and the **Save** and **Cancel** buttons are disabled. In addition, other users are unable to make changes to the rule because it is marked "read only".

When you are editing rules, be careful not to clear your browsing history or cookie data, as this might cause the rule to be stuck in a locked state. Unsaved changes could be lost.

You can import an entire rule package, containing the rule definitions, business calendars, and references to the templates and versions that the rule package is dependent on. Refer to **Importing Rule Packages** for details.

Exporting Decision Tables

You can export decision tables in GRAT. For example, you might want to export your rules to back them up or move them to another server, and then import them back in. You can also export the file as a spreadsheet (.xls) format. This can be useful if you want a decision table with hundreds of rows it might be easier to work in Excel, replicating rows and making minor changes, and then import it back into the Rules Authoring Tool, rather than creating hundreds of rows in the tool.

> ### Important
> You can export an entire rule package containing the rule definitions, business calendars, and references to the templates and versions on which the rule package is dependent. Refer to **Exporting Rule Packages** for details.

To export a decision table:

1. Navigate to the rule package to which the decision table belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

    > ### Important
    > You can also use the **Search** feature to locate rules.

2. Locate the decision table in the list and click Export Rule. There are two options for exporting decision tables: `.xml` or `.xls`. Select the format you prefer.

3. You can either **Open** or **Save** the exported rule file.

Deleting Decision Tables

Follow these steps to delete a decision table:

1. Navigate to the rule package to which the decision table belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select the correct node in the Explorer Tree (the level at which the rule was defined) and click the **Rules** tab.

> ### Important
> You can also use the **Search** feature to locate rules.

2. Locate the decision table in the list and click .

Rule Testing Overview

> **Important**
>
> From the 8.5.1 release of GRS, the Testing Scenarios feature is supported for rules based on the Conversation Manager standard template.

Before deploying a rules package to the Genesys Rules Engine, subject to having the relevant permissions in Genesys Administrator, you can :

- Create, modify and run one or more test scenarios for each rule package

- Add input data, business context and phase data and expected results

- Review the test outcomes in plain language

- Import and export the test scenarios in the same way as with rules packages

These test features allow rules authors to test any changes made to existing rules packages before deploying them, in order to ensure that no errors are introduced.

The rule testing functionality is available via a node in the navigation tree called **Test Scenarios**. Click this node to use the rule testing features.

> **Important**
>
> From release 8.5.301, the maximum number of columns supported in Test Scenarios is increased from 30 to 50.

- **Creating rule test scenarios**
- **Running rule test scenarios**
- **Test scenario results**
- **Importing and exporting rule scenarios**

Split Test functionality that allows you to test alternative business rule outcomes is available via a node in the navigation tree called Split Test Configuration.

- **Split Testing**

Creating Test Scenarios

For All Template Types

To create or modify a test scenario (for which separate create and modify permissions are needed), do the following:

1. Click the **Test Scenarios** node.

2. On the toolbar, click **New Test Scenario**.

3. Add the following data:

   - **Name**—A descriptive name for the test scenario.

   - **Description**—A test scenario description

   - **Phase**—The phase that you want the test case to execute on. For templates that do not contain phases, an asterisk (*) indicates that this phase is not applicable.

   - **Business Hierarchy**—You can select, from a drop-down list, the level of the **Business Hierarchy** on which you want to run the test: for example, run at the "general/package level," or run under a specific department or process. If your business hierarchy is nested, only the nodes below the relevant rule package are shown.

   - **Simulated Date**—You can simulate the date that the test scenario is running in order to test time-sensitive rules, such as a rule with a start/end date or business calendar. The default is to run with today's date.

   - **Simulated Time**—You can simulate the time at which the test scenario runs in order to test time-sensitive rules, such as a rule with a business calendar. The default is to run with the current time. To clear the simulated time field, enter a dash ("-") in the hour field and press enter.

   - **TimeZone**—You can set the time zone for the test. The time zone is applied to the **Simulated Time** field, and also to any time parameters in the test scenario. The default is GMT.

   If you have delete permissions, a **Delete** icon also appears. Click it to delete the line that it relates to.

   There is also a **Result** column indicating either a pass or a fail once the test has run.

4. Add one or more **Given** columns by clicking **Add Given** and selecting from the drop-down list. Each given represents data passed into the rule package for testing. See below for special considerations for Conversation Manager template-based rules.

> **Important**
>
> If a fact's field displays in parentheses, this means that it is mapped back to more than one object in the rule template. You must select the relevant object for your test scenario. Consult the template developer if required.

5. Add one or more **Expectation** columns by clicking **Add Expectation** and selecting from the drop-down list. An expectation represents the expected results from the rule execution. See below for special considerations for Conversation Manager template-based rules.

> **Important**
>
> If a parameter displays in parentheses, this means that it is mapped back to more than one object in the rule template. You must select the relevant object for your test scenario. Consult the rule developer if required.

> **Tip**
>
> From release 8.5.303, tooltips for **Givens** and **Expectations** now show the **Fact** field description as defined in the template.

6. Create one or more rows of test data. Each row represents, and is executed as, one test. Give each row a name which describes the test. Drop-down lists present all the available data options for selection, as in the rule editor, and the same tooltip as in the rule editor is also presented. But no checks are carried out on the ranges of any values, in order to enable users to specify illegal conditions for testing.

7. Click **Save**.

For Conversation Manager Templates

Release 8.5.1 of GRS supports Test Scenarios for Conversation Manager template-based rules. The data structures for these types of rules are different, so the creation of data in the **Given** and the **Expectation** columns are also different.

With Conversation Manager, the data is in a hierarchical JSON format of **Customer -> Service -> State -> Task**. Any given Customer may have one or more Services. Each Service may be in at most one State at a time. Each State may have one or more Tasks. Tasks may also be associated directly with Services. The current CM Template is only interested in the Type, Start Time, and Completion Time (if any) of Services, States, and Tasks.

So the `Customer`, `Services`, `States` and `Tasks` Facts have now been added the lists of Facts that can be defined as Given fields, and the `RulesResults` fact has been added to the list of Facts that can be defined as an Expectation.

For each Customer ID, Service ID, State ID and Task ID you may need to define a series of parameters from the Fact model and add appropriate values to them. This data hierarchy is maintained so you can't add Task parameters where no State is defined, nor State parameters where no Service is defined, and so on.

See the **Business Process/User Guide** for more information.

Running Test Scenarios

> ### Important
> From the 8.5.1 release of GRS, the Testing Scenarios feature is supported for rules based on the Conversation Manager standard template.

To run a test scenario (for which execute permission is needed), select one or more rows of test data and click **Run Test Scenario**.

To run all the test scenarios, click **Run All**.

When the tests are complete, a details view and a summary view are both displayed. The **Result** column will display either a pass or a fail . Click either the pass or the fail icon to bring up a detailed view of the test run.

In release 8.5.1, an additional level of detail is available, if configured, that shows all the conditions that were evaluated in arriving at the Pass/Fail decision for each linear rule or each row of a decision table. Click **Show Execution Log** to display this detail. Click **Hide Execution Log** to hide it. See **Test Scenario Results**.

Test Scenario Results

The Rule Execution Trace table is always shown. If GRAT is configured by your administrators to capture and display event-level logging, an additional Rule Evaluation Detail table can be displayed (or hidden) for debugging by clicking on the **Show/Hide Execution Log** link. The If the configuration option `include-rule-evaluation-detail-in-response` must be set to value true to display this option.

Rule Execution Trace

The Rule Execution Trace table shows the following test scenario results:

- A summary result, showing the test ID and a trace of the rule execution
- The expected results as well as the actual results, for each rule that fired. Either a green or a red indicator shows whether the actual result matched the expected result.

Rule Evaluation Detail

This table shows which how each individual condition evaluated at rule execution time, so you can do much more detailed debugging.

Column	Detail
Rule	Rule name (Linear Rule) or row name (Decision Table). For example; Rule-100 *<rulename>*, Row 1 DT-163 *<rowname>* where DT-163 is a Decision Table.
Navigate	Navigation link to the Rules section.
Condition	The condition that is evaluated as part of the rule. A single rule may consist of multiple conditions.
Value	The value to be evaluated against the condition. This is the value in the Fact model.
Result	True (green indicator) or false (red indicator). `true` if value evaluation against the given condition resulted in success; otherwise `false`.

Rule Execution Log

When configured for display, the **Show Execution Log** option displays. The execution log provides low-level details of which rules fired, what values were evaluated and what the evaluation results were. Click **Hide Execution Log** to hide this display.

Importing and Exporting Rule Scenarios

> **Important**
> From the 8.5.1 release of GRS, the Testing Scenarios feature is supported for rules based on the Conversation Manager standard template.

You can import an individual test scenario from, or export to, an XLS format. This enables you to edit rows of test data inside a spreadsheet like Excel, or produce test suite data from another tool or source that can extract real customer data from an external database and build an XLS document.

To import from an external .XLS file:

1. On the toolbar, click **Import**.
2. Browse to the relevant file.
3. Click **Import**.

To export to an external .XLS file:

1. Select the test scenario for export.
2. Click to display the drop-down list.
3. Select **Export Test Scenario (.xls)**.

Using Split Testing to Compare Business Rule Outcomes

Overview

[+] DETAILS

What problem does A/B/C Split Testing solve?

If your organization has a complex set of rule packages and rules to define business decision-making, if you want to be able to compare alternative outcomes and scenarios, then rather than just changing a condition and hoping for the best you probably want to phase changes in slowly in order to measure the impact over time.

A/B/C Split Testing (hereafter, **Split Testing**) allows you to compare the business outcomes of alternative rule scenarios before rolling out significant changes to the way you make your business decisions. With Split Testing you can make, test and review changes incrementally to test their effects before committing to a particular change set.

For example, you might want to test several subtle changes in the way applications for credit cards are treated, in order to identify which has the best business outcome. You could split test for one income level against another, or one age range against another, or between different customer segments, or indeed any conditions in your rule package.

Flexible Approaches to Split Testing

Split Testing offers several approaches. For example, you can choose to:

- Unconditionally force either path A or B or C.

- Tie Split Testing to certain conditions (whether the customer is from a particular city, of a certain age, not a Gold customer, and so on).

- Weight the paths for A, B and C by percentage. This allows you to take a more statistical approach and use larger test data sets.

- Tie Split Testing to a business calendar (for example only do split testing on Fridays after 5 PM or Saturday morning 9 AM - 12 PM).

New Split Testing Template

A new template ships with GRS 8.5.3—GRSSplitTest_template.xml—and this provides some basic Facts (Conditions and Actions) for the Split Testing feature. To implement the feature, GRAT users must import this template (from the **Samples** folder) and attach it to all rules packages for which the Split Test functionality is required.

> ## Important
>
> The new template—GRSSplitTest_template.xml—is shipped with type samples. This means it can only be added to rule packages of type samples, because GRAT only shows templates in the list with compatible types. To use this template with other rule package types, you can import the template from GRAT into GRDT, change the name (for example, GRSSplitTestForMyType) and the type (to match your rule package type) and publish to GRAT. Then you can use with another package type.

Changes in GRAT

[+] DETAILS

New Split Test Column in Rule Packages

A new Split Test column displays at the rule package level.

When the Split Test template has been imported into GRAT, this drop-down field will show the values imported from the template (A, B and C are the default values in the shipped template). If the template has not been imported, only the wildcard (*) symbol will be available.

When a path is selected in this column, the rows color-code for easier viewing. The wildcard symbol (*) means that the Split Test condition is ignored, so this rule will always fire.

New Split Test Configuration Node

A new node—Split Test Configuration—appears in the left navigation tree. You can use this node to create new (and display existing) Split Test rules that will apply at the rule package level. In rules created by clicking this new node, the **Split Test** column is hidden to avoid confusion.
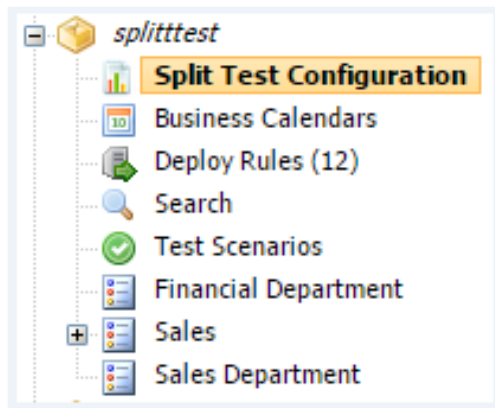
What Can I Do with Split Test Rules?

[+] Force the Split Test Path to A, B or C

Unconditionally force either path A or B or C

In rules created by clicking this new node, the `splitTestValue` can be selected as a Parameter for the rule. You can use this simple rule to force the Split Test path to any of the values in the template (the default shipped values in the template are A, B and C, but you can change these in the template if required).
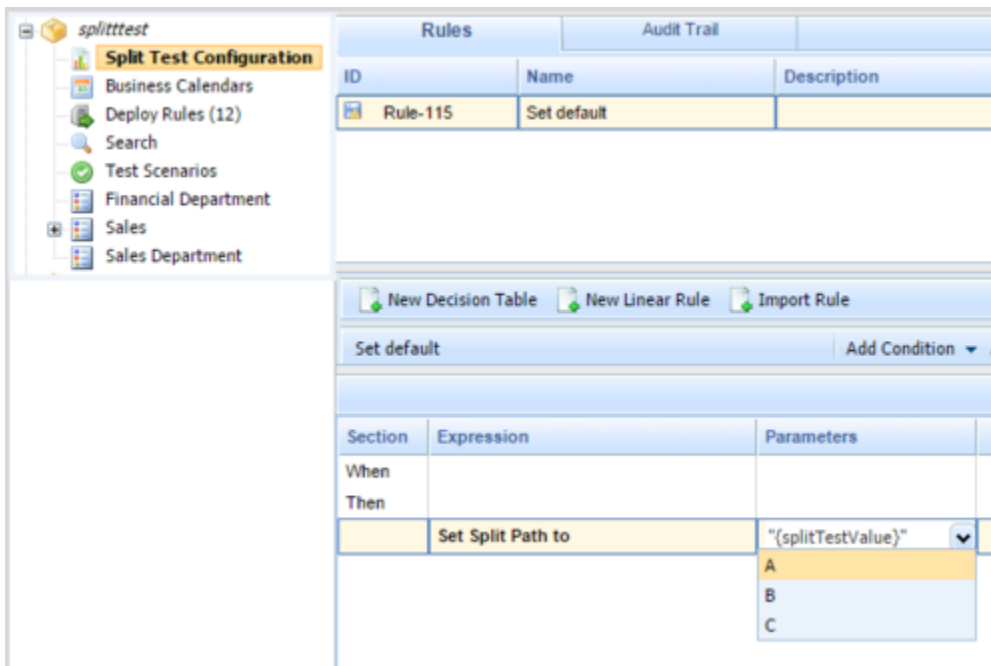
[+] Tie a Split Test Rule to a Condition

Tie Split Testing to a Condition

To add more flexibility and precision to your use of Split Test rules, you can add to your rule any other condition available from the template(s) attached to the rule package. The example below has a lower age limit:
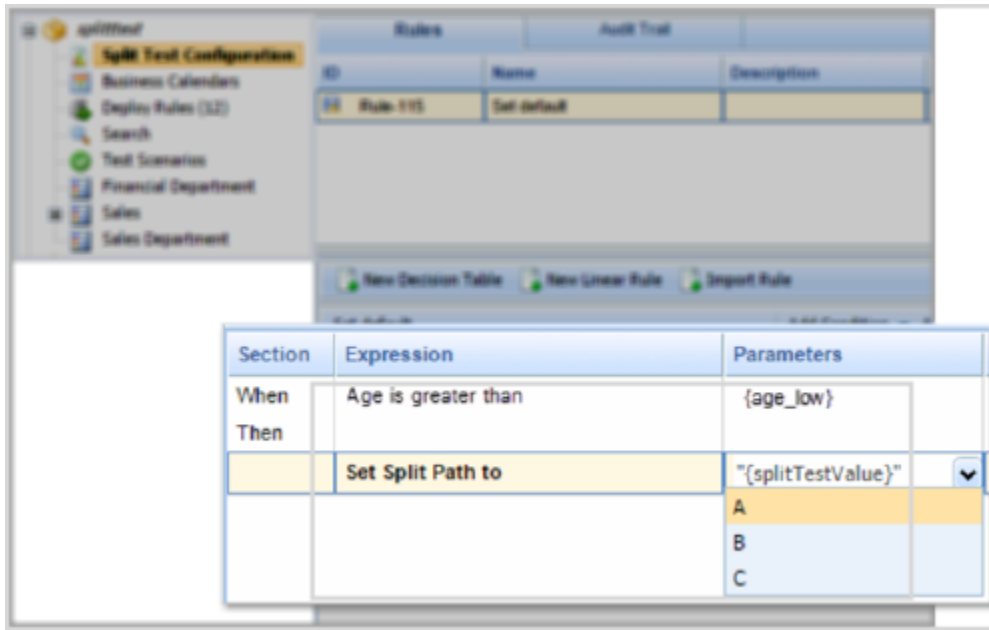
[+] Set Up a Weighted Distribution

Weight the paths for A, B and C by percentage

You could add a condition to perform Weighted Distribution Split Testing. In this example the Split Test rule distributes the incoming rule evaluation requests across the A, B and C paths in the percentage proportions 50/25/25. This should look something like this:

[+] Tie a Split Test Rule to a Business Calendar

Tie Split Testing to a Business Calendar

You can also tie Split Testing to a Business Calendar. For example, you might prefer to keep Split Testing outside normal business hours, or maybe run Split Testing in response to specific customer offers or other commercial events. To do this you can either use an existing Business Calendar or create a new one for your specific purpose. You then add this calendar to the rule to which you want to apply Split Testing.

So, when the parameters set for the Business Calendar apply, the weighted Split Testing begins and ends automatically.
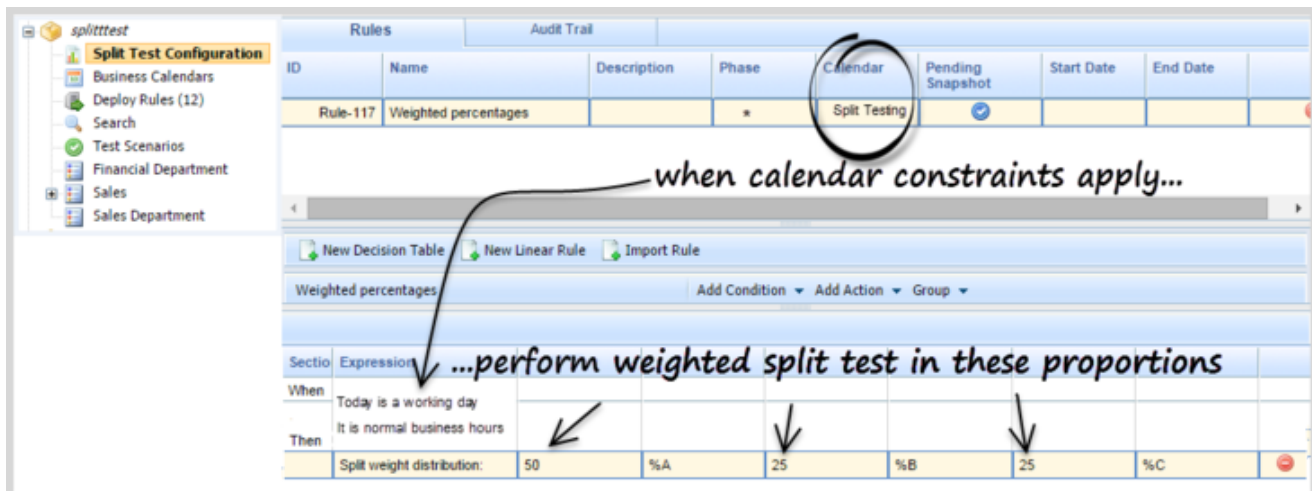
Using Test Scenarios to Check Your Split Test Logic

[+] Using Test Scenarios to Check Your Split Test Logic

GRAT's Test Scenario feature allows you to run pre-deployment checks on the logic of any rule package that you want to deploy. Because A/B/C Split Testing enables an additional level of logic to be built into a rule package, it's advisable to run more complex Split Test logic through a Test Scenario before deploying it to a production rules engine.

For example, if you wanted to check the Weighted Distribution example above before deploying the rule package to a production engine, you could create a test scenario to have 10 rows of identical data that only qualify when running path **A**. Each row in the test scenario simulates a separate rule evaluation and will therefore apply the Split Test Configuration rules first. If we see a green tick, then the original **A** path was taken. If we see a red cross, then either the **B** or **C** path was taken.

Because we configured the **A** path for 50% of the time, we should see about 50% green ticks every time we hit the **Run Test Scenario** button. Here are the outcomes of running the test scenario twice:

After testing that the A/B/C split logic is correct, you can deploy your rule package. At this point, the A/B/C split logic will run as you have it configured during normal rule evaluation. To adjust the A/B/C configuration (for example, make the **A** path 25% instead of 50% and the **B** path 75% instead of 50% and so on), you must make the changes in GRAT and then redeploy the rule package.

Allowing an Application to Override Split Test Configuration Rules

[+] Allowing an Application to Override Split Test Configuration Rules

In addition to setting the A/B/C path in the Split Test Configuration section, it is possible for the invoking application (GVP, IVR, ORS and so on) to set the value. This can either be used as a default, or can be used to override the logic in the Split Test Configuration.

If you want the invoking application to be able to override the normal logic in Split Test Configuration, then you can simply add the new `Split Test Path is not set` condition to your rule.

Section	Expression	Parameters
When		
	Split test path is not set	
Then		
	Set Split Path to	A

This new condition will check whether the value has already been passed in by the invoking application. If it has been passed in, then the Split Test logic will be bypassed. If not, then the normal Split Test rule logic will apply.

Business Calendars Overview

Rule packages can contain one or more Business Calendars. Business calendars define the working days and hours of the organization. They can also be associated with any rule in the package.

Calendars are out-of-the-box classes available in the Fact Model that can be used by Rules. A calendar contains:

- Name
- Time zone (the list of available timezones is defined in the Java runtime)

> ## Important
> In release 8.5.001.21, business calendars were enhanced to allow the timezone to be provided at rule-evaluation time.
>
> When the GRAT user configures a business calendar, a timezone is chosen along with the other attributes of the calendar (normal work week, exceptions, holidays). Timezones that respect Daylight Saving display with a "*" suffix.
>
> In this release, the standard methods that can be accessed from within the rule template have been extended to allow the timezone ID to be passed in at rule evaluation time by the applications that is requesting rule evaluation. If the timezone ID is not passed in in this way, then the "saved" timezone is used. If the timezone ID is passed in, then it overrides the saved timezone and the calculations will be done using the provided timezone. See **Business Calendar Enhancements** (Best Practice/User Guide).

- Week start day and time
- Week end day and time
- Holidays (one or more)
- Time Change (one or more)

A **holiday** is fixed, relative, or annual.

- A fixed holiday contains the date of the holiday, including day, month, and year, such as 01/01/2015.
- A relative holiday contains the month and weekday of the holiday and whether it is on the first, second, third, fourth, or last day of that month, such as the third Thursday of November.
- An annual holiday contains the month and day of the holiday, such as July 4.

A **time change** indicates how the work hours can be adjusted on particular days; for example, defining a half day on a particular day of the work week. Like a holiday, a time change is fixed, relative, or annual and contains the same date definition as the corresponding holiday definition. In addition, the time change contains the start and end time for the defined date.

Business calendars are needed to be able to define rules based on work hours. For instance:

WHEN Task is idle for more than *3 Working Days* THEN increase Priority by 20

WHEN *Today is a holiday* AND Task is urgent THEN Agent Group is "Urgent Care"

The italicized portions of the above examples use business calendar information.

The following topics explain how to work with Business Calendars in GRAT:

- **Creating Business Calendars**
- **Copying Business Calendars**
- **Deleting Business Calendars**

Creating Business Calendars

Follow these steps to create a new business calendar:

1. Navigate to the rule package to which the business calendar will belong in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list).

2. Select **Business Calendars** under the rule package in the Explorer Tree.

3. Click **New Calendar**.

4. The **ID** field is populated automatically. This is not editable.

5. Enter a **Name** for the business calendar. Use something descriptive that will make it easier to identify the rule, such as Regular Work Week.

6. Select which day of the week the week starts on (such as Monday).

7. Select the ending day of the week (such as Friday).

8. Enter the start time (such as 9:00 AM).

9. Enter the end time (such as 5:00 PM). If the end time is earlier than the start time, it is assumed that the workday spans midnight.

10. Select the default timezone that applies to this business calendar.

> ### Important
>
> 1. Timezones that respect Daylight Saving display with a "*" suffix.
>
> 2. The timezone selected can be overridden if a different timezone ID is passed in at rule evaluation time by the application requesting an evaluation by the rules engine.

11. If necessary, you can configure business calendar rules for your new business calendar.

    a. In the lower pane, click   .

    b. A new row will appear in the **Business Calendar Rules** panel. Enter a **Name** for the rule, such as **New Year's Day**.

    c. Select the **Entry Type** for the rule, such as **Holiday**.

    d. Select the **Calendar Placement**, such as **Annual** for New Year's Day, or **Relative** for Memorial Day. You might also need to configure a Fixed holiday, for example, if the holiday will be observed on a different day one year, because the actual holiday falls on a non-working day.

    e. Enter the parameters for the rule, such as the specific date (January 1, for New Year's Day), or the x day of a specific month (such as the third Monday in May, for Memorial Day).

    f. Configure any time change exceptions for this business calendar. A time change indicates how the work hours can be adjusted on particular days; for example, defining a half day on a particular day of the work week. Like a holiday, a time change is fixed, relative, or annual and contains the same date definition as the corresponding holiday definition. In addition, the time change contains the start and end time for the defined date.

From release 8.5.303, if you have configured more than one holiday or time change exception, provided that the calendar is not locked by another user you can use the far right-hand column to:

- Adjust the order in which they are processed. This lets you avoid setting up clashing exceptions. If there is a conflict, the highest entry takes priority.

- Make copies of existing exceptions and adjust them.

- Create new exceptions.

g. Click **Save**.

Copying Business Calendar

You can copy a business calendar and paste that copy in either the same, or a different, rule package. Follow these steps to copy a business calendar:

1. Navigate to the rule package to which the business calendar belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list). Select **Business Calendars** under the rule package in the Explorer Tree.

2. Locate the business calendar in the list and click **Copy Calendar**.

3. If you want the copy to be in the same rule package, click **Paste Calendar**. Enter a name for the new business calendar.

4. If you want the copy to be in a different rule package, locate that rule package in the explorer tree, and select **Business Calendars** under that rule package. Click **Paste Calendar**. Enter a name for the new business calendar.

5. Update the information as needed. Click **Save**. Refer to **Creating Business Calendars** for information about the various fields and configuring business calendar rules.

Deleting Business Calendars

Follow these steps to delete a business calendar:

1. Navigate to the rule package to which the business calendar belongs in the Explorer Tree (verify that you have selected the correct Tenant from the **Tenant** drop-down list).

2. Select **Business Calendars** under the rule package in the Explorer Tree.

3. Locate the business calendar in the list and click .

Search

GRAT includes a Search feature. You can search for existing rules to more easily locate them for editing.

Some of the fields that can be searched are:

- Rule ID
- Rule Name (the full name, "starts with", or "includes")
- Last Modified By: the user name of the person who last updated the rule
- Creation Date Range (any rule created between x and y)
- Business Calendar (calendar name)
- Rules pending snapshot
- Rules that contain a specific parameter in a rule condition.
- Rules that contain a specific parameter in a rule action.

Important

After the search results are presented, you can click the rules to see the contents, modify the rules, or delete the rules from the search screen. You can also click the navigate icon to locate the context in which the rule was originally defined.