What's New in Pega Platform

This release of Pega Platform™ furthers Pega's mission of building for change, automating from end to end, and engaging without limits. Highlights include a contextual authoring environment with Studios, the ability to collaborate across applications with Spaces, management of data integrations in a single place, an Intelligent Virtual Assistant that can now decipher emails with file attachments, and quicker deployments with improved DevOps and automated testing.

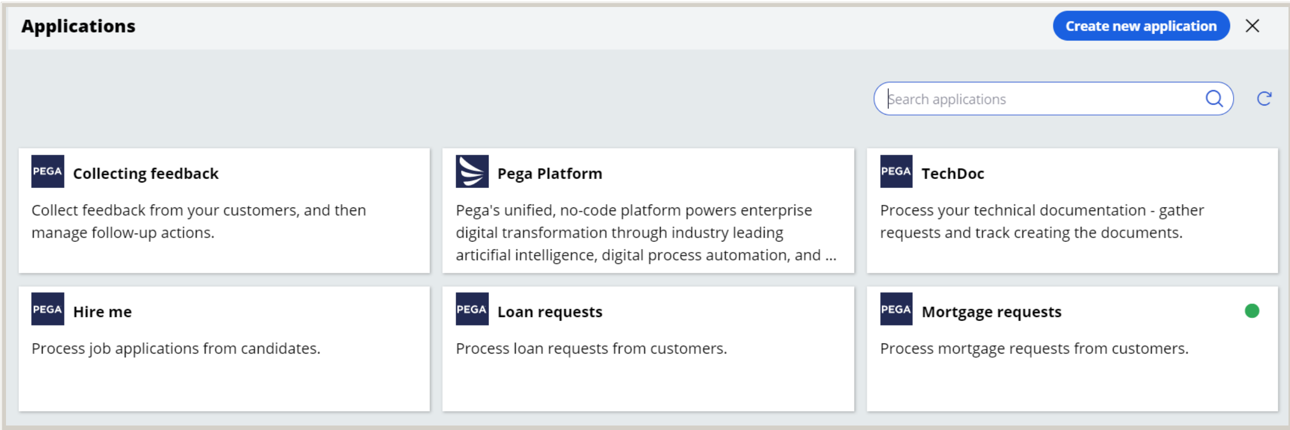
To learn more about all the key new features in Pega Platform, see [What's New in Pega Platform.]

Looking for What's New in 8.2 videos? View them in our [Pega Community Video Library.]

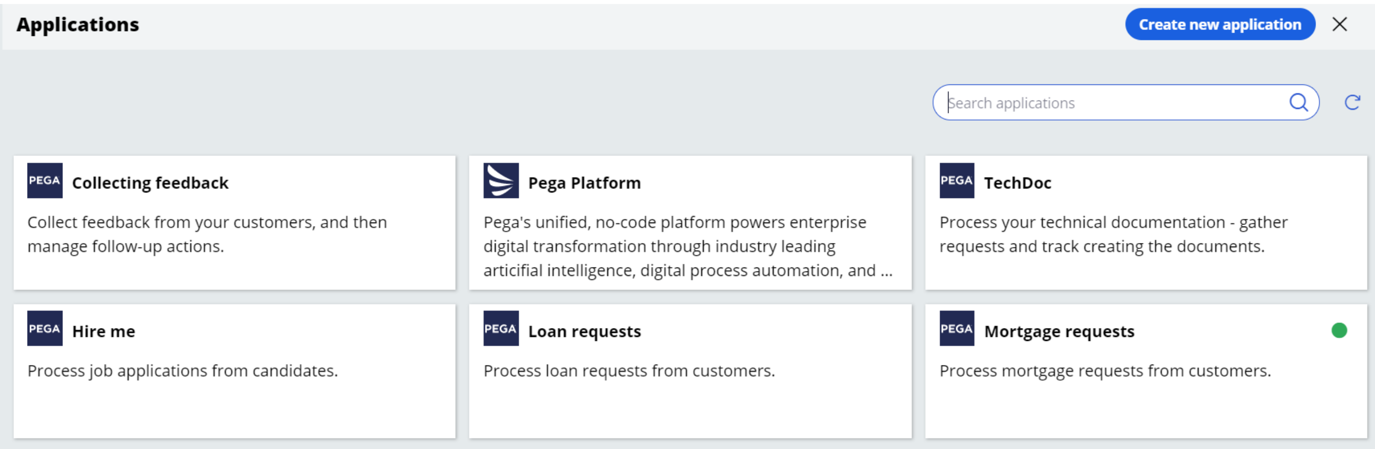
Visit [www.pega.com] to learn more about Pega Infinity™.

Application Development

Application Development tools help you create high-quality applications that follow best practices. Key enhancements in this release focus on expanding App Studio functionality. For example, you can now define branches where you save changes that you make in App Studio, which allows you to work on multiple features simultaneously. You can also switch between applications in a facilitated way and create a new application by using the My Applications gadget.



My Applications gadget in App Studio



My Applications gadget in App Studio

Application Development tools include the following enhancements:

- Improve application development by saving changes in branches (8.3)
- Define When rules more efficiently with the condition builder (8.3)
- Switch between applications more conveniently in App Studio (8.3)
- Generate customized application documentation in App Studio (8.3)
- Visualize application layers for case processes and sections (8.2)
- Improve productivity by using role-based workspaces
- Review key application highlights on a single page
- Collaborate by using agile-development features
- Manage your library of reusable components more efficiently

To learn about all the new features in **Application Development**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

Visit www.pega.com to learn more about Pega Infinity™.

Visit What's New in Pega Platform to discover all the exciting new features in this release.

Plan successful microjourneys in App Studio (8.4)

For more detailed and user-friendly planning of your application development, you can visualize your business processes by creating microjourneys™. By implementing this Pega Express™ methodology in App Studio, you gather the most important factors in your cases on one screen, so that you can understand your customers' needs. Microjourneys represent a set of actions that result in a specific outcome, and you base your microjourney on the following elements:

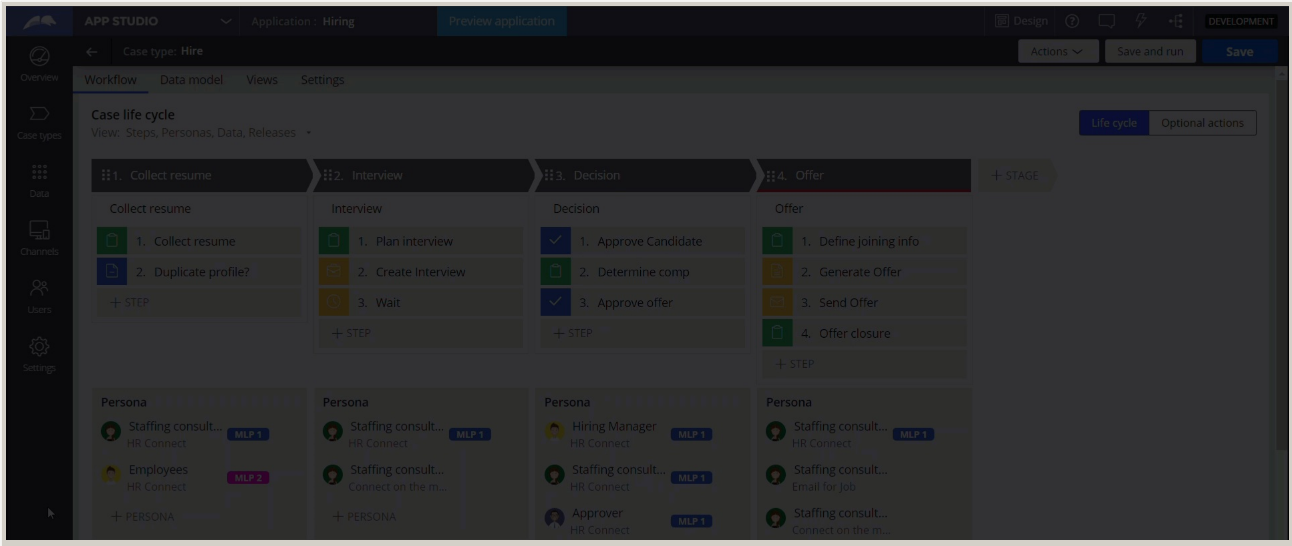
- Case types, which represent the paths of your business processes

- Personas, which visualize the people who interact with your cases
- The data that your cases require to reach a resolution

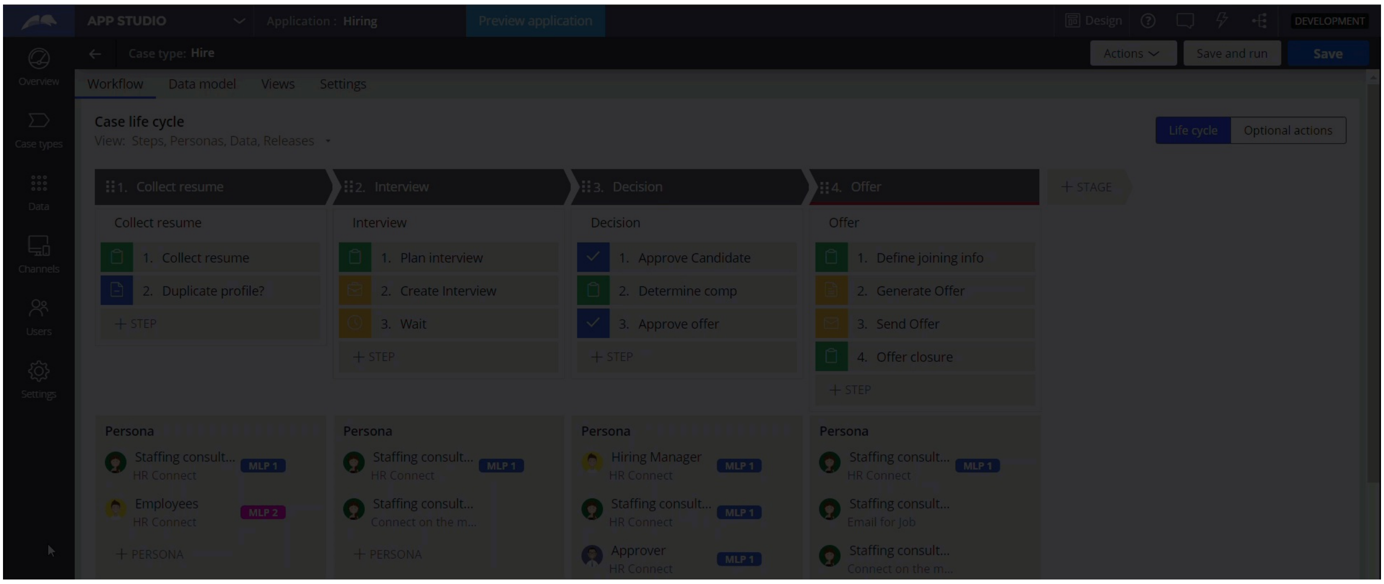
By focusing on one microjourney at a time, you ensure that you plan your application in the most efficient way, to maximize the effects of your development process. For example, in an HR application, you can design a microjourney for reviewing job applications.

For enhanced capturing of your customers' requirements, you can quickly create new personas and data objects that you can associate with case types. After you plan your microjourney, the draft relationships between cases, personas, and data objects help your team to estimate the amount of time and effort that they need to implement these items, so that you can start processing cases sooner.

The following figure shows the association of a persona with a case type:



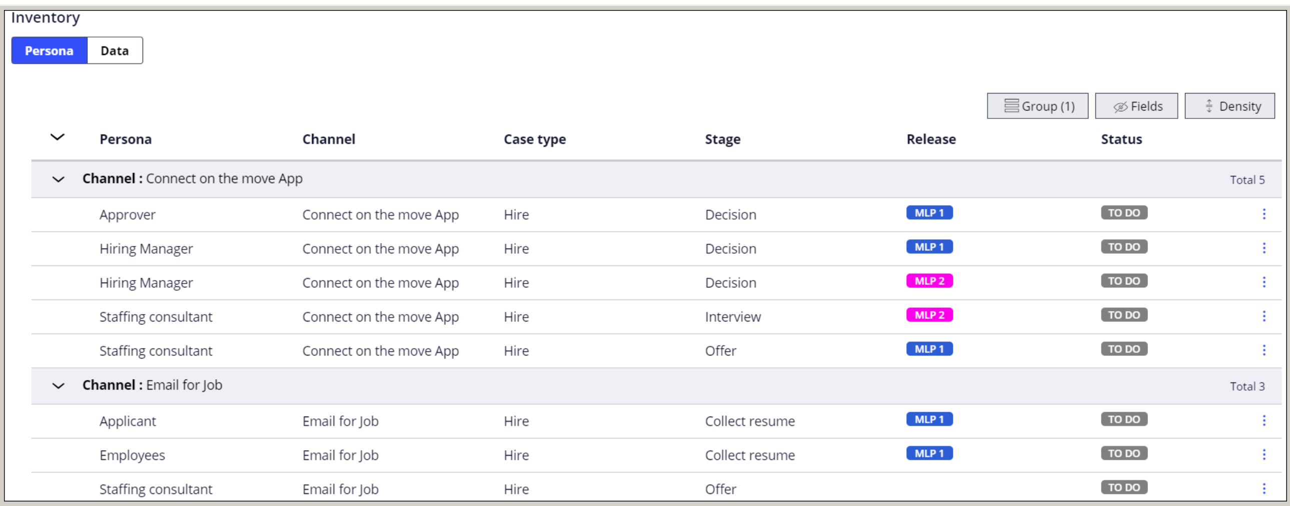
Creating a draft relationship between a persona and a case type



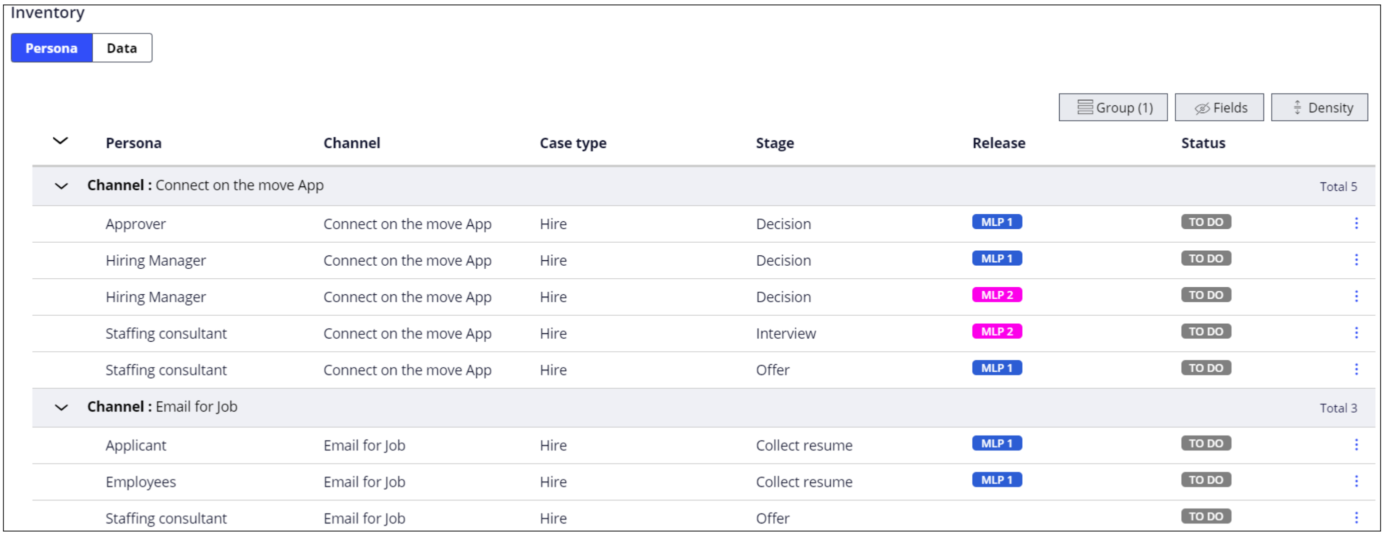
Creating a draft relationship between a persona and a case type

To manage your development team workload in a simplified way and to conveniently check the relationships between items, the new Inventory page lists all of the personas and data objects in your application. You can quickly access the information that you need by grouping items in the list by different criteria, such as by persona or case type. You can also filter the information to show only what you want to see, for example when you want to check items by status.

The following image shows personas grouped by channel on the Inventory screen:



An application inventory page



An application inventory page

To experience an intuitive, low-code, and user-friendly journey, update your application in App Studio to include the new features.

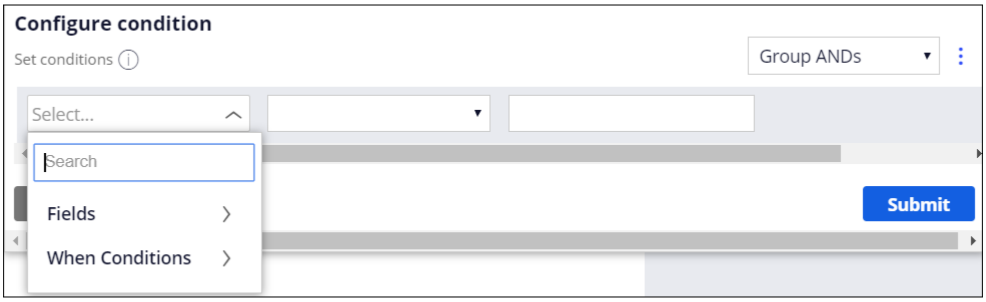
For more information, see [Creating microjourneys for customer success](#).

Create conditions faster with an Anypicker control (8.4)

You can now create conditions in a simplified and accelerated way in a condition builder by using the Anypicker control. Save time by searching for values or selecting values from categories of when conditions and fields. To create precise conditions, you can include fields that are up to four levels within field groups.

The following figure shows the Anypicker control in a condition builder:

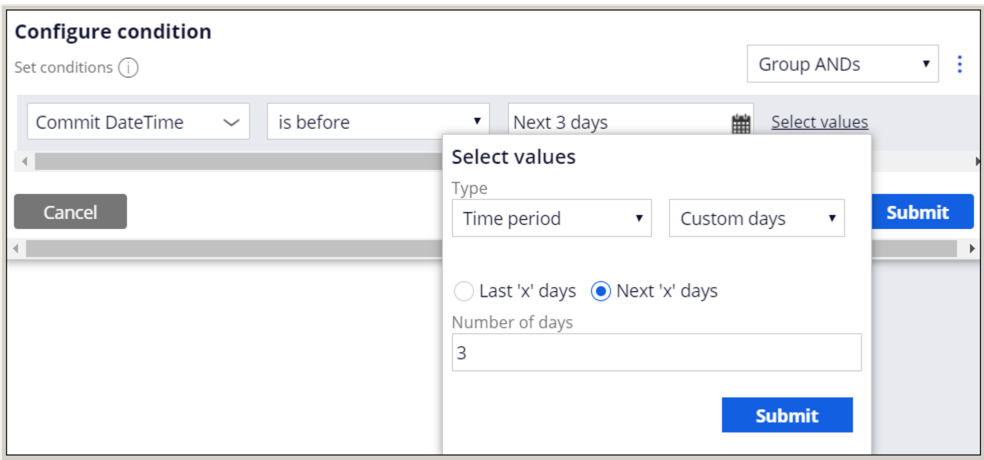
Condition builder with an Anypicker control



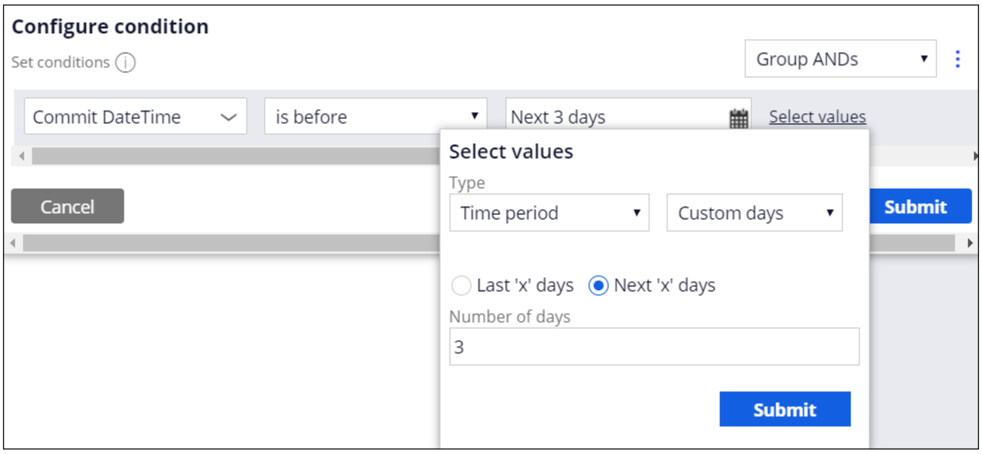
Condition builder with an Anypicker control

You can also improve the flexibility of your processes and ensure that an application evaluates conditions regardless of the capitalization that users enter by ignoring case sensitivity in text type fields. For example, an application can then return the same result for both of the following two conditions: `Active channel is equal to email` and `Active channel is equal to Email`. You can also customize the commit DateTime value by specifying the number of days before or after an application reaches a specified condition. For example, `Commit DateTime is before next 3 days` advances the case only if a user resolves a task within 3 days after the case reaches the condition.

The following figure shows how to define a Commit DateTime value:



Configuration of a Commit DateTime value



Configuration of a Commit DateTime value

Define complex conditions by defining embedded conditions for lists. For example, you can create a condition that displays a list of products that have specific values, such as a color, year, and make.

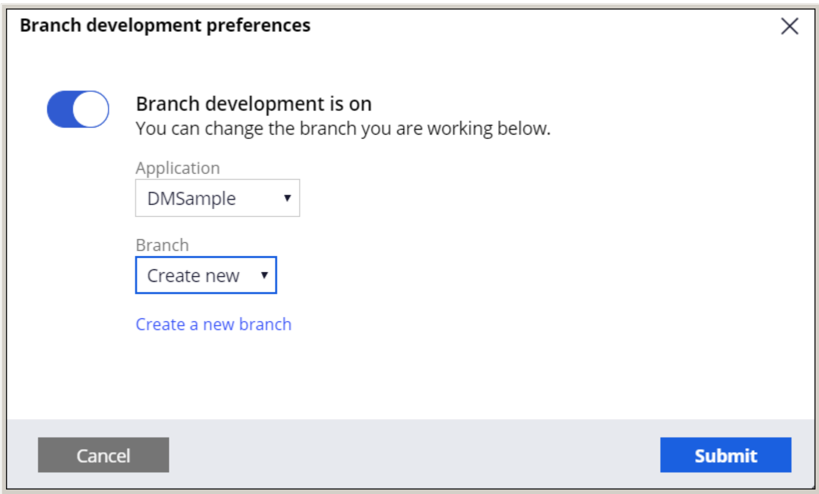
For more information, see [Adding an Anypicker control](), [Defining conditions in the condition builder]().

Improve application development by saving changes in branches (8.3)

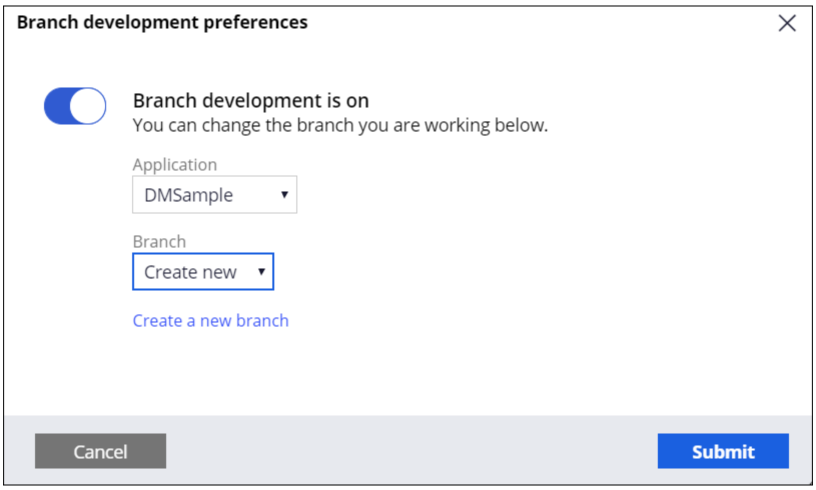
For improved management and control of application development, you can now define the branch where you save the changes that you make in App Studio. By defining branch preferences, you can use branches as sandboxes to create features that you can review, and then save or discard your changes without affecting a whole application. Also, your team can work on multiple features independently by saving changes in different branches. You can set your branch preferences to a localization ruleset and use App Studio to quickly locate elements of your application.

You can define branch preferences in App Studio and Dev Studio. When you define branch development preferences, Dev Studio uses these preferences as default settings. For example, you can create a branch to enhance a feature, and set the default to save all future changes in that branch.

The following figure shows the Branch development preferences dialog box in which you create a new branch:



Branch development preferences dialog box



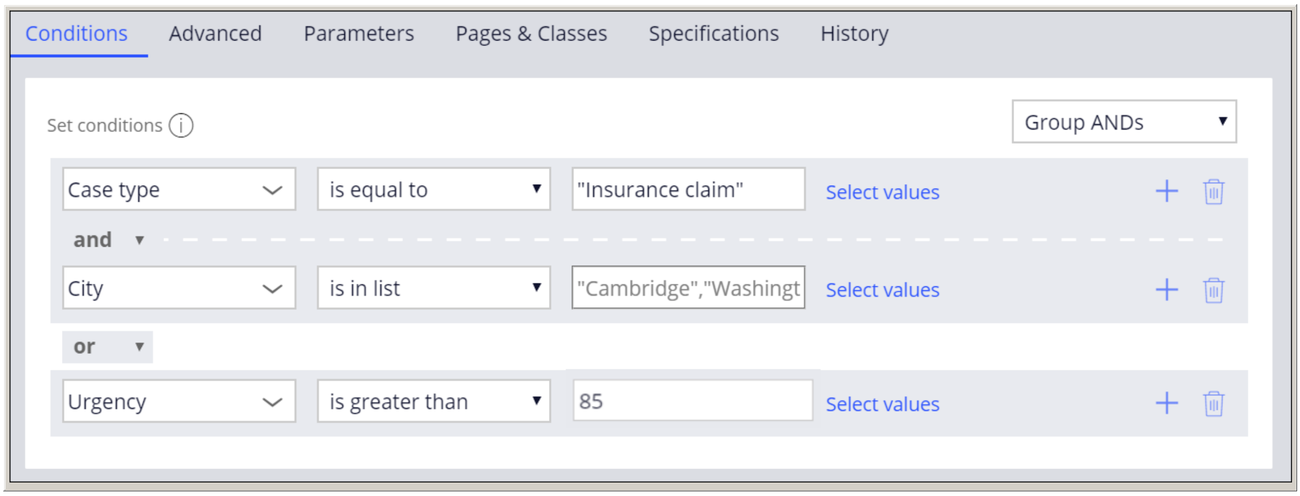
Branch development preferences dialog box

For more information, see [Creating branches]().

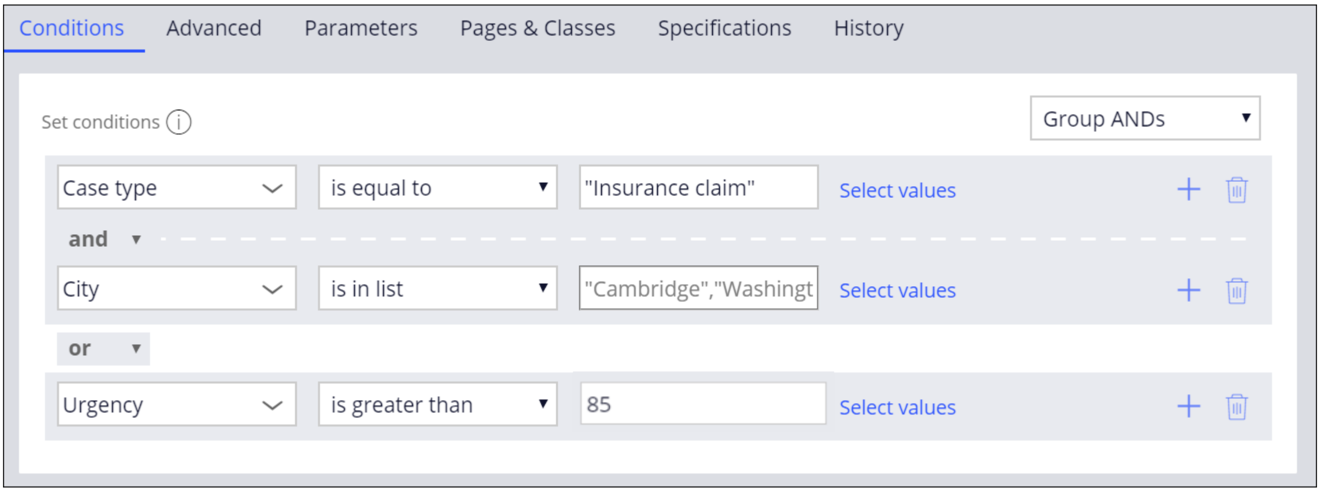
Define When rules more efficiently with the condition builder (8.3)

In Dev Studio, you can now create When rules more efficiently by using the condition builder. You can conveniently define and group conditions by using ANDs, ORs, or advanced logic, and add conditions to check if a customer form contains any value from the list.

For example, create a When rule that starts a case if it is an insurance claim and a city of residence of a client is in the list or the claim is submitted with a specific urgency level, as in the following example:



Sample rule definition in the condition builder



Sample rule definition in the condition builder

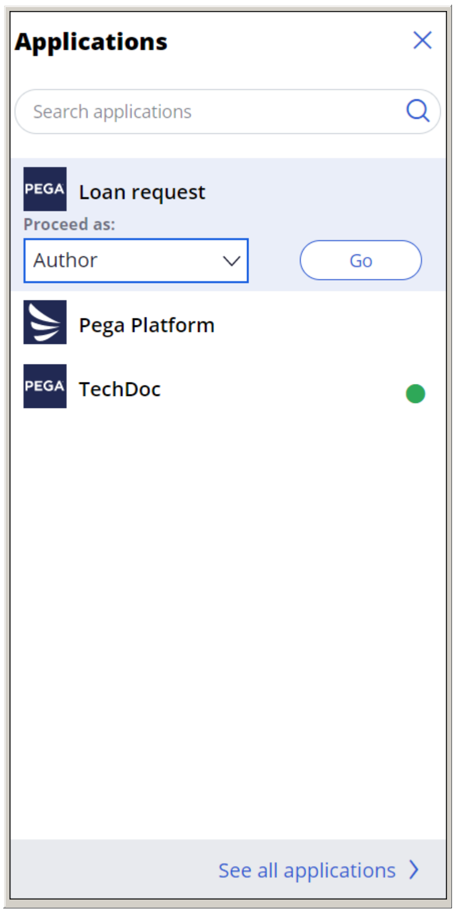
If you need to use functions for your When rule, you can edit conditions in the way that is used in the previous versions of the Pega Platform™.

For more information, see Defining conditions with a condition builder, Defining conditions for a When rule.

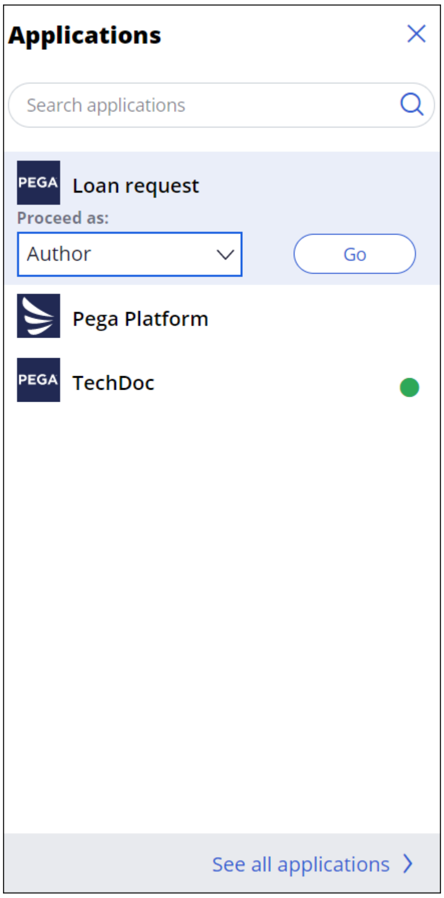
Switch between applications more conveniently in App Studio (8.3)

In App Studio, you can now switch applications more intuitively by using the My Applications gadget. If you have multiple applications, search the application by name instead of choosing from the list, and then select an access role if you have more than one assigned, for example, an author and an administrator. To read a description of each application, go to the My Applications page where you can also create applications if you have administrator or author privileges.

The following figure shows the My Applications gadget:



Choosing an application



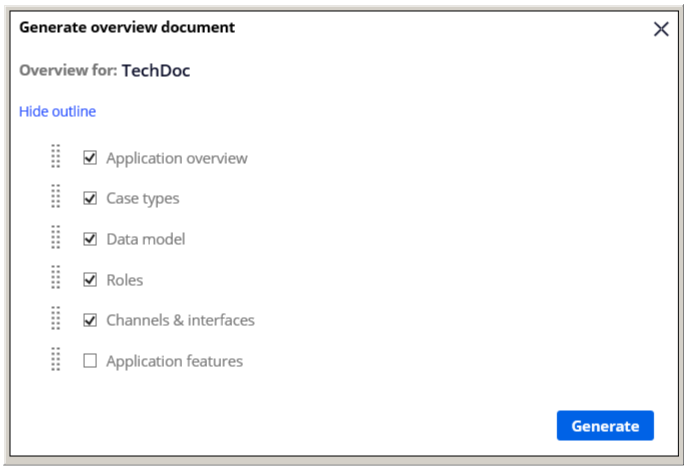
Choosing an application

For more information, see Adding the My Applications gadget, Switching between applications in App Studio.

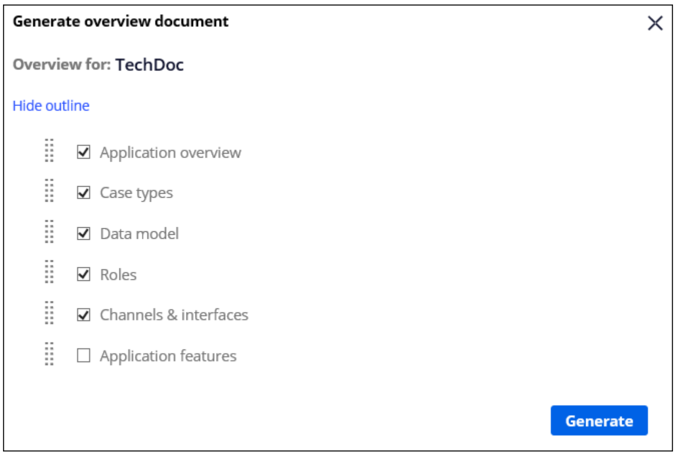
Generate customized application documentation in App Studio (8.3)

Provide stakeholders with high-level information about your application by creating an application overview document in App Studio. Customize the application overview by selecting specific chapters, so that the document contains only relevant information. You can include information such as case types, roles, or features. Highlight the most important items by changing the order of the chapters in the document. Generate a Microsoft Word file that you can share with stakeholders or other application developers.

The following figure shows selections for an outline in the Generate overview document dialog box:



Generate overview document dialog box



Generate overview document dialog box

You can provide insight into a data model in your application by exporting the data model into a Word or Excel file. The file contains all the information about the data model, so that you can quickly check case type or data type details. For example, you can check what information is collected within each case type and what fields a case type contains.

For more information, see [Creating project documents for stakeholders in App Studio](), [Exporting a data model into a document]().

Visualize application layers for case processes and sections (8.2)

In App Studio, you can now easily visualize the application layers for case processes and sections, including work areas and views. When you click the Discover gadget for a case process or section, you are shown a visual representation of the application layers. You can open a layer in Dev Studio to see the rulesets and other attributes of an application.

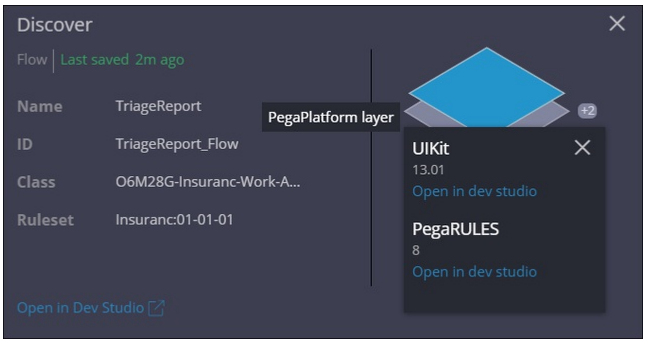
The following image shows the Discover gadget.

Discover gadget

Click the Discover gadget to see the layers in your application, similar to the image below.

Application layers visualization

Click a layer to see the details for that layer, and to optionally open the built-on application in Dev Studio.



Application layers detail

For more information, see [Discover gadget](#).

Improve productivity by using role-based workspaces

This content mentions Pega Express, which formerly referred to App Studio. Pega Express now unifies our low-code experience strategy with our delivery methods. You can find the Pega Express delivery methodology [here](#).

A workspace, or studio, is an environment that provides specific tools and features. By using different workspaces to develop and manage your application, you can help team members focus on the tasks that align with their expertise.

For example, front-end developers can design interface channels in one workspace, while system administrators can switch between workspaces as they configure advanced functionality and monitor run-time results.

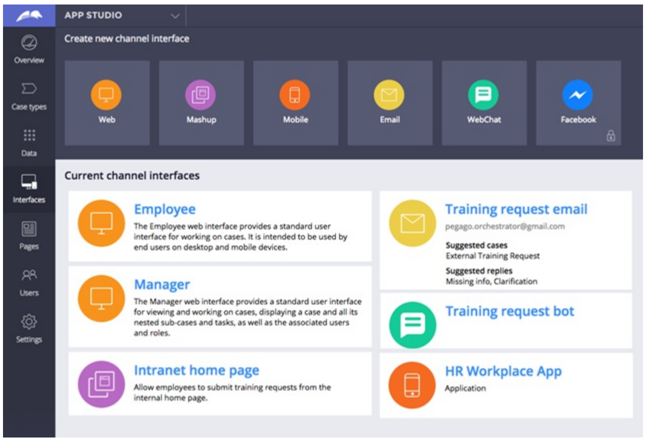
The following workspaces are supported:

- [App Studio](#)
- [Dev Studio](#)
- [Admin Studio](#)
- [Prediction Studio](#)

App Studio

Formerly Pega Express, this workspace provides core features for application development, such as case design, data management, and the user experience. Typical users include application developers, front-end developers, data engineers, and business analysts. You can use App Studio to get your applications up and running quickly.

The following figure illustrates some features, such as channels and interfaces, that are available in App Studio.



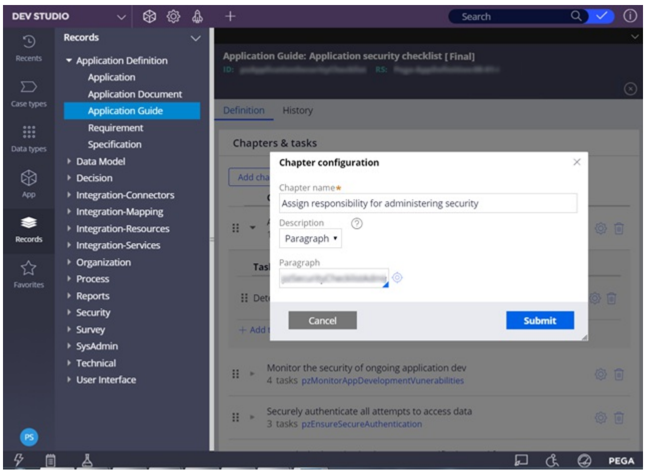
Example channels in the App Studio workspace

For more information about working in App Studio, see [Getting started for business analysts and development teams](#).

Dev Studio

Formerly Designer Studio, this workspace provides advanced features for application development. Typical users include full-stack developers, database administrators, and security administrators. You can use Dev Studio to fully customize your application and build reusable components for your team to configure in App Studio.

The following figure illustrates some features, such as application guides, that are exclusive to Dev Studio.



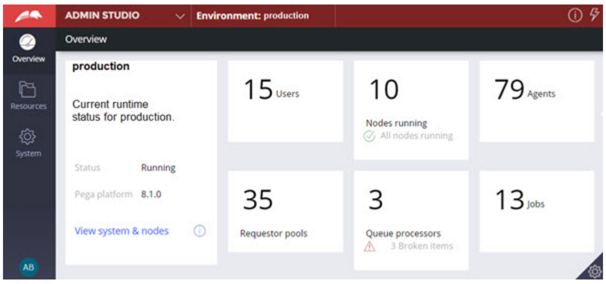
Chapter details for an application guide in the Dev Studio workspace

For more information about working in Dev Studio, see [Getting started for experienced development teams](#).

Admin Studio

This workspace provides run-time information and configuration options to enable you to monitor your production system.

The following figure shows the current run-time status of a production system.



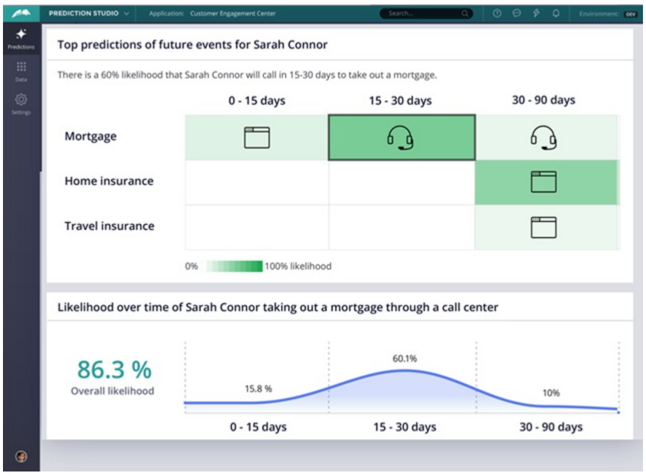
Run-time status in the Admin Studio workspace

For more information about working in Admin Studio, see [Getting started for administrators](#).

Prediction Studio

This workspace provides features for data scientists to build machine-learning models for adaptive, predictive, and text analytics.

The following figure shows example predictions in an insurance and loan application.



Future events for a customer in the Prediction Studio workspace

For more information, see:

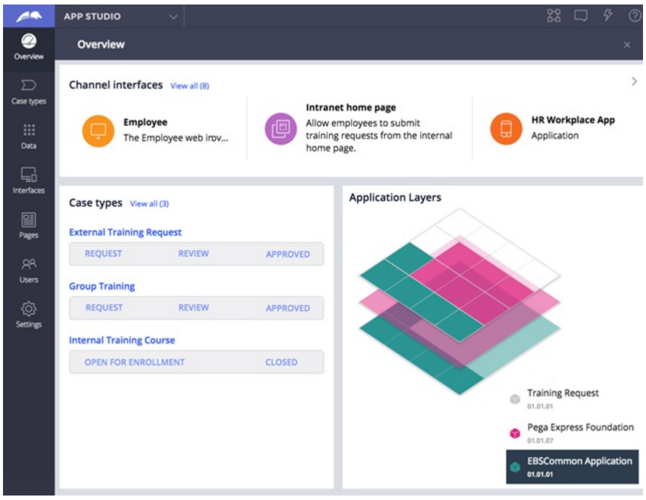
- [Managing predictive and text analytics models](#)
- [Build and maintain machine-learning models in Prediction Studio](#)

Review key application components on a single page

An application overview is a page that aggregates high-level information, such as supported channel interfaces, case types, or data types. By using this page to find and monitor the key components in your application, you can make informed decisions about how you want to allocate your development resources.

For example, you can compare the life-cycle stages in your case types to identify inconsistencies and opportunities for reuse, or review your channel interfaces to find new ways to engage customers.

The following figure illustrates the organization of overview information for a human resources application.



Overview page in App Studio

Encourage your project stakeholders to periodically review your application overview, so that they can stay informed and require fewer status updates.

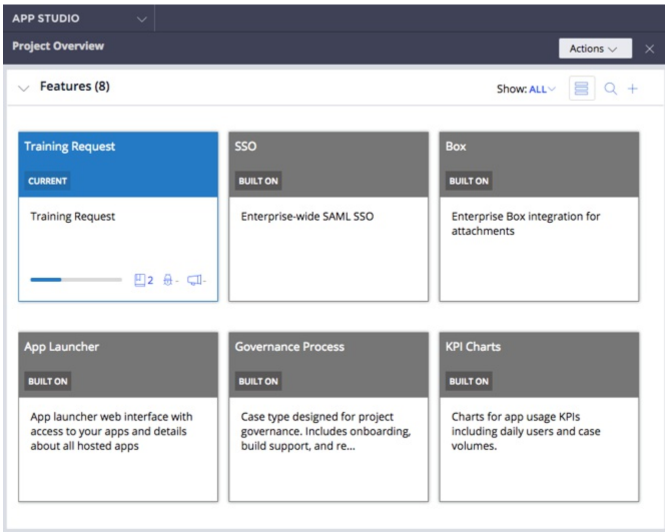
For more information about projects in App Studio, see [Getting started for business analysts and development teams](#).

Collaborate by using agile-development features

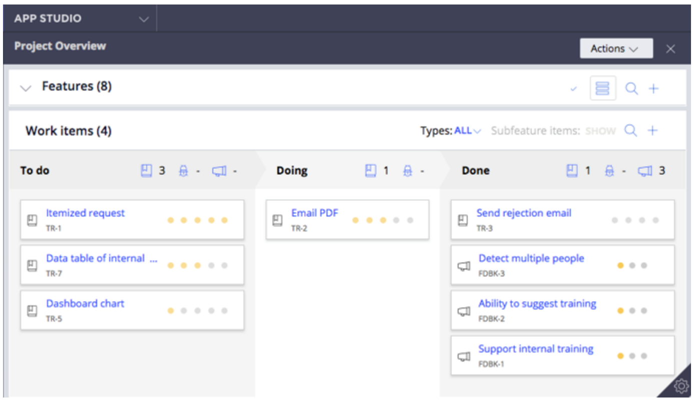
Features in an agile-development model help you plan and implement new capabilities in your application. By tracking development changes in the context of a feature, you can maintain functional requirements and project status directly in your application.

For example, you can create a feature to support requests for new training modules in your application. Your team can then map development tasks, such as defining a data table of available courses, to this feature by creating stories, bugs, and other work items in Agile Workbench. Because features support traceability from requirements to work items, and work items to implementation, your project status is updated in real time.

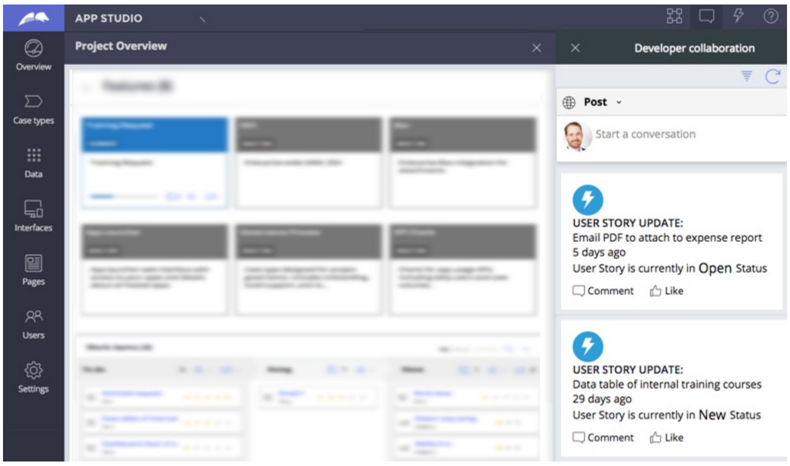
The following figures illustrate the types of information that are generated for you when you use features.



New and inherited features, the number of associated work items, and visual progress indicators on the Project Overview page



Work items filtered by type, status, and associated feature on the Project Overview page



Automated application-level messages in Pulse for status changes to work items

Features are available in both Dev Studio and App Studio. As a best practice, choose the workspace that aligns with your role and expertise to manage your features.

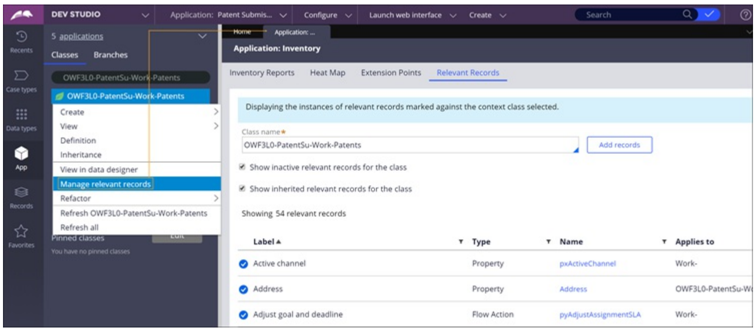
For more information, see Adopting feature-driven development and Managing features in your application.

Manage your library of reusable components more efficiently

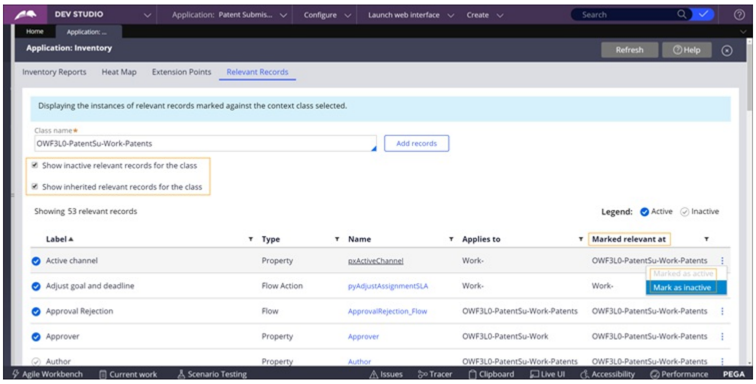
Reduce application development time by more effectively managing the relevant records in your application. By building a well-designed library of reusable components, you promote their reuse across your applications.

You can now access the relevant record management tab for a specific class by right-clicking that class in the App Explorer. On the relevant records management tab, you can display inactive and inherited relevant records from the class hierarchy, which you can use to add assets for reuse in cases and data types within your current class. Mark records as active or inactive for your current class to optimize the fields that are available to you during case creation. In addition, you can mark a specific record as relevant for its class directly on the record's rule form.

The following figures illustrate the new way of accessing the Relevant Records tab and improvements to the tab.

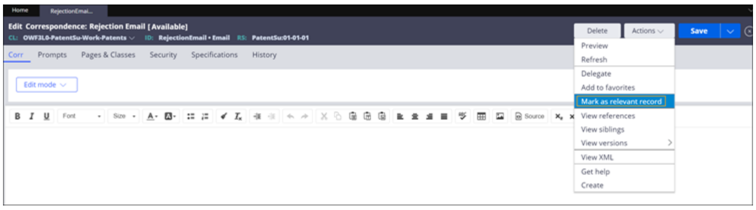


Option to open relevant records directly from class



Options to manage relevant records

You can see how to mark a record as relevant on its rule form in the following figure.



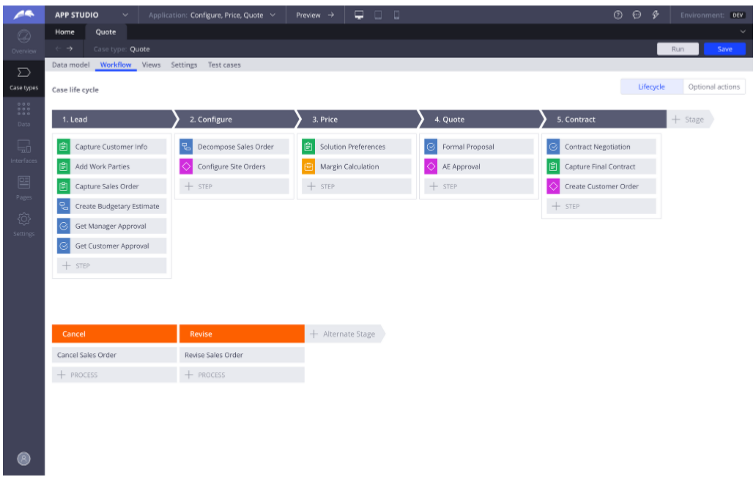
Option to mark a record as relevant on its rule form

For more information, see Managing relevant records and Marking records as relevant records.

Case Management

Case Management features help you enhance the resolution of your cases by providing efficient, intuitive, and time-saving solutions. Key enhancements in this release focus on collaboration and task management.

For example, you can now track and update tasks with the improved task board view. By posting Pulse comments via email and collaborating on documents, you can resolve cases more quickly. Business logic-based routing helps you resolve cases quicker by routing an assignment to the most appropriate customer service representative by evaluating work load, skillset, and availability.



Case designer

Case Management includes the following enhancements:

- Improve case processing with enhanced business logic-based routing (8.3)
- Improve collaboration on resolving tasks with enhanced task board (8.3)
- Meet deadlines more efficiently with Pulse tasks (8.2)
- Communicate more efficiently in spaces with pin enhancements (8.2)

- Configure Augmented SLA settings in App Studio (8.2)
- Create personalized and comprehensive survey questions by reusing properties (8.2)
- Improve collaboration by using subspaces (8.2)
- Provide meaningful and relevant content with new document features (8.2)
- Visualize, track, and manage tasks from the board view (8.2)
- Improve performance by archiving inactive cases
- Resolve cases more effectively with shared documents
- Design cases more quickly
- Create more effective surveys
- Discuss specific topics with relevant users by joining spaces
- Send important case updates to case participants
- Personalize collaboration with private messages
- Enforce service level agreements with automated email notifications
- Communicate more efficiently on mobile devices

Visit www.pega.com to learn more about Pega Infinity™.

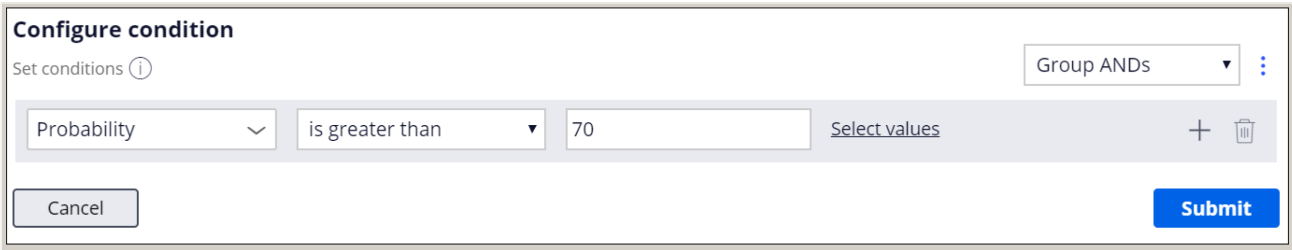
Visit What's New in Pega Platform to discover all the exciting new features in this release.

Predict the case outcome (8.4)

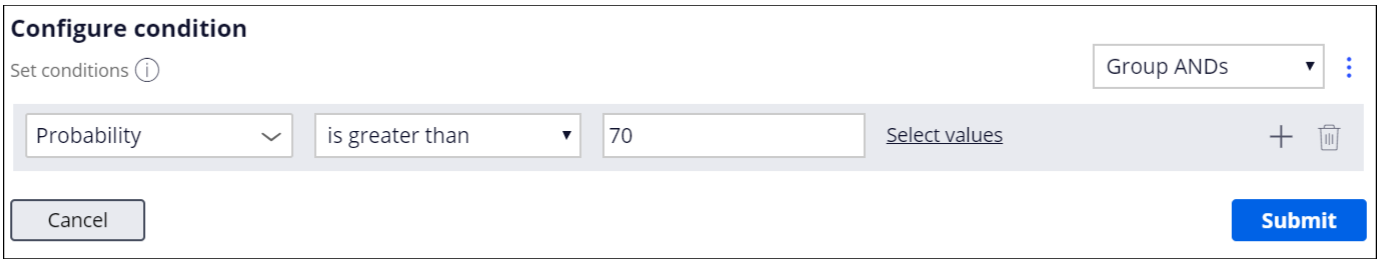
Prepare the best responses to the individual needs of your customers by using predictions in your case types. When you can predict the probability of a case a reaching successful resolution, you can react accordingly to every case. You can use predictions in every scenario when you define conditions in the condition builder, for example, to route assignments through business logic-based routing or branch processes, or to validate information. For instance, you can configure your application to conditionally run an optional qualification process to capture more information from a job candidate, only when the possibility of accepting the candidate is greater than 70%.

To apply predictions in your case types, you create a prediction in Prediction Studio, and then select it in your case type settings.

The following figure shows how to create a condition by using a prediction:



Using a prediction in a condition builder

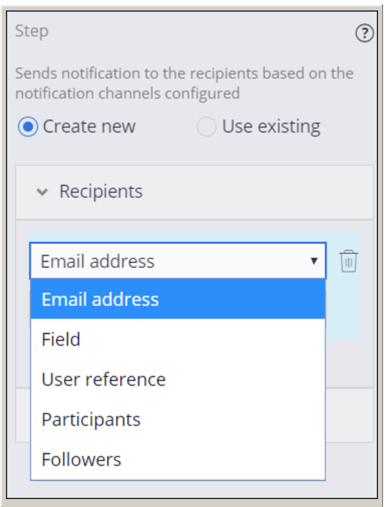


Using a prediction in a condition builder

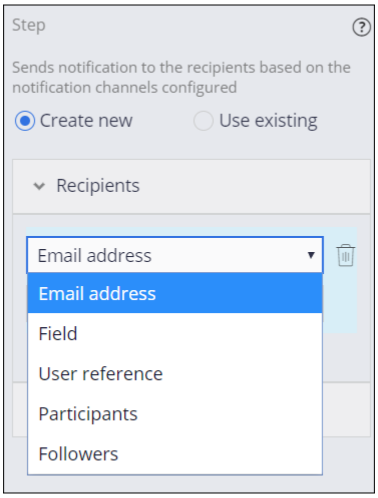
For more information, see Create predictions in just a few clicks (8.4), Predicting case outcome.

Configure case notifications directly in Case Designer (8.4)

When you create case types in App Studio and Dev Studio, you can now configure case notifications directly in Case Designer. To speed up and simplify case creation, instead of first creating a notification rule and then providing a rule name, you can specify the contents of notifications by adding a Send notification shape to your case life cycle. In addition, you do not need to create data pages to store recipients, but can define notification recipients by selecting them in Case Designer. You can also make your messages more relevant and dynamic by referencing properties in push notifications and email subjects. For example, you can include a case ID in a notification that states: A "Hiring process" case has been assigned to you.



Defining notification recipients



Defining notification recipients

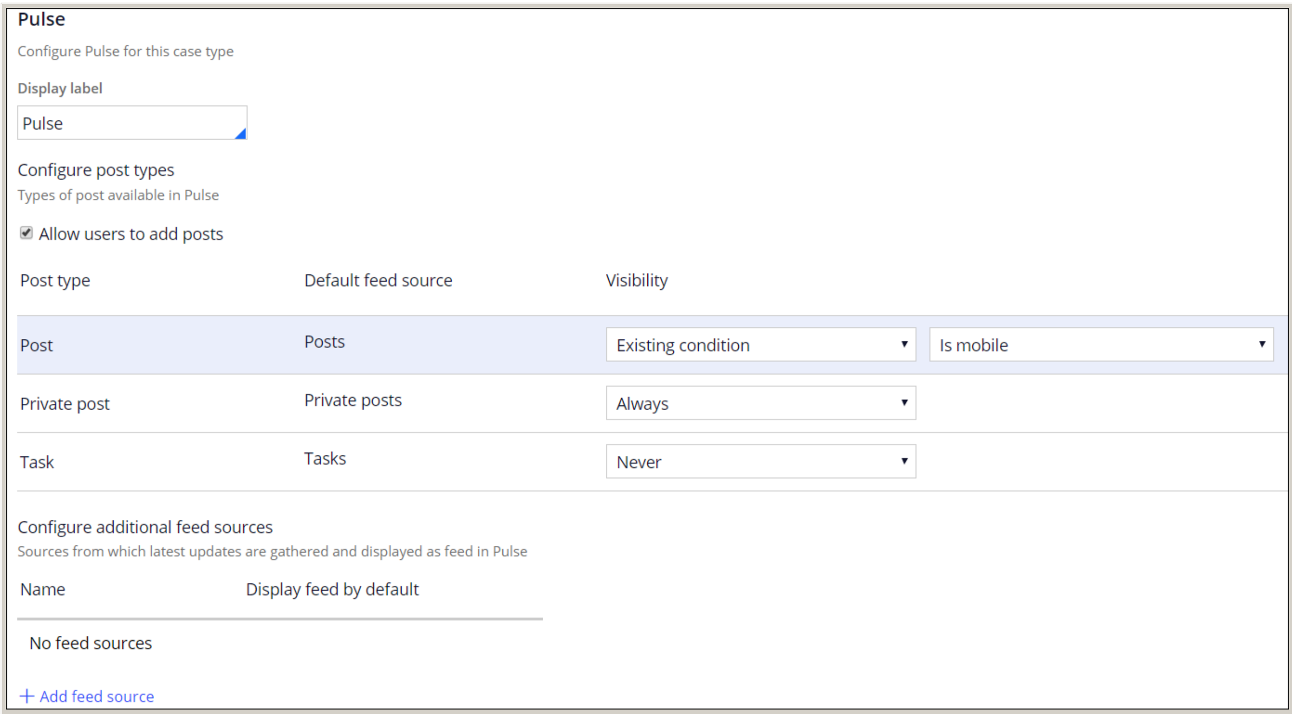
Meet your business needs by defining your own notification text, or select from existing messages to save time. You can send push notifications, web gadget notifications, and email messages based on the notification channels that you configure for users of your application.

For more information, see [Sending event notifications from cases in Dev Studio](), [Sending event notifications from cases in App Studio]().

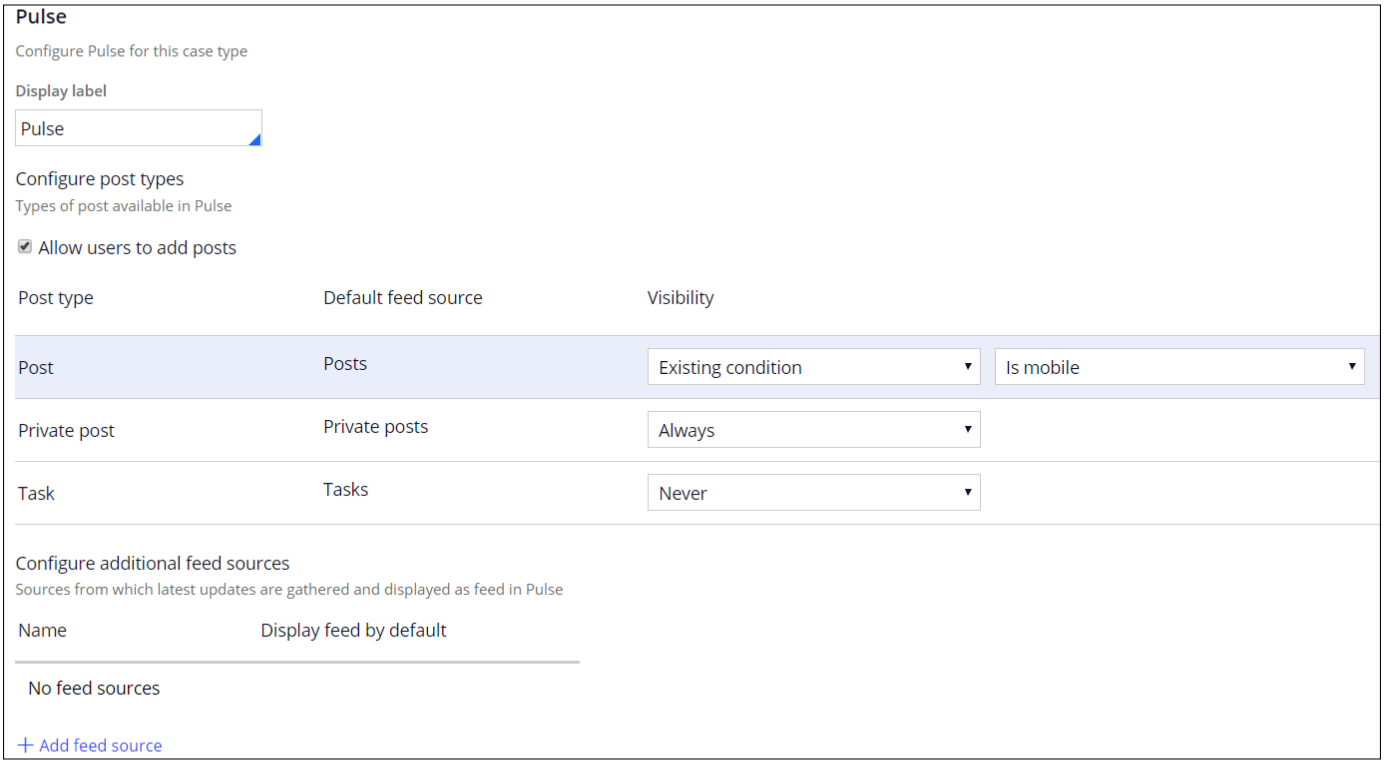
Start collaborating faster with simplified Pulse configuration (8.4)

Improve collaboration on cases by configuring a Pulse gadget directly in the case type settings. App Studio and Dev Studio now both support simplified Pulse configuration, so that you do not need to perform advanced actions, such as configuring the pyPulseWrapper or pxFeed sections. Instead, you can customize the Pulse label, provide users with the ability to add posts, and add feed sources, all in a user-friendly way.

The following figure shows the Pulse configuration section in the case type settings:



Pulse configurations in the case type settings



Pulse configurations in the case type settings

To ensure that users receive only relevant posts, you can also define visibility conditions for each post type.

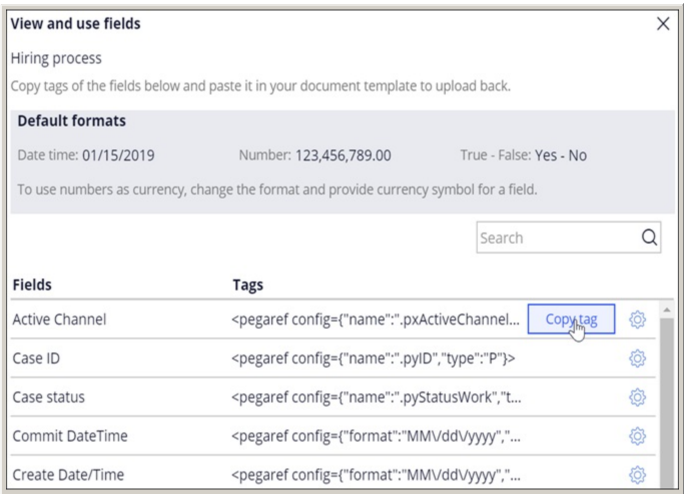
For more information, see [Configuring Pulse for case types in Dev Studio](), [Configuring Pulse for case types in App Studio]().

Generate case documents in a case life cycle (8.4)

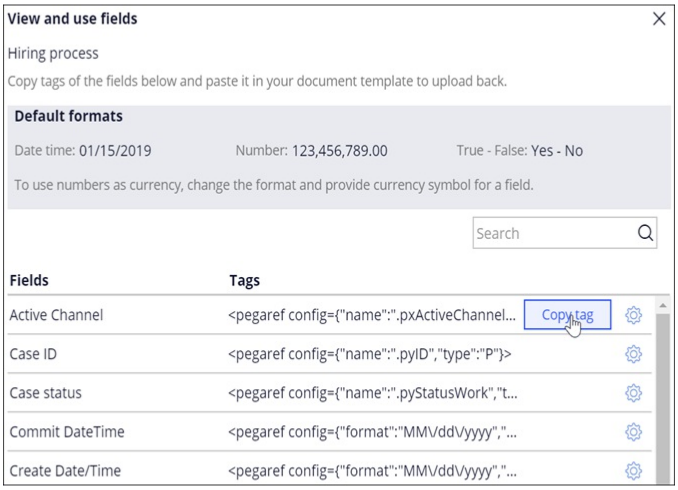
Save time and increase the automation of your business processes by generating case documents as part of the case life cycle. Document templates can now have dynamic tags that your application populates with information that is specific to the case, for example the case ID and date. You create the templates in a word processor, save them in the .docx file format, and then upload them to your application. The output document reflects any styling that you apply. To further customize your document, you can include the following dynamic elements in your templates:

- Fields from a case data model
- Attachments
- Views
- Correspondence
- Headers and footers

The following figure shows the window in which you can search for and copy tags into your template:



Selecting tags for a document template



Selecting tags for a document template

After your application generates a document, users can view and download it in the **Recent content** section of the case portal. If you add attachments in a .docx file format, your application generates them as a part of the main document. If you attach files in a different format, your application adds them as attachments.

You can quickly locate problems with tags in a template by checking the generated document for inline error messages, for example, if you insert an incorrect tag.

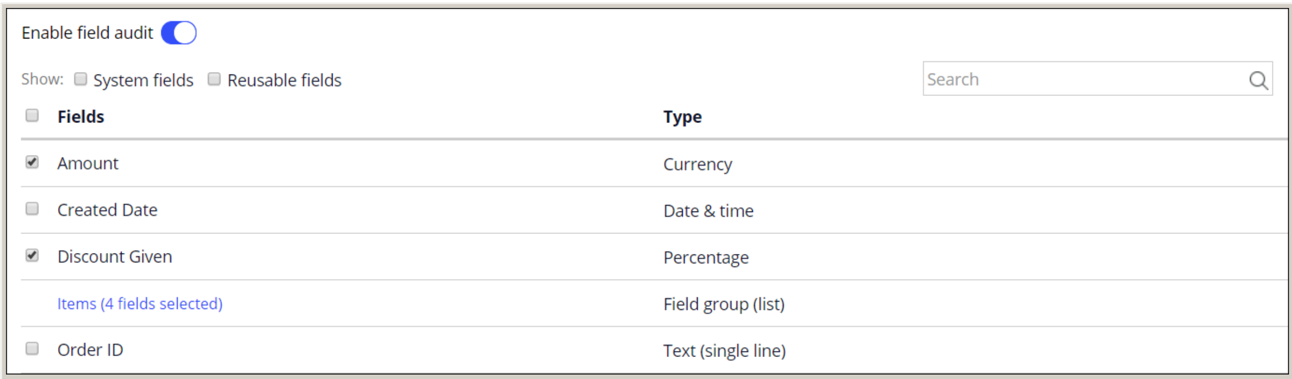
For more information, see [Generating case documents in Dev Studio](), [Generating case documents in App Studio]().

Track changes in cases with improved field-level auditing (8.4)

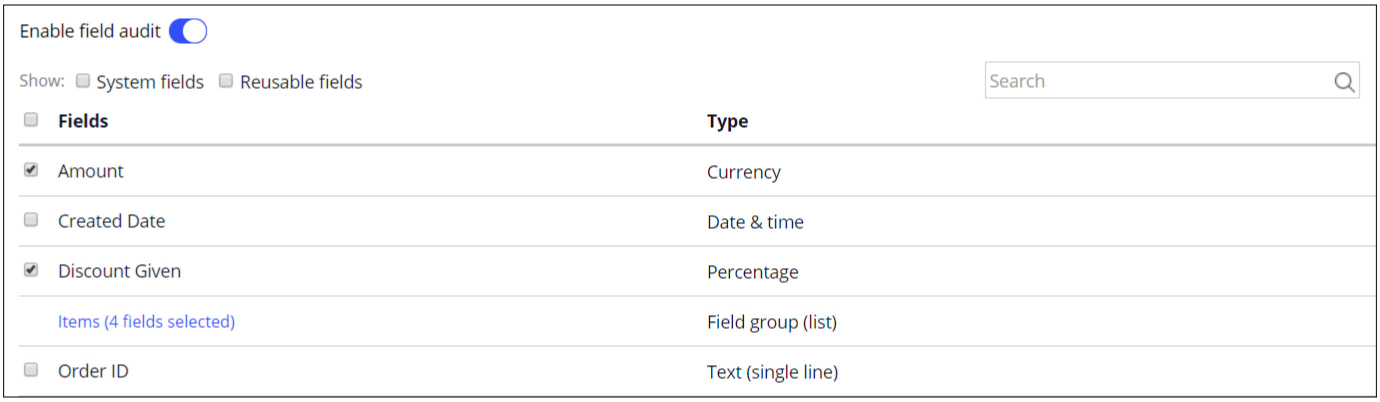
You can now track changes in your cases in a convenient way with improved and simplified field-level auditing, in both App Studio and Dev Studio. You can enable auditing for fields, field groups, and field group lists that a data model for your case type contains and that store scalar values. Field-level auditing works for field groups that are at any level of your data model. Also, data models with persistent field history now support auditing of field data.

After you upgrade to Pega Platform™ 8.4, the field-level auditing landing page in Dev Studio is no longer available. Instead, field-level auditing is available by default for all new case types and existing case types that do not have auditing enabled. To maintain consistency with previous versions of Pega Platform, you upgrade the cases that already audit fields to be compatible with the new auditing method. When you upgrade field-level auditing, you migrate the existing field-level auditing configurations in your application.

The following figure shows configuration of field-level auditing:



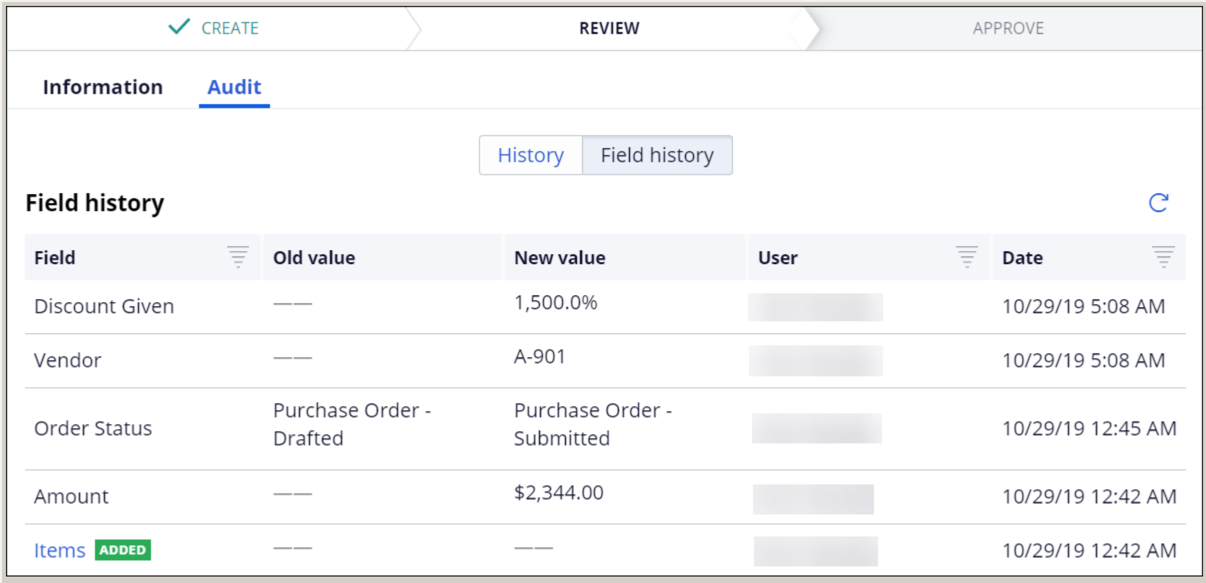
Selecting fields for field-level auditing



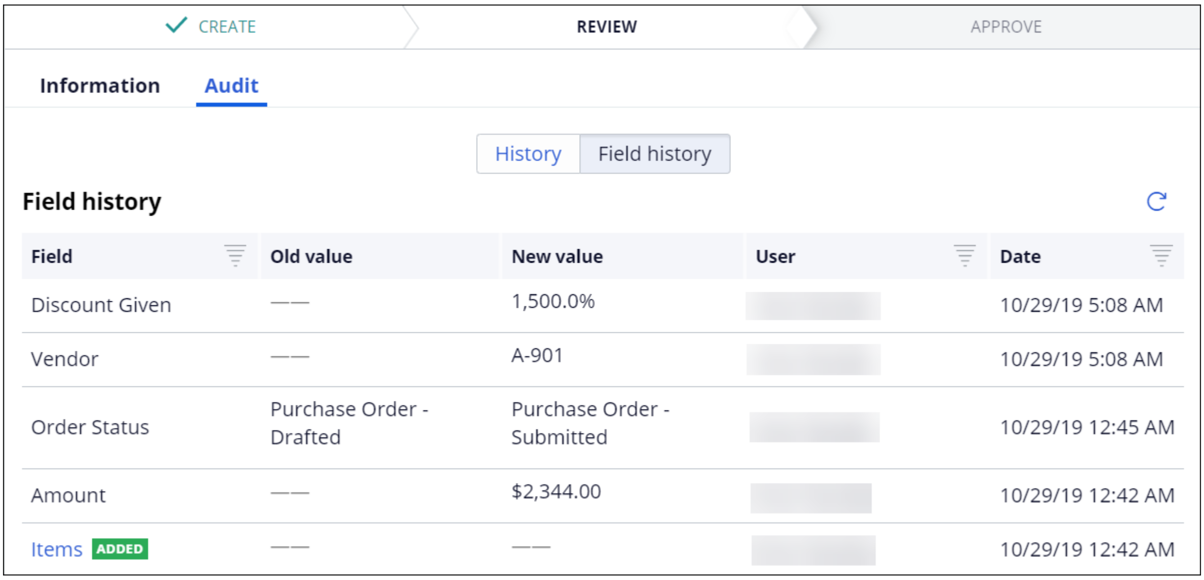
Selecting fields for field-level auditing

By enabling field-level auditing, users of your application can check information about changes in fields, for example, their current and previous values, the last user to change the values, and the time of the change. Users see the data in a new gadget that you can embed in a form that displays case details, on the Audit tab. To use the field-level auditing gadget, ensure that your application uses UI Kit 15.

The following figure shows field-level auditing at run time:



The field-level auditing gadget

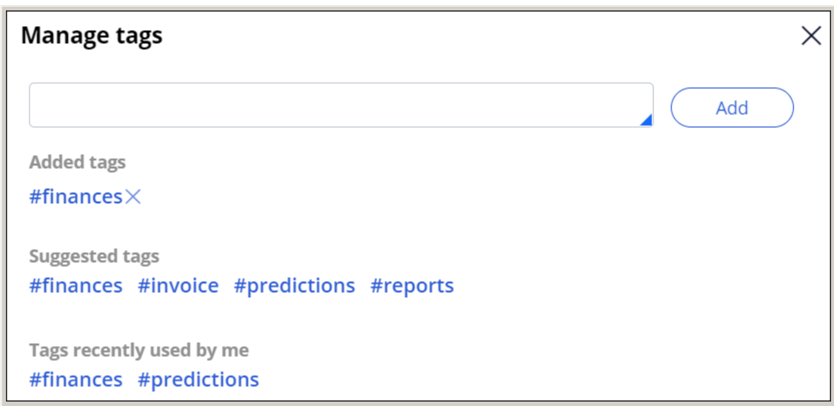


The field-level auditing gadget

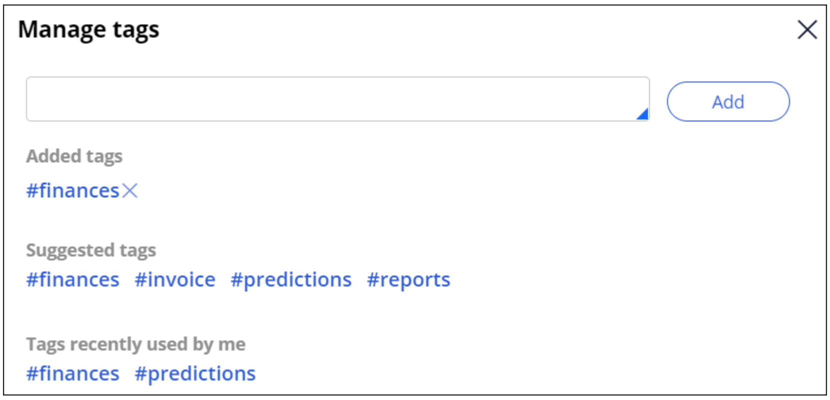
For more information, see Enabling field-level auditing in Dev Studio, Enabling field-level auditing in App Studio.

Find cases faster with improved case tags (8.4)

To speed up finding cases and Pulse messages, Pega Platform™ now supports enhanced case tagging. Ensure that users apply consistent tagging by defining sets of suggested tags that users can select, as in the following example:

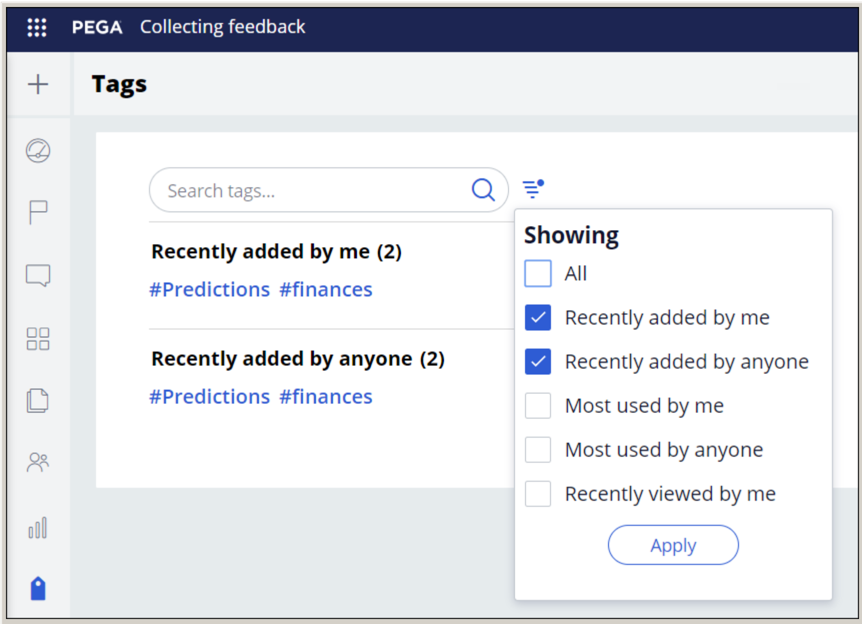


Selecting tags from different categories

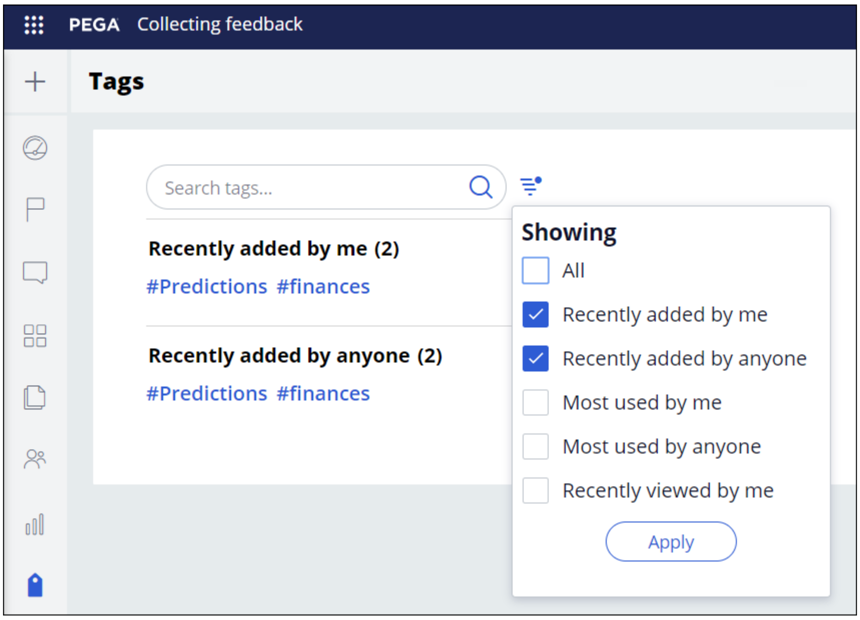


Selecting tags from different categories

When users filter cases and posts in several ways, for example, by the recently added, recently viewed, or most frequently used tags, they can gather the relevant information faster. To find more specific information, users can also filter cases and messages by selecting one or more tags. The following example presents different tag filters:



Filtering cases and messages by tags



Filtering cases and messages by tags

For more information about tags, see Tagging cases in Dev Studio, Tagging cases in App Studio.

Improve case processing with enhanced business logic-based routing (8.3)

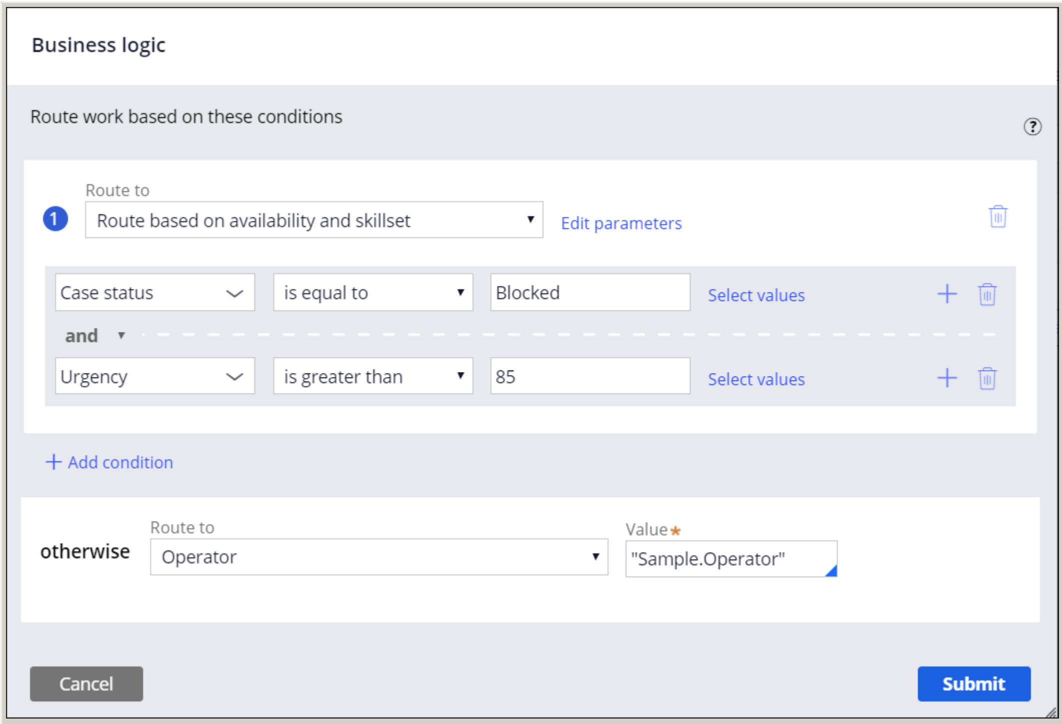
Process cases quicker by automatically routing assignments to the most appropriate customer service representative (CSR). With improved business logic, apart from assigning a task to an operator or to a work queue, you can use custom routing options. You have a choice to create your own routing logic or select one of the default options:

- Route based on availability and skillset
- Route based on availability, skillset, and work load

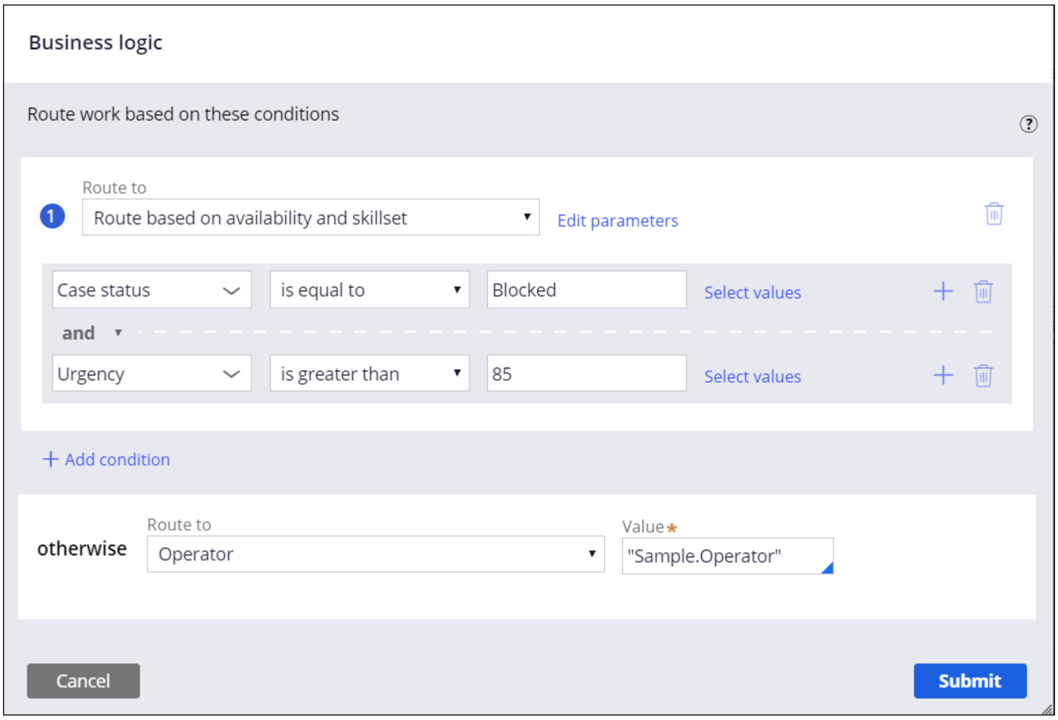
To specify detailed routing logic, you edit the parameters of the selected routing option. For example, if your team consists of members with different levels of expertise in a foreign language, edit the parameters to route assignments to a CSR with the most expertise. By modifying the lists of operators and work queues, you can include only relevant options, such as operators with certain privileges. Custom business logic-based routing also supports conditions that check for a specific parameter in the list.

If you enter an invalid condition, an inline error message indicates the mistake, so you can quickly locate and improve the expression without checking the whole setting.

The following figure shows a sample business logic configuration:



Sample business logic configuration



Sample business logic configuration

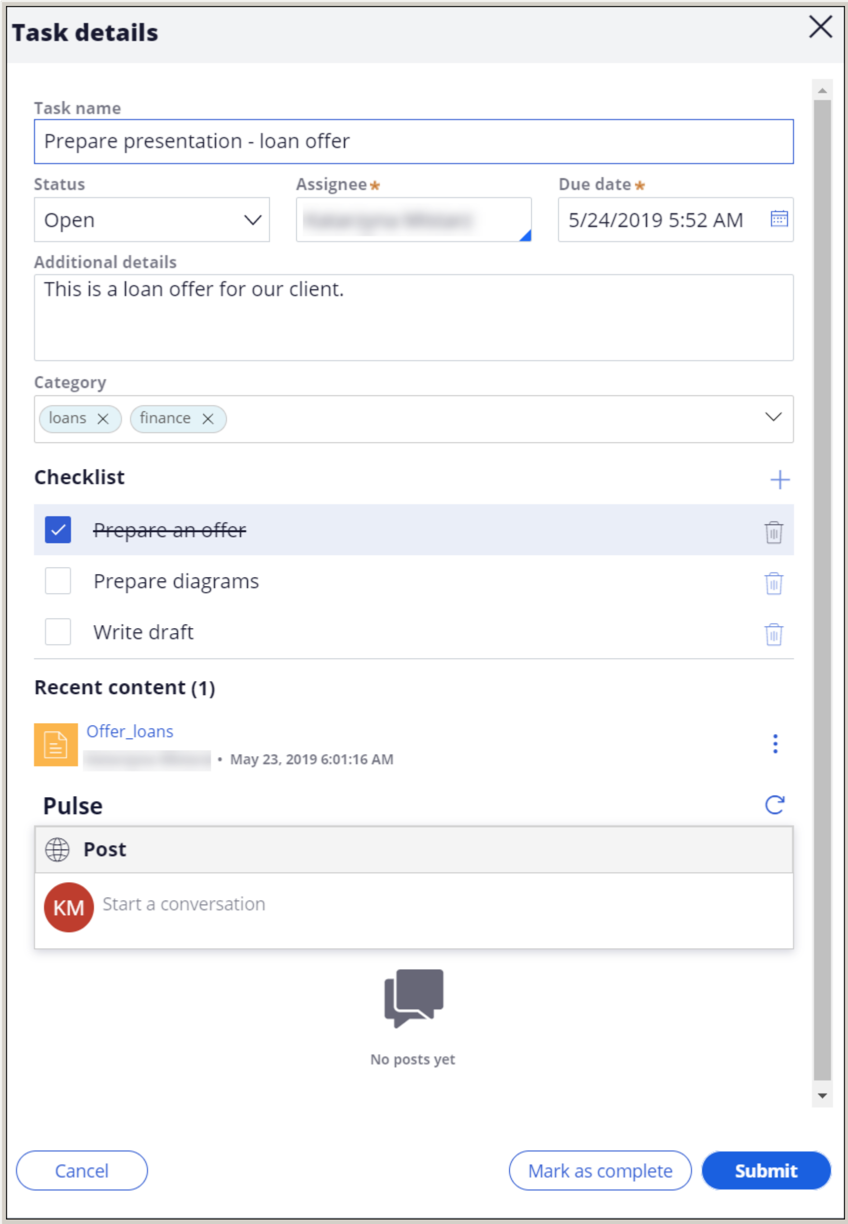
For more information about routing assignments, see Choosing an assignee at run time in Dev Studio, Choosing an assignee at run time in App Studio, Configuring business logic routing APIs.

Improve collaboration on resolving tasks with enhanced task board (8.3)

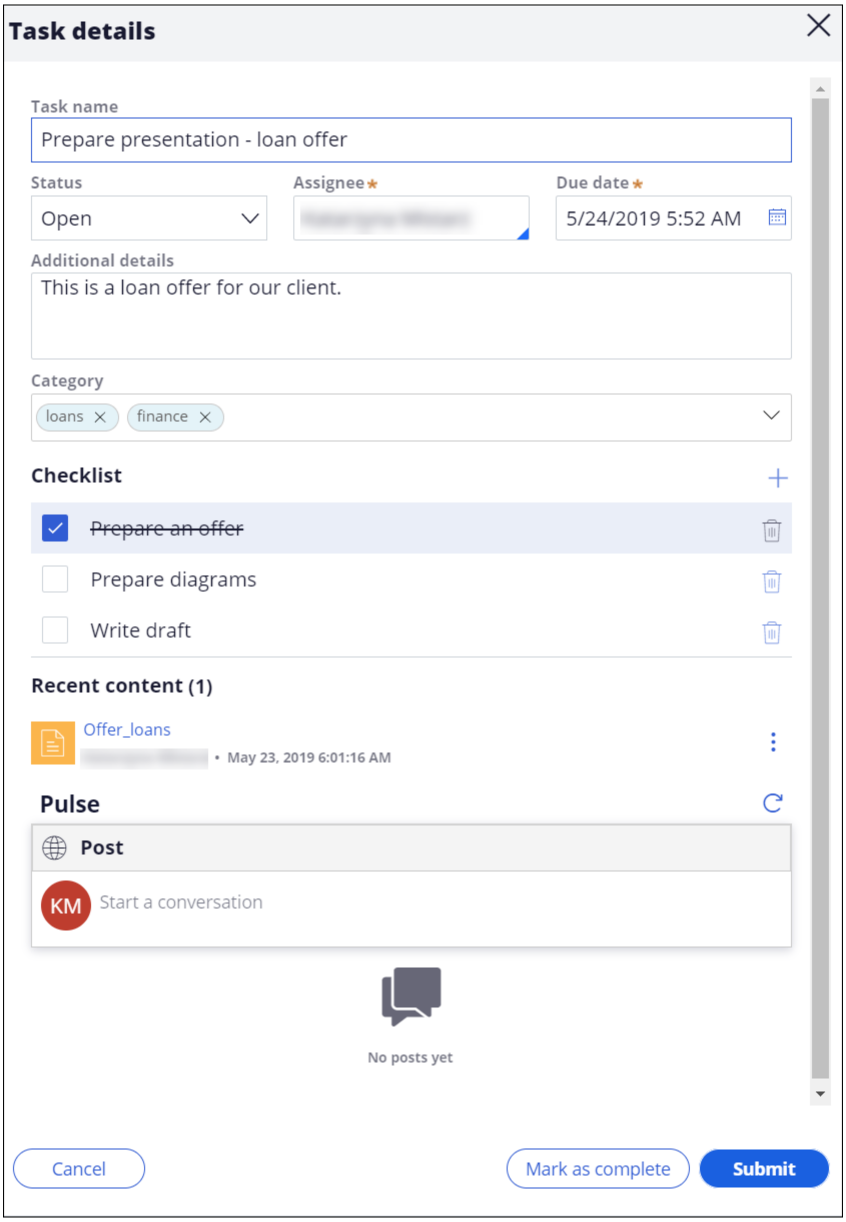
Now your team can track and manage work more effectively by using the improved task board. These enhancements include the following options:

- Adding a checklist to a task, and then marking items as completed.
- Prioritizing work by changing the order of tasks within a stage.
- Categorizing tasks, filtering tasks by category, and searching tasks by name.
- Attaching content: adding existing and creating new documents, uploading local files, attaching URLs.
- Deleting tasks that you do not want to maintain.

The following figure shows the enhanced Task details dialog box:



Task details dialog box



Task details dialog box

For more information, see [Monitoring and tracking tasks in Dev Studio](), [Monitoring and tracking tasks in App Studio]().

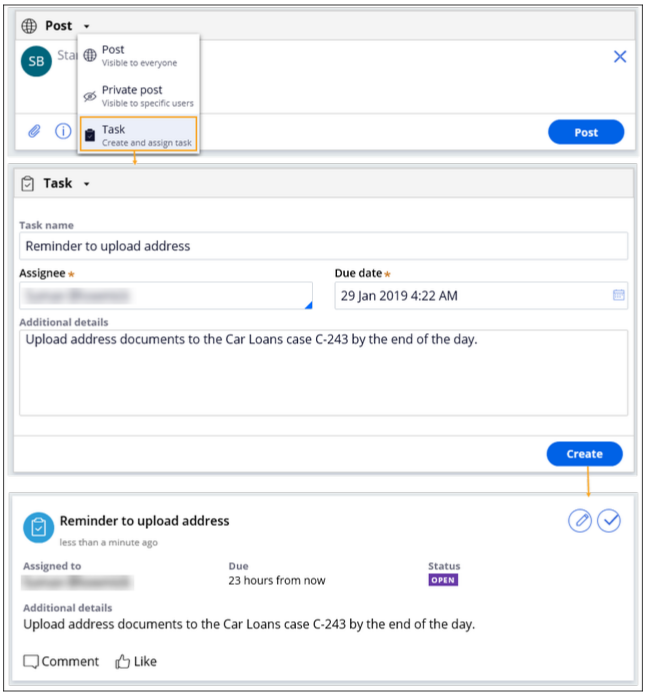
Meet deadlines more efficiently with Pulse tasks (8.2)

Organize your assignments and work to case deadlines more effectively by defining tasks in Pulse. To help complete case work within a specific time frame, create tasks and assign them to other users or to yourself.

For example, you can assign a task to yourself as a reminder to upload address documents to a Car Loans case by the end of the day.

By default, the task post is available in Spaces and Pulse feeds available on a portal landing page, however, you can enable it for cases by configuring the task post in the feed gadget.

The following figure shows a sample task in Pulse.



A task in Pulse

You can comment on and like tasks that you create and tasks that are assigned to you. You receive notifications for your assignments, which help you keep track of your work.

For more information, see Creating a task in Pulse (App Studio), Creating a task in Pulse (Dev Studio), Enabling users to post messages in the activity feed.

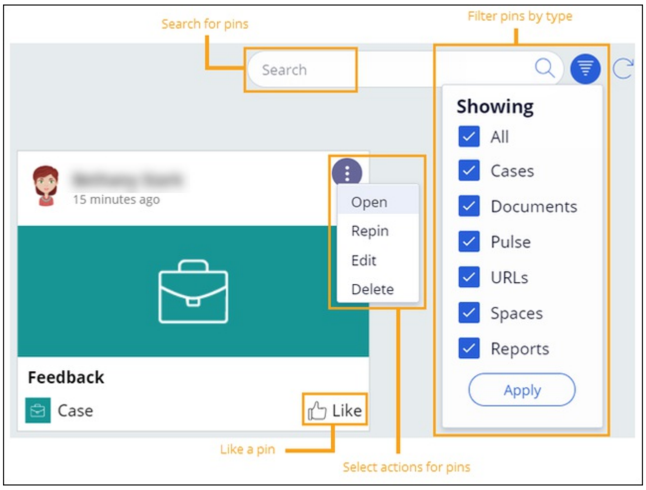
Communicate more efficiently in spaces with pin enhancements (8.2)

Improve discussions in spaces and stimulate effective communication by using enhanced capabilities of pins. You can add and edit titles and images for pins, search for pins, filter pins by pin type, and like pins. You can also pin existing content of a space to another space.

For example, you can edit a Car Loans case that is pinned to a space by adding an image of a car, to make the case type instantly visible to the user.

You can also reorganize pins to place the most relevant and the most important pins at the top of the list.

The following figure illustrates the enhanced options of pins in spaces.



Pin enhancements

For more information, see Pinning content to a space (App Studio), Pinning content to a space (Dev Studio).

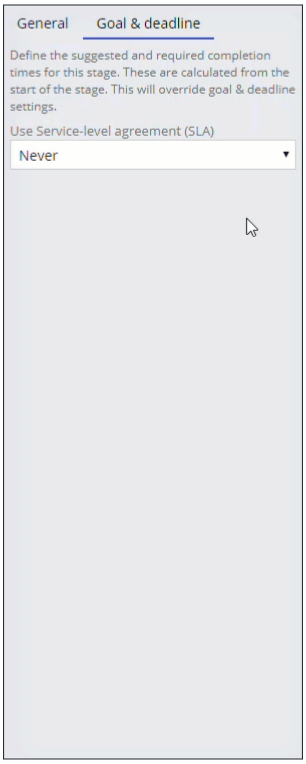
Configure Enhanced SLA settings in App Studio (8.2)

You can now process service level agreements (SLA) more efficiently by configuring Goal & deadline settings in App Studio, without switching to Dev Studio. As a part of the Goal & deadline configuration enhancements in App Studio, you can enable service level agreement (SLA) processing.

By defining a custom SLA or reusing an existing SLA that is based on relevant records, you can specify the exact event for initiating SLA processing (for example, when the parent case is created), and can configure automatic email notifications to inform users about upcoming goals and deadlines. In addition, you can choose the recipients and options for composing a message.

All these options are available at a case, stage, and process level for a given case type.

The following figure illustrates the SLA configuration features that are available in App Studio:



SLA configuration in App Studio

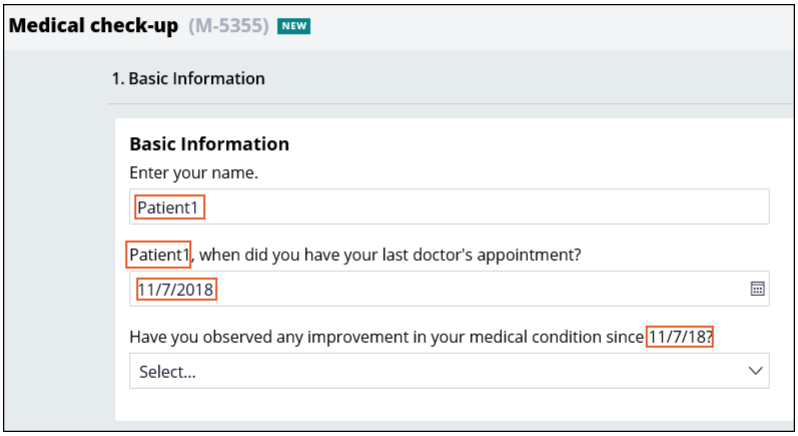
For more information, see Setting goals and deadlines for case resolution.

Create personalized and comprehensive survey questions by reusing properties (8.2)

To create comprehensive surveys that provide a personalized experience for users, when you create survey questions, reuse properties that users provide as answers for prior survey questions. You can reuse the properties of any question format, such as a radio button matrix or simple text. When you create a survey, you can also reuse answers that users provide on another survey, as well as reuse the properties that belong to the same base class.

For example, you can ask users to complete a survey before the recruitment process, and then reuse their answers in the survey that the user completes after the recruitment process. You can ask users to enter their name as an answer for a question, and then begin subsequent questions with the answer that the user provided.

The following figure shows how an answer that a user provides to one question is reused in the next question:



Reusing answer in a question

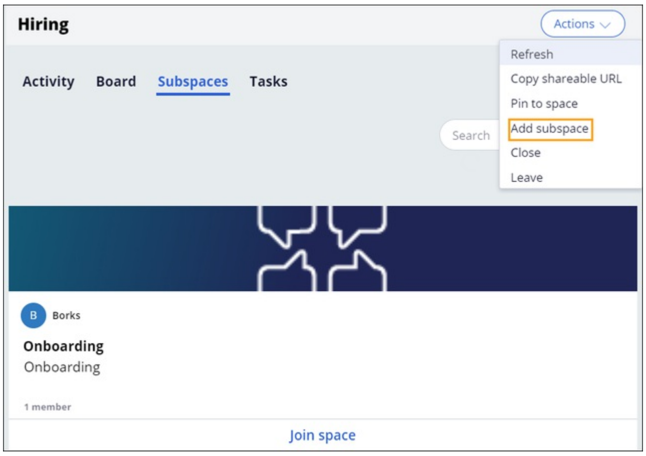
For more information, see Reusing answers in survey questions.

Improve collaboration by using subspaces (8.2)

You can now improve collaboration on a topic by branching the parent space. This way you can create multiple subspaces that contain relevant subtopic content for their members.

For example, you can divide the Loans space into subspaces for different loan types, such as Car Loans or Mortgage Loans. In these subspaces, case workers can access only the information for the loan types that they are working on.

The following figure illustrates the Subspaces tab in a space.



Adding a subspace

You can perform the same tasks for spaces and subspaces, for example, create further subspaces, define their visibility, set access rights, and reorganize the entire space structure to meet your needs. For example, you can turn a subspace into a space, and then create its subspaces to further specify subtopics and improve collaboration.

For more information, see Creating a subspace (App Studio), Creating a subspace (dev Studio).

Provide meaningful and relevant content with new document features (8.2)

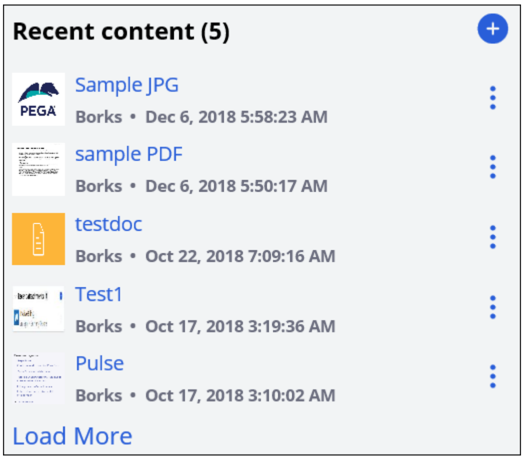
Now you can attach meaningful and relevant content to your spaces and cases, and then discuss that content and collaborate with other users by using Pulse.

Add varied content to your case or space by using the Recent content gadget. With this gadget, you can create documents by using a rich text editor, upload files, include URLs, and attach files from other cases or spaces in your portal. You can add any type of file.

Add relevant documents from external repositories that you configure in your system. Now you do not have to download a document and upload it to your portal; instead you can attach content directly from an external repository.

Manage your content by granting access to documents only to the members of a specific space or case. Include only relevant content to foster more focused communication and collaboration between users.

The following figure shows documents that were added by using the Recent content gadget:



Recent content gadget

By adding meaningful content to your portal, you can collaborate with other users to exchange useful information and feedback. For example, you can discuss an order from a client with other members of a case. You can post Pulse comments more quickly by replying to a notification email without logging in to the portal. You can also download documents as PDF files, and share documents by using shareable URLs.

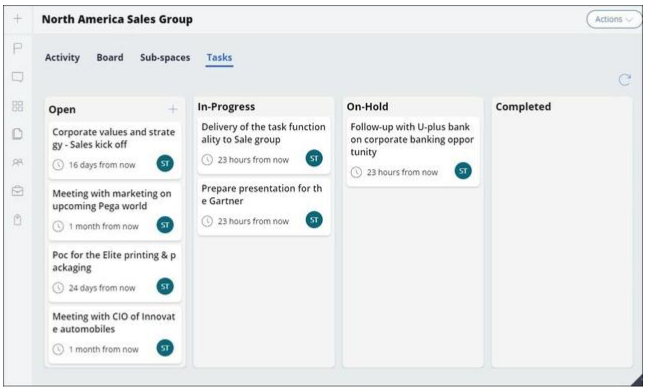
For more information, see:

- For App Studio: Adding content to a space, Creating a document.
- For Dev Studio: Adding content to a space, Creating a document.

Visualize, track, and manage tasks from the board view (8.2)

You can monitor and track the resolution of cases in a specific context, such as spaces or cases, by using the task board. By default, the board view is enabled in spaces only, but you can enable it in any context to meet your needs. For better clarity when resolving cases, track the tasks that are grouped in columns by status. You can change the status of a task by dragging it to columns. From the task board view, you can also quickly create and assign ad-hoc tasks by configuring deadlines, as well update task details.

The following figure shows an example task board with the status columns.



A sample task board

Provide members of your space with a comprehensive task overview so that they can collaborate efficiently in monitoring and updating the status of tasks.

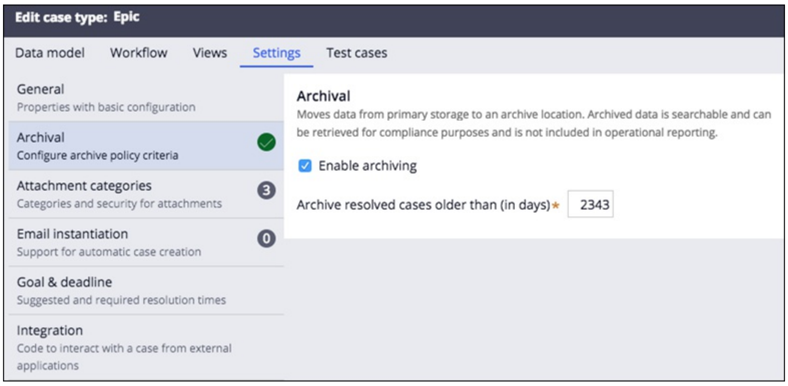
For more information, see [Monitoring and tracking cases]() (for App Studio) or [Monitoring and tracking cases]() (for Dev Studio).

Improve performance by archiving inactive cases

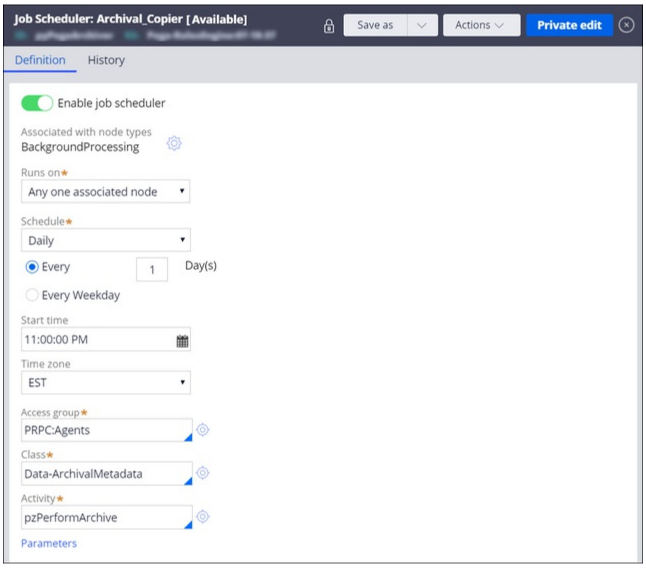
Case archiving is a strategy for long-term retention of cases and case attachments in Pega Cloud. By defining the conditions that move inactive cases to secondary storage, you can improve application performance.

For example, you can archive resolved Auto Loan cases that are older than 2 years. During your yearly audit, you can demonstrate compliance by finding archived cases in search or navigating to your Amazon S3 bucket.

The following figures illustrate an example archival policy and the available scheduling options.



Archival settings for a case type



Options on the Job Scheduler form

To maximize performance, encourage your administrator to schedule archiving jobs during times when there is low demand for case workers.

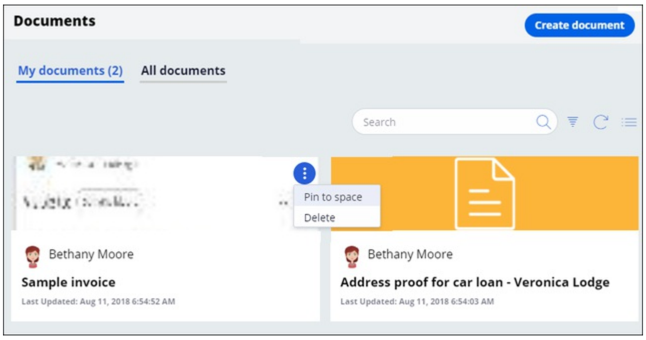
For more information, see [Archiving cases]().

Resolve cases more effectively with shared documents

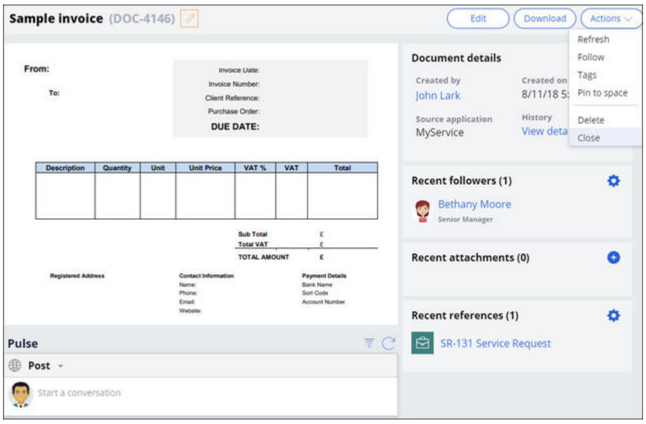
Documents are files that contain additional information about cases and are shared with all users in your application. The Documents landing page consolidates all the important content for your application in one place. Documents enable you to resolve cases more quickly by making it easier to collaborate on shared case content with other users in Pulse.

For example, you are an approver for Car Loan cases and you want to discuss the address proof document for a case with other approvers. You can open the document listed in the Recent documents section of the case and use Pulse to consult other approvers.

The following figure illustrates the Documents landing page and the collaboration interface for a document.



Documents landing page



Pulse interface for a sample document

You can also follow documents, pin documents to spaces, and link documents to cases.

For more information, see:

- App Studio – Collaborating on shared content by using documents
- Dev Studio – Collaborating on shared content by using documents

Design cases more quickly

In App Studio, you can now replace some custom implementations with model-driven solutions for your case design. By using standard configurations in a case life cycle, you can add capabilities to a case type more quickly.

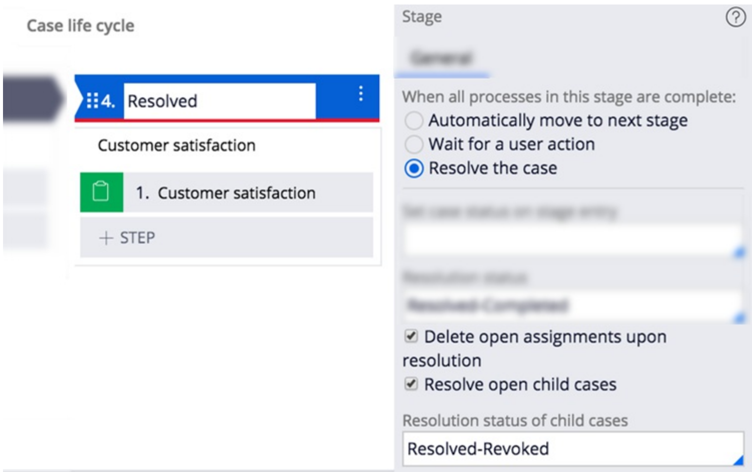
The following configurations are supported:

- Parent-child resolution
- Stage-level case status
- Conditional stage entry

Parent-child resolution

This configuration resolves child cases when a parent case reaches the end of its life cycle. You can optionally assign a final status to child cases that is different from the final status of the parent case.

The following figure illustrates the available options when you click a resolution stage in a parent case type.



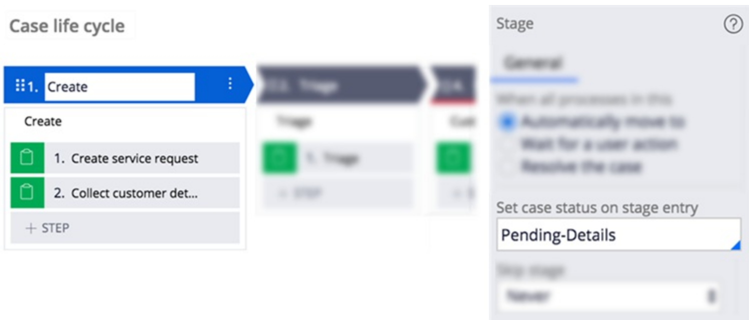
Resolution stage in a case life cycle

For more information, see Configuring case resolution.

Stage-level case status

This configuration changes the status of a case when the case moves from one stage to another in the case life cycle. You can choose an existing status or create a custom status.

The following figure illustrates a stage that sets the case status to Pending-Details.



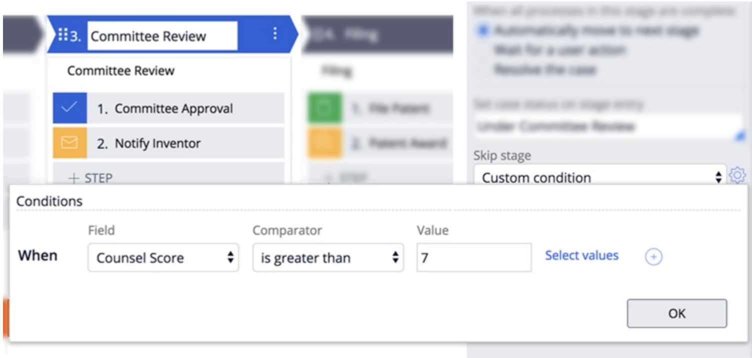
Stage options in a case life cycle

For more information, see Changing the status of a case.

Conditional stage entry

This configuration skips a stage in the case life cycle, based on the conditions that you define. You can compare the values of fields in a case to create simple or complex conditions.

The following figure illustrates the options for conditional stage entry.



Stage with defined entrance criteria

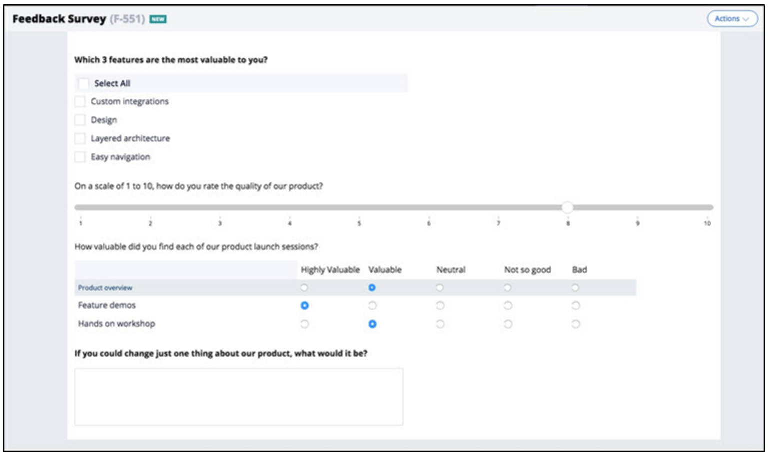
For more information, see [Requiring conditions for stage entry](#).

Create more effective surveys

With multi-answer survey questions you can collect a series of related responses. Use this type of question to design concise surveys.

For example, you can ask users to select spoken languages from a checklist or to evaluate the quality of product features.

The following figure illustrates some of the formats, such as a radio button matrix, that multi-answer questions support.



Multi-answer questions in a survey

To save time, you can reuse multi-answer questions from your question library.

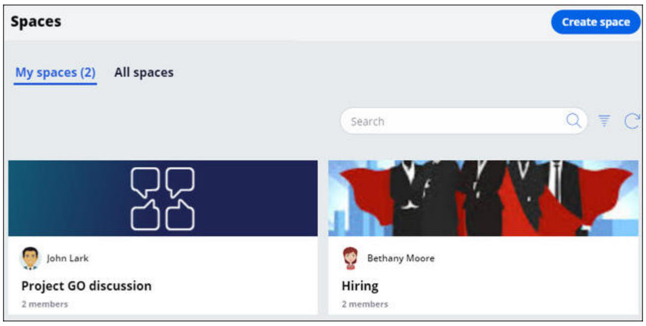
For more information about including multianswer questions in a survey, see [Designing a survey](#).

Discuss specific topics with relevant users by joining spaces

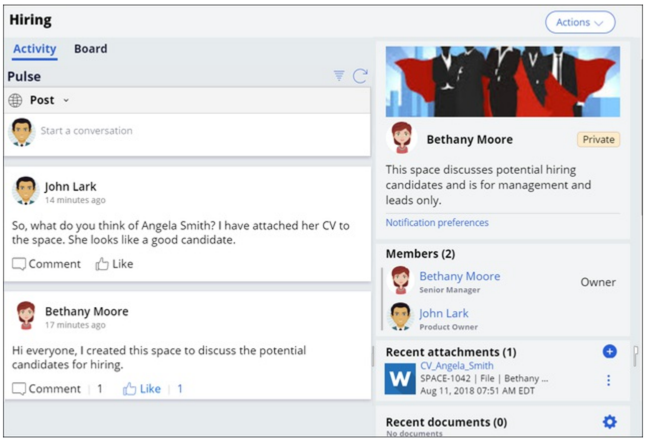
Spaces are areas in the application that enable groups of users to collaborate on a specific area of interest by using Pulse. By restricting the discussion of certain topics to the users of a space, you can avoid broadcasting irrelevant messages to all users in your application.

For example, you are a team leader and you want to hire new members for your team. To discuss prospective candidates with management, you can create a space that includes the manager, senior manager, and director of the team.

The following figure illustrates the Spaces landing page and the collaboration interface for a space.



Spaces landing page



Pulse interface for a space

Spaces can be public, private, or hidden. You can add relevant content to a space by uploading attachments, linking documents, or by pinning cases, documents, reports, and other spaces.

For more information, see:

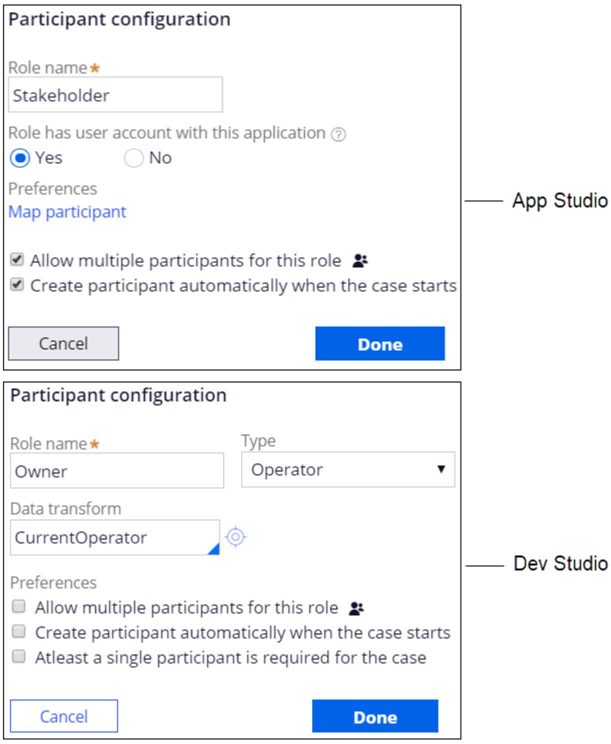
- App Studio – Collaborating with users by using spaces
- Dev Studio – Collaborating with users by using spaces

Send important case updates to case participants

Case participants are people, businesses, and organizations that are involved in a case. By managing case participants, you can define their relationship with a case and share important case updates with them.

For example, your company grants car loans to the employees of an organization. To send loan updates to key members of the organization, you can add these members as participants in the stakeholder role for Car Loan cases.

The following figure illustrates the configuration for a sample case participant. The screens vary depending on whether you use App Studio or Dev Studio.



Case participant configuration

At run time, you can update case participants, route assignments and approvals to participants, and send notifications when goals and deadlines are not met.

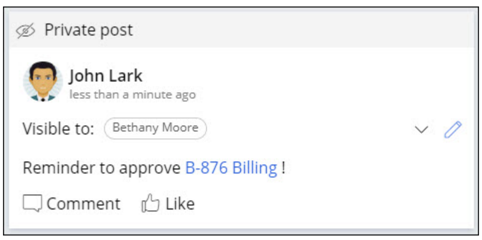
For more information, see Participant configuration for case types.

Personalize collaboration with private messages

Private messages in Pulse are posted only for selected users within a context, such as a case or an application. By adding private messages, you can discuss specific topics with relevant users without broadcasting them to all users.

For example, you can post a private message in Pulse to remind a user to approve a case.

The following figure illustrates a private message for a user in Pulse.



A private message in Pulse

In addition to using private messages, you can create and enable custom message types in Pulse.

For more information, see:

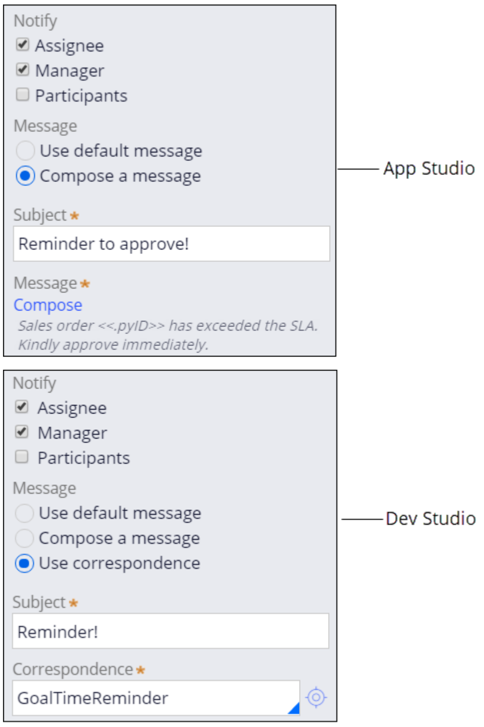
- App Studio – Posting a message in Pulse
- Dev Studio – Posting a message in Pulse

Enforce service-level agreements with automated email notifications

Use emails to notify users when they miss a goal or deadline for an assignment or approval in a case. The case sends these email notifications after the suggested and required completion times for the assignment or approval. By informing users about goals and deadlines, you can ensure that service-level agreements are strictly enforced during case processing.

For example, you can configure a case to send an email to the approvers and their manager when an approval exceeds the goal or deadline time. This notification acts as a reminder for the approvers and also escalates the task to a higher authority.

The following figure illustrates options for configuring the recipients, subject, and message body of your email notifications. The labels vary depending on whether you use App Studio or Dev Studio.



Configuration of a goal notification

You can use the default message, compose a message in a rich text editor, or use Dev Studio to select a correspondence for goal and deadline email notifications.

For more information, see:

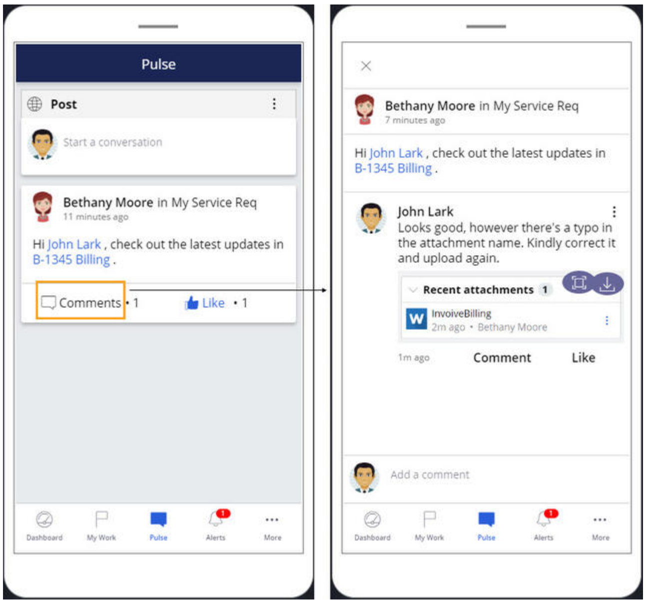
- App Studio – Setting goals and deadlines for task completion
- Dev Studio – Setting goals and deadlines for task completion

Communicate more efficiently on mobile devices

Use Pulse on your Pega Platform™ mobile app to communicate with users within a specific context, such as a case or an application. Pulse messaging from a mobile app is fast and easily accessible, and increases your productivity. The intuitive layout of Pulse on mobile devices provides an enjoyable user experience for posting messages, adding attachments, bookmarking content, and so on.

For example, if you are outside your workplace, you can resolve a critical customer issue involving incorrect prices in a Sales Order case by posting a message on Pulse from your mobile device. In the message, you can describe the issue and reference the relevant Sales Order case and target users who can help resolve the issue.

The following figure illustrates a Pulse conversation on a mobile device.



Pulse messaging on mobile devices

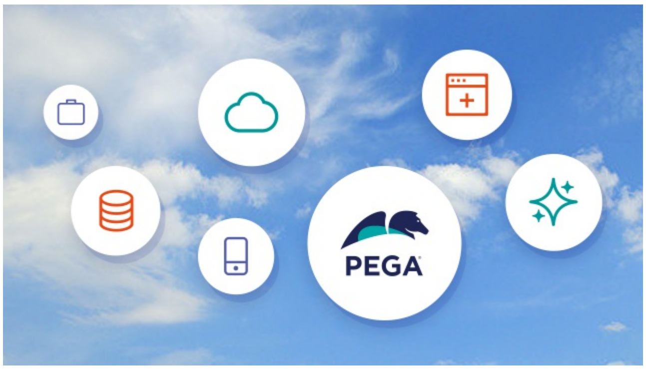
For instant mobile communication, enable push notifications for Pulse and ensure that your application and mobile device are correctly configured to allow you to reply to the notifications.

For information about using Pulse, see:

- App Studio – [Communicating with users by using Pulse]
- Dev Studio – [Communicating with users by using Pulse]

Cloud Choice

Designed to run Pega applications on industry-leading infrastructure, Pega Cloud Services manages your Pega Platform and strategic application environments so you can focus on your customers and their results. Focus on customers and their results through a set of enhancements that simplify your cloud management. Regardless of the cloud on which you choose to run your applications, Pega Platform™ provides a wider choice of services.



When Pega manages your Cloud infrastructure, you can focus on building your business applications

Cloud Choice includes the following enhancements:

- Improved service reliability and streamlined upgrade process (8.3)
- Implement large-scale Pega Marketing application with Pega Cloud Services (8.2)
- Leverage Kubernetes orchestration for Pega Platform deployments (8.2)
- Upgrade your CRM solution software with a newly automated process
- Use improved self-service capabilities in the My Pega Cloud portal
- Perform secure file transfers with the Pega Cloud SFTP Service

Visit www.pega.com to learn more about Pega Infinity™.

Visit What's New in Pega Platform to discover all the exciting new features in this release.

Make use of cloud-based microservices in Pega Platform (8.4)

Pega Platform™ now uses container technology to deliver Elasticsearch as a microservice. This change reflects how Pega Platform is evolving into a cloud-native application.

The newest services delivered to Pega Cloud® clients include:

- A streaming log add-on service you can integrate into your existing Splunk service. This service is an alternative to manually downloading Pega logs from the past 30 days. For details, see Pega Cloud log streaming service.
- Expansion of our global footprint with support for the AWS Stockholm region.

The newest capabilities available to client-managed cloud clients across certified cloud deployment options include:

- You can now use Helm 3.0 to deploy Pega Platform.
- You can now install and deploy of Pega Platform 8.2 distributions and later.
- You will see improved startup performance.
- You can now configure automated autoscaling in your Pega Platform deployments.

Improved service reliability and streamlined upgrade process (8.3)

Pega Cloud Services brings greater predictability and speed to Pega software upgrades and patches through the automation of steps in these processes.The result brings both a streamlined upgrade experience for the entire software stack in a client's environment and a Pega Platform patch process with no downtime. This means clients now experience no disruption in service during patch applications. Clients now see status messages about in-progress software upgrades and patches when they log into their environments using the My Pega Cloud tab on the My Support Portal.

These combined enhancements make it easier for clients to take advantage of the latest Pega Infinity™ release features and optimize their Pega-driven business goals and process.

Additional Pega Cloud Services infrastructure enhancements include:

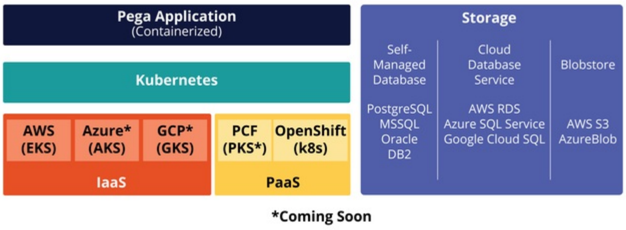
- Pega Cloud Services infrastructure now automatically upgrades the database to Amazon RDS PostgreSQL 11.4, which improves scaling, performance, and operational management.
- For clients using Pega Marketing and DSM applications in Pega Cloud Services environments, support for Cassandra 3.11.3 to increase your system's reliability and reduce its memory footprint. For details, see Cassandra 3.11.3 support for Pega Platform.
- Clients' global footprint expansion with support for the AWS Mumbai region. For details, see Pega Cloud Services support for the AWS Asia Pacific (Mumbai) region.

Implement large-scale Pega Marketing application with Pega Cloud Services (8.2)

Pega Cloud Services supports a major US-based bank to deliver hyper-personalized web content that is optimized for customer lifetime value during each online interaction with their brand. Pega Cloud Services architected an infrastructure to support the client’s initial use case of 45 million decisions per day, with the potential to scale upwards of three times the initial launch volume. This Pega Cloud Services environment leverages the native artificial intelligence capabilities within the Pega Marketing solution - enabling real-time processing of data from multiple sources, and delivering Next Best Action decisions within a 100 millisecond service level agreement. Using the efficiency of scale inherent to Pega Cloud Service offerings, the client now delivers highly relevant, data-driven experiences every time a customer or prospect visits the client's global web site.

Leverage Kubernetes orchestration for Pega Platform deployments (8.2)

You can now adopt a container-based architecture orchestrated by Kubernetes to maximize performance and scale for your Pega Platform™ deployments.



Kubernetes orchestration maximizes the performance and scale for your Pega Platform deployments

For clients managing their cloud environments on supported infrastructures, Pega Platform 8.2 is optimized for orchestration using Kubernetes. This new Cloud Choice architecture shift to Docker decouples Pega software from the underlying infrastructure to deploy Pega applications in orchestrations sized to your business needs. Leverage the flexibility of Kubernetes to reduce your operational burdens and optimize Pega workloads in both your Pega applications, such as the suite of CRM applications, as well as in your Pega application extensions.

For details, see Deploying Pega Platform by using Kubernetes.

Upgrade your CRM solution software with a newly automated process

Pega Cloud Services customers running release 7.4 of the CRM suite of applications can take advantage of the latest capabilities and features of Pega Platform™ using a new, streamlined software upgrade process. Pega introduces automation to the upgrades of both the Pega Platform and the suite of CRM application software in Pega Cloud Services subscriptions. This streamlined upgrade process reduces downtime and post-upgrade steps, so that you can focus on taking advantage of the latest capabilities and features in the 8.1 software releases.

The upgrade process also provides you with an upgraded, cloned environment for a 30-day test-and-assess period so you can verify that Pega can apply the software upgrade across all your Pega Cloud environments. Pega will engage with you throughout the upgrade process to ensure that you take advantage of all the capabilities and features, while maintaining your security requirements, and minimizing downtime during the upgrades.

For details, see Pega Cloud Services upgrade for Pega Platform and the suite of CRM applications.

Use improved self-service capabilities in the My Pega Cloud portal

Self-service is a common request from customers who want to quickly and accurately assess the health of their applications running in Pega Cloud. Pega has developed a variety of self-service tools to meet customer needs. Pega Cloud Services has added a new self-service portal to the My Support Portal. To access it, Pega Cloud Services customers can click the My Pega Cloud tab in the My Support Portal.

Depending on your My Support Portal privileges, you can use this self-service portal to restart an environment, download log files up to 30 days old, or view high-level details about all your Pega Cloud environments.

For details, see Managing your Pega Cloud environments from My Support Portal.

Perform secure file transfers with the Pega Cloud SFTP Service

Pega Cloud Services offers an optional, secure service for file transfers between your enterprise and your Pega Cloud applications. The security model of this new service supports single-user access authentication, using a private/public key pair. During customer onboarding, Pega uses a customer-supplied public key to configure authentication to the Pega Cloud SFTP Service.

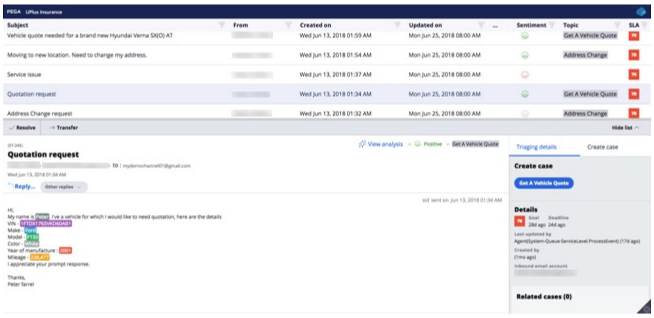
The Pega Cloud SFTP Service configures a separate SFTP server with a unique URL, user credential, and folder for each of your environments. Each SFTP Service in your subscription maps directly to the Pega Cloud File Storage repository. This separate SFTP server ensures isolation between the development, staging, and production environments in your Pega Cloud Services subscription.

For details, see Pega Cloud SFTP Service.

Conversational Channels

What’s new in Pega Platform   Pega Infinity™

Pega Intelligent Virtual Assistant™ (IVA) and Pega Email Bot™ are conversational channels through which users interact with a Pega Platform™ application in multiple ways. This release provides several improvements to IVAs and Email Bots that reduce time, improve efficiency, and make the system more robust and responsive to users. For example, by integrating emails, case management, and artificial intelligence, you can quickly and seamlessly turn emails into business cases. In addition, you can use the decision-enabled NLP text analyzer in IVAs and Email Bots. You can also copy training data and model to another IVA or Email Bot environment.



Email Manager portal

Conversation Channels includes the following enhancements:

- Use the decisioning enabled NLP text analyzer in IVAs and Email Bots (8.3)
- Copy training data and model to another IVA or Email Bot environment (8.3)
- Access multiple work queues in the Email Manager portal (8.3)
- Streamline conversations in IVA for Web Chatbot with rich user interface controls (8.3)
- Manage and communicate more easily in IVA for Email (8.2)
- Test and build a chatbot from the preview console (8.2)
- Trigger multiple actions during email intelligent routing (8.2)
- Use rich user interface controls in IVA for Web Chatbot (8.2)
- Train entity models with a single click (8.1)
- Take advantage of new Email Manager portal (8.1)
- Avoid redundant cases by detecting duplicates during email triaging (8.1)
- Speed up email triaging by mapping data to a business case (8.1)
- View enhanced text analysis results during email triaging (8.1)
- Employ more intelligent routing criteria (8.1)
- Create cases faster with data extracted from emails (8.1)

To learn about all the new features in **Conversational Channels**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

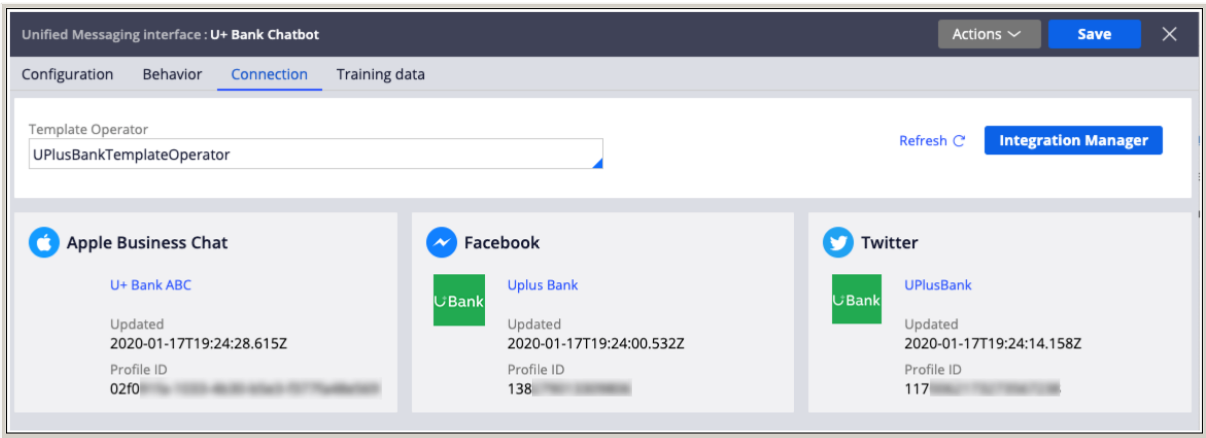
Visit www.pega.com to learn more about Pega Infinity™.

Visit What's New in Pega Platform to discover all the exciting new features in this release.

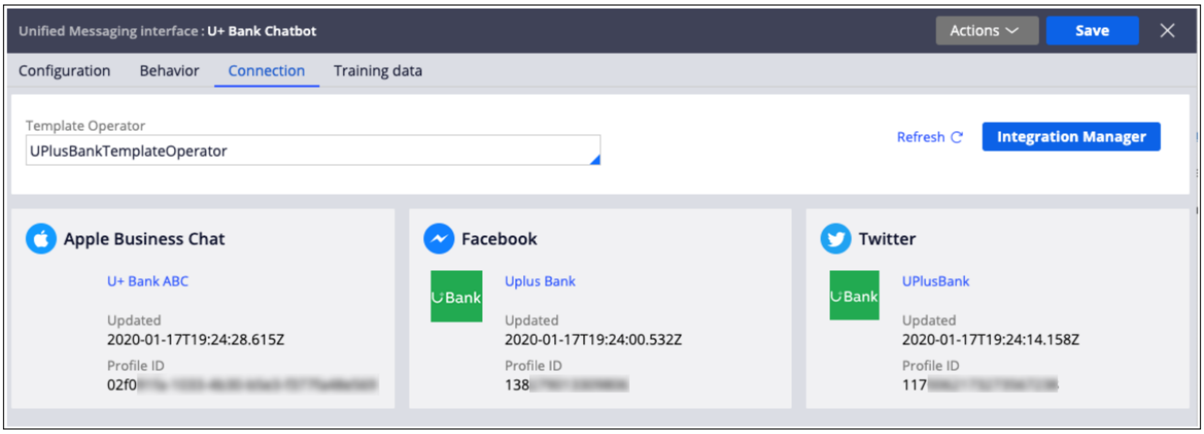
Develop an IVA channel to chat across multiple social messaging platforms (8.4)

Increase your responsiveness to user requests by using Pega Intelligent Virtual Assistant™ (IVA) in the new integrated Unified Messaging channel. The Unified Messaging channel is easy to set up in your Pega Platform™ application and saves you time, because you only need to configure and develop a single channel to enable users to chat across different social messaging platforms (for example, Apple Business Chat, Facebook, SMS, or Twitter.) You can run the Unified Messaging channel as an IVA channel with multiple social messaging platforms. Additionally, a channel run in this way can serve as an integration point for the Pega Unified Messaging Desktop™ solution, a stand-alone application that customer service representatives (CSRs) use to interact with customers.

You use the integration manager interface in a Pega Platform application to configure the Unified Messaging IVA for social messaging platforms. The following figure shows the Connection tab for the Unified Messaging channel with Apple Business Chat, Facebook and Twitter configured for the IVA:



Unified Messaging channel - Connection tab



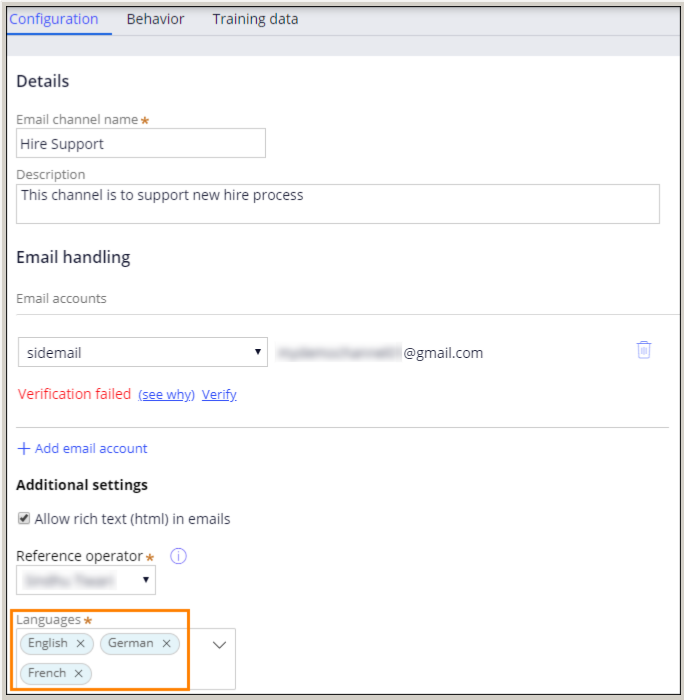
Unified Messaging channel - Connection tab

For more information, see Unified Messaging channel overview and Creating a Unified Messaging channel.

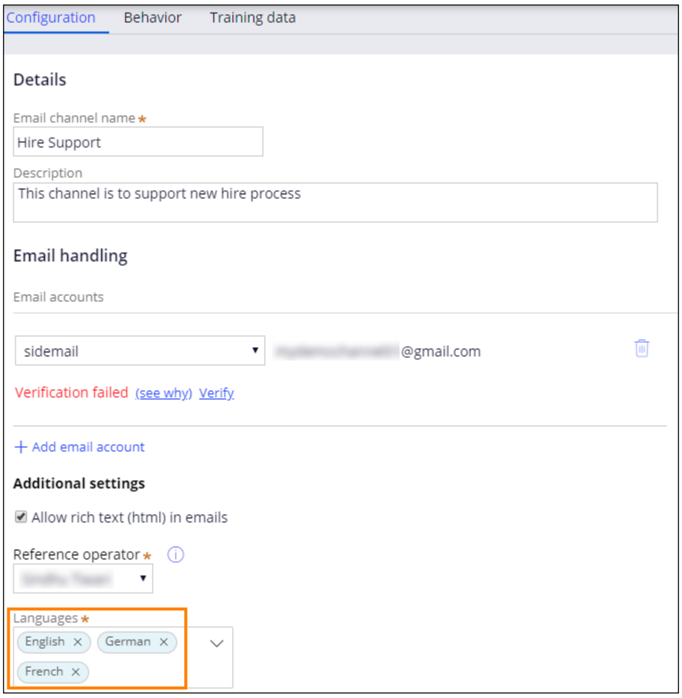
Process emails in multiple languages in an email bot (8.4)

To ensure that your Pega Platform™ application can handle user emails in different languages, set up multiple language support in Pega Email Bot™. Configure your email bot to detect topics and entities from emails in additional languages, so that the system suggests the correct business case and then provides an email response in the user's own language. By training the machine learning models in different languages for a single Pega Platform application, you increase efficiency by increasing the number of automatically triaged emails. For more information about the topics and entities detected by email bots using text analysis, see Exploring text analyzers.

You specify the languages that the email bot supports during Email channel configuration, so that the system knows when to perform text analysis and respond in a different language. The following figure shows where you configure language support for an Email channel:

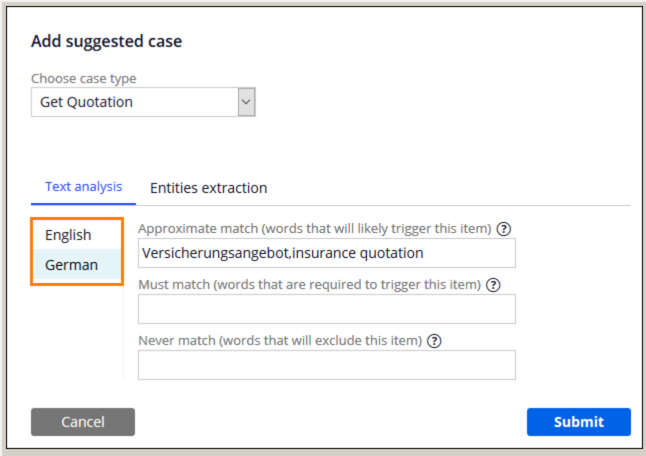


Email channel interface - Configuration tab

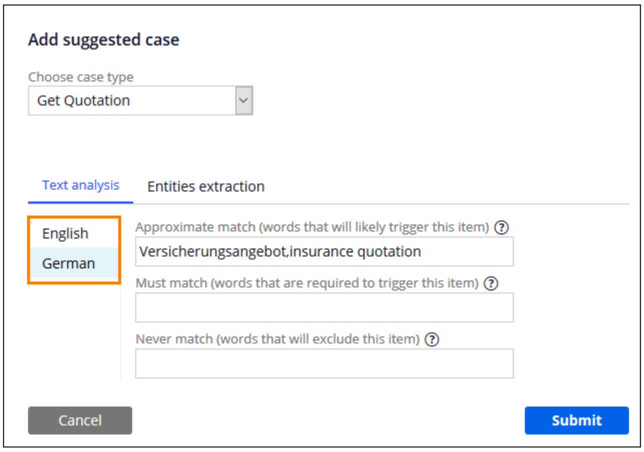


Email channel interface - Configuration tab

The languages supported for email text analysis and processing include English, Dutch, French, German, and Spanish, in any combination. The default language for the email bot is English but you can override this setting by editing the pyGetDefaultLanguage data transform rule for your application. For example, you can configure text analysis of topics and set up suggested email reply templates individually for both English and German users of the same application. For a complete list of additional languages used with for the email bot, see Text analytics features in Pega Platform. To set up multiple-language text analysis for suggested cases in an Email channel, you use the Add suggested case window:

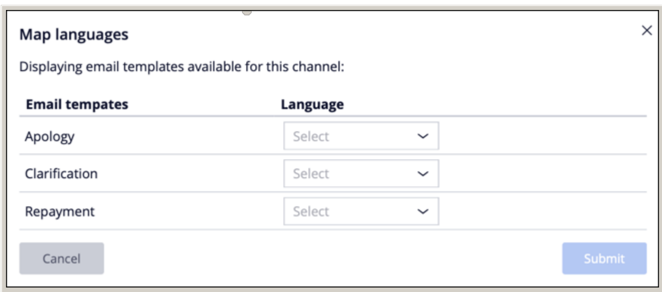


Add suggested case window - Text analysis tab

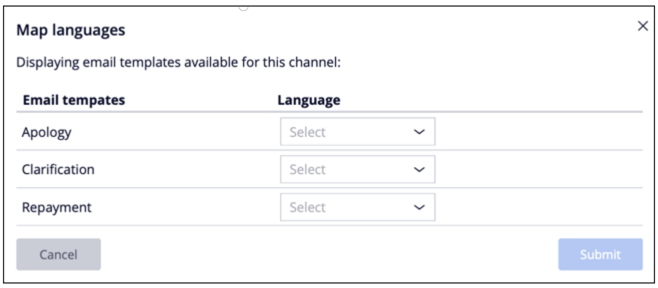


Add suggested case window - Text analysis tab

When training an email bot with data, you can filter training data records by a language with one click. In addition, you can now choose the language in which to create a new training record. When reviewing training data for a specific language, you can also map the text to any of the existing entities in the system, or create a new entity. After you apply your changes to the text analytics model using the reviewed training data, the system builds models in all of the languages that you defined. If you upgrade from a Pega Platform version prior to 8.4, as a one-time action, you use the Map languages window to select existing reply templates and map them to specific languages:



Map existing templates for upgrade compatibility



Map existing templates for upgrade compatibility

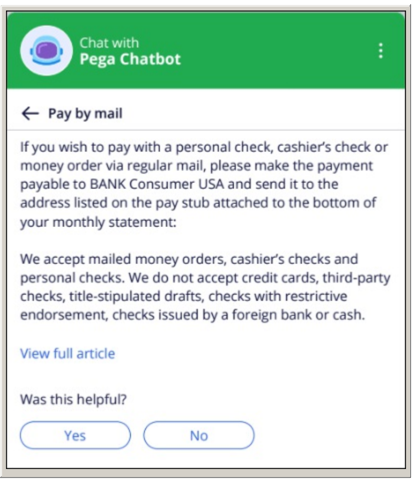
For more information, see Selecting languages for an Email channel, Overriding the default language for an Email channel, and Enabling automatic language detection for text analysis.

Associate IVA for Web Chatbot responses with Knowledge Management articles (8.4)

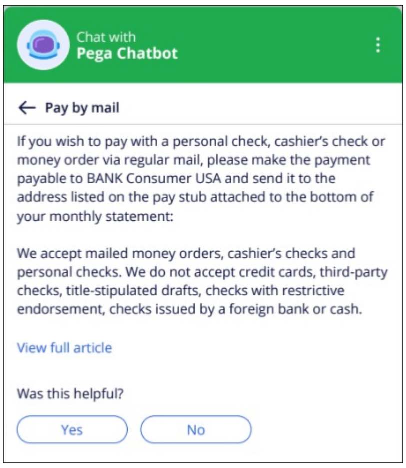
You can improve collaboration and knowledge sharing, and add value for users of Pega Intelligent Virtual Assistant™ (IVA) for Web Chatbot through integration with Knowledge Management systems. During user interactions with an IVA for Web Chatbot, the system now displays a list of relevant Knowledge Management articles that users can then open in a new window.

You can associate multiple articles with IVA responses in the context of the case conversation. The chat window displays a short description of the Knowledge Management article, so that the user remains within the context of the conversation. The user can also provide feedback to the Knowledge Management system by adding a rating and specifying whether the article was helpful.

The following is an example of a Knowledge Management article for the IVA for Web Chatbot:



Sample Knowledge Management article



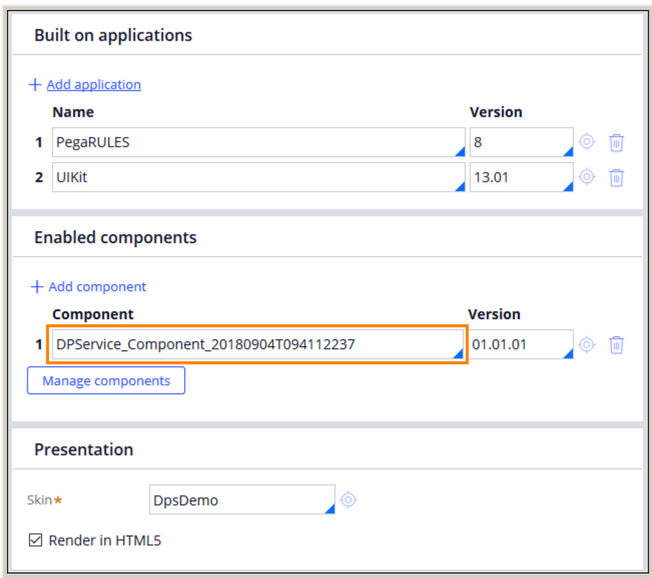
Sample Knowledge Management article

For more information, see Building a conversational channel and Creating a Web Chatbot channel.

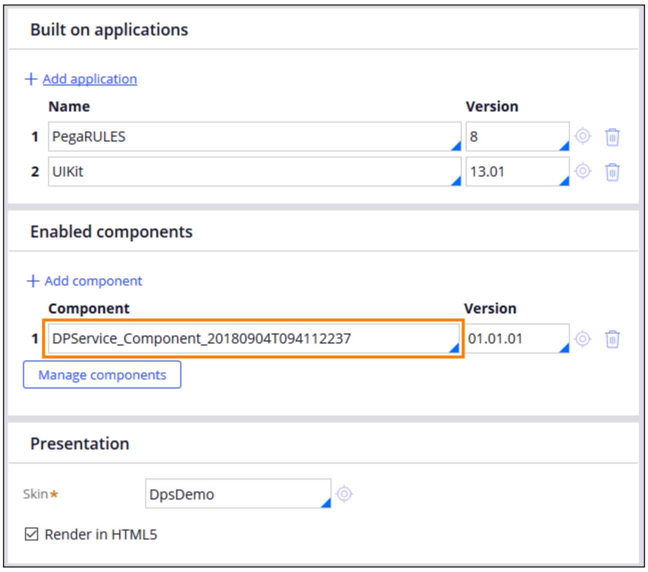
Improve email text analysis with Document Processing Service (8.4)

To process documents in a separate service on the cloud, without the need to install optical character recognition (OCR) software on a Pega Platform™ instance, you can use Document Processing Service (DPS). This capability makes text analysis of image attachments by Pega Email Bot™ easier to maintain and more reliable. For example, an email bot can highlight entities, such as names, locations, dates, and postal codes, in image attachments by using OCR and analysis of forms for an application.

For the system to analyze text in image email attachments, you first install and enable the DPS component in your Pega Platform application, as in the following example:



Pega DPS Component in a Pega Platform application



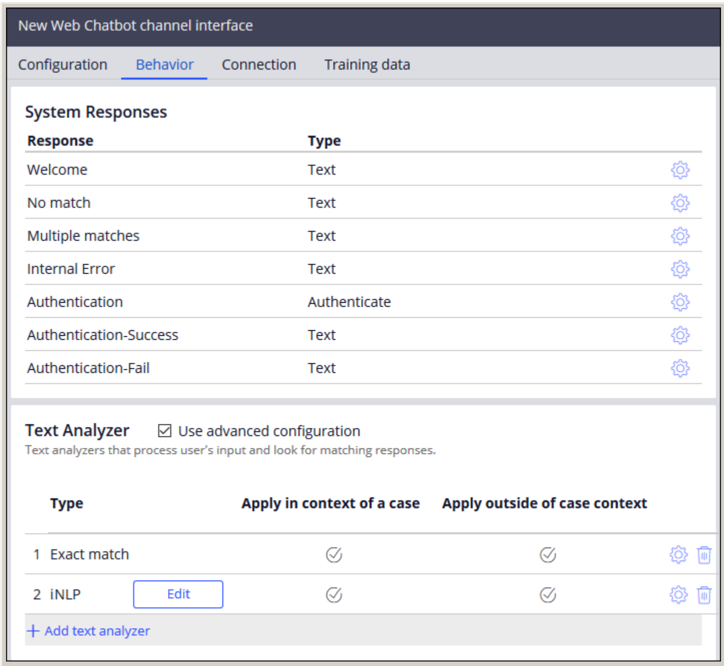
Pega DPS Component in a Pega Platform application

For more information, see Document Processing Service component and Installing and enabling the Document Processing Service component.

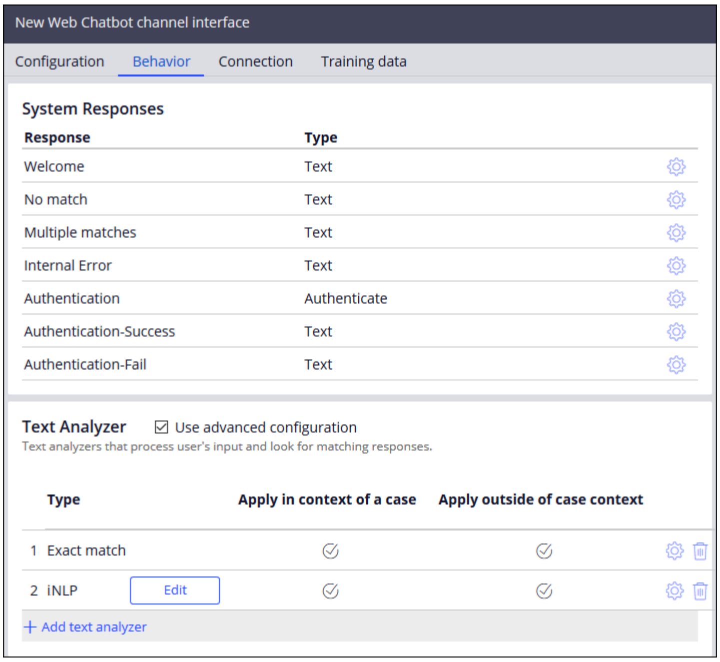
Use the decisioning enabled NLP text analyzer in IVAs and Email Bots (8.3)

Pega Intelligent Virtual Assistants™ (IVAs) and Pega Email Bots™ for conversational channels now support the new intelligent natural language processing (iNLP) text analyzer. This advanced text analyzer is decisioning enabled to help provide quicker and smarter responses. As a result, you can create more sophisticated IVAs and Email Bots that are based on decisioning strategies. The decisioning capability in the system integrates text analytics with strategies, propositions, and interaction history, to provide the context for making better next-best-action decisions. In addition, you now configure the text analyzers for all IVAs and Email Bots on the Behavior tab for each conversational channel.

The following screenshot shows the Behavior tab in the Web Chatbot channel configuration.



Web Chatbot channel - Behavior tab



Web Chatbot channel - Behavior tab

You can reuse a single instance of the advanced Interaction text analyzer in all of the conversational channels, for example, Email Bot, IVA for Facebook, and IVA for Web Chatbot. You can also define a separate text analyzer for Email Bot that performs text analysis of each area of interest, for example, the email body, the email attachments, and the email subject, respectively.

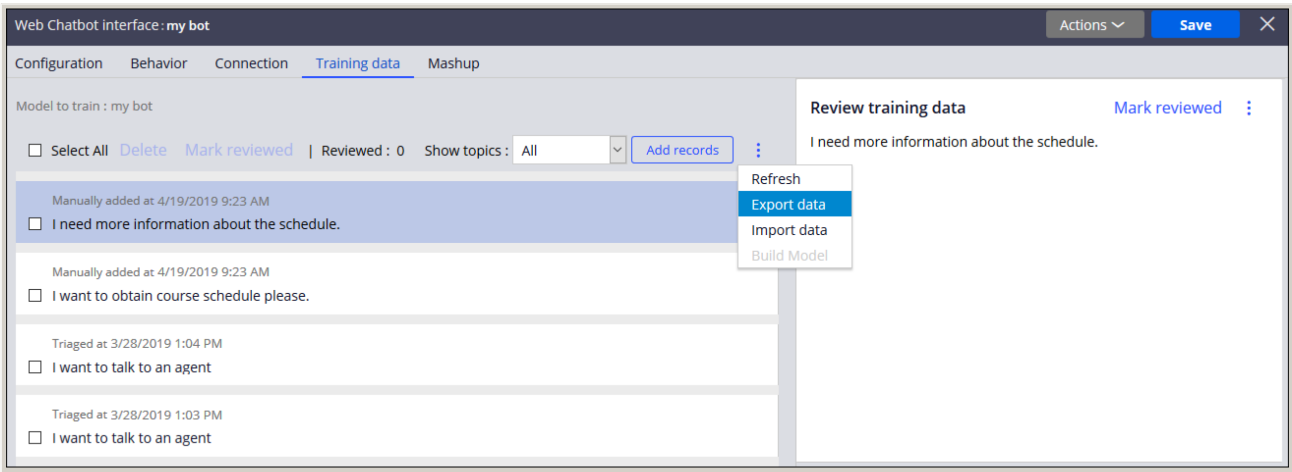
For more information, see Web Chatbot channel behavior, Configuring text analyzer definitions for the Web Chatbot channel, and Defining advanced Web Chatbot text analyzer configuration.

Copy training data and model to another IVA or Email Bot environment (8.3)

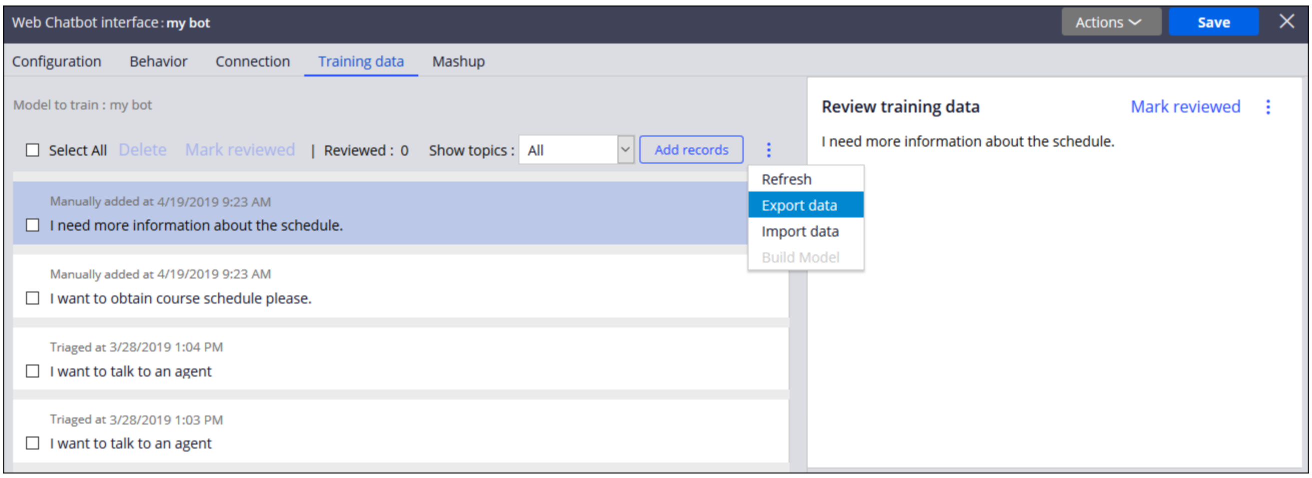
To have greater control of the quality of machine learning in your Pega Intelligent Virtual Assistant™ (IVA) and Pega Email Bot™, you can now copy training data and the unbuilt natural language processing (NLP) model from one IVA or Email Bot environment to another. The ability to copy data between IVA and Email Bot environments results in a higher number of triaged emails and greater accuracy of entity detection, and makes it easier to maintain IVA and build its artificial intelligence.

Entities are detected by the system in a chat conversation, including attachments, to help respond to the user correctly, and consist of proper nouns that fall into a commonly understood category such as a person, organization, location, date, and for example, can also be a Social Security number, an email address, or a ZIP code.

The following figure shows the IVA Web Chatbot Training data tab.



Exporting training data in IVA for Web Chatbot



Exporting training data in IVA for Web Chatbot

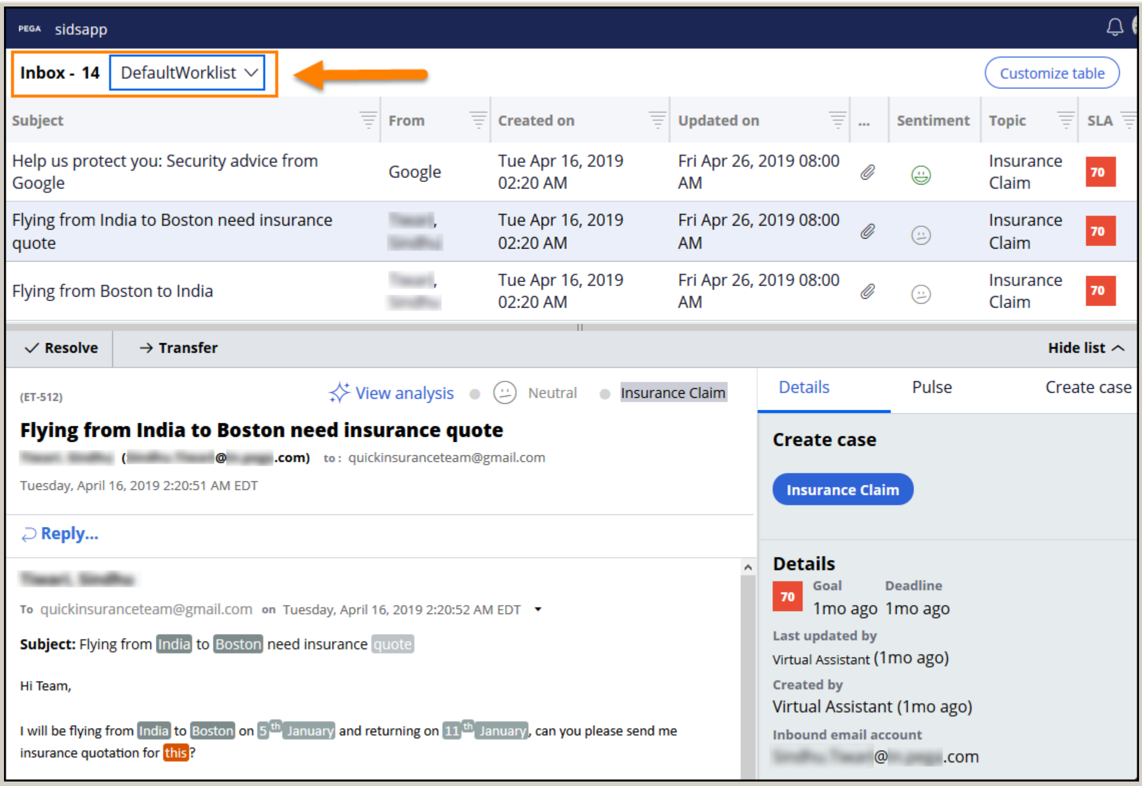
You copy data by exporting the data from an IVA or Email Bot environment to a RAP file, and then importing the RAP file from your local disk to another IVA environment. For example, you can generate training data in a production environment for your IVA or Email Bot, and then copy it to a development or a QA environment. You can either export or import the reviewed training data or all the training data, including training records that are not reviewed. Data that is exported includes entities that were added to the text analyzer but were not built.

For more information, see [Copying training data to another environment in IVA for Facebook](), [Copying training data to another environment in IVA for Web Chatbot](), and [Copying training data to another environment in Email Bot]().

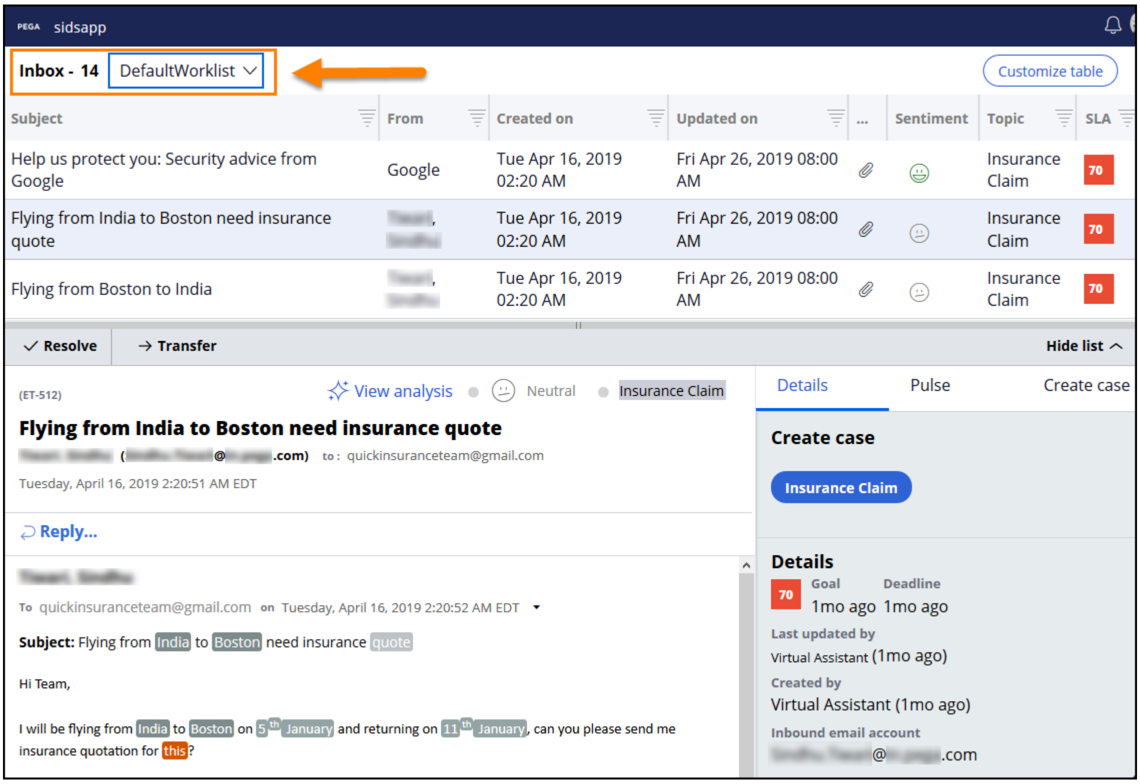
Access multiple work queues in the Email Manager portal (8.3)

Operators of Pega Email Bot™, such as customer service representatives, can now access multiple work queues in the Email Manager portal, making the triage process much more efficient and effective. Operators only have access to work queues for the current Pega Platform™ application.

The following screenshot shows the default worklist queue in Email Manager as being selected:



Default work list - Email Manager portal



Default work list - Email Manager portal

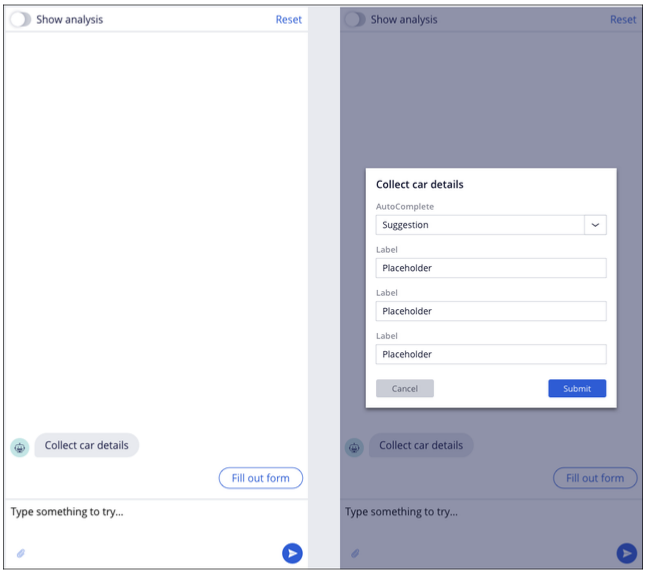
Operators can begin to triage an interaction case from a different work queue by reassigning the case to themselves by clicking Reassign to self. A triage case is automatically removed from the operator's work list if another operator begins working on it. If multiple users are working on the same triage case, a notification is sent by the system.

For more information, see [Email Manager portal]() and [Email Bot]().

Streamline conversations in IVA for Web Chatbot with rich user interface controls (8.3)

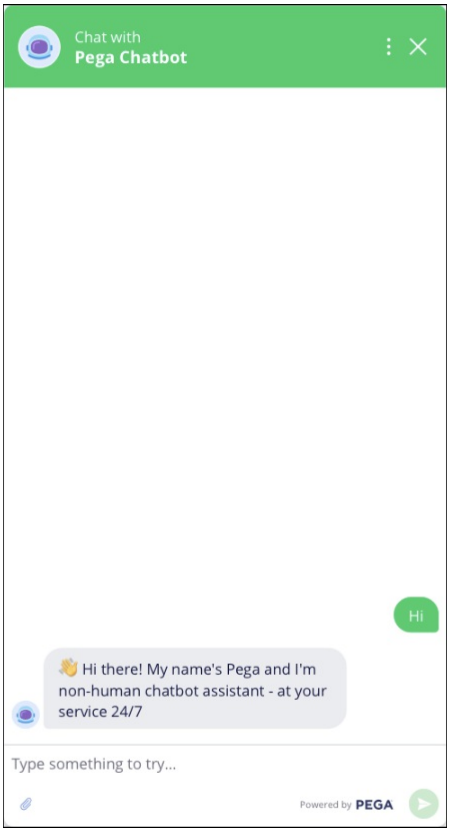
In Pega Intelligent Virtual Assistant™ (IVA) for Web Chatbot, you can now streamline conversations by using new rich user interface controls making the system less error-prone.

For example, use the date and time picker that is based on a case property type so that a user can quickly enter the date and time details without mistakes. Additionally, you can add a simple form that is based on a collection information shape to enter information in multiple fields, for example, for data properties that are part of a business case.



IVA for Web Chatbot - simple form control

IVA for Web Chatbot can now also display a short welcome message in the chat window to inform the user about the person with whom they are chatting. This customizable welcome message is displayed automatically before the user starts chatting or when the chat session times out.

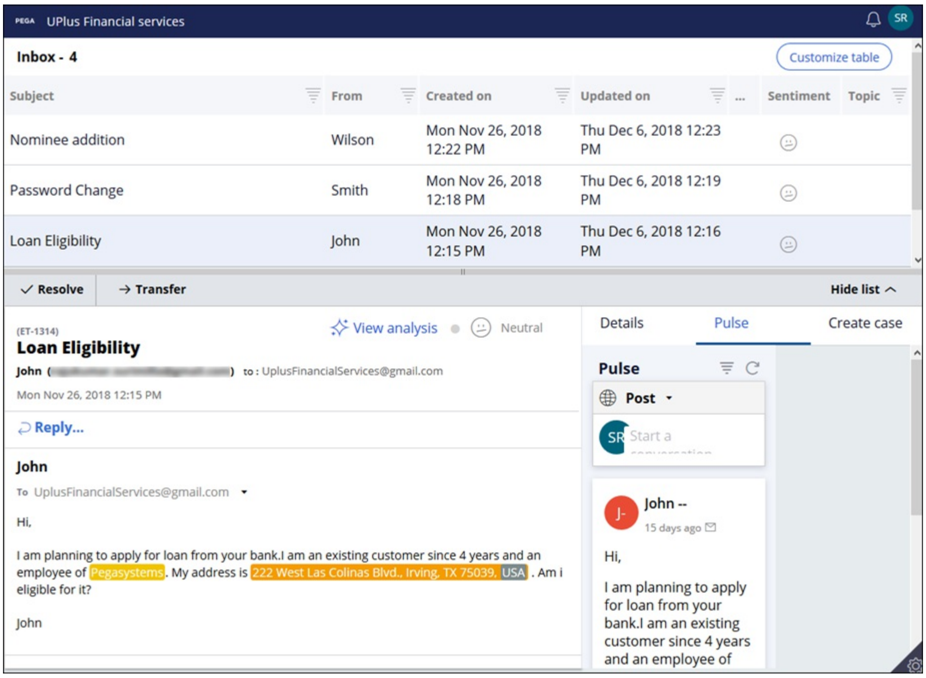


IVA for Web Chatbot - initial welcome message

For more information, see [Configuring the Web Chatbot channel] and [Configuring timeout options for the Web Chatbot channel].

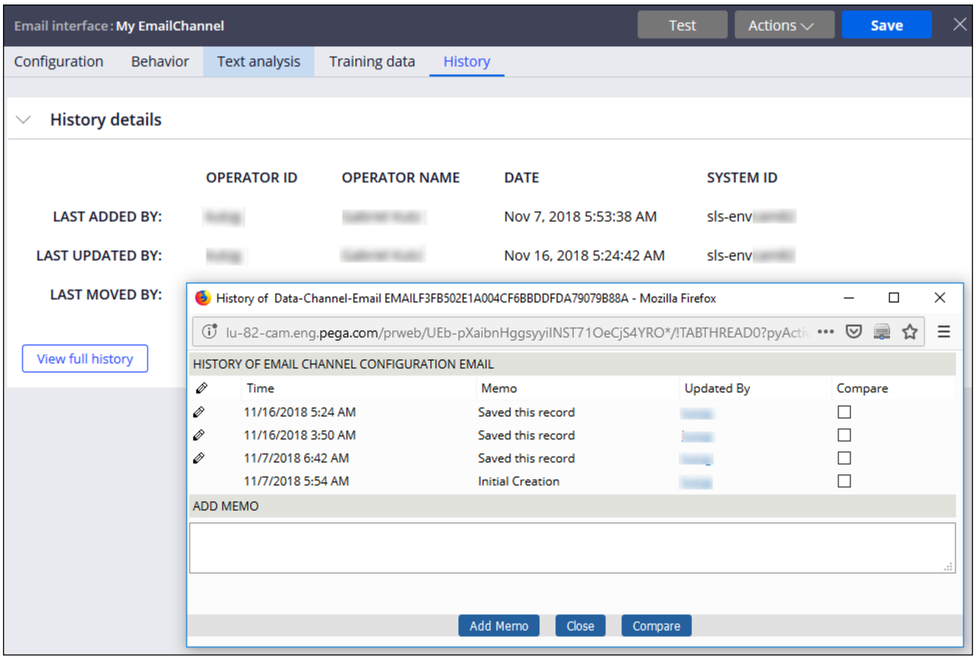
Manage and communicate more easily in IVA for Email (8.2)

To resolve email triage cases more quickly and efficiently, communication in Pega Intelligent Virtual Assistant™ (IVA) for Email is enhanced. You can reply to any email address, instead of only to the email address of an IVA triage case operator. Furthermore, response options are expanded with ability to forward, reply all, carbon copy (cc), and blind carbon-copy (cc). You can send Pulse messages to discuss case details without exposing the information to external users. You are automatically notified in the Email Manager and Case Manager portals if you receive Pulse messages. Even when an email case has been resolved and appears as read-only, you can still send Pulse messages to further discuss the triage case details.



Email Manager portal

To make IVA for Email easier to manage during development, you can track all the Email channel configuration changes that you or other operators make. View the history of changes on the History tab and also compare Email channel configuration save records.



Email channel - History tab

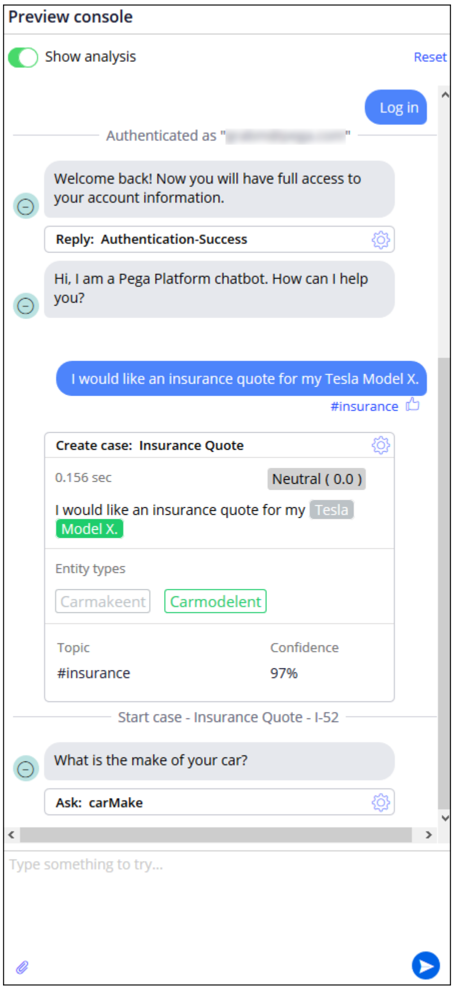
To enhance text analysis in IVA and improve the responsiveness to emails, the system detects defined entities not only in the contents of the email messages and its attached files but also in the email subject field. You can map same text that appears in separate places in an email triage case to different entities. For example, you can map the text 'James' that appears in an email in two different places as 'James Street' and 'James Norton', to two separate entities: a street name and a first name.

For more information, see Email triage, Enabling the analysis of subject field content during email triage, and Tracking configuration changes in the Email channel.

Test and build a chatbot from the preview console (8.2)

When you develop a Pega Intelligent Virtual Assistant™ (IVA) for Facebook or Web Chatbot, you can now configure interactive bot conversations by chatting with the bot in the preview console and guiding the algorithm to the right responses. By using the preview console you can experience run-time functionality during the design phase. The flexible user interface and intuitive tools in the preview console greatly accelerate conversation development and simplify configuration.

Gain more transparency in the response mechanism by analyzing conversations in the preview console. For example, when the chatbot does not recognize the command that you enter in the preview console or if the bot responds incorrectly, you can immediately improve the algorithm by mapping the command to the correct topic in the model. In the preview console, you can now also map and create entities for extraction to case type properties and add examples of commands for a topic. After making changes to the bot, you can rebuild the text analysis model with a single click.



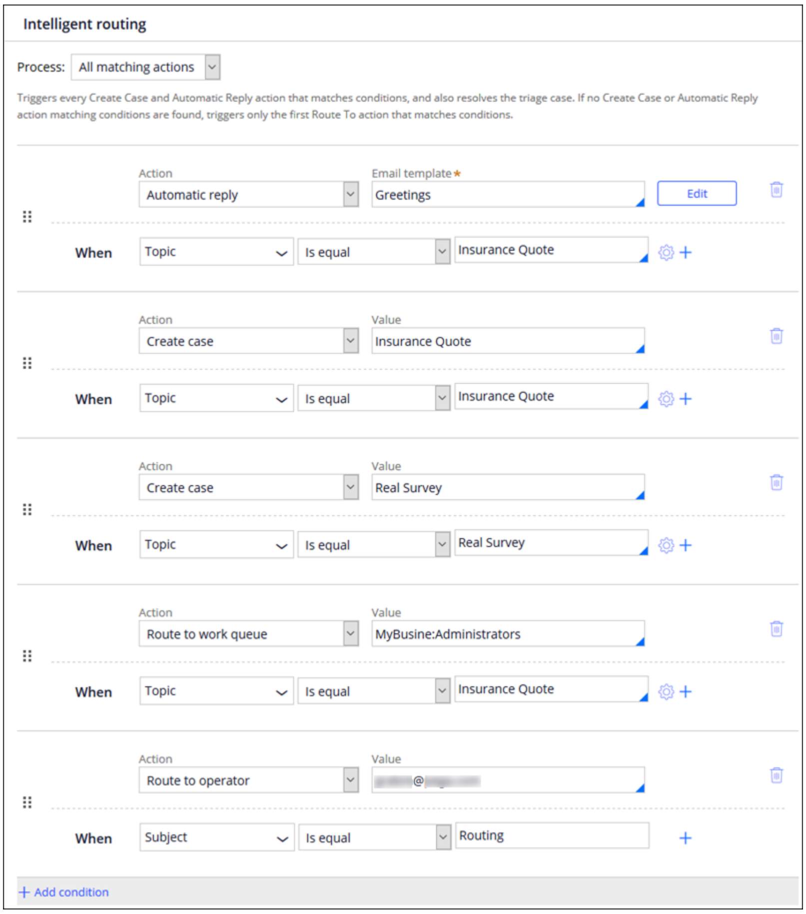
Preview console for Web Chatbot

For more information, see [Simulating a conversation and building a chatbot runtime] and [Build a chatbot in the preview console].

Trigger multiple actions during email intelligent routing (8.2)

Pega Intelligent Virtual Assistant™ (IVA) for Email now supports the triggering of multiple actions during the intelligent routing of received emails. This improves the artificial intelligence capability of IVA for Email by making the system more automatic and responsive to user emails. To use this feature, you must set up intelligent routing for an Email channel so that it processes all actions with matching conditions in the intelligent routing list. When you set up intelligent routing in this way, the system triggers every *create case* and *automatic reply* action in the list that matches the conditions, while *route to* actions are skipped. If no *create case* or *automatic reply* action matching conditions are found in the list, the system triggers only the first *route to* action that matches the conditions.

For example, you can configure intelligent routing for an Email channel so that multiple actions, such as creating a case and automatically replying to an email, are triggered for the received email. In this example, if IVA for Email determines that a received email is a user request for a car insurance quote, the system can immediately create an Insurance Quote business case in Pega Platform™ and automatically reply to the email at the same time.



Email channel - Behavior tab and Intelligent routing section

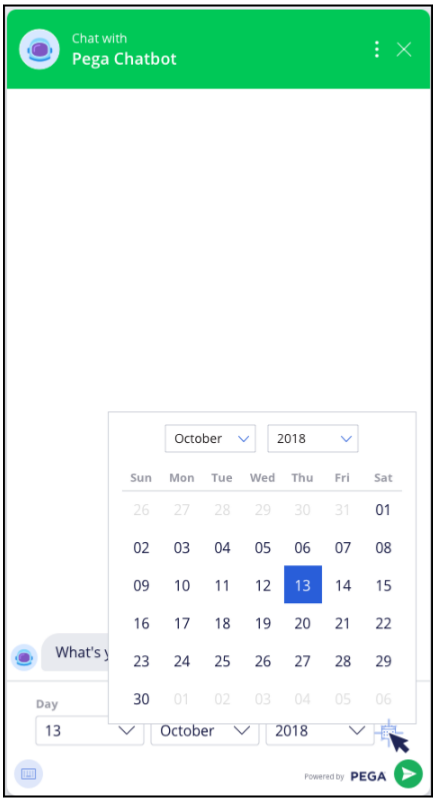
For more information, see Intelligent email routing, Setting up intelligent routing in Intelligent Virtual Assistant for Email, and Configuring routing conditions for automatic email handling.

Use rich user interface controls in IVA for Web Chatbot (8.2)

A user can use rich user interface controls in Pega Intelligent Virtual Assistant™ (IVA) for Web Chatbot because Pega Platform™ also includes a framework for advanced user interface controls. With the introduction of support for a date picker control and the ability to add file attachments while a user is chatting with the chatbot, the system provides a richer and more robust user experience and helps the user accomplish tasks more quickly without the need for complex validation messages.

The date picker control is displayed in the chatbot based on a question rule format or based on a case property type, if a question rule format is not defined. When a user is chatting and needs to enter a date in the chatbot, they can easily switch between the date picker control and simple input text mode.

A user can add file attachments in the chatbot both when they are in a case context and when they are outside of a case context. When a user is in a case context, file attachments are part of the processed business case. The file attachments are automatically assigned to an interaction case when a user is outside of a case context.



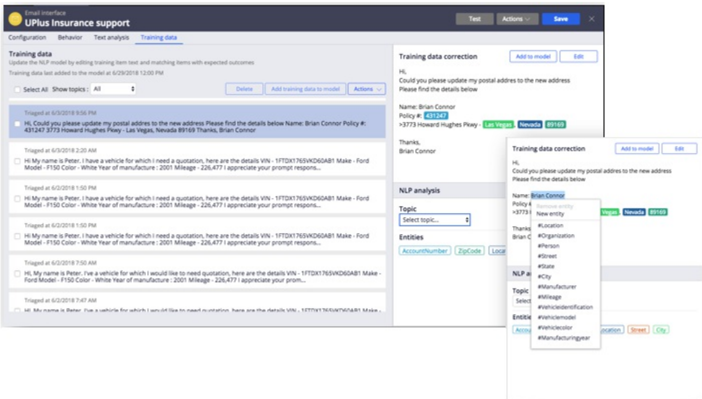
IVA for Web Chatbot - date picker control

For more information, see [Configuring the Web Chatbot channel]().

Train entity models with a single click

Entities are a specific type of data that is detected using natural language processing (NLP). You can now easily create custom entities that precisely match your use case and train the model with a single click. This ensures that the data that is copied from an email sent to a business case is always correct. Creating custom entities and user-friendly model improves your ability to map data from a block of text into a Pega service case. This helps Pega Intelligent Virtual Assistant (IVA) for Email™ streamline email processing and reduce both the handle times and error rates.

From the training data screen of Intelligent Virtual Assistant for Email, you can create entities and immediately correct any misidentified entities. You can then re-build the model and see those changes reflected immediately.



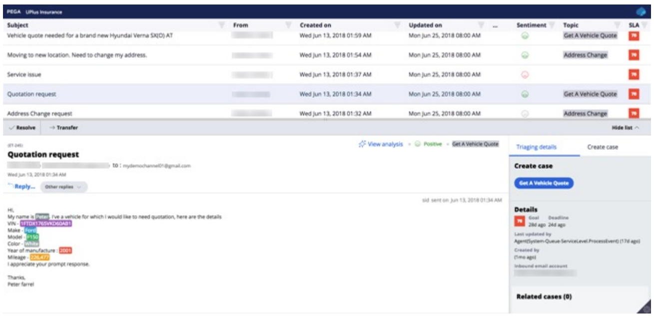
Training data screen for the Email channel

For more information, see [Updating entities for an Email channel]() and [NLP model for an Email channel.]()

Take advantage of the new Email Manager portal

You can now use the new Email Manager portal with an application. The new portal helps you to efficiently and seamlessly triage emails by combining email, case management, and artificial intelligence. You can quickly turn emails into business cases in Pega Platform™ and Pega Intelligent Virtual Assistant (IVA) for Email™.

You can adjust the email list by filtering columns and by sorting the content. The email list is automatically updated in real time by using web sockets. Through embedded artificial intelligence, Email Manager suggests business cases or templated replies to create and it can automatically send replies to a customer. The Email Manager portal automatically populates business case properties by using detected entities. You can reply to emails with just one click.



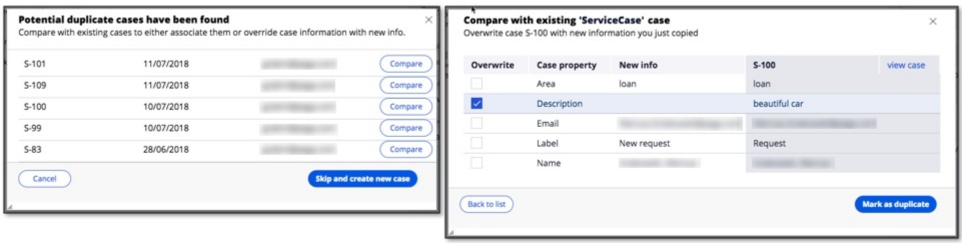
Email Manager portal

For more information, see [Email Manager portal]().

Avoid redundant cases by detecting duplicates during email triaging

When you triage emails, you can avoid repetitive work because the system now detects related cases. Use the Compare view in the list of potential duplicates to verify whether duplicates exist for a received email case. You can also link related cases to an email triage case. This action ensures that related information that is received by email from any user is not repeated and is kept together in a single thread for an email triage case.

The system uses duplicate case logic to match existing cases with new ones. In addition, the system shows you a list of potential duplicates before it creates business cases. You can compare new information with the defined properties of an existing business case. From the Override case details section, you can see the most relevant case information.

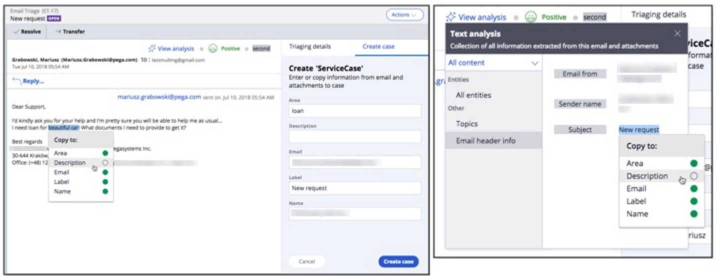


Duplicate cases screen

For more information, see [Email triage]().

Speed up email triaging by mapping data to a business case

To improve the usability of Pega Intelligent Virtual Assistant for Email™, you can now speed up triaging by mapping data to a business case. For this purpose, use the new case form that is displayed along with the received email. Right-click the content in the email body or use the text analysis view to perform entity mapping.

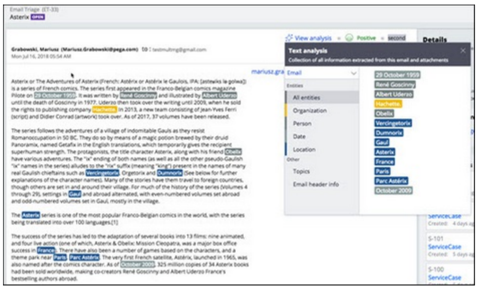


Entity mapping in Pega Platform

For more information, see Email triage.

View enhanced text analysis results during email triaging

To make Pega Intelligent Virtual Assistant for Email™ more robust and responsive to users, you can now respond quickly and accurately based on the information that is extracted from emails and their attachments. The system displays a confidence score, a detected localization language, and a topic category for an email. The information that is displayed also includes entities that are detected in email attachments. The system can pull data, such as a date, a name, or an address, out of an email or its attachments and automatically assign the data to a spun-off business case property. To help you find and understand this information, the system highlights detected entities in different colors on the text analysis page and in the body of the email.

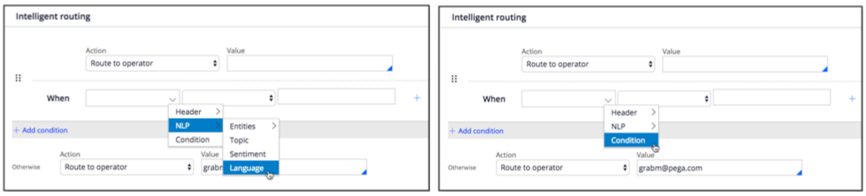


Text analysis view

For more information, see Email triage.

Employ more intelligent routing criteria

Developers of Pega Intelligent Virtual Assistant (IVA) for Email™ can now employ a broader range of use cases because of several new routing criteria in the Email channel configuration. You can use a detected language, a when rule, and keyword-based entities in the intelligent email routing criteria. The custom, flexible when rule makes intelligent routing more robust and responsive to incoming email content from users.

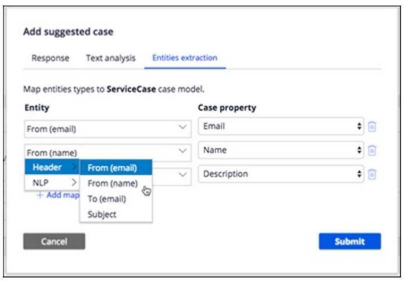


Intelligent routing for the Email channel

For more information, see Intelligent email routing and Configuring routing conditions for automatic email handling.

Create cases faster with data extracted from emails

You can now speed up case creation in Pega Intelligent Virtual Assistant (IVA) for Email™ by having the system automatically populate properties with extracted data. In the Add suggested case section, you can preconfigure entity mappings. You can also use email-specific properties, such as an email address or a subject, in the entity mapping definition.



Add suggested case screen

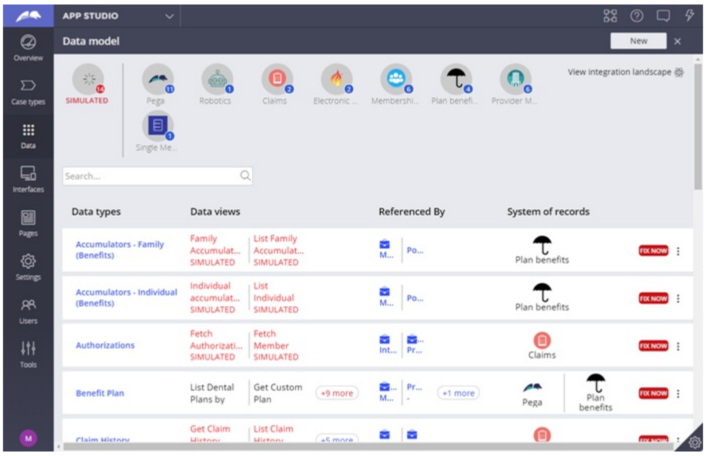
For more information, see Defining suggested cases for the Email channel.

Data Integration

What's new in Pega Platform

Pega Infinity™

New features in Pega Platform™ improve how you connect your application to distributed resources for real-time access to your data. Easily connect your application to distributed resources for real-time access to your data through the data management and integration capability enhancements. Experience instance access to your data by sourcing attachments from file storage repositories and improved Service REST processing. Drag-and-drop functionality simplifies connecting data sources to application data views, eliminating the need to know the technical details of the integration.



Integration Designer

Data Management and Integration includes the following enhancements:

- Configure and debug automations more easilty (8.3)
- Create a simple association to quickly join classes (8.3)
- Quickly implement email in your application using email automations (8.3)
- Migrate case attachments from Pega database storage to a repository (8.3)
- Troubleshoot data and integration in UI elements using Live Data (8.3)
- Use a sample JSON response to create a data type (8.3)
- View and update your data model from the Data Visualizer (8.3)
- Configure data source simulations from Integration Designer (8.3)
- Configure your environment for optimal performance during data migration (8.3)
- Create and view application settings in App Studio (8.3)
- Manage your application settings more effectively (8.3)
- Automatically generate OpenAPI Specification documentation for application REST APIs (8.3)
- Retrieve a flat list of fields from Pega Digital Experience APIs (8.3)
- Specify a queue of user operations in Pega Digital Experience APIs (8.3)
- Source attachments from file storage repositories (8.2)
- Configure REST connectors with improved URL offerings (8.2)
- Integrate with services by using the PATCH method (8.2)
- Improve Service REST processing using lightweight clipboard mode (8.2)
- Use POST method in Integration Designer (8.2)
- Authenticate with OAuth 2.0 in Integration Designer (8.2)
- Explore your data and integration assets with the Integration Designer
- Understand how your data and integration assets are sourced
- Create data types sourced from the Pega database
- Create data types sourced from REST endpoints
- Define your data type from a REST response
- Map REST responses to your data types with visual drag-and-drop
- Visualize data type relationships
- Replace or update existing sources for a data type
- Manage integration settings across environments
- Configure data pages to source information from automations
- Reduce complexity and activity dependencies with automations

To learn about all the new features in **Data Management and Integration**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

Visit www.pega.com to learn more about Pega Infinity™.

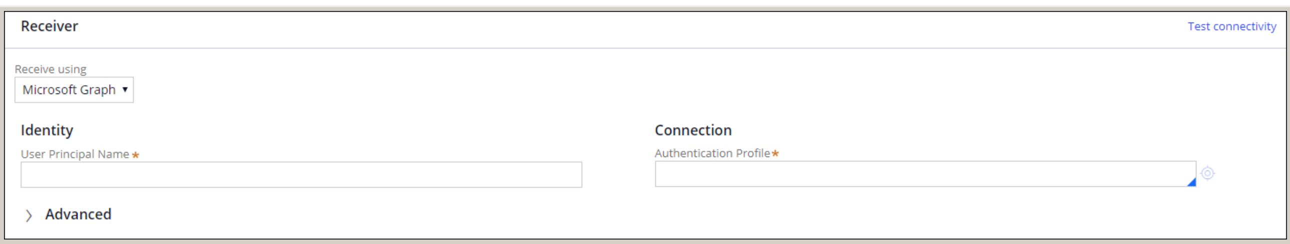
Visit What's New in Pega Platform to discover all the exciting new features in this release.

Use Microsoft Graph to receive email more securely (8.4)

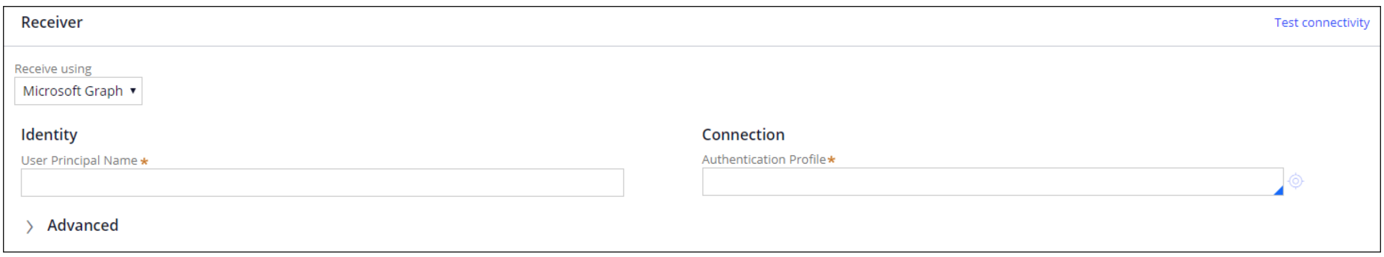
To ensure that your Pega Platform™ application complies with the latest industry security standards, email integration with Microsoft Office 365 now supports Microsoft Graph. Microsoft Graph is a more secure option for receiving emails than IMAP and POP3.

You specify the email account and the authentication profile in the application settings. You can also use application settings to define multiple email accounts and authentication profiles for different environments. For example, you can specify an email account for your testing environment.

To use Microsoft Graph for incoming email, update the email account settings as shown in the following example:



Microsoft Graph configuration in the Receiver section of the email account form.



Microsoft Graph configuration in the Receiver section of the email account form.

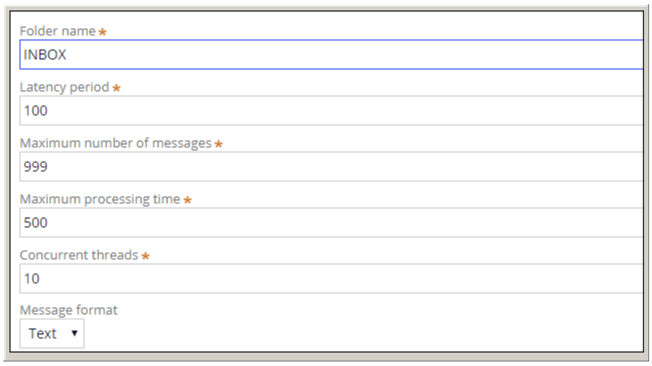
For more information, see Creating an email account.

Process more emails faster with enhanced email listeners (8.4)

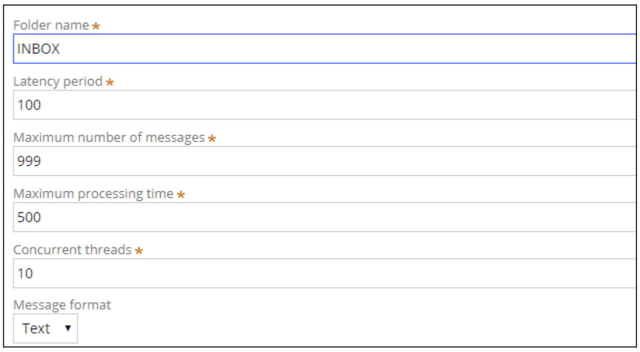
To process more emails in less time, you can now scale email listeners to meet your organization's load requirements. This enhancement is useful for organizations that receive a high volume of emails per day or that manage thousands of email accounts.

You can increase the throughput of your email listeners by specifying how many concurrent threads must process emails per node. For example, specify 10 concurrent threads to simultaneously process 10 emails.

You configure concurrent threads on the Email listener rule form, as shown in the following image.



Configuring concurrent threads on the Email listener form



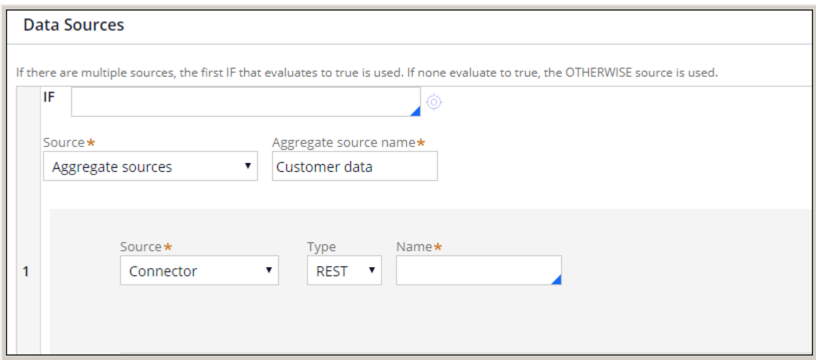
Configuring concurrent threads on the Email listener form

For more information, see Creating an email listener.

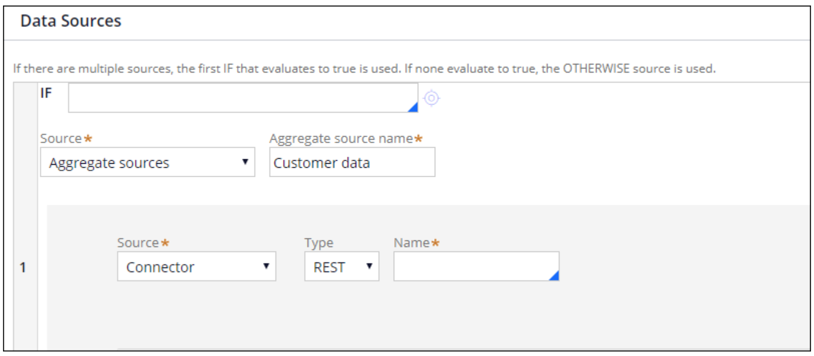
Aggregate data in data pages from multiple sources (8.4)

You can now configure data pages to aggregate data from multiple sources. With this enhancement, data pages load more easily, making your implementations faster and easier. For example, by aggregating sources, you can call multiple REST connectors to load your data page, instead of using an activity.

You configure data source aggregation on the data page rule form, as in the following image:



Configuring source aggregation



Configuring source aggregation

You can source data types from aggregate sources in Integration Designer. Use the integration landscape to view each source for your application.

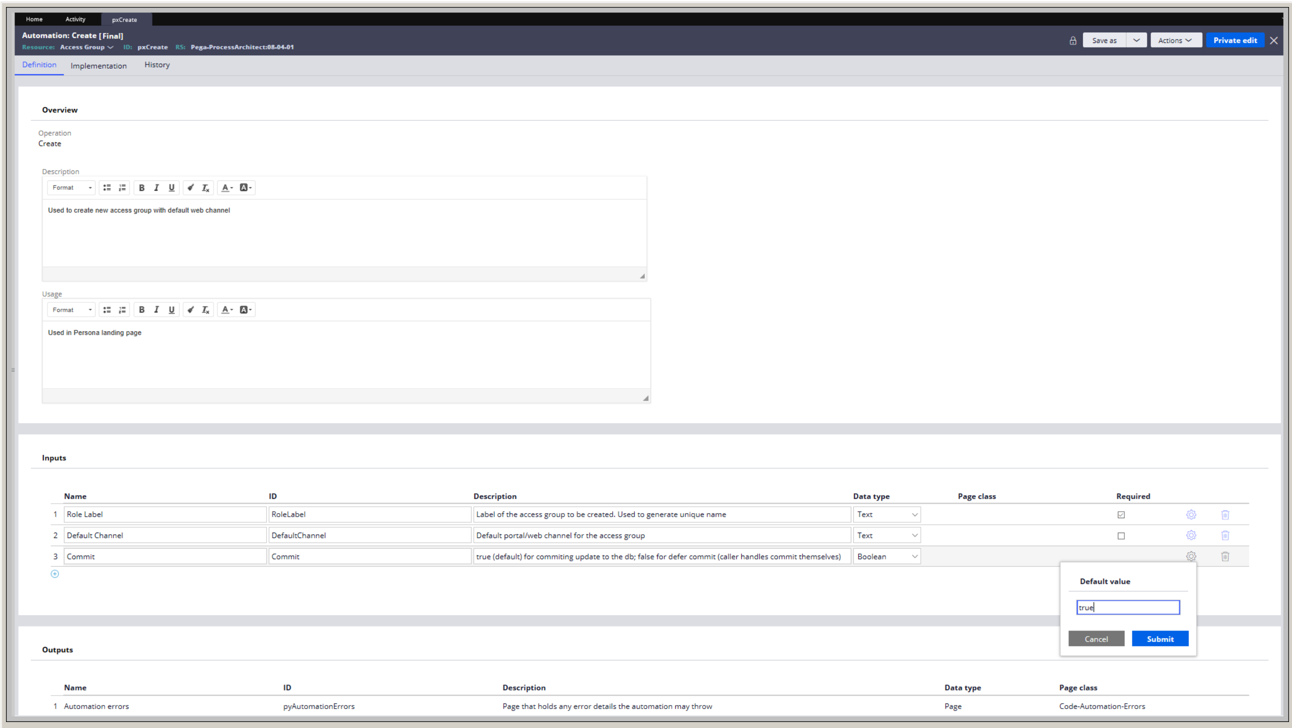
For more information, see Creating a data page.

Define and maintain applications efficiently by using automations (8.4)

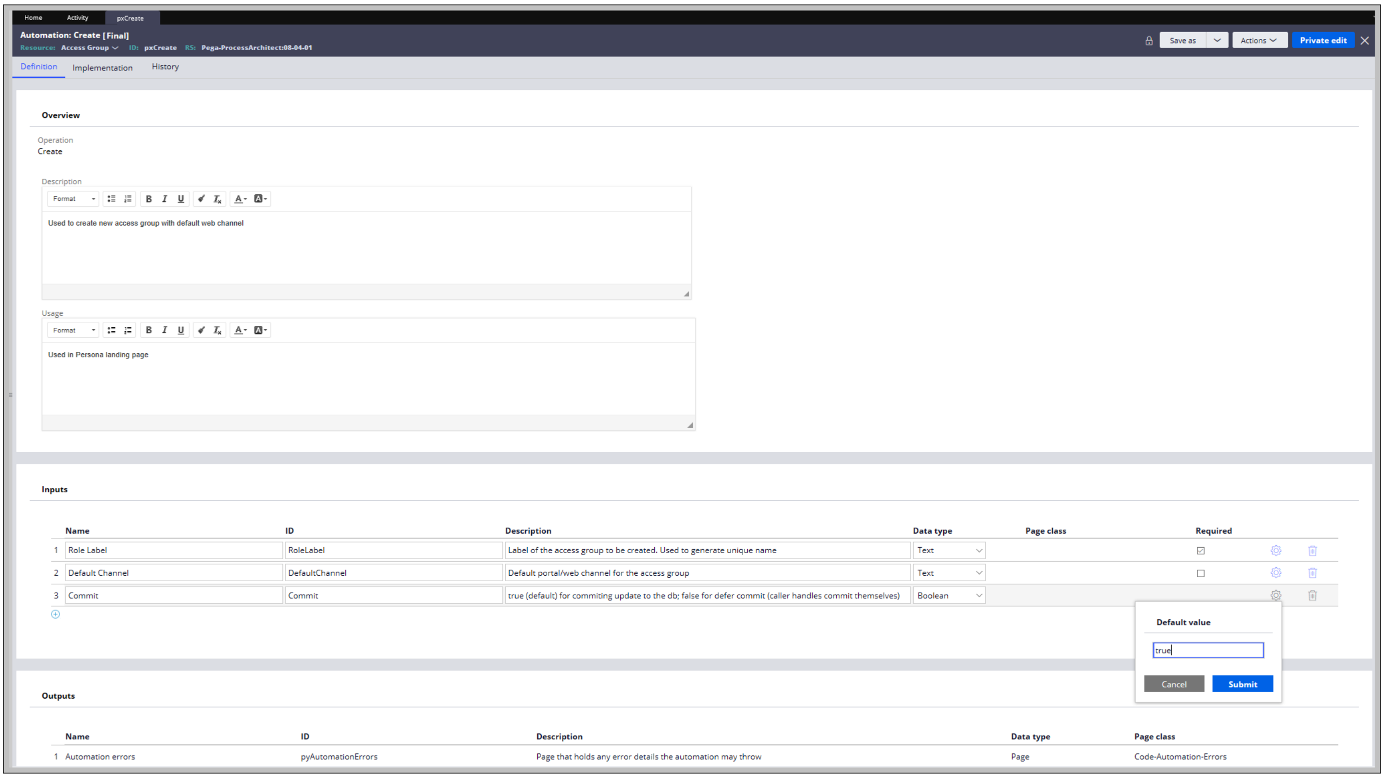
Enhanced automations allow for better defined and more maintainable applications. You can easily update and improve the model over time without creating backwards compatibility issues for customers. API contracts now provide the following enhancements:

- Contracts support embedded pages for more complex input/output types.
- You can set default values for a new optional input without creating backward compatibility issues.
- Use the Enum/Picklist type to define a robust input/output model by specifying a fixed list of values.

The following figure shows where to enter a default value in the automation rule.



Default value field in the automation rule form



Default value field in the automation rule form

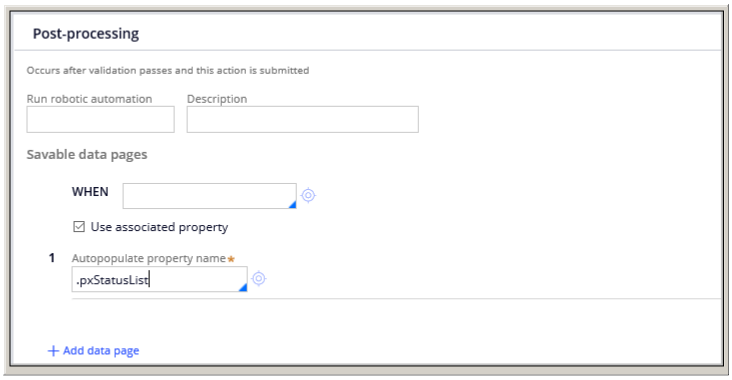
For more information, see Viewing automations.

Source data more easily by using enhanced autopopulated properties (8.4)

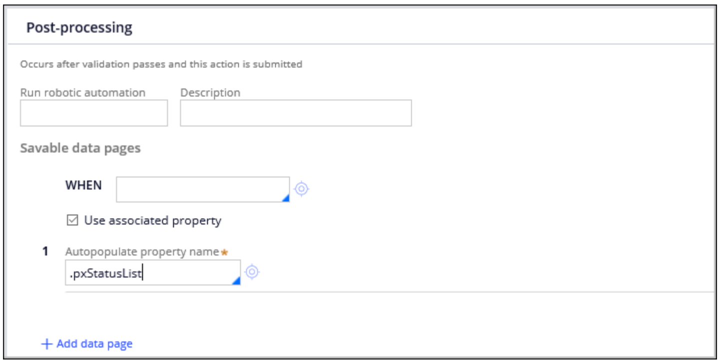
You can now seamlessly import data from autopopulated properties that support savable data pages, into an existing model. Autopopulated properties make the applications that you build easier to manage and maintain. Additionally, setting up data persistence for service applications now has a reduced implementation time. Other enhancements to autopopulated properties that support savable data pages include:

- Enable the discoverability of data relationships within the model.
- Authorize customers to modify and extend data pages without requiring updates.
- Reduce the number of touch points between data pages and case/data types.

If you use autopopulate by copy with a savable data page, the save plan executes on the copy, instead of the data page. You can now also list the data pages you save on your flow action instead of using an activity, as shown in the following figure:



The autopopulated property fields in a flow action.



The autopopulated property fields in a flow action.

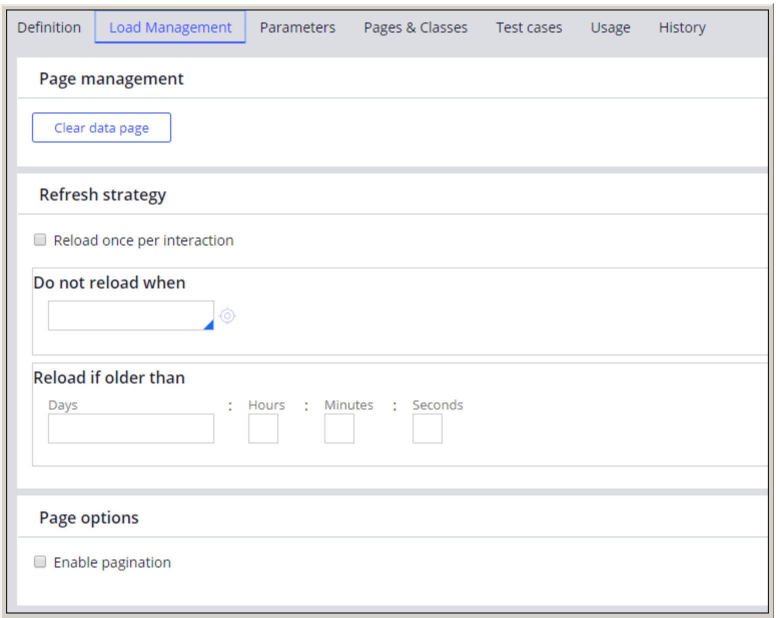
For more information, see [Configuring the processing details for a flow action](#).

Retrieve large data sets with improved paging in data pages (8.4)

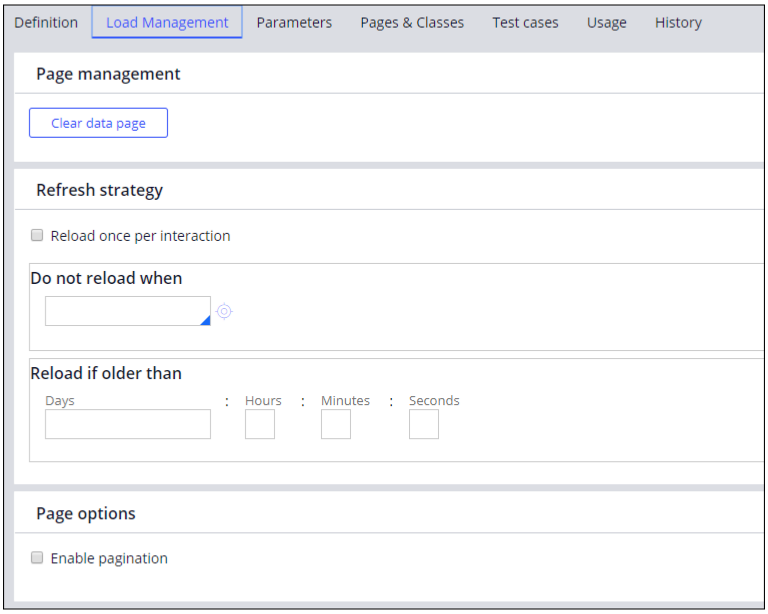
You can now retrieve large data sets more efficiently with improved paging in data pages that are sourced from report definitions. Data page memory and performance is optimized because paging is done on the server instead of the client. You can set up server-side pagination for data pages with the following criteria:

- Structure - List
- Mode - Read-only
- Scope - Thread or Requestor
- Source - Report definition

You configure pagination in the Page options section on the **Load Management** tab on the Data page rule form, as in the following example:



Enabling pagination for a data page



Enabling pagination for a data page

For more information, see Defining data page access.

Generate a complete OpenAPI specification from REST service rules (8.4)

Automatically generate a complete and accurate OpenAPI Specification (OAS) by using REST Service rules. You can use the OAS to better understand how to use your REST API in your application.

With the following enhancements, you can produce a comprehensive description of your REST APIs:

- Pega Platform™ uses relevant records to more clearly define the schema for page and page list outputs.
- Map values to JSON or Clipboard in the request, or map values from JSON or Clipboard in the response.
- Schema type definitions are more detailed and more accurately reflect the properties to which you mapped in the request or response.

The following figure shows an example of the OAS that you can generate by using the enhancements in a REST service rule:


```yaml
      tags:
      - Post
      requestBody:
        content:
          application/json:
            schema:
              required:
              - case_id
              - message
              type: object
              properties:
                message:
                  title: message
                  type: string
                  description: Message content
                case_id:
                  title: case_id
                  type: string
                  description: Handle of the case to post to
                tags:
                  title: tags
                  type: array
                  description: List of tags to apply to post
                  items:
                    $ref: '#/components/schemas/RULE-OBJ-CLASS.LINK-TAG.true.PegaAPI'
                is_private:
                  title: is_private
                  type: boolean
                  description: If the post is private or not (defaults to false)
```

OAS on the OpenAPI tab of a REST service rule.


```
      tags:
      - Post
      requestBody:
        content:
          application/json:
            schema:
              required:
              - case_id
              - message
              type: object
              properties:
                message:
                  title: message
                  type: string
                  description: Message content
                case_id:
                  title: case_id
                  type: string
                  description: Handle of the case to post to
                tags:
                  title: tags
                  type: array
                  description: List of tags to apply to post
                  items:
                    $ref: '#/components/schemas/RULE-OBJ-CLASS.LINK-TAG.true.PegaAPI'
                is_private:
                  title: is_private
                  type: boolean
                  description: If the post is private or not (defaults to false)
```

OAS on the OpenAPI tab of a REST service rule.

REST service rules now support using an automation for the implementation method instead of an activity. Although creating automations is restricted in Pega Platform 8.4, you can take full advantage of this capability in an upcoming Pega Platform release.

For more information, see Creating a REST service.

Discover, configure, and use application settings more easily (8.3)

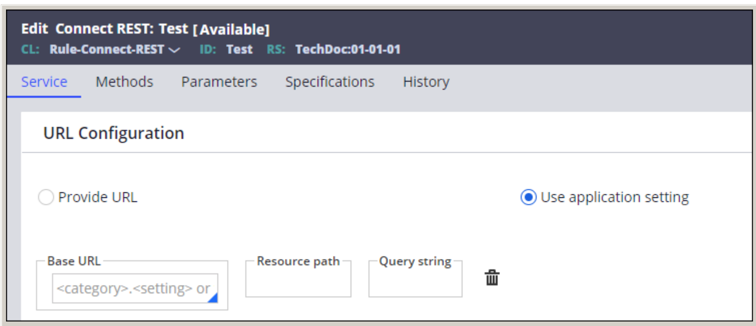
Application settings are enhanced so that you can reference application settings in your rules in order to specify separate values for each production level. At runtime, the setting holds the correct value for the application's current production level.

You can now manage your application settings more effectively with the following enhancements:

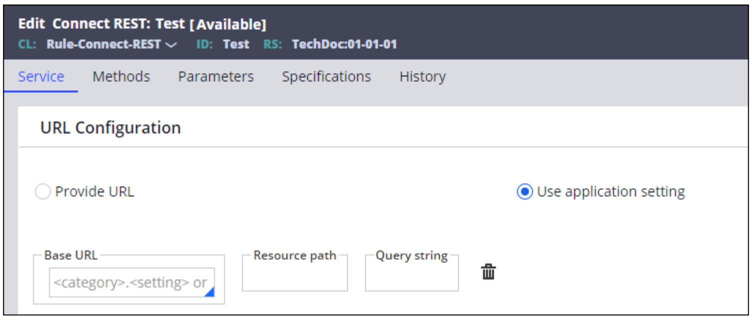
- Create categories to organize your application settings, define their purpose, and make them easier to search for. Create parent categories to group several child categories that relate to the parent category, for example, Integration.Security.
- Specify a value type, such as Boolean or String/text. This defines how the application settings are rendered in the Application settings landing page in App Studio.
- Use the reusable UI control to reference application settings in rules. Configure the control's parameters to define how application settings display in other rules.
- Use application settings for the base URL and authentication profile in connect REST or service REST rules.

In previous releases, application settings were called Rule Admin System Settings.

The following image is an example of a connect REST rule that uses the reusable UI control to surface an application setting for the base URL. Press the Down arrow key in the Base URL field to select an existing application setting, or select Create New Setting.



Surfacing an application setting in a connect REST rule



Surfacing an application setting in a connect REST rule

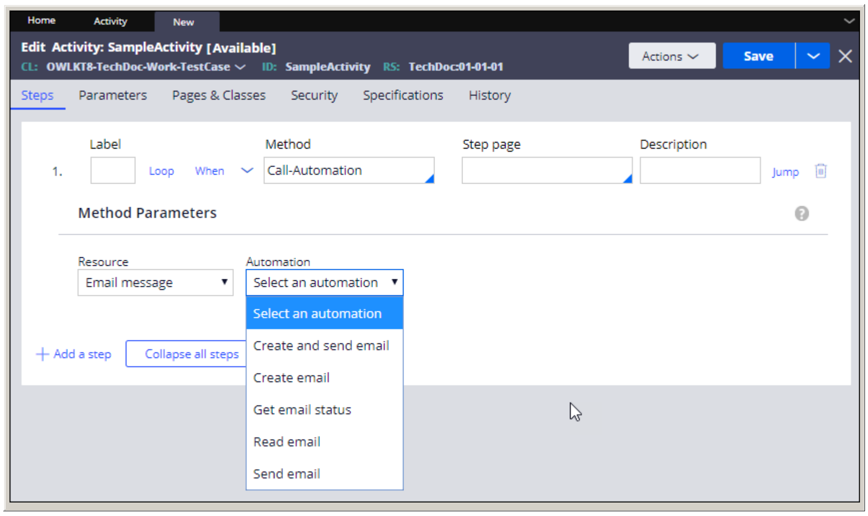
For more information, see Creating an application setting and Categorizing application settings.

Implement email in your applications by using email automations (8.3)

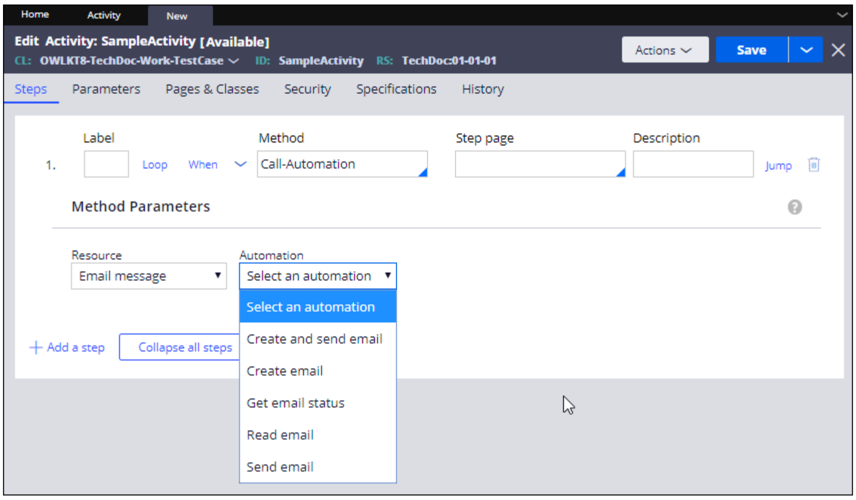
You can now configure cases, flows, and activities to compose and send guardrail-compliant emails that conform to the MIME standard by using email automations. Use the new Call-Automation method to call an automation from an activity without writing Java.

Implement compliant emails in your applications by using the following email automations in flows and activities:

- Create and send email
- Create email
- Get email status
- Read email
- Send email (also available in Case Designer)



Email automations



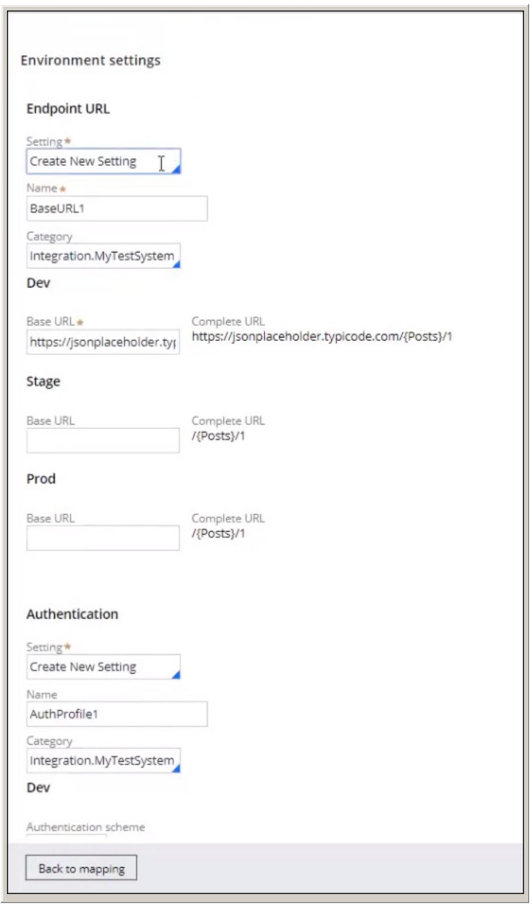
Email automations

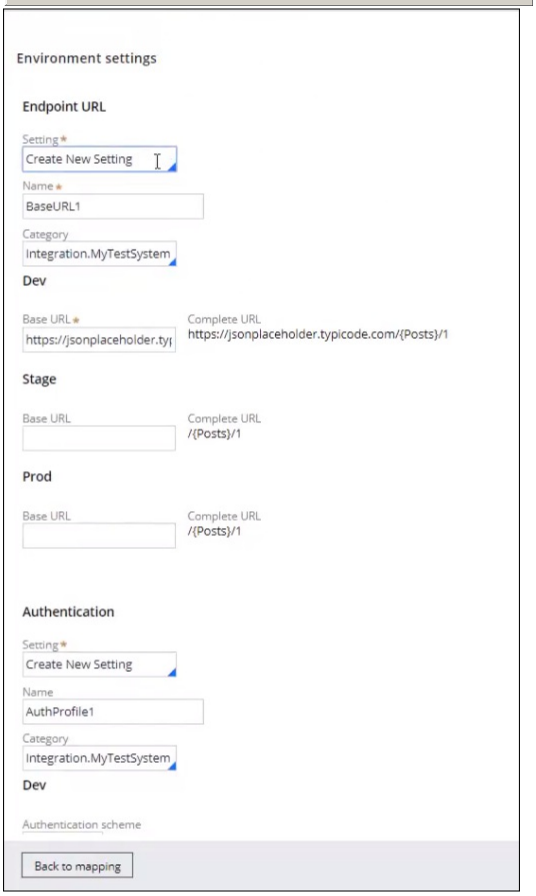
For more information, see [Calling an automation from an activity](#).

Create and view application settings in App Studio (8.3)

View your application settings on the new Application settings landing page in App Studio. The landing page displays the categories that you specified for your application settings. If you did not specify a category for an application setting, the application setting displays in the Uncategorized category. You can also use the search bar to search for an application setting.

When you create a new data type, the Data type wizard automatically creates an application setting for the base URLs and the authentication profile. On theEnvironment settings page, you can edit the application setting to specify a new name or category or accept the default values. The following image shows an example of the Environment settings page with the default values.



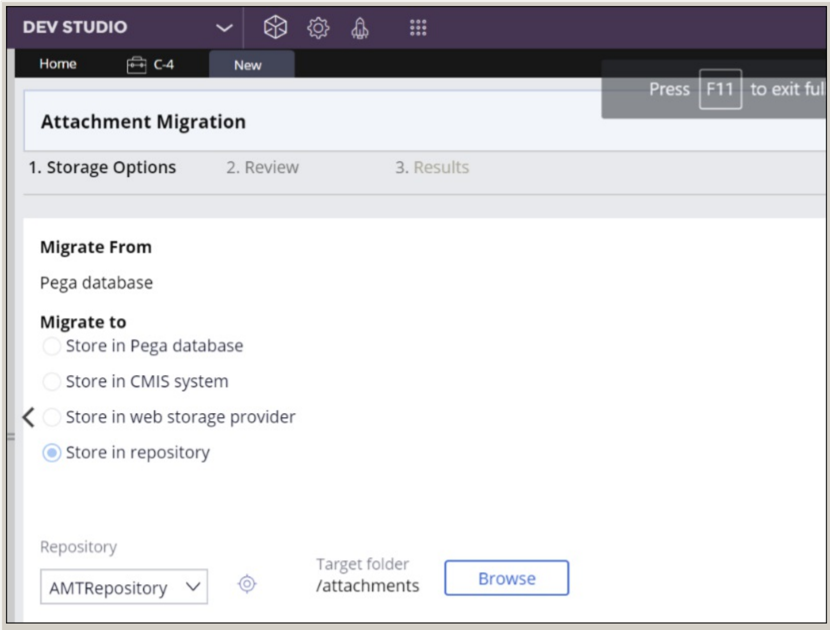


For more information, see [Viewing application settings in App Studio] and [Preparing your data for production].

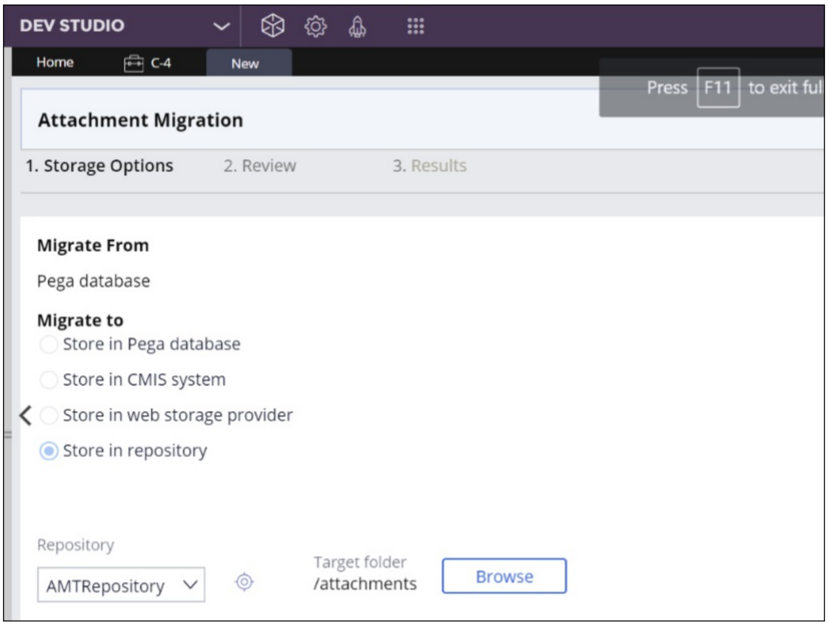
Migrate case attachments from Pega database storage to a repository (8.3)

You can now migrate case attachments from Pega database storage to a repository. This ability is useful, for example, when migrating from an on-premises deployment to a Pega Cloud Services environment because you can reduce the size of your Pega database and manage all your case attachments in a single location. You can migrate case attachments to AWS S3 or Pega Cloud Storage only.

During migration, you can view migration progress. When migration is finished, you can view the number of files that were migrated and a list of files that were not migrated. The following figure shows the Attachment migration wizard page with storage options.



Attachment Migration wizard

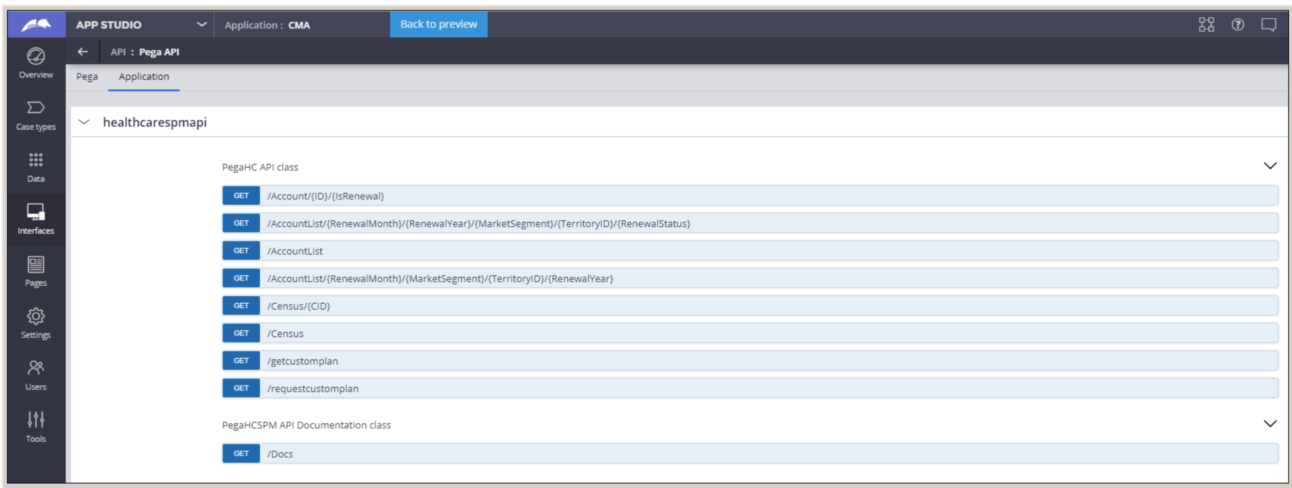


Attachment Migration wizard

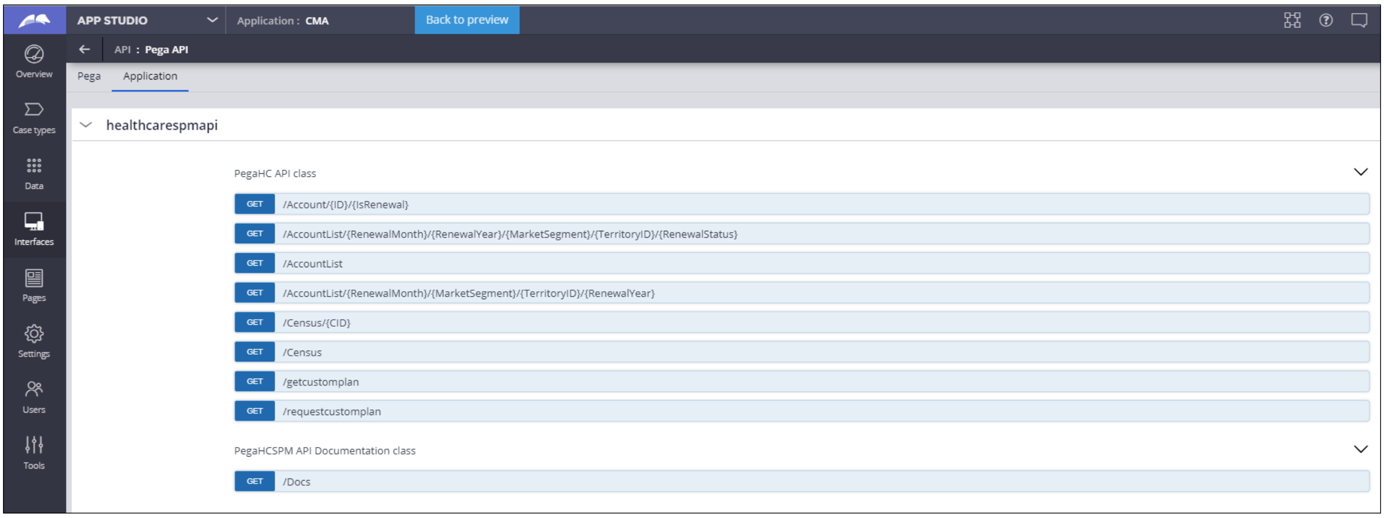
For more information, see [Migrating case attachments to a repository](#).

Automatically generate OpenAPI Specification documentation for application REST APIs (8.3)

In App Studio, you can view the OpenAPI Specification (OAS) 3.0 documentation generated for your application REST APIs by using the new Application tab in the API channel. The Application tab provides a single location for viewing all the application-specific REST APIs that your application documents so that you can easily find, understand, and test them. The following figure shows an example of the list of REST APIs that are displayed on the Application tab.

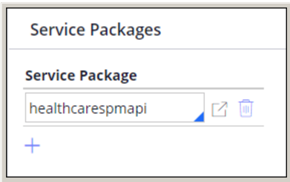


Application tab with list of REST APIs

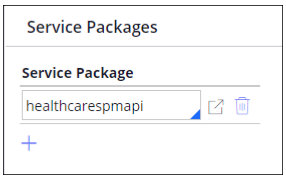


Application tab with list of REST APIs

In Dev Studio, the Integration & security tab of your application rule now includes a Service Packages section. You can curate the list of services that are documented in your application by listing the service packages that contain them in your application rule. For example, if you list a service package called myDemoPackage in your application rule, the REST APIs for the services included in myDemoPackage are displayed on the Application tab in App Studio. The following figure shows the Service Packages section of the application rule.

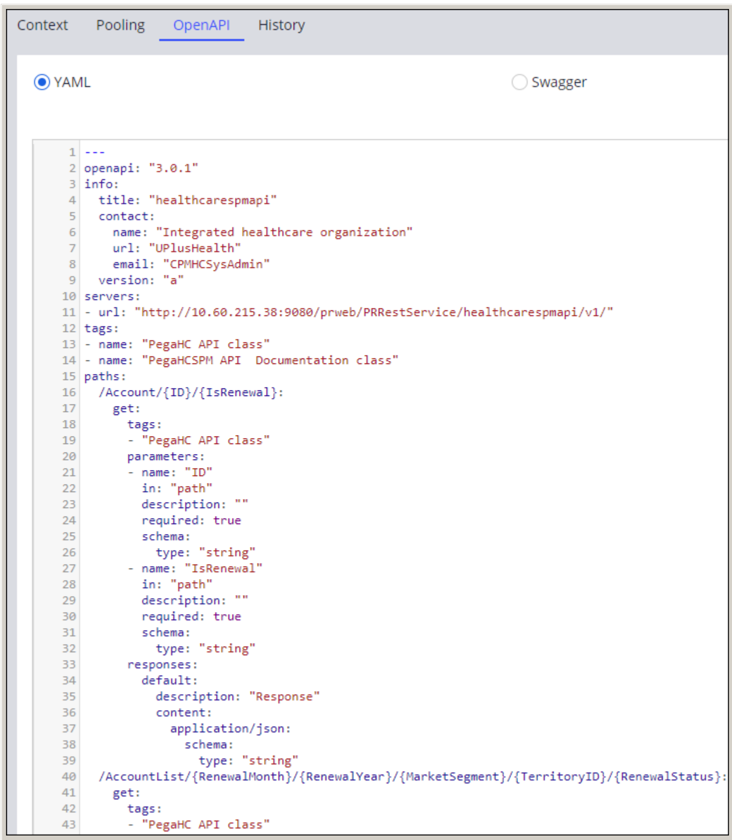


Service Packages section of the application rule

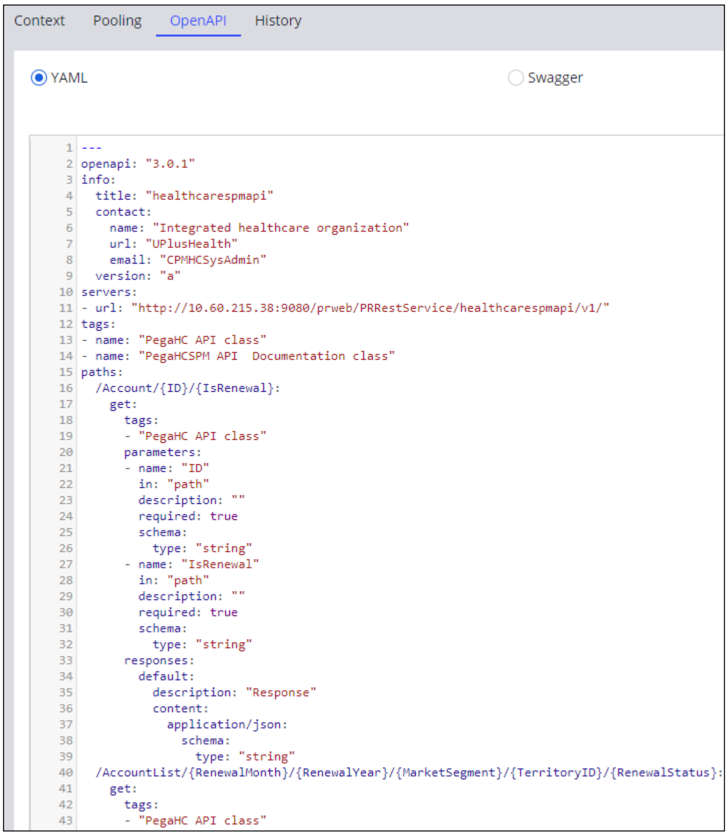


Service Packages section of the application rule

Additionally, in Dev Studio, you can use the OpenAPI tab in the service package rule to view the automatically generated OAS documentation for all the REST services in the service package in YAML and Swagger UI. The following figure provides an example of the OpenAPI tab for a healthcare application API.



OpenAPI tab in the service package rule



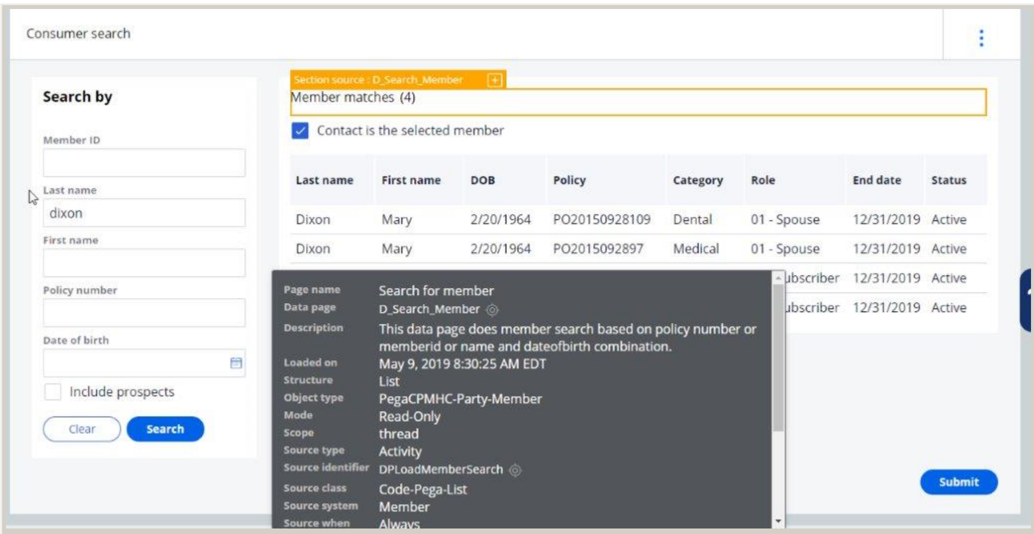
OpenAPI tab in the service package rule

For more information, see [Generating OpenAPI Specification documentation for application-specific REST APIs](#).

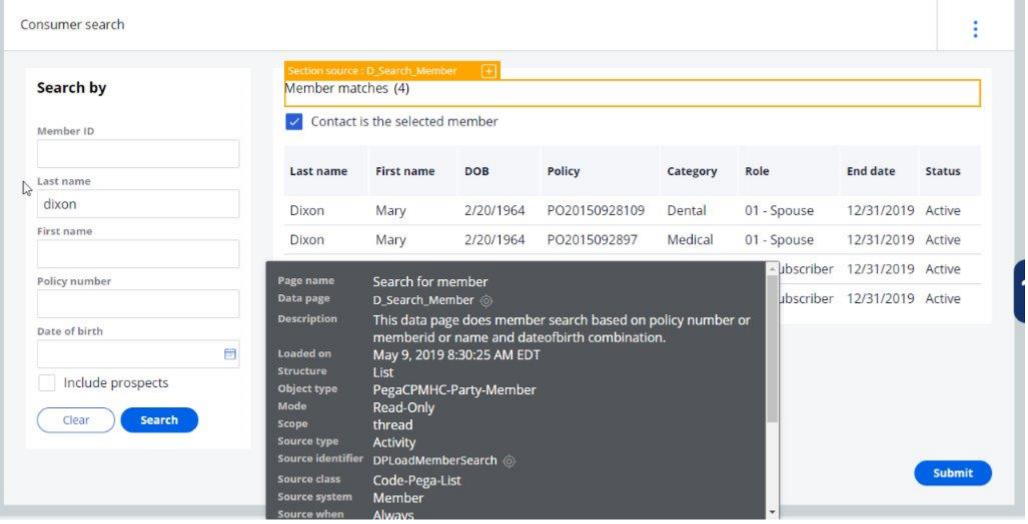
Troubleshoot data and integrations in UI elements by using the Live Data tool (8.3)

Identify how data is loaded in user interface (UI) elements, quickly discover which data sources were used, and immediately navigate to the relevant rules by using the new Live Data tool. The Live Data tool makes it possible for you to quickly troubleshoot data and integrations from the UI without searching through the clipboard.

Access the Live Data tool in the Dev Studio Developer toolbar to view data source information from your UI without opening rule forms.



Live Data tool



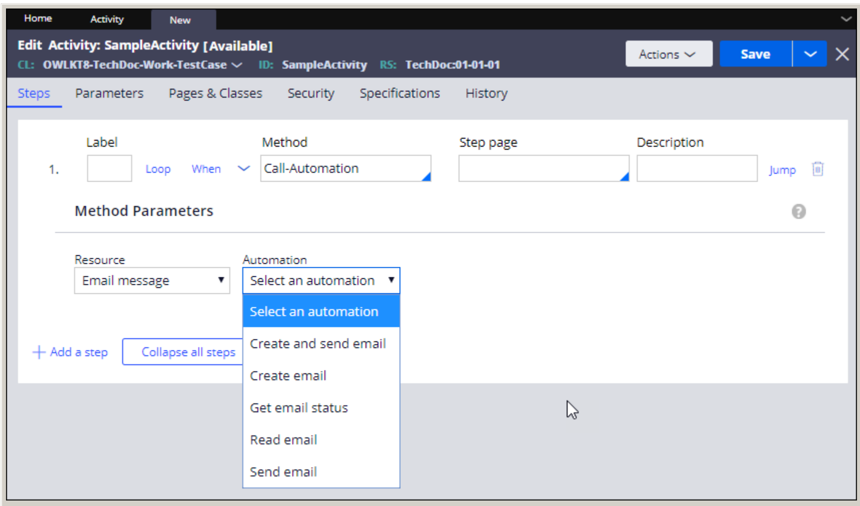
Live Data tool

For more information, see Troubleshooting data in UI elements.

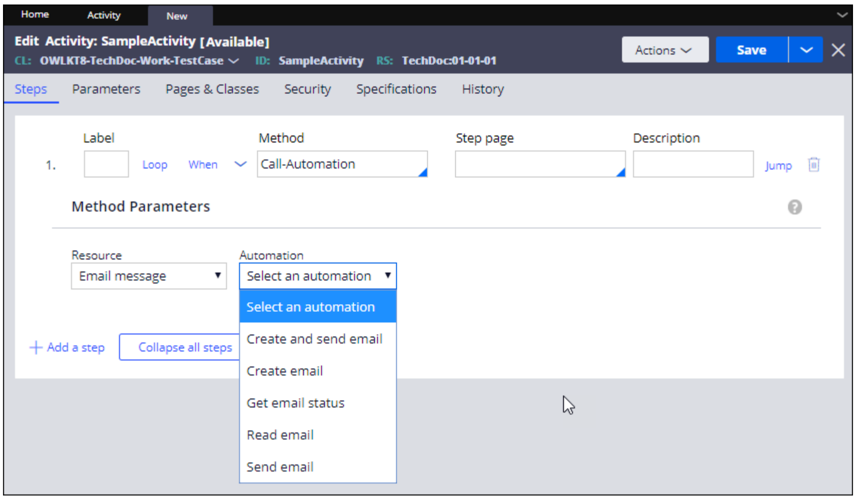
Use a sample JSON response to create a data type (8.3)

Reduce application development time by using a sample JSON response to create a data type when a live endpoint is not available. Using a sample JSON response reduces development time by allowing you to continue developing the integration without waiting for the endpoint to be available, since it is creating the response schema without connecting to the endpoint.

The following image shows a sample JSON response uploaded from a file into the Data Type wizard.



Sample JSON file



Sample JSON file

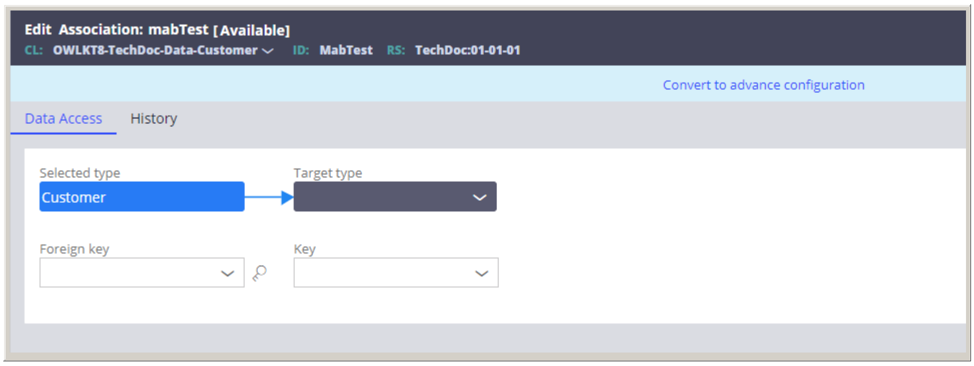
Create a simple association to join classes (8.3)

Create a simple association to quickly define an explicit relationship between two classes. Use a simple association when all of the following conditions are true.

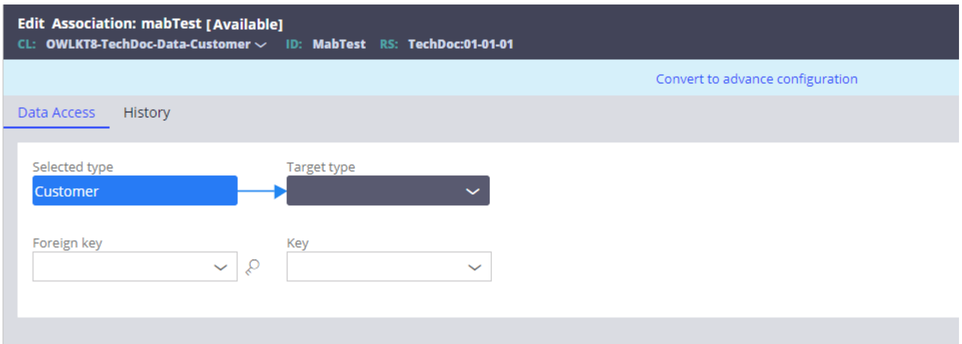
- The join is to only one class.
- The join type is left outer.
- The join is to a class using a singular key.

Use an advanced association for all other conditions. View associations that are available for reporting in the Visual data model.

The following figure shows the configuration for a simple association:

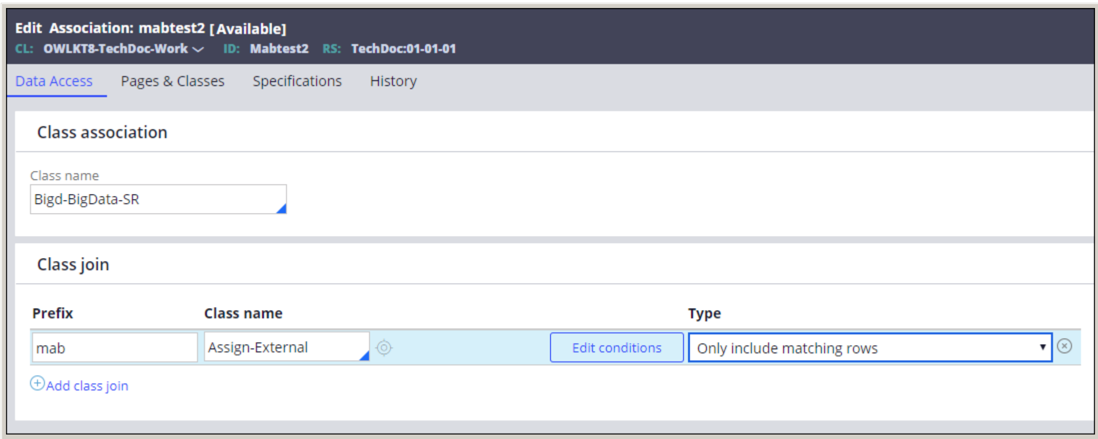


Simple association

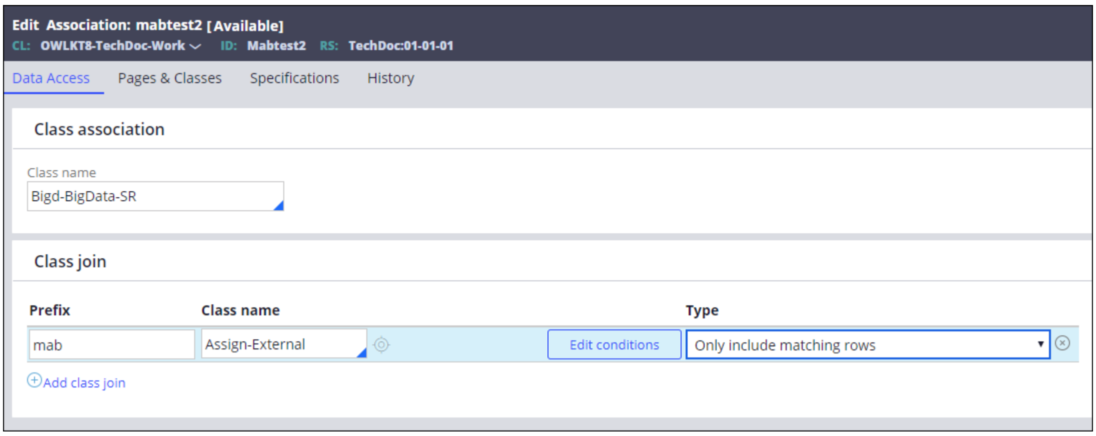


Simple association

The following figure shows the configuration for an advanced association:



Complex association



Complex association

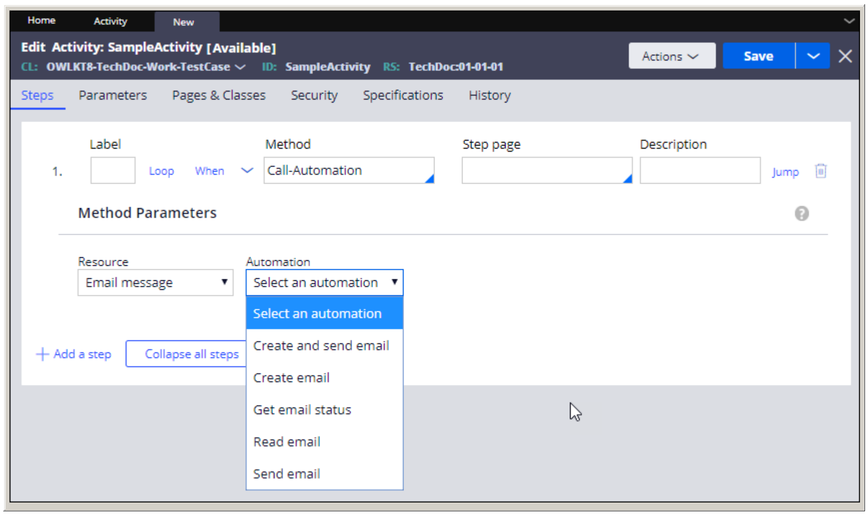
For more information, see Exploring the data model.

View and update your data model from the Visual Data Model (8.3)

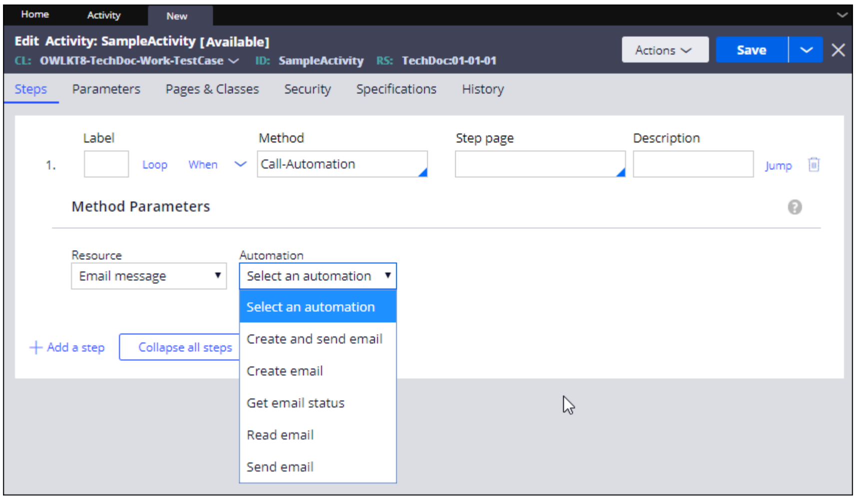
Quickly understand and update your data model by using the Visual Data Model. View your application's data model, see how its entities are related, update and delete fields, and add fields to the model without exiting the Visual Data Model.

You can now perform the following tasks:

- View the relationships among the case types and data type in your application.
- View the data types associated with a case type.
- View the fields associated with a case or data type.
- Search for fields.
- Open the data model for a case or data type.
- Add fields and relationships.
- Edit or delete fields and relationships.



Data Visualizer



Data Visualizer

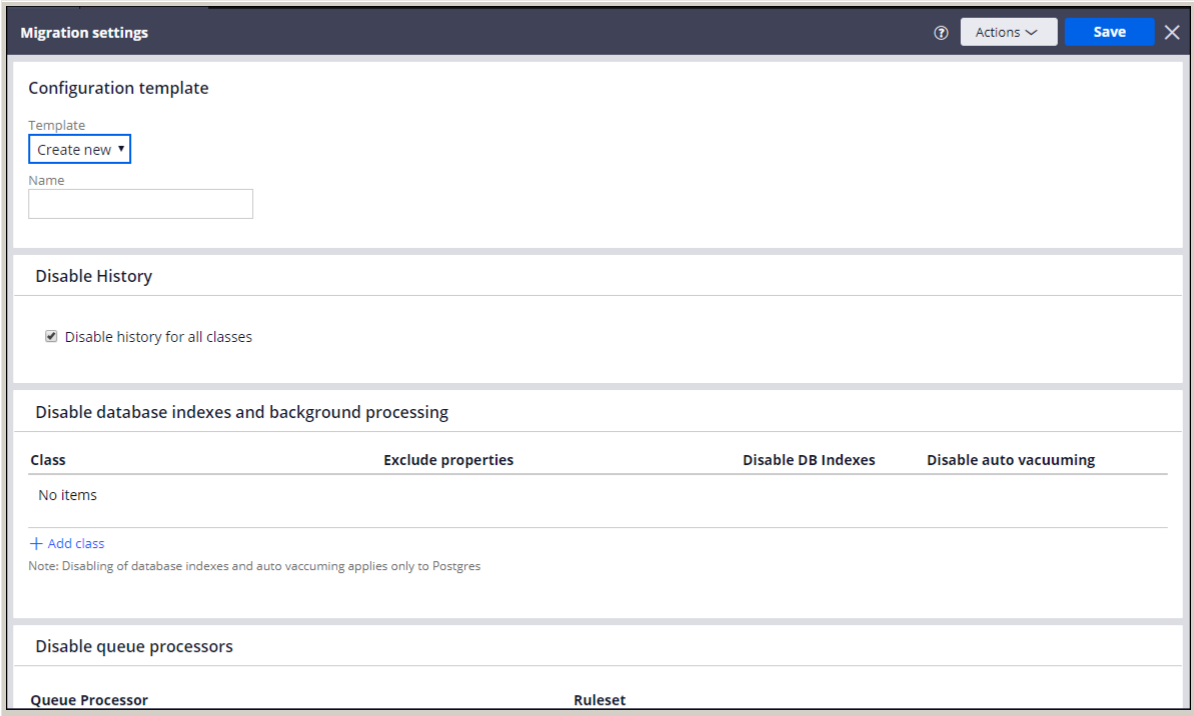
For more information, see [Exploring the data model](#).

Configure your environment for optimal performance during data migration (8.3)

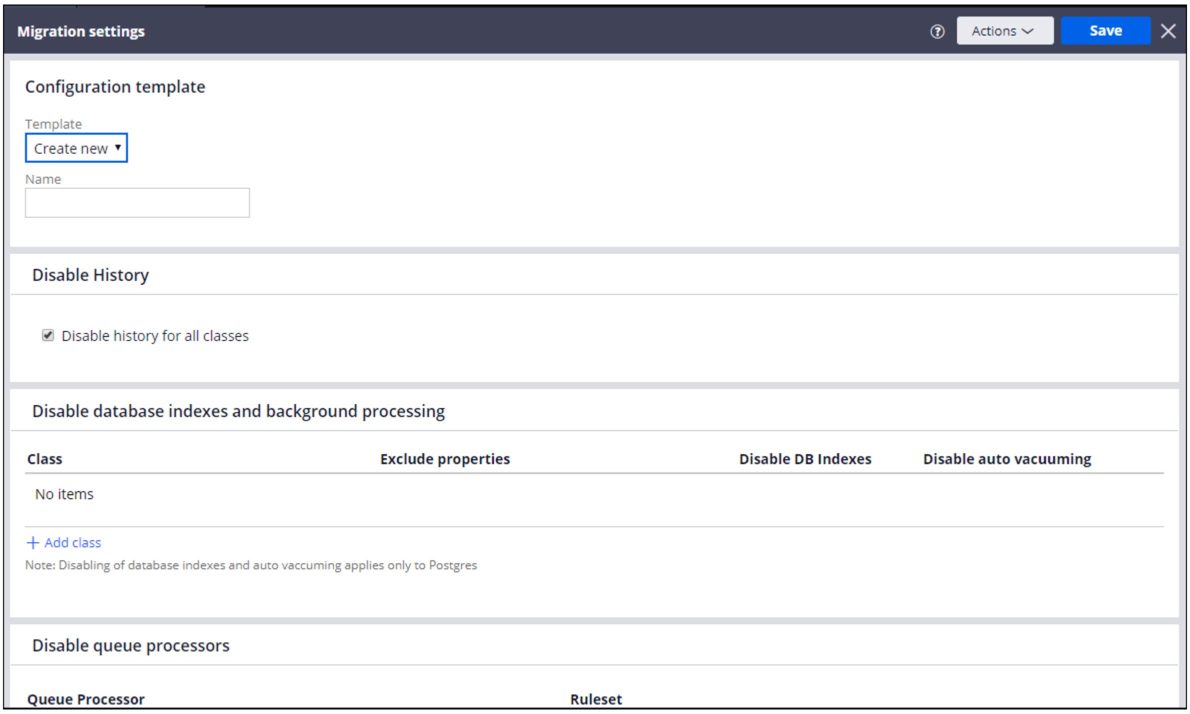
You can now create and use a configuration template to set up your environment for optimal performance when you migrate application data. Correctly setting up your environment helps ensure a successful migration. From the new Migration settings landing page, you can configure and save the following options that might affect data migration performance.

- History – disable history for all classes.
- Database indexing and background processing – turn off database indexing, auto vacuuming, and background processing for database tables with which the migration interacts.
- Queue processors, agents, job schedulers, and listeners – turn off processes that are not required for migration so that the resources are free and do not interrupt the migration process.
- Dynamic system settings that apply to data migration.

After you have finished migrating data, you can revert your system to its normal working state.



Migration settings landing page



Migration settings landing page

A guardrail warning has been added to the import wizard that warns you when the operator doing the import hasAllow rule checkout enabled. The Allow rule checkout option might affect performance; therefore, it is recommended that you disable this option or use an operator ID that does not have this option enabled.

For more information, see Creating a migration configuration template.

Retrieve a flat list of fields from Pega Digital Experience APIs (8.3)

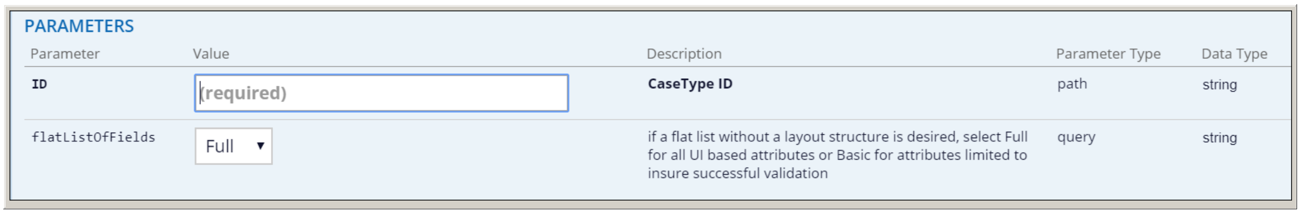
You can now use the *flatListOfFields* parameter to retrieve a list of the fields in a case or flow action. With this parameter, you avoid parsing all the layout information for the Pega Digital Experience API, making it easier for you to see only what you need to build your user interface.

The following Pega Digital Experience APIs support the *flatListOfFields* parameter:

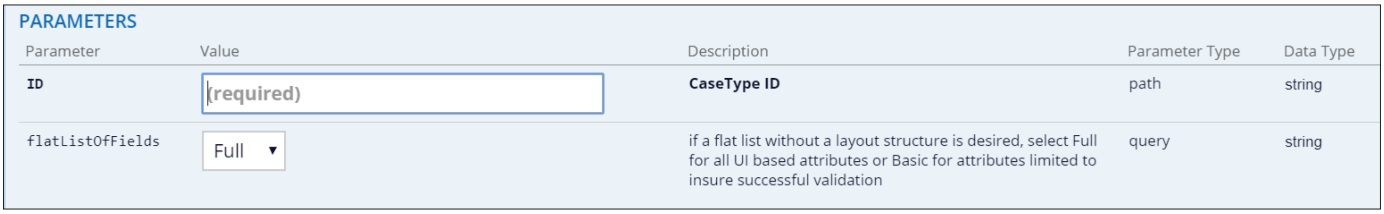
- GET /casetypes/{ID}
- GET /assignments/{ID}/actions/{actionID}
- GET /cases/{ID}/actions/{actionID}

Specify the level of detail that you need in the list by setting the parameter's values toFull or Basic. Full returns the full level of information, including the control format and modes. Basic returns basic information about the property, such as the type, reference, and value.

You can test the *flatListOfFields* parameter in the Parameters section of the Pega Digital Experience API, for example, GET /casetypes/{ID}, as shown in the following figure.



Parameters section



Parameters section

For more information, see [Retrieve a flat list of fields from Pega APIs](#).

Configure data source simulations from Integration Designer (8.3)

Continue developing and testing applications when your integrations are not available by toggling on simulation for a data source from Integration Designer in App Studio. Toggle the simulation off when the integration becomes available.

When you turn on simulation for a data source that does not have a configured simulation, the system creates a simulation by using Pega database storage as the source for the simulated data.

Toggle simulation option

Toggle simulation option

For more information, see [Turning on data source simulation](#).

Specify a queue of user operations in Pega Digital Experience APIs (8.3)

You can now specify a queue of page instructions for user operations on embedded pages, page lists, and page groups in Pega Digital Experience APIs. The page instructions allow your client application to more accurately model users' actions.

Pega Digital Experience APIs support the following operations:

- For embedded pages: DELETE, REPLACE, and UPDATE.
- For page lists: DELETE, REPLACE, UPDATE, APPEND, INSERT, and MOVE.
- For page groups: DELETE, REPLACE, UPDATE, and ADD.

Each time a user performs an operation, such as modifying a row in a table, the client application queues it. When the user completes the form, the client application passes all the operations via the page instructions to the server, and the server plays back the operations in the order that the user made them. For example, if the user edited a row (UPDATE), appended a row (APPEND), and inserted a row (INSERT), the client application passes only the instructions and fields for those three rows to the server instead of the entire table.

The following image shows the page instructions that are included in the Model Schema section of the POST /assignments{ID} Pega Digital Experience API.

Page instructions in the Model Schema section

Page instructions in the Model Schema section

The following Pega Digital Experience APIs include the page instructions:

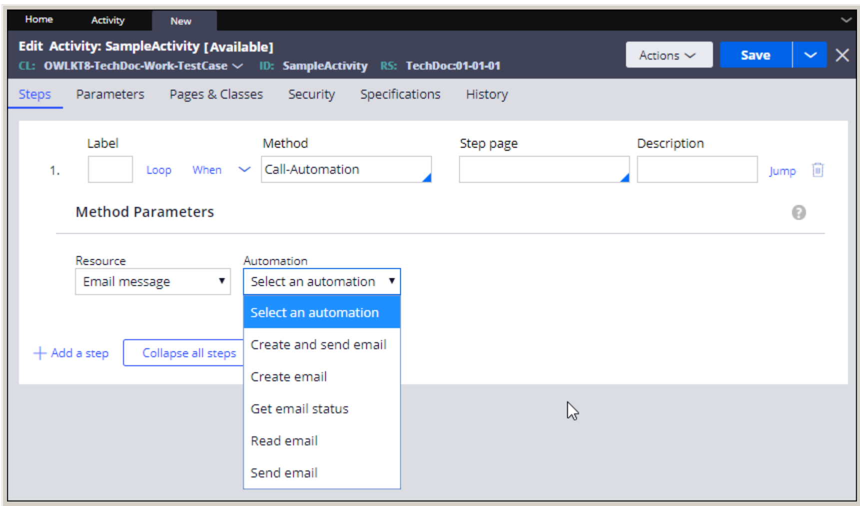
- PUT /casetypes/{ID}/refresh
- POST /cases
- PUT /cases/{ID}
- PUT /cases/{ID}/actions/{actionID}/refresh
- POST /assignments/{ID}
- PUT /assignments/{ID}/actions/{actionID}/refresh

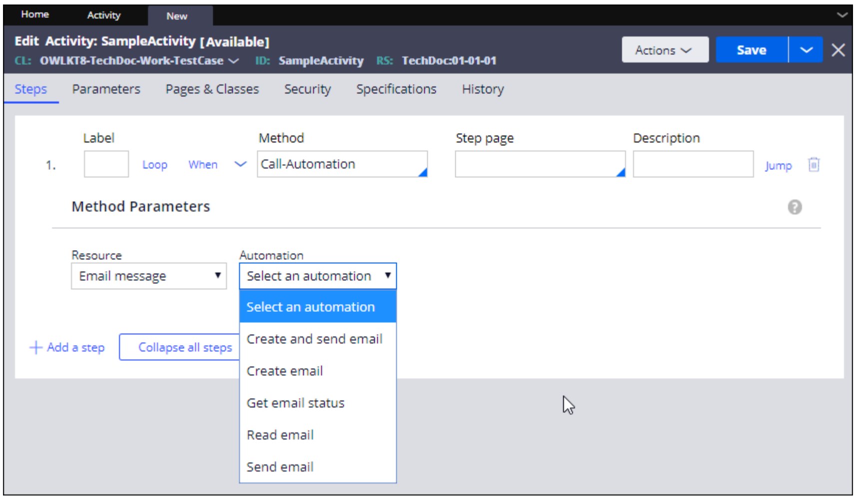
For more information, see [Page-related operation queuing with page instructions in Pega APIs](#).

Configure and debug automations using categories (8.3)

You can now categorize error messages in automations to quickly understand the type of error that occurred. In addition, page list data types are now supported for inputs and outputs in automations.

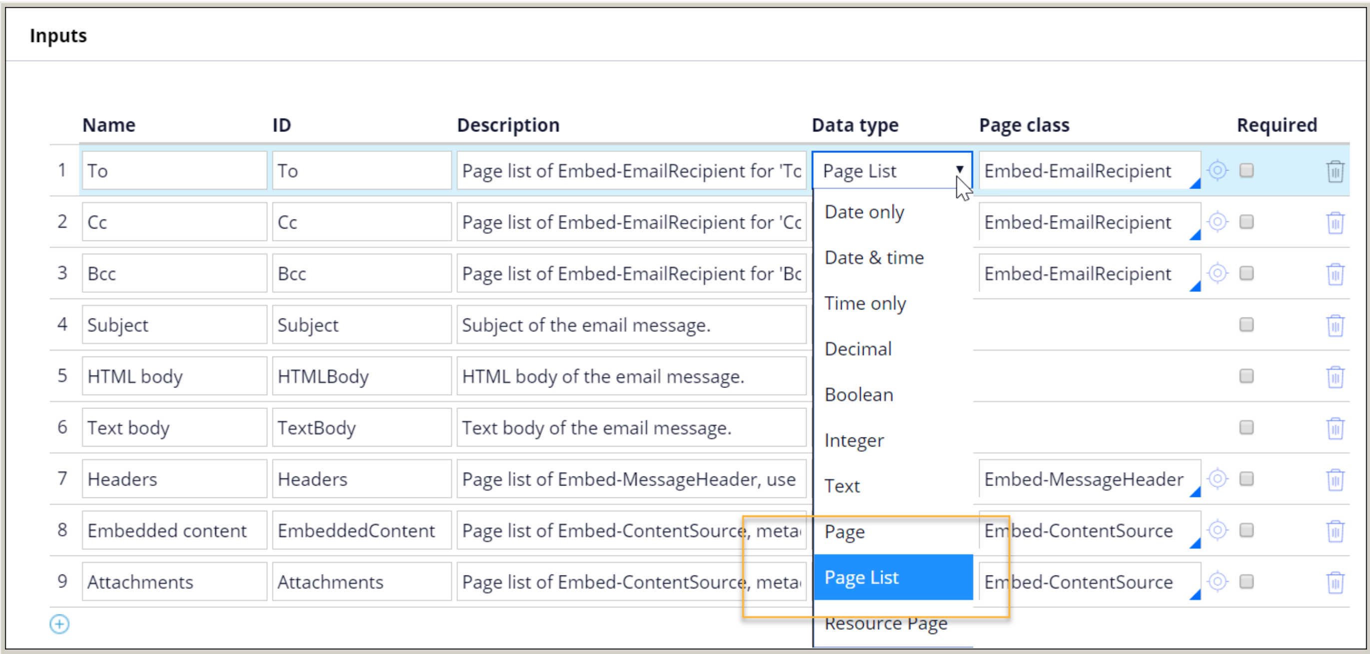
The Classificaton column shows the error category field for automations:

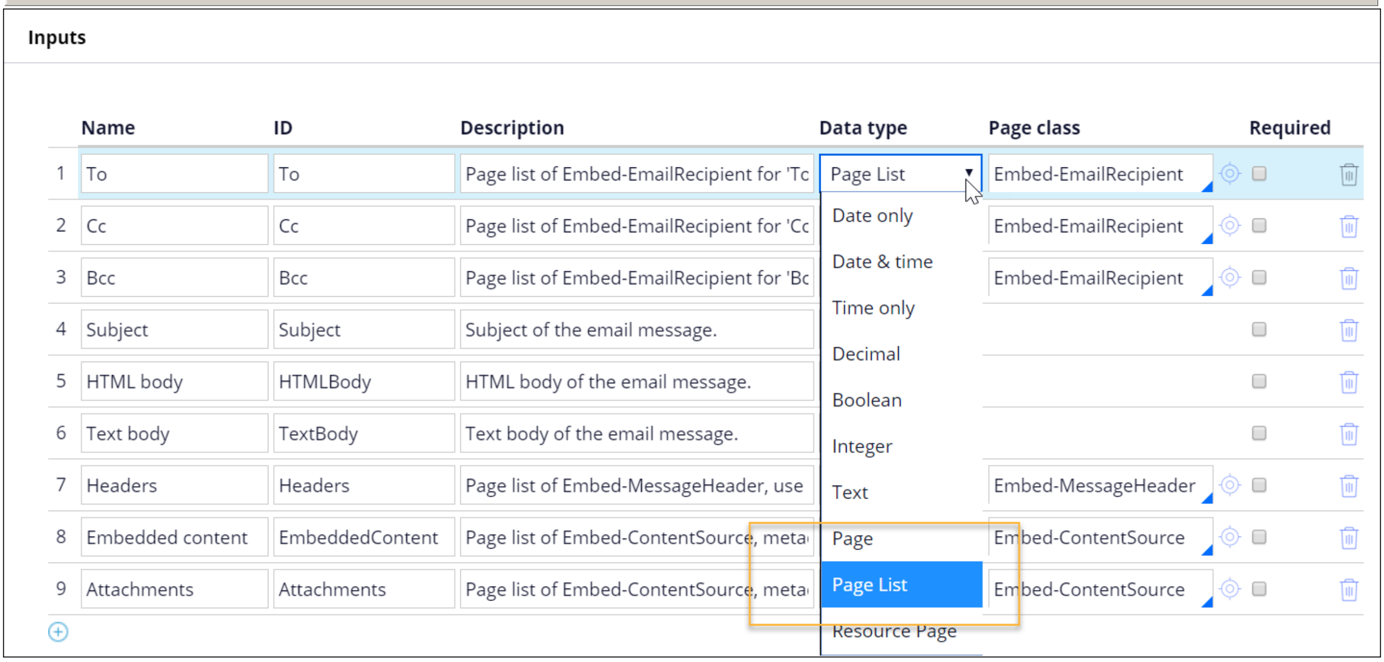




Automation error category

The Data type field shows the page list option for data types:





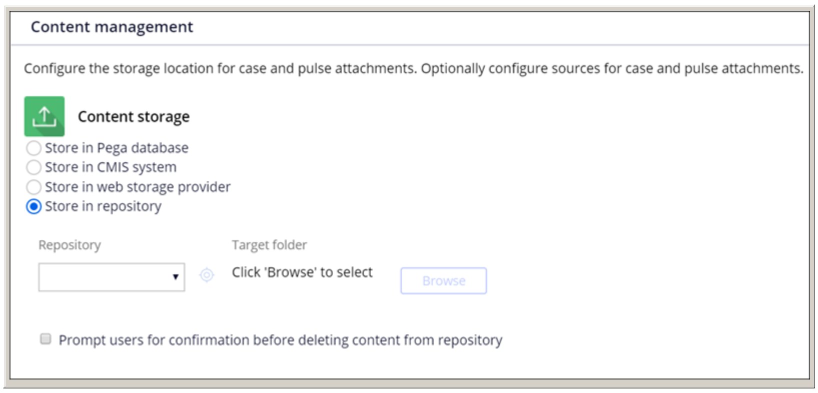
Page list option for automation inputs and outputs

For more information, see Viewing automations.

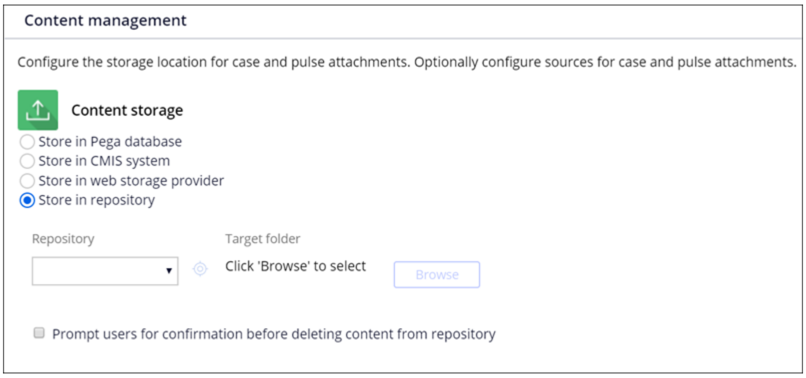
Source attachments from file storage repositories (8.2)

You can now source case and Pulse attachments from repositories, which provides a complete solution for attachment management. In addition, unlike other external sourcing solutions, repositories do not require OAuth 2.0 authentication, so that you can connect to repositories that use non-interactive authentication.

The ability to source attachments from repositories allows Pega Cloud customers to attach files from the Pega Cloud File Storage repository without using repository APIs. The following figure shows the content management options for storing and sourcing content for an application.



Application content management options



Application content management options

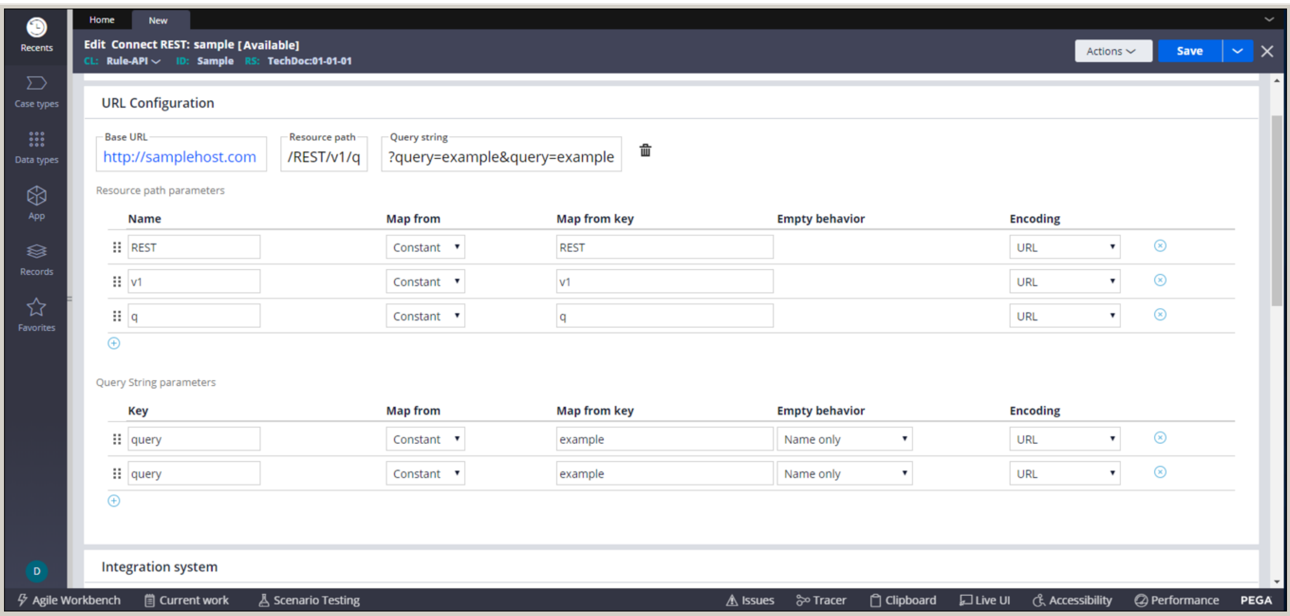
For more information, see Configuring external sourcing options for attachments.

Configure REST connectors with improved URL offerings (8.2)

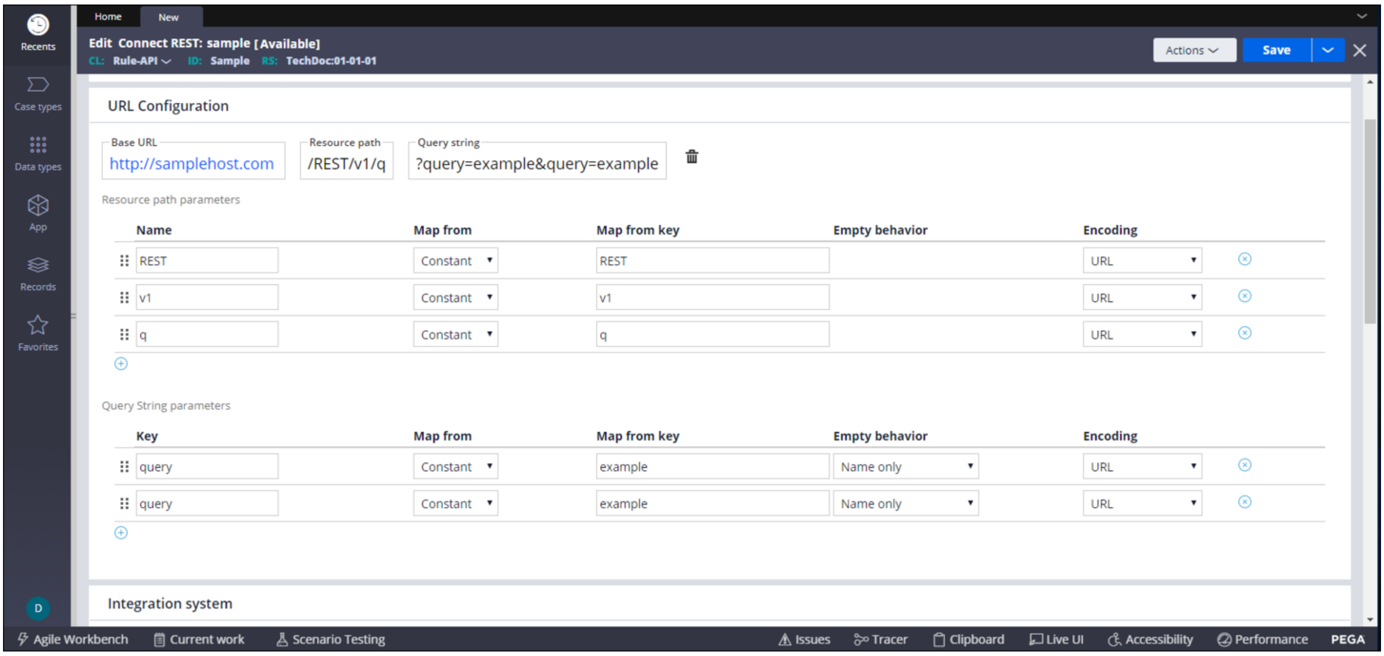
Configure REST connectors that support any standards-compliant URL, regardless of how those URLs use query parameters. Pega Platform™ 8.2 offers additional control over the configuration of URLs in REST connectors, including the ability to configure the source, encoding, and empty behavior of each part of the URL separately.

With the new URL support, you can now do the following actions:

- Include repeated query string parameters in a URL.
- Choose the behavior when the value of a query string parameter is empty when you send a request. You can choose to omit the empty parameter from the request, send the empty parameter, or raise an error.
- Apply appropriate encoding for different URL components.



URL with repeated query string parameters



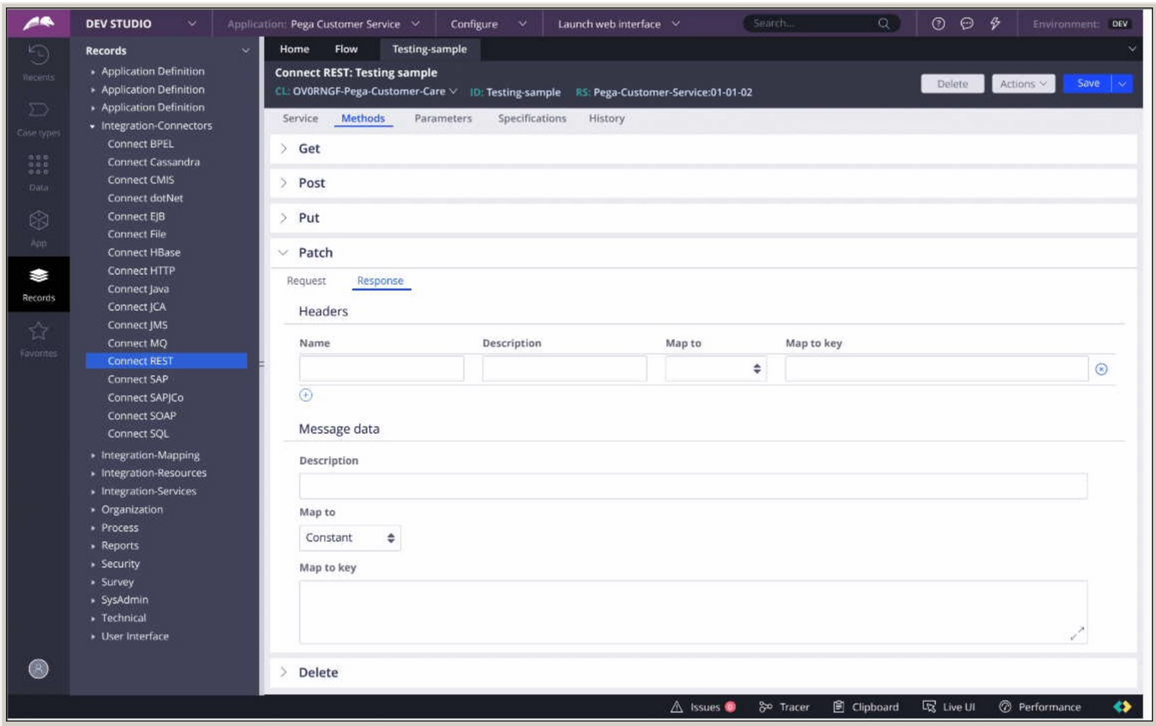
URL with repeated query string parameters

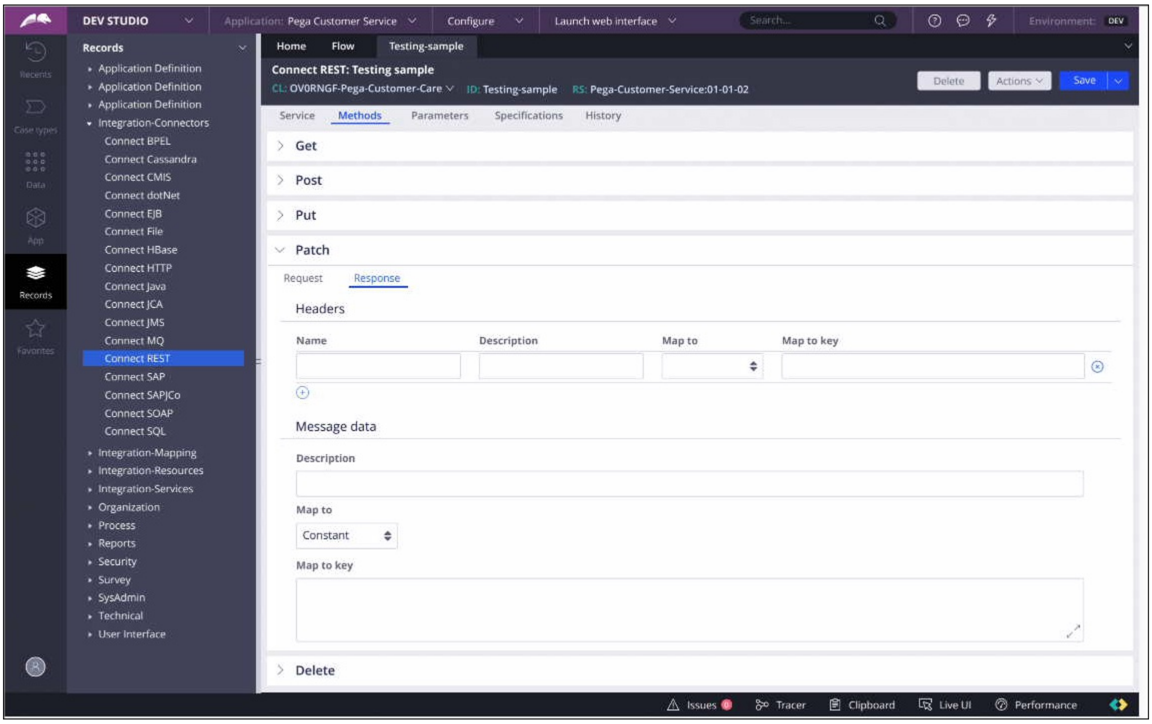
For more information about REST connectors, see [Connect REST form](#).

Integrate with services by using the PATCH method (8.2)

You can now integrate your Pega Platform™ application with REST APIs that require using the PATCH method. You can use REST integrations that support the PATCH method to make partial updates to individual resources while retaining data that does not require an update. With PATCH support, you no longer need to write complex custom code or use third-party libraries to integrate with services that require using the PATCH method.

To use the PATCH method in Pega Platform, complete the PATCH method fields on the REST connector and REST service rule forms, as shown in the following figure:



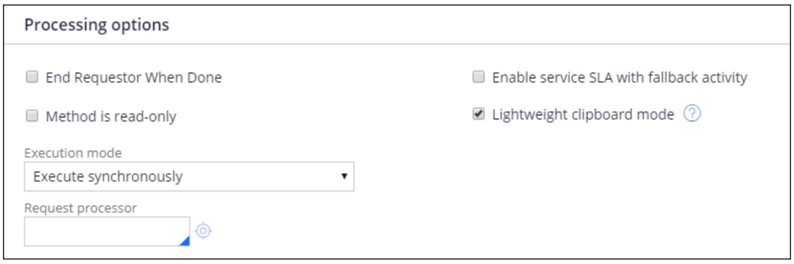


REST connector rule form PATCH method

For more information about integrating with REST APIs, see [Connect REST form - Completing the Methods tab](#).

Improve Service REST processing performance by using lightweight clipboard mode (8.2)

Improve clipboard performance in Service REST processing by using the Lightweight clipboard mode option. Access this option in Dev Studio on the Services tab of the connector rule form.



Lightweight clipboard mode option

This mode does not support all clipboard features. The following clipboard features are supported:

- Hierarchical structure – Arbitrarily deep and complex tree structure formed by pages, lists, groups, and so on.
- JAVA objects – Pages can be wrapped around Java objects.
- Complex references – APIs on the page support arbitrarily complex property reference strings, including list subscript symbolics such as <APPEND>, <FIRST>, and so on.
- Messaging – Message metadata can be attached to properties and pages, for example, as a result of validation, Rule-Declare-Constraints, or various APIs and activity methods
- Dictionary – Information specified on the Property rule form is available during clipboard processing.
- Serialization/deserialization – Save page structure and contents for storage on disk or in a database; then later restore the page into memory.

The following clipboard features are not supported:

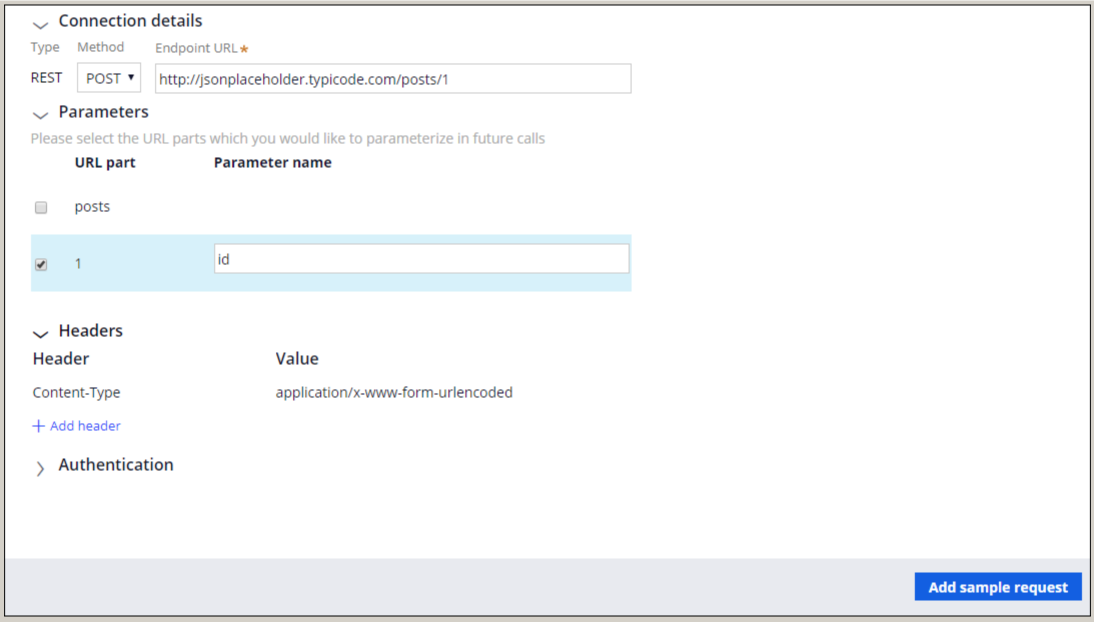
- Properties referencing a data page
- Linked properties
- Referenced properties
- Declaratives
- Limited support for declare expressions/backward and forward chaining
- Change tracking for property value updates in the user interface

For more information about configuring Service REST rules, see [Service REST form - Completing the Service tab](#).

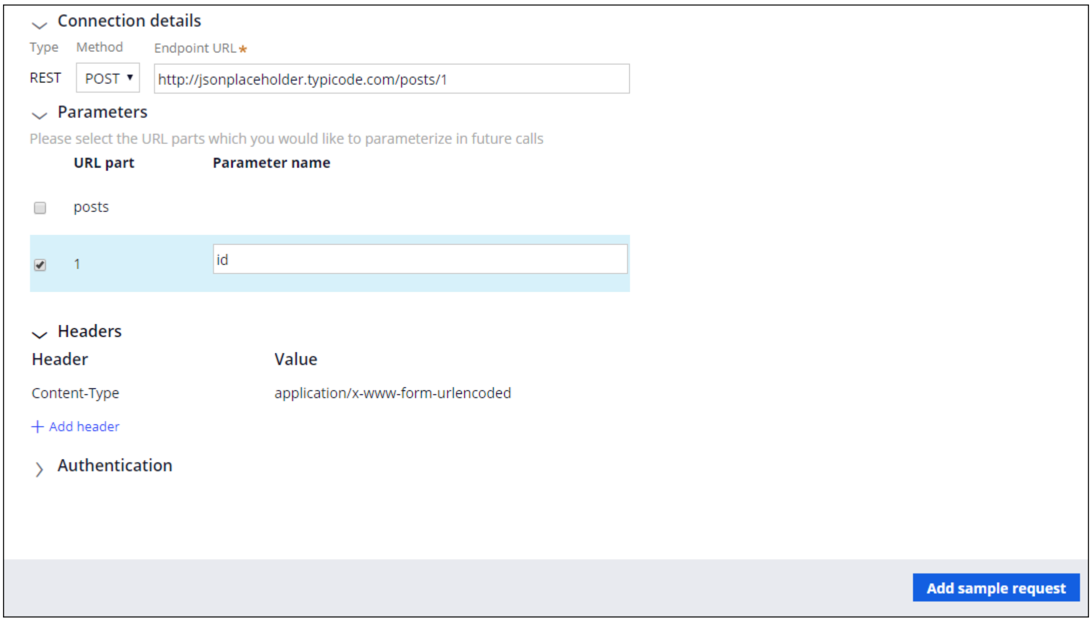
Use POST method in Integration Designer (8.2)

You can source data from any REST endpoint that requires a POST method to retrieve information. With the POST method, you can encrypt sensitive information, for example, a patient's data, in the body of the request.

To send encrypted data with the POST method, enter the correct URL endpoint in the Connection details section, as shown in the following figure. Add the data to a request body by clicking Add sample request.

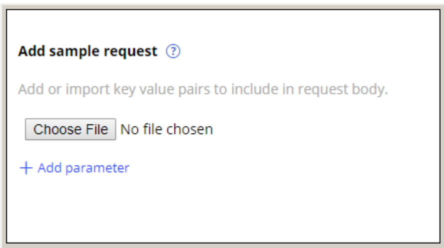


Using the POST method in Integration Designer

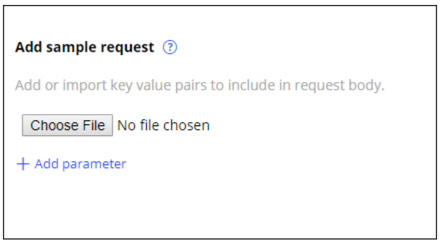


Using the POST method in Integration Designer

In the Add sample request window, you can add parameters or upload a file, as shown in the following image.



Adding data to the request body



Adding data to the request body

For more information about using the POST method, see the POST method section on [Service REST form - Completing the Methods tab]

Authenticate with OAuth 2.0 in Integration Designer (8.2)

You can use OAuth 2.0 authentication in Integration Designer to communicate securely with external applications such as Facebook and Google over HTTPS when you create a data type, replace a data source, or update a data source. Integration Designer supports the configuration of OAuth 2.0 authentication with two grant types, authorization code and client credentials.

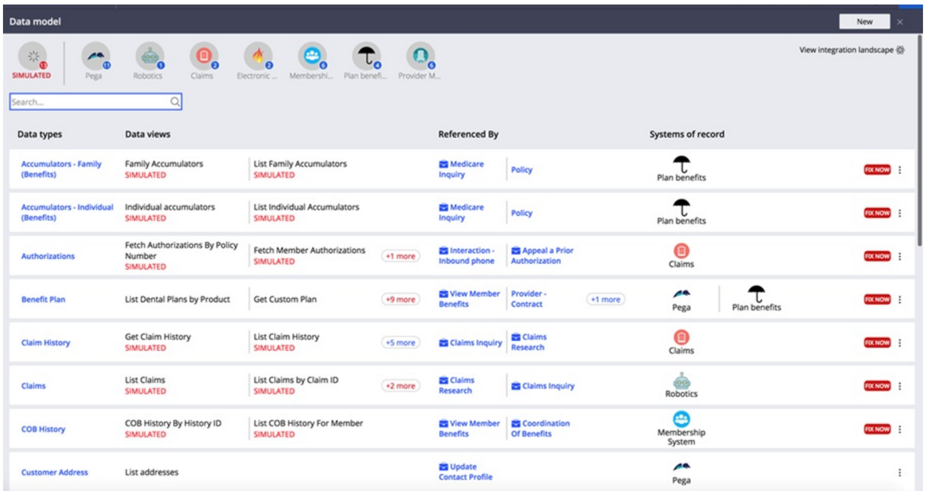
For more information about OAuth 2.0 authentication, see [OAuth 2.0 providers].

Explore your data and integration assets with Integration Designer

The Integration Designer provides a single location for viewing all the business objects, data views, object dependencies, and external systems in an application.

The Integration Designer landing page clearly shows how all the components are connected, including:

- Data types that are used in your application
- Data Views for the data type
- Case types and data types in the applications that use this data type
- Systems of record that are the sources for the data

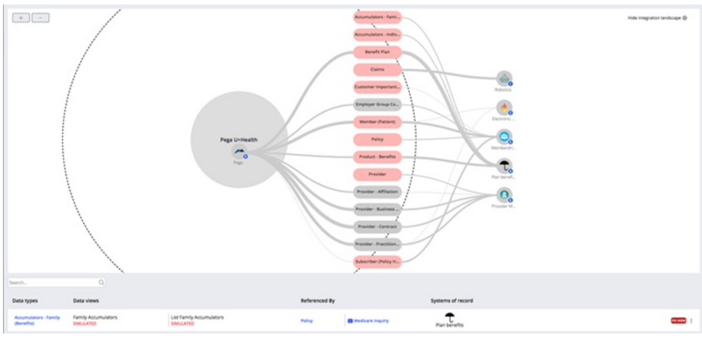


Integration Designer landing page

For more information, see [Managing data and integrations with the Integration Designer]() and [Viewing the integration landscape]().

Understand how your data and integration assets are sourced

The integration landscape feature of the Integration Designer provides a visual, interactive map of your application's data types and their sources. The following figure shows a sample integration landscape.



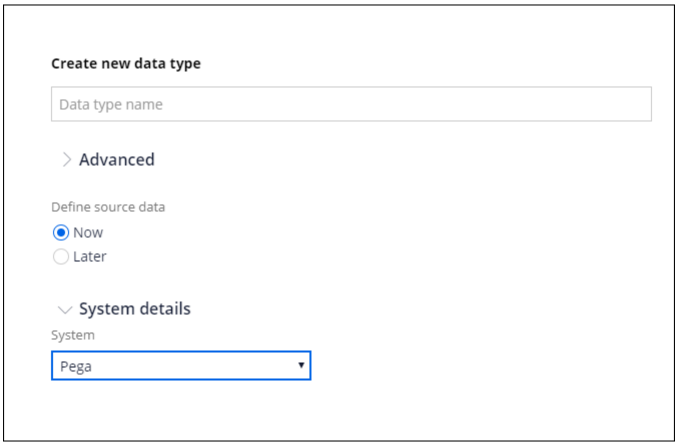
Integration landscape

For more information, see [Viewing the integration landscape]().

Create data types sourced from the Pega database

In the Integration Designer, you can quickly and easily create a data type by using the Pega Platform™ local database as your system of record. The Pega system is included with the product.

The following figure shows the Create new data type dialog box with the System details.



Create new data type - Pega Platform database

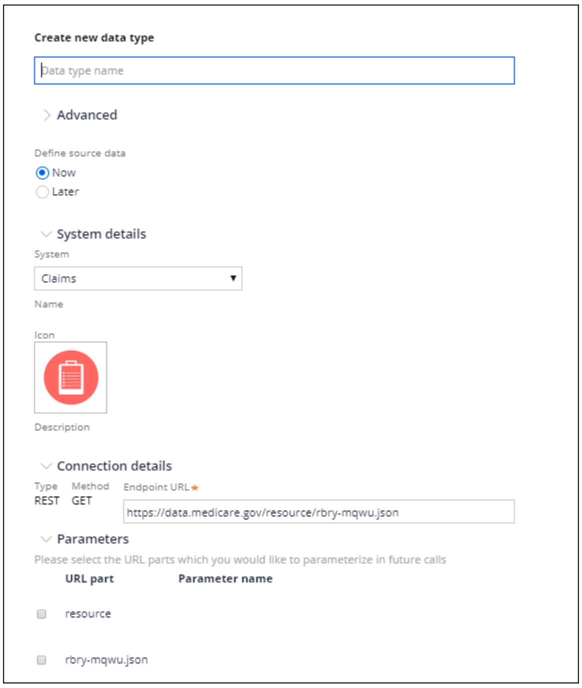
For more information, see [Adding a data type that uses local data storage]().

Create data types sourced from REST endpoints

From the Integration Designer you can create a data type that uses a REST connection, data views for the data type, and optionally connect the data type to a system of record.

From the Create new data type dialog box, you can do the following actions:

- Define the source now or later.
- Select the system of record or create one by selecting Create new.
- Enter your endpoint URL and specify which parts are parameters for future calls.
- Add request headers and authentication, when necessary.



Create data type - REST connection

For more information, see [Adding a data type by using a REST connection](#).

Define your data type from a REST response

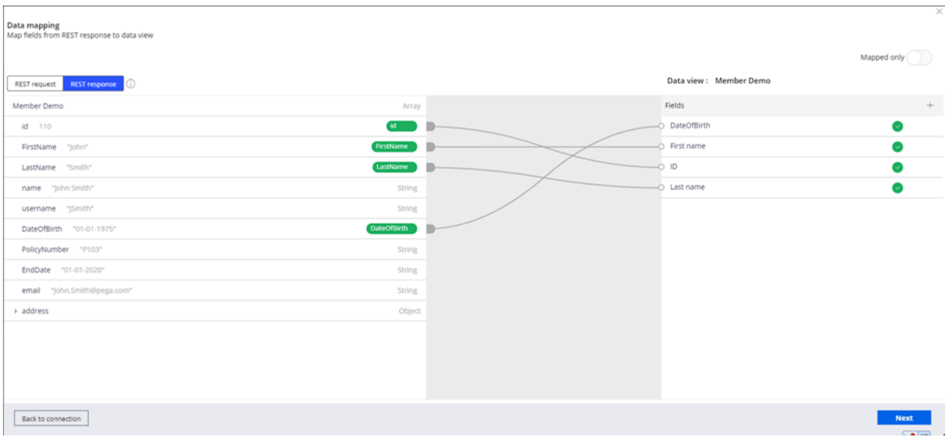
You can quickly create a data type model by using the REST response as the basis for the model. The following figure shows the REST response along with the type and value of each field. For each field, on the right, you choose to use that data by mapping it to a new property. You can automatically create mappings for all properties by clicking Add all.

Data mapping example

For more information, see [Mapping fields](#).

Map REST responses to your data types with visual drag-and-drop

The Visual Data Mapper provides drag-and-drop mapping between the REST response and the data type data model. You can add fields and view raw request and response data, including the full URL and the response codes, to correctly map fields. Visual data mapping simplifies connecting data sources to the application's data views, without requiring knowledge of all the technical details of the integration. The following figure shows a sample mapping.

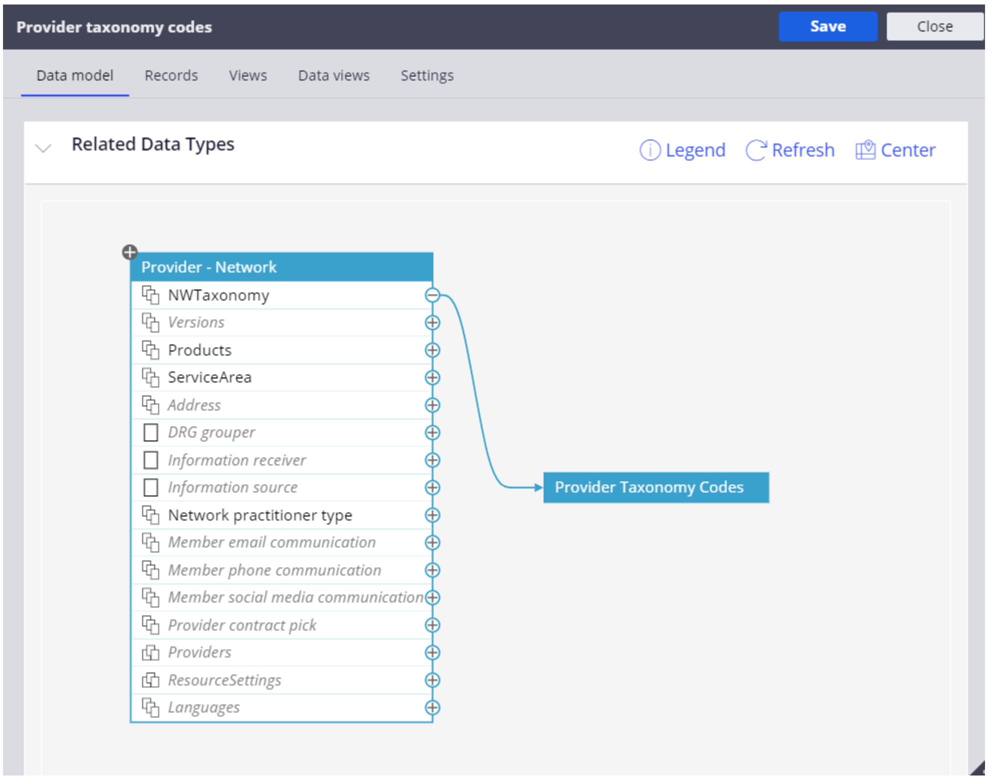


Visual Editor

For more information, see [Mapping fields](#).

Visualize data type relationships

Visualize a data type's relationships and manage the data model by using the Data Visualizer on the Data Model tab of the Data Designer in App Studio. The Data Visualizer shows the relationships between the selected data type and its properties, and with the other data types in the application. By visualizing data, you can maintain and understand the effect of changes to your data virtualization. The following diagram shows a data visualization.

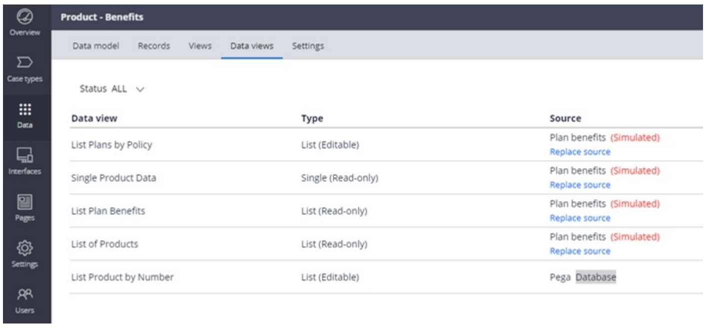


Data Visualizer

For more information, see [Data Visualization](#).

Replace or update existing sources for a data type

Replace or update data sources for a data view in App Studio. Data views can be a single instance or a list, and they can be read-only, editable, or savable. You can easily see the data views that have simulated data sources, and replace the source from the Data views tab, as shown in the following figure.

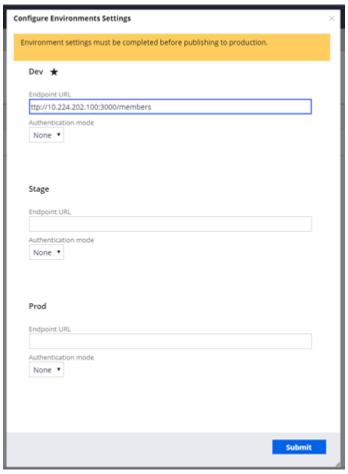


Data views tab

For more information, see [Data view management](#).

Manage integration settings across environments

Easily manage your integration settings across the development, stage, and production environments. Specify the endpoint URL and authentication modes for each environment. At run time, the system chooses the appropriate values based on your environment. You can configure these environment settings when you add a new data type, update or replace a data source, or from the Data Views tab in the Data Designer. The following figure shows an example of the Configure Environments Settings dialog box.

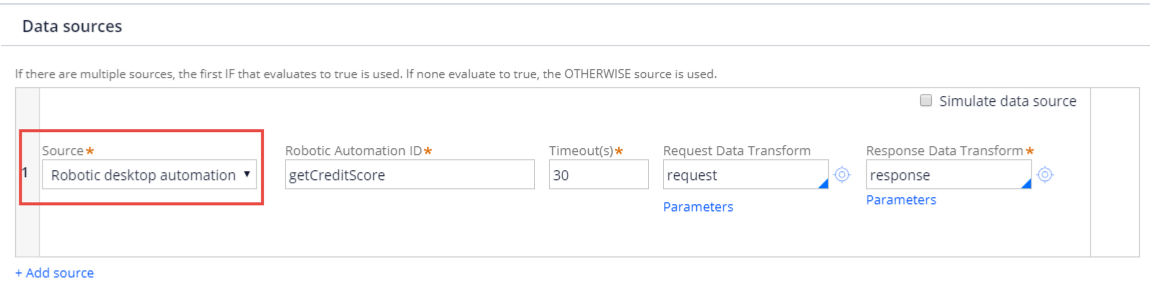


Configure Environments Settings dialog box

For more information, see [Configuring endpoint URLs for environments](#).

Configure data pages to source information from automations

Configure data pages to source information from robotic desktop automations (RDAs). By using an RDA to source a data page, you can connect your Pega Platform™ application to any application or system that is accessible from an end-user's desktop, even systems that do not have an API. By using automations to retrieve data and load it into a data page, you can use data virtualization to separate your Pega Platform data model from the physical interface of a legacy system against which the automation is running. Save plans are also supported for RDAs. The following figure shows a sample data page that is configured to use an RDA as a source.



Data sources configuration

For more information, see [Obtaining information from robotic automations](#), [Using a Robotic Desktop Automation as a source for a data page](#), and [Using a Robotic Automation as a source for a data page](#).

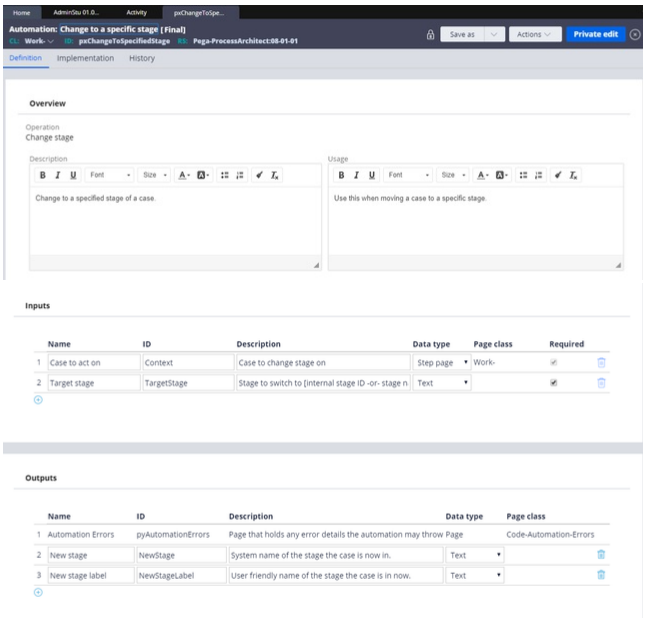
Reduce complexity and activity dependencies with automations

Automations are APIs that follow a RESTful pattern and have a contract that clearly defines strongly-typed inputs, outputs, and error messages. Because this contract is separate from implementation, you can include automations in your case design to reduce complexity and replace dependencies on activities.

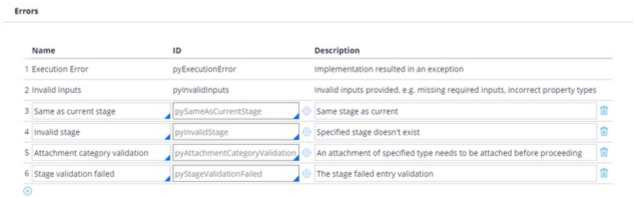
Pega Platform™ 8.1 introduces the new development model, delivers the Change stage and Change to next stage automations, and the new Automation rule. You can use the Change stage and Change to next stage automations in flows or in steps in the case life cycle. You cannot create new automations; you can only view the automations that Pega 8.1 delivers.

Future releases will enrich the core functionality of the automation rule and deliver additional automations.

The following figures illustrate the configuration of the Change Stage automation.



Input parameters and return values



Errors

	Name	ID	Description
1	Execution Error	pyExecutionError	Implementation resulted in an exception
2	Invalid Inputs	pyInvalidInputs	Invalid inputs provided, e.g. missing required inputs, incorrect property types
3	Same as current stage	pySameAsCurrentStage	Same stage as current
4	Invalid stage	pyInvalidStage	Specified stage doesn't exist
5	Attachment category validation	pyAttachmentCategoryValidation	An attachment of specified type needs to be attached before proceeding
6	Stage validation failed	pyStageValidationFailed	The stage failed entry validation

Error codes and messages

For more information, see Viewing automations.

Decision Management

Significant usability enhancements improve the overall user experience of Decision Management and enable you to meet the ever-changing needs of your customers. The key enhancements include the option to use the predictive power of Google AI Platform models, the ability to create a dedicated application environment for simulating decision strategies on real-life data, the option to deploy urgent business rule changes without interrupting revisions that are in progress, and many others.

The following list includes all the latest and previous Decision Management enhancements:

- Process high-volume interactions more efficiently (8.3)
- Increase your system's reliability by upgrading to Cassandra 3.11.3 (8.3)
- Create custom criteria for Proposition Filter rules by using the condition builder (8.3)
- Evaluate event strategies through unit testing (8.3)
- Improve your custom predictive models through machine learning as a service (8.3)
- Make better predictions through actionable insights in Prediction Studio (8.3)
- Release urgent business rule updates through fast-track change requests (8.3)
- Sample, migrate, and test production data in a simulation environment (8.3)
- Improve the management of text extraction models through entity types (8.3)
- Effectively manage text analytics models (8.3)
- Improve prediction accuracy by monitoring predictive models (8.2)
- Interpret the decision funnel with simulation tests (8.2)
- Review the lifecycle events of data flow runs (8.2)
- Optimize decision strategy performance (8.2)
- Evaluate event strategies through test runs (8.2)
- Generate scorecard explanations (8.2)
- Configure enhanced File data sets (8.2)
- Build machine-learning models in Prediction Studio
- Create taxonomies more efficiently
- Extract meaningful summaries from text
- Configure managed data flow runs
- Benefit from improved decision strategies and test runs
- Connect to remote repositories through File data sets
- Add predictors based on Interaction History
- Comply with customer data management regulations

To learn about all the new features in **Decision Management**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

Visit www.pega.com to learn more about Pega Infinity™.

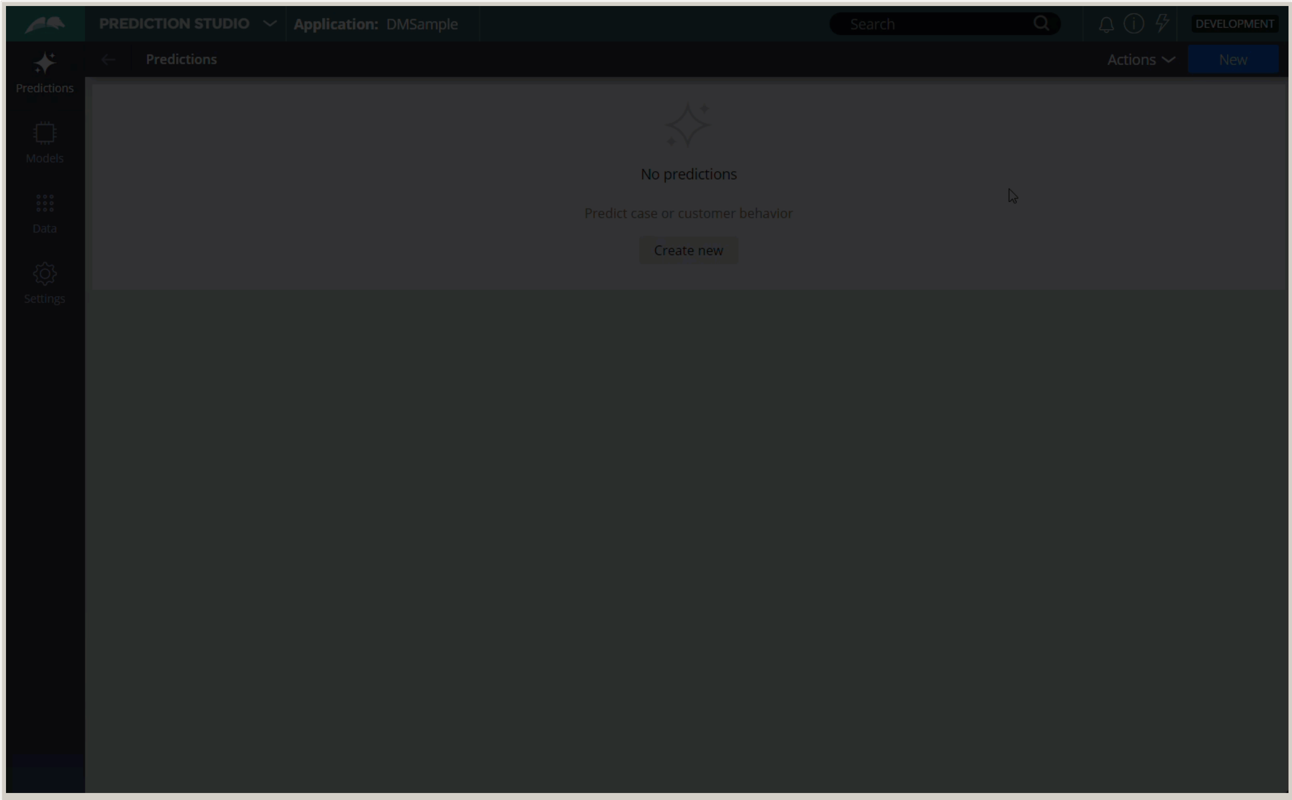
Visit What's New in Pega Platform to discover all the exciting new features in this release.

Create predictions in just a few clicks (8.4)

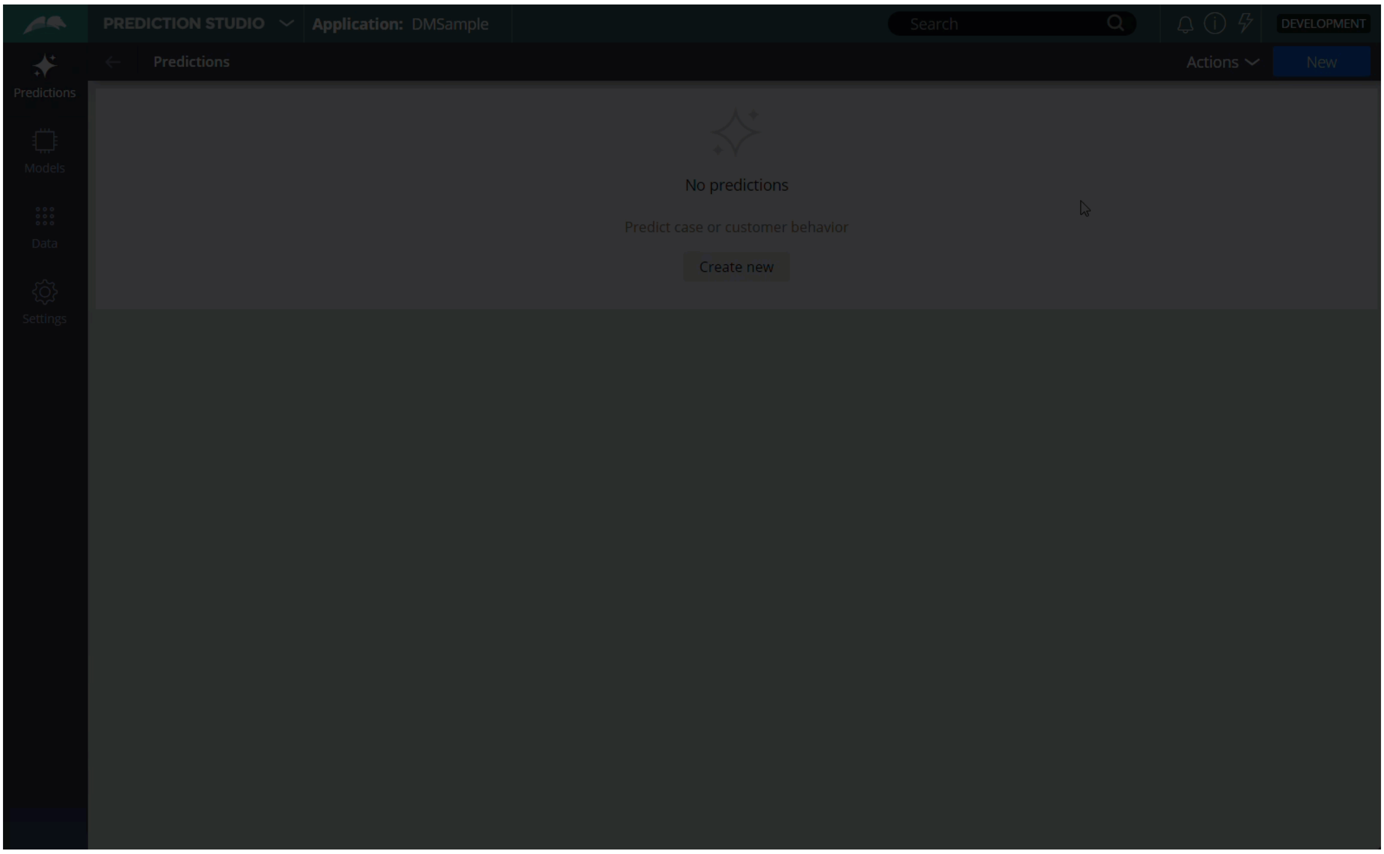
Predict customer behavior and business events by using Prediction Studio to create predictions. By answering a short series of questions about what you want to predict, you can, for example, create a prediction to anticipate customer churn. You can then include the prediction as part of your next-best-action strategy to present an offer to the customers that are most likely to churn.

By creating a prediction, you also create an adaptive model as the basis of the prediction. You do not need to provide historical data to the underlying adaptive model, because adaptive models use real-time self-learning to create their own data, based on incoming customer interactions.

The following video demonstrates how to create predictions in Prediction Studio:



Creating a prediction to determine if a customer is likely to accept an offer



Creating a prediction to determine if a customer is likely to accept an offer

For more information, see Anticipating customer behavior and business events by using predictions.

Configure your chatbot for detecting small talk (8.4)

Pega Platform™ chatbots can now automatically detect small talk through the default topic detection model, pySmallTalk. Use this model to configure custom chatbot responses based on the small talk topic that your chatbot detects. Chatbots that use small talk are smarter and more appealing because they appear to have more human qualities, which helps build better connections with users.

The pySmallTalk topic detection model contains the following pre-defined topics:

Default small talk topics

Small talk topic	Example
Escalation	I want to talk to a human!
Greeting	Hi, Howdy! Hello!, How's it going?
Goodbye	Bye, See ya, talk to you later!
Thanks	Thank you!, Thanks, Much obliged
Help	help

Small talk topic	Example
Cancel	cancel
Other	Not applicable

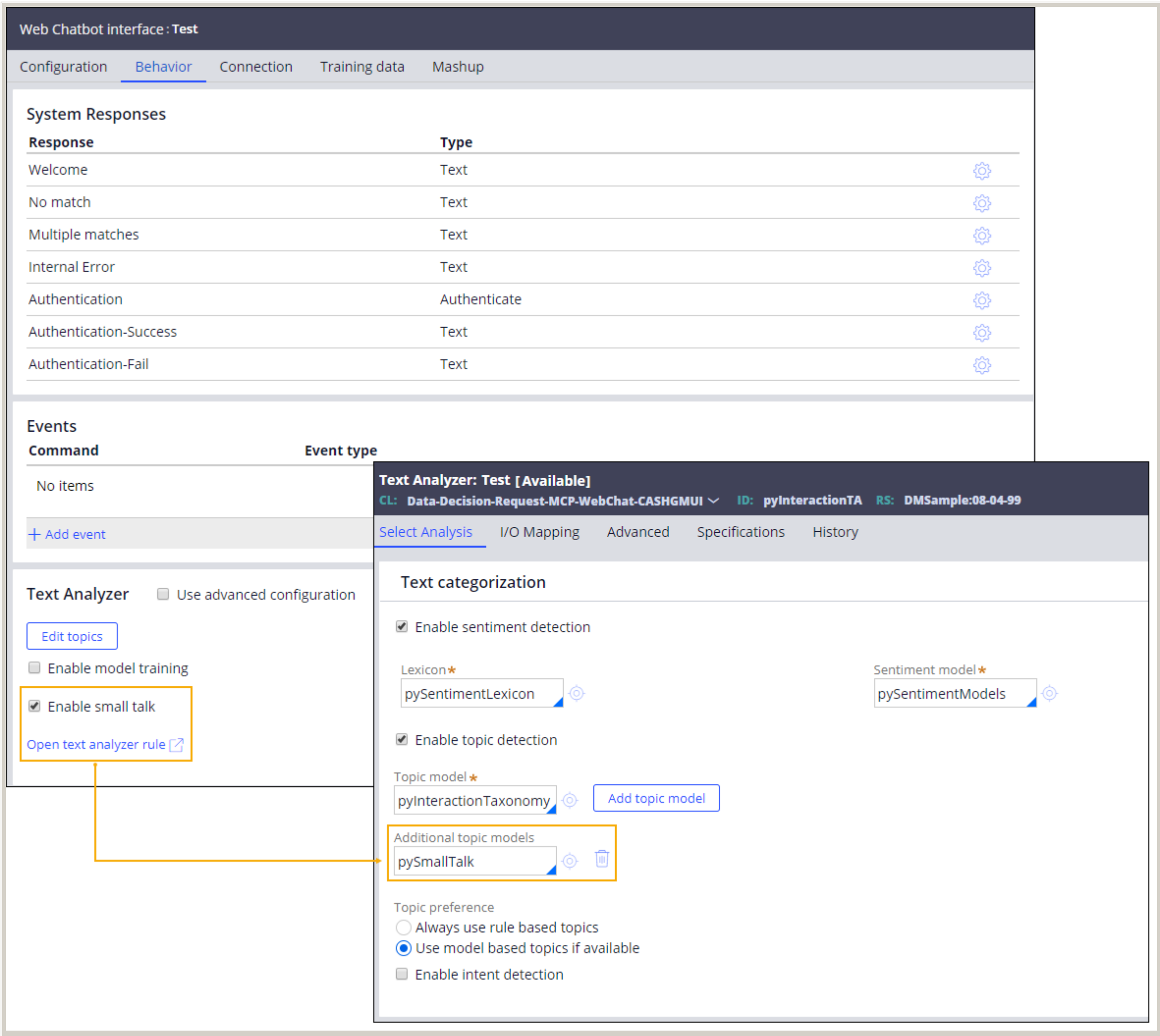
The Help and Cancel topics are based on single keywords. You can use them to create a custom action, for example, route the conversation to a sales representative if the user enters the word help or to terminate the conversation when the user enters the word cancel. However, if the user places these words within a context (for example, I would like to cancel my internet subscription or I would like to get your help in booking a flight from New York to San Francisco), then the text analyzer chooses a topic from the business model, which corresponds to that context, for example, Action > Book flight.

Other is a fallback topic, in case the small talk detection model does not find a match for any of the previous categories.

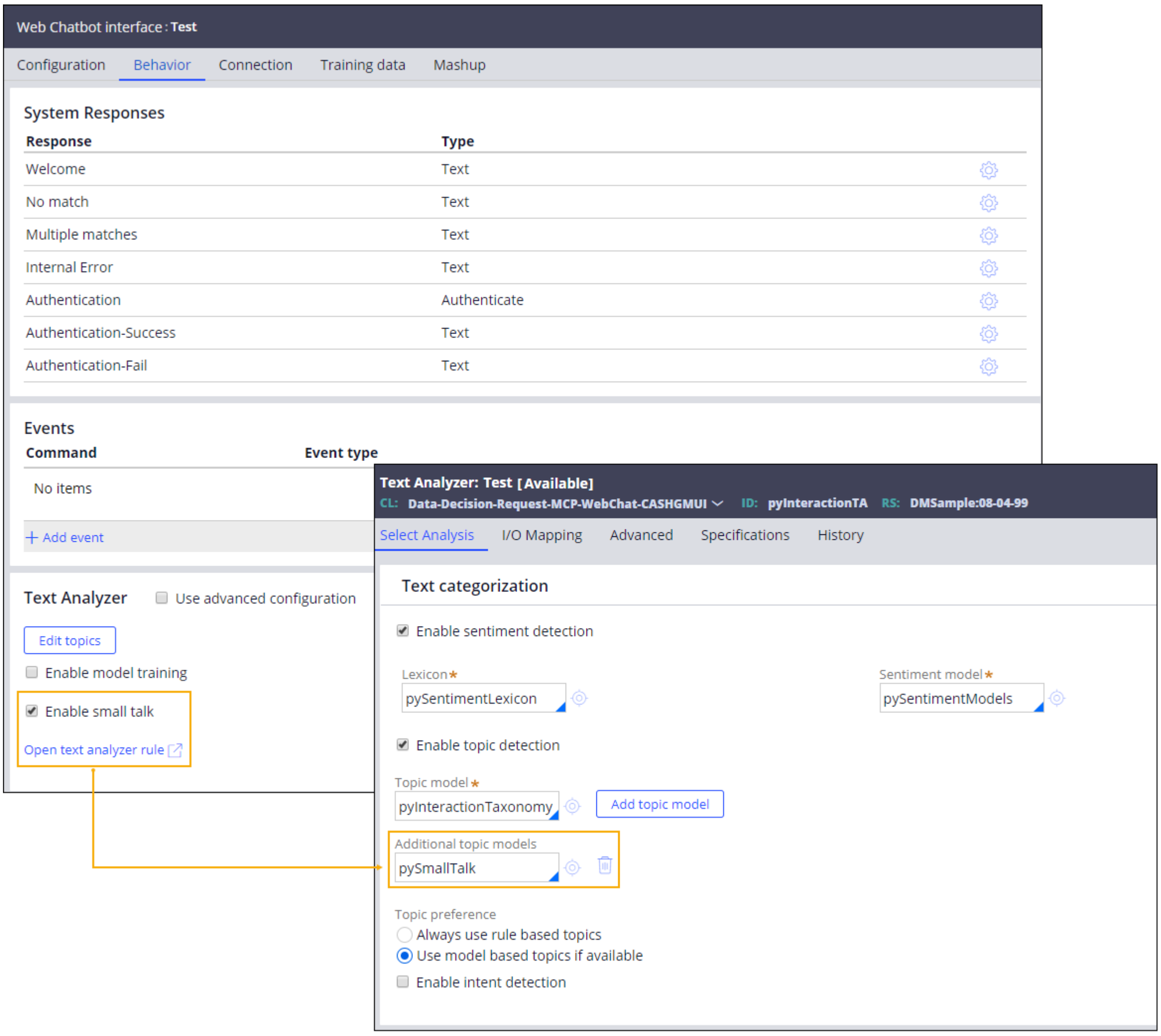
The small talk model is available for English, German, Spanish, Dutch, Portuguese, Italian, and French.

Small talk detection in the Web Chatbot channel

For any Web Chatbot channel that you create, small talk detection is enabled by default, as shown in the following example:



Enabling small talk detection



Enabling small talk detection

Through the Enable small talk button, you automatically add the pySmallTalk model to the list of topic models in the corresponding text analyzer. At the same time, the pyInteractionDF data flow adds the pxManageSmallTalkTopics activity for processing the NLP outcome. This activity contains the logic for determining whether to classify the text as small talk or being related to your business use case (for example, booking a flight).

Small talk detection logic

To determine whether to consider the text small talk, the pxManageSmallTalkTopics activity compares the confidence score of the topic detection model that addresses your business use case (for example, the banking model) with the confidence score of the small talk detection model. The activity uses the EvaluateSmallTalkTopics decision table to perform the comparison.

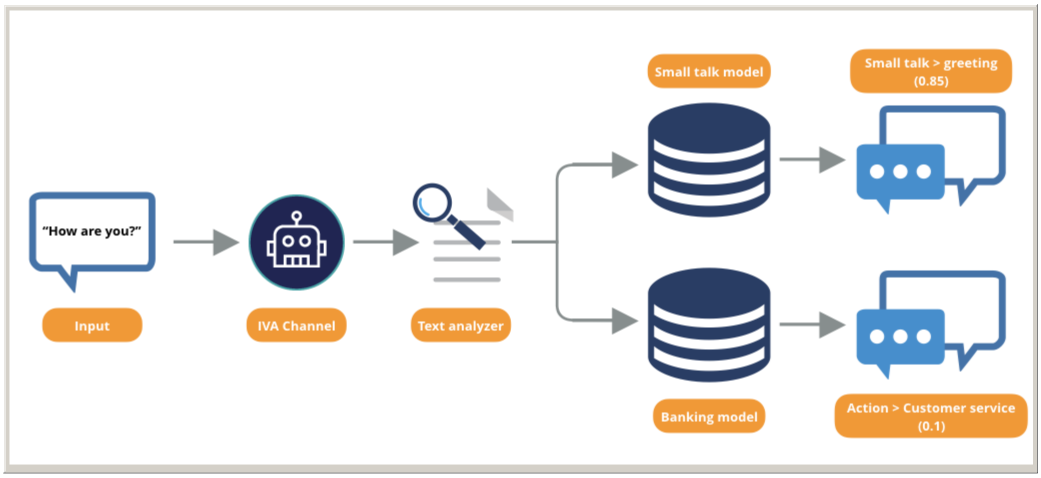
	Conditions				Actions
	Small talk topic	SmallTalkScore	BusinessScore		Return
if	"action > escalate"	"High"		→	"SmallTalk"
else if	"action > escalate"	"Low"		→	"Business"
else if	"action > Others"			→	"Business"
else if	"action > greeting"	"High"	"High"	→	"Business"
else if	"action > greeting"	"High"	"Low"	→	"SmallTalk"

Sample small talk logic

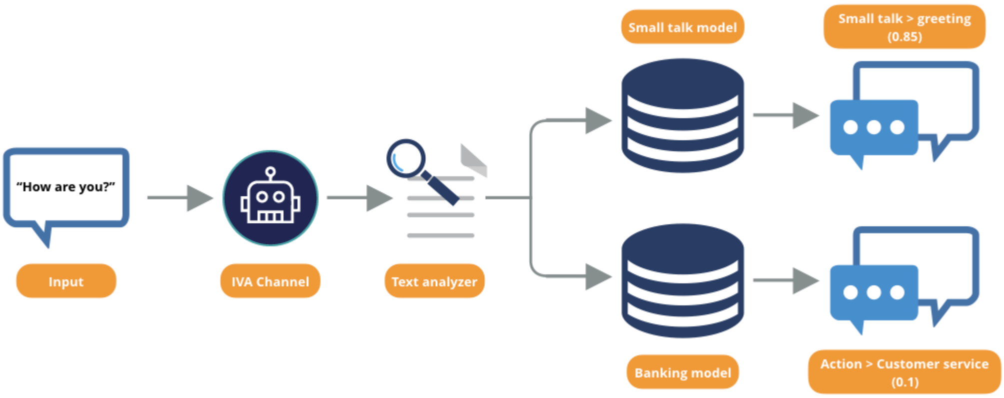
	Conditions				Actions
	Small talk topic	SmallTalkScore	BusinessScore		Return
if	"action > escalate"	"High"		→	"SmallTalk"
else if	"action > escalate"	"Low"		→	"Business"
else if	"action > Others"			→	"Business"
else if	"action > greeting"	"High"	"High"	→	"Business"
else if	"action > greeting"	"High"	"Low"	→	"SmallTalk"

Sample small talk logic

Consider the following use cases when a user provides input to a text analyzer:



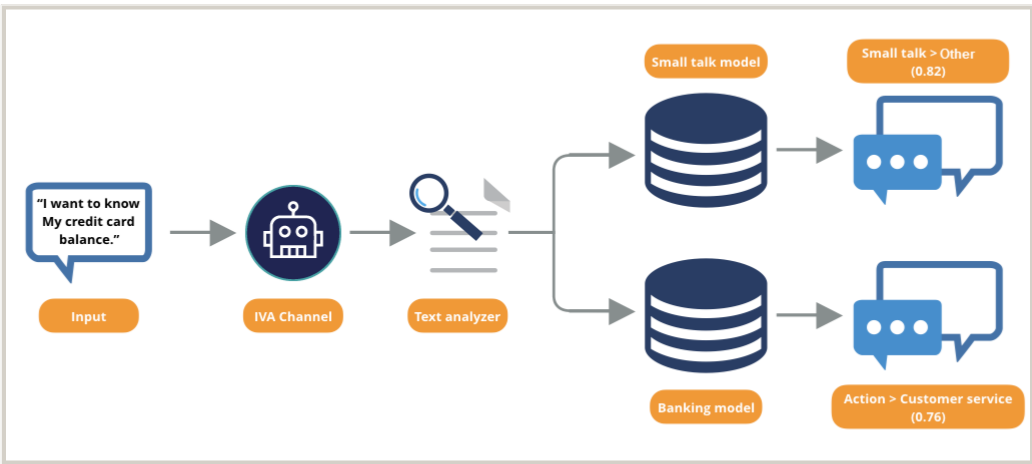
Identifying the text as small talk



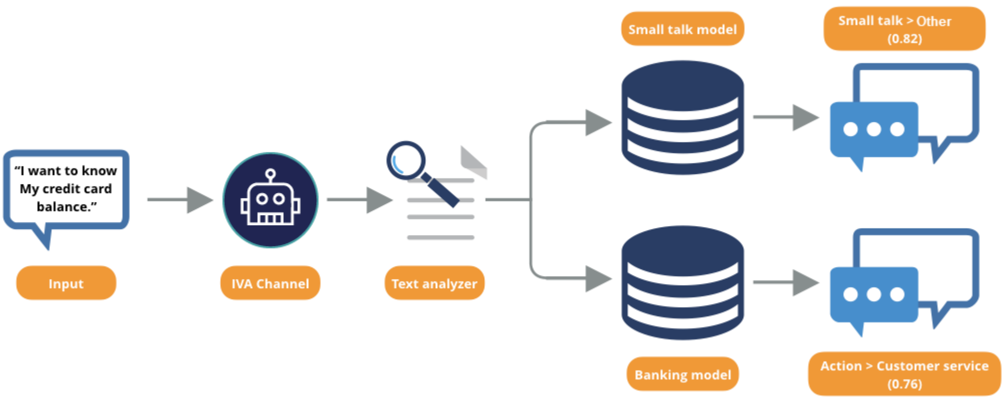
Identifying the text as small talk

If the small talk model classifies the input as not belonging to the Other topic, then the pxManageSmallTalkTopics activity compares the analysis results with the business model to determine the final outcome. In this example, Small talk > Greeting is an outcome with a high confidence score and Action > Customer service is an outcome with a low confidence score.

Consider the following example:



Assigning a business topic to the text



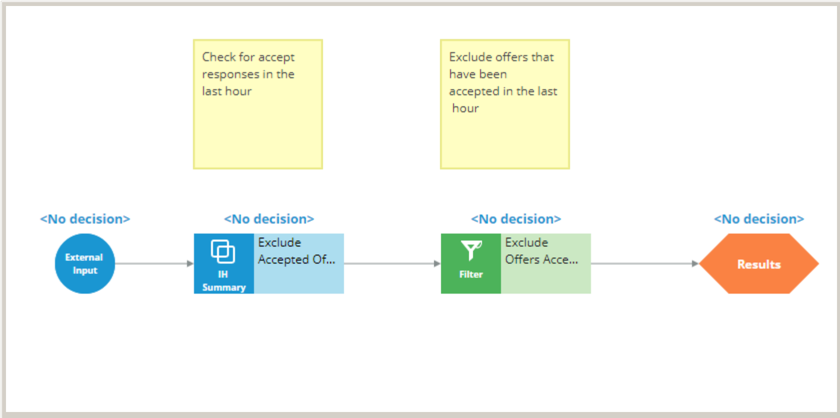
Assigning a business topic to the text

If the outcome of the small talk detection is Other, then the activity ignores the small talk model when determining the category with the highest confidence score, and proceeds to assign a topic from the business model to the text.

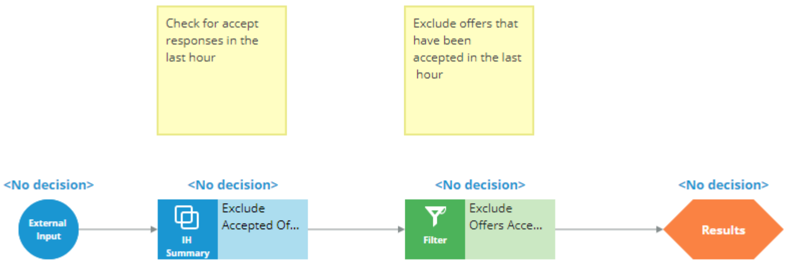
Enrich your Proposition Filter rules with conditions based on strategy results (8.4)

When designing proposition filters, you can now include strategy outcomes as a condition to be evaluated. Select a strategy and specify the component that you want to use as output to include more advanced decisioning in your proposition filters.

For example, you can use a strategy to indicate that a proposition filter must exclude propositions that were already accepted by a specific customer. In this way, you can avoid showing the customer an ad for a product that they already own. To do this, create a strategy that uses Interaction History to check the latest accepted propositions, as in the following figure:

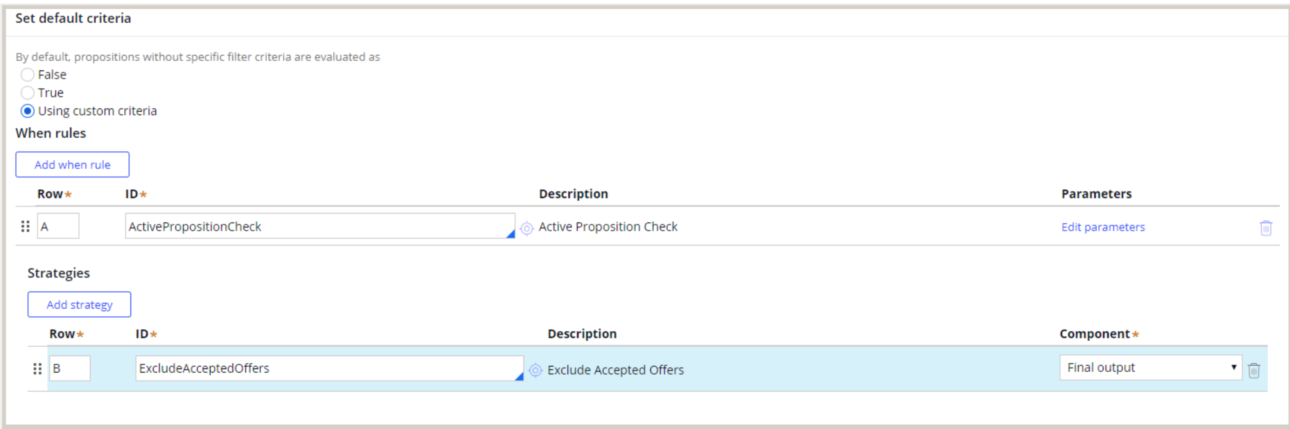


Sample strategy

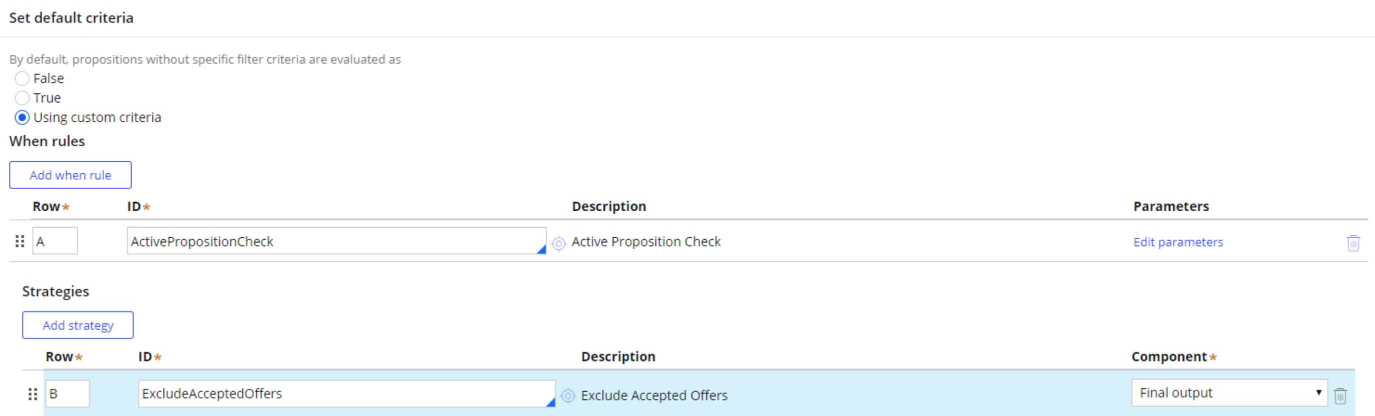


Sample strategy

After you create the strategy, register it as a relevant record, and then select the strategy as a proposition filter criterion, as in the following figure:



Sample proposition filter configuration



Sample proposition filter configuration

The proposition filter now excludes already accepted propositions, and thus delivers more relevant results for the customer.

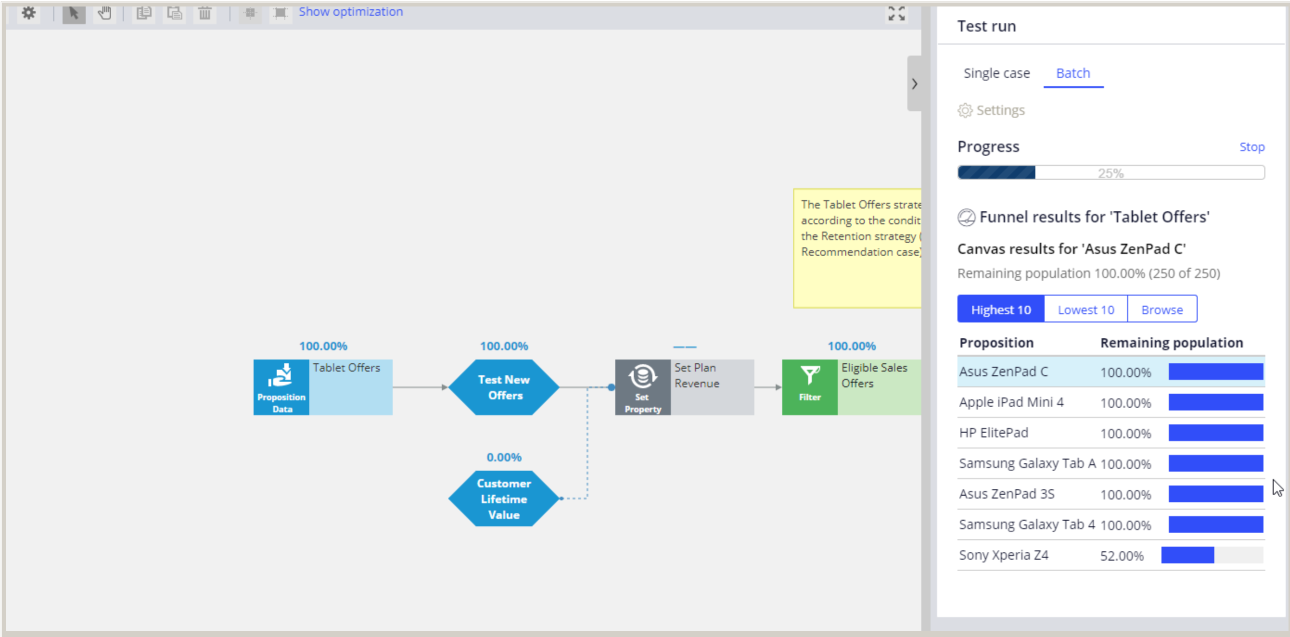
For more information, see [Understanding relevant records](#).

Increase the real-time visibility of strategy design changes with simulation batch tests (8.4)

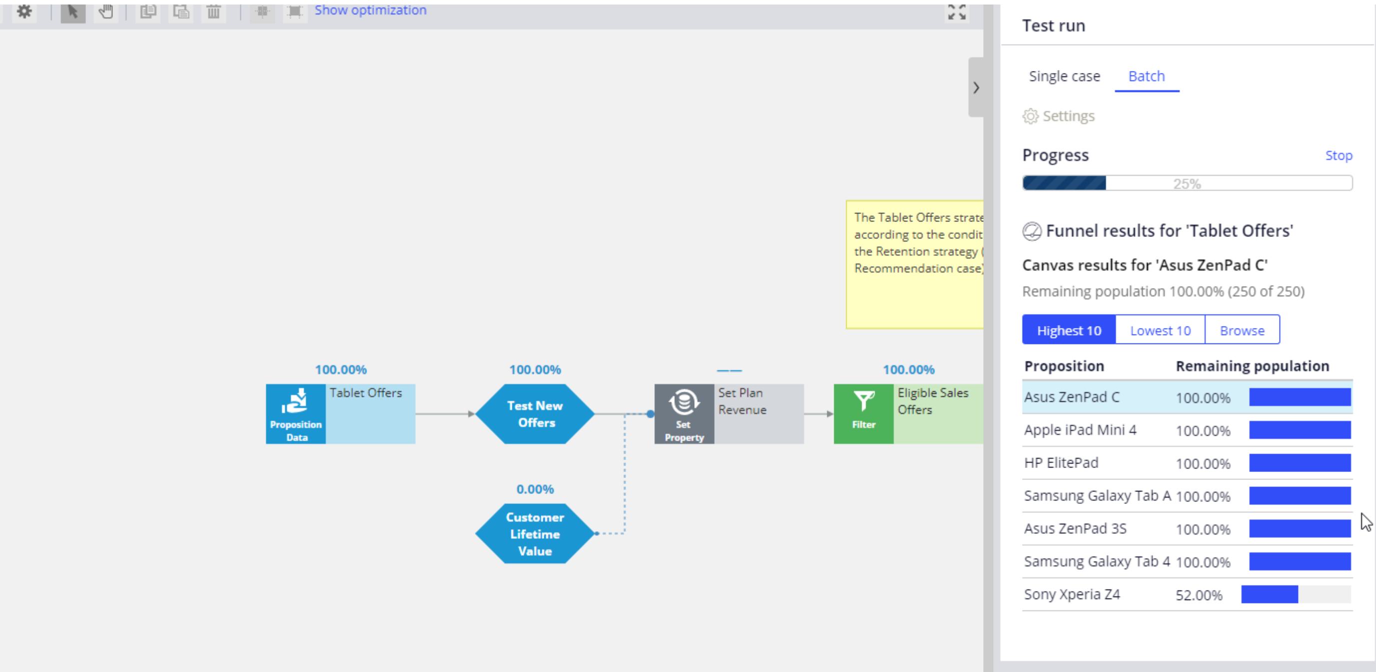
You can now run simulation tests directly from the Batch Test Run panel of a strategy canvas. Select a predefined simulation test, or quickly create one for the relevant context, and then view the results for each supported component of the decision funnel.

By running batch simulation tests, you can improve your understanding of the impact that individual changes to strategy design have on the decision funnel. With batch simulation tests, you can check that your strategy changes produce the expected results, and immediately see the results in context.

The strategy canvas displays population counts as the simulation test runs. You can use the simulation results to find the most or least successful propositions, and browse the results by business issue and group.



A batch simulation test run in progress



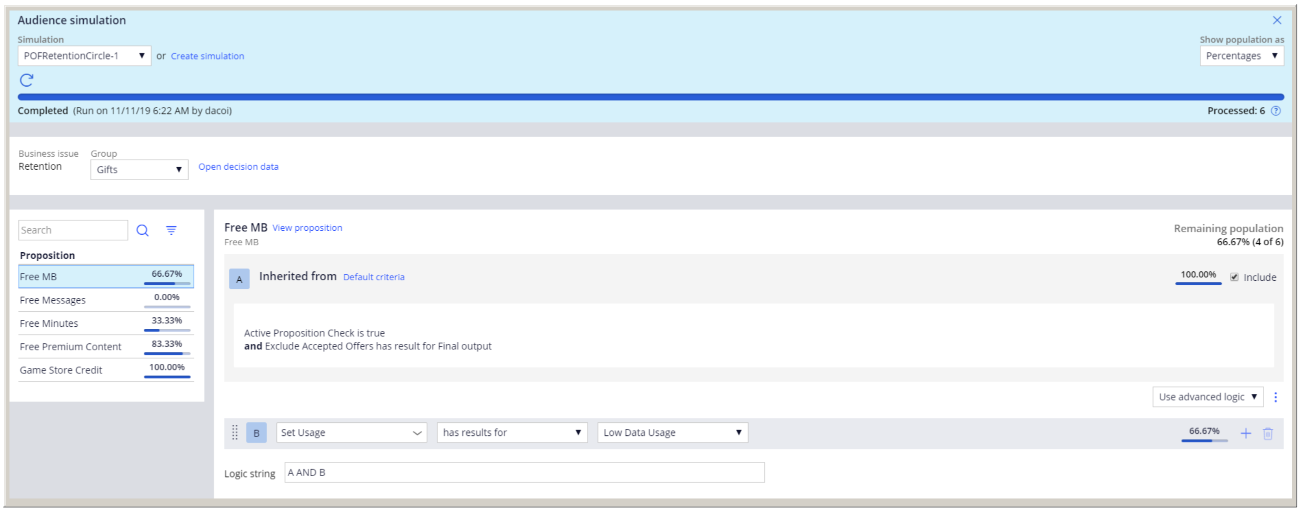
A batch simulation test run in progress

For more information, see [Configuring batch case runs](#).

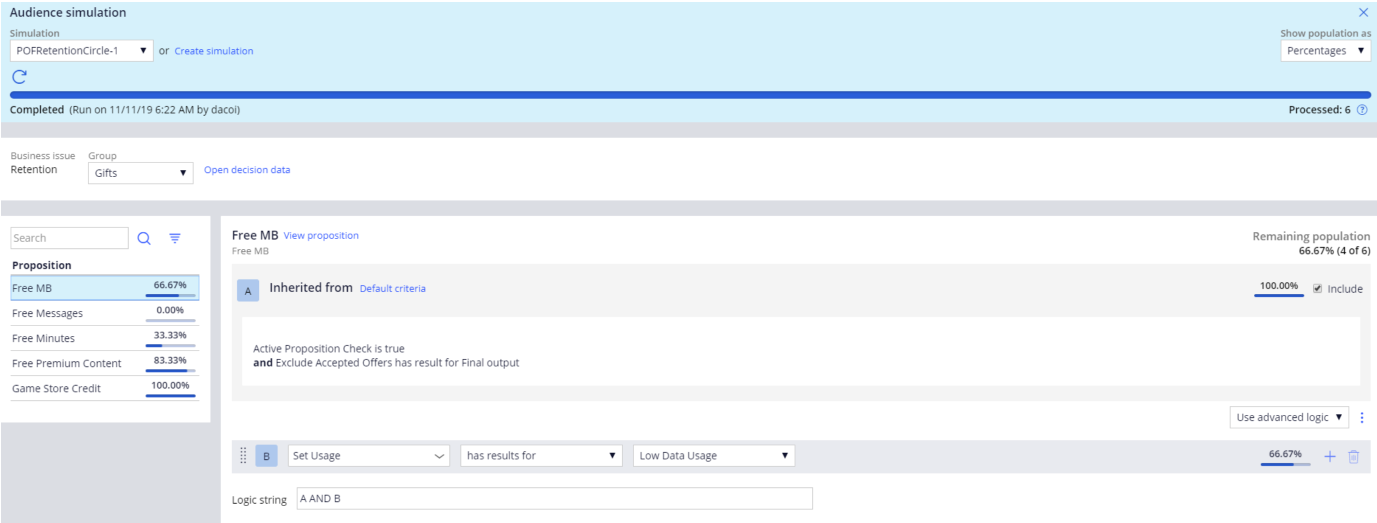
Optimize the performance of your Proposition Filter rules with audience simulation tests (8.4)

Improve the performance of your proposition filters by testing them against simulated audiences. You can check how many potential offers are being filtered by each condition of the filter, and discover if a particular criterion is too broad or too narrow for your requirements.

The proposition filter displays the population counts while the simulation test runs. For each filter condition, the simulation test shows percentage values for the percentage of the selected audience that would receive the proposition according to the current filtering. For example, if the result for a particular criterion is 100.00%, no audience members are filtered out by this condition.



Sample audience simulation results



Sample audience simulation results

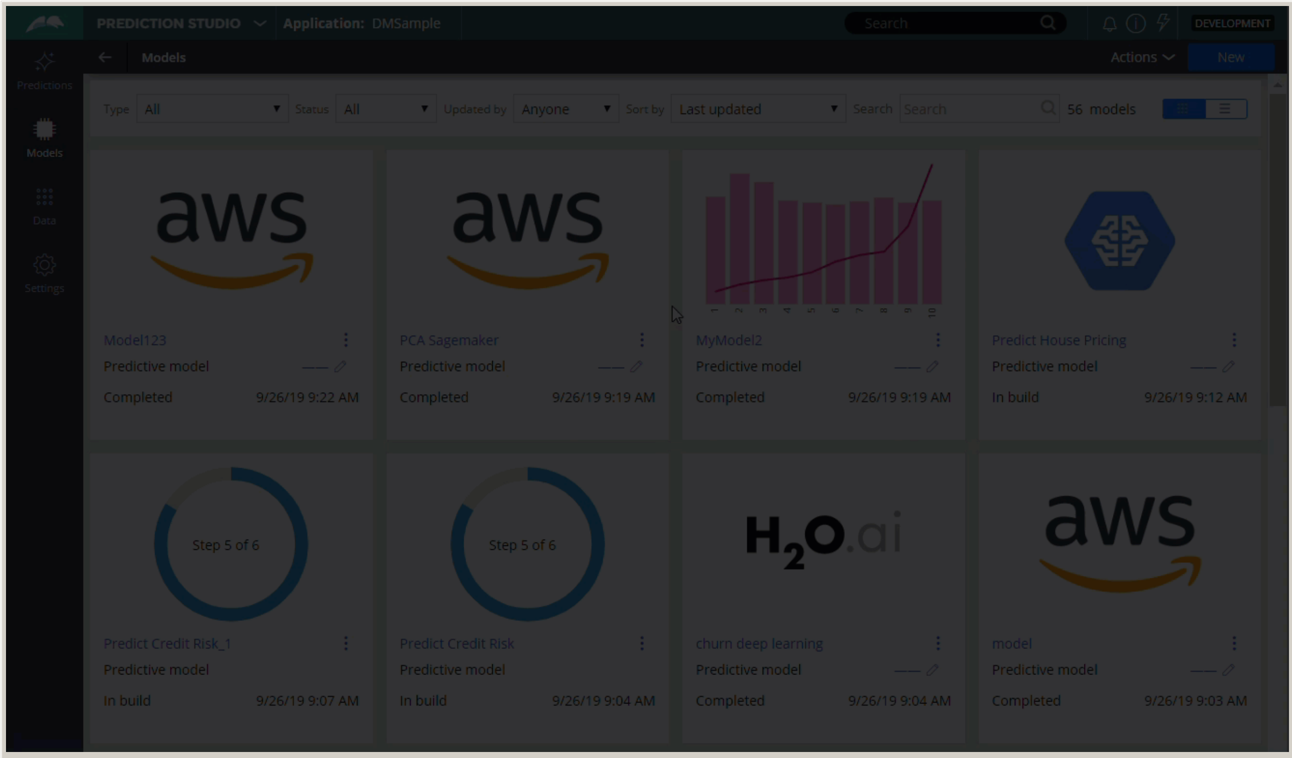
For more information, see Testing the Proposition Filter rule with audience simulations.

Enrich your decision strategies with H2O and Amazon SageMaker predictive models (8.4)

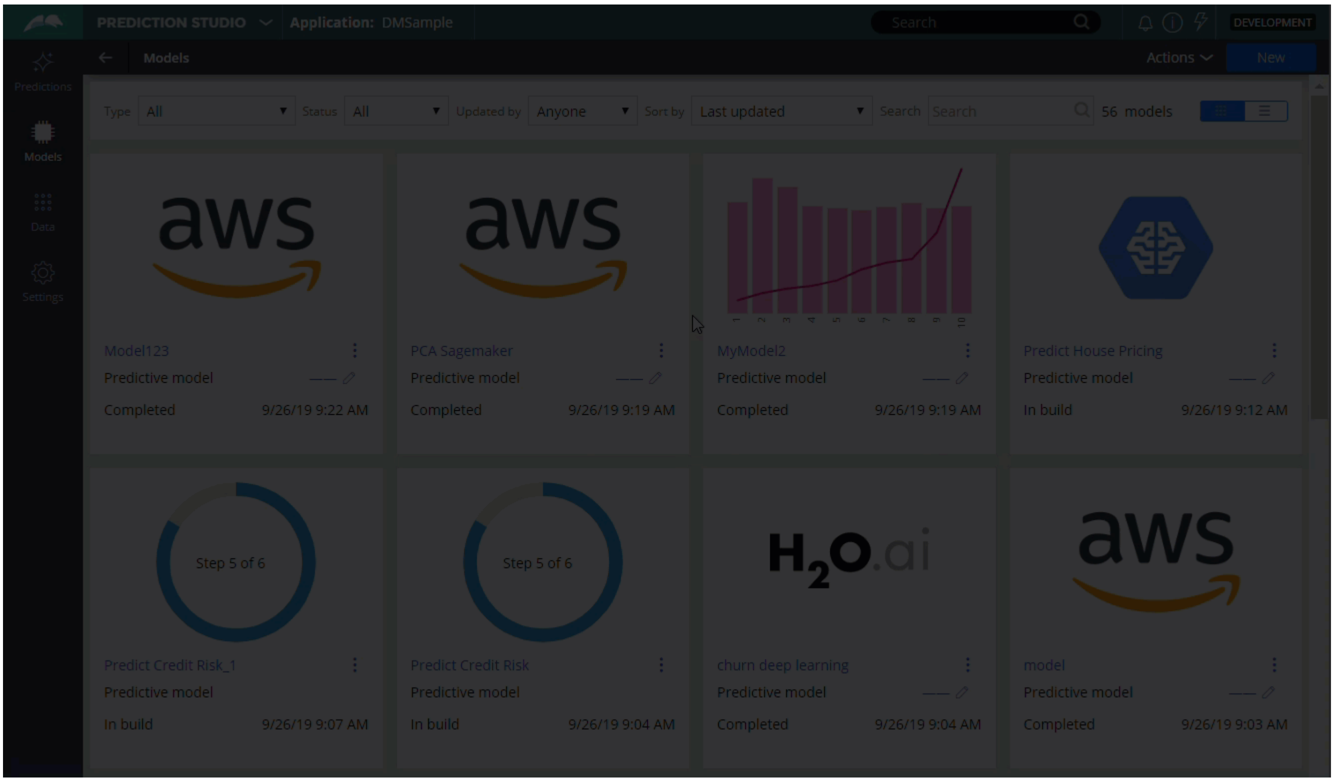
Develop your decision strategies by including predictive models from the H2O and Amazon SageMaker machine learning platforms. You can choose from a broader selection of external models that you can then include as part of your next-best-action strategies. For example, you can predict customer churn by importing XGBoost models from H2O.

Pega Platform™ enables you to fully benefit from predictive models created in third-party applications, as well as your own custom models, by importing them to Prediction Studio. You can also connect to models in external machine learning services.

The following video illustrates how to import H2O models to Prediction Studio:



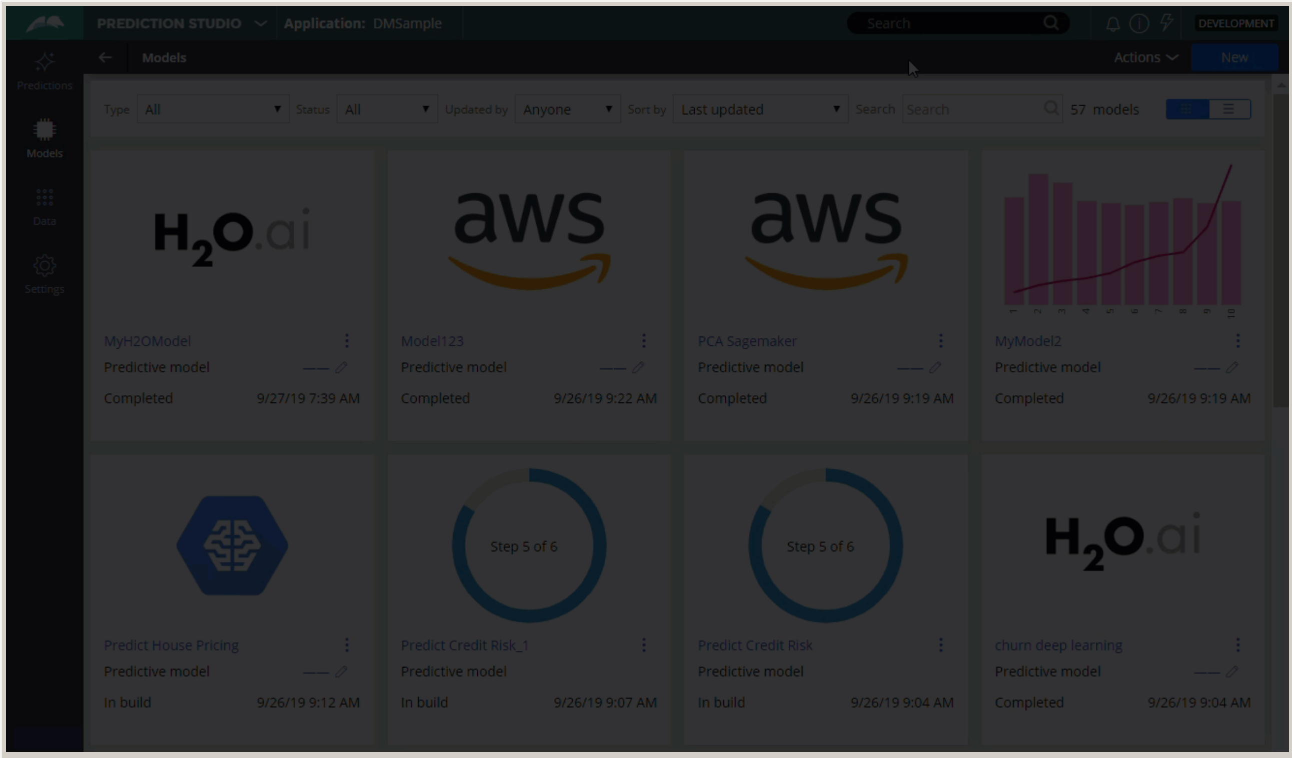
Selecting and importing an H2O model to Prediction Studio



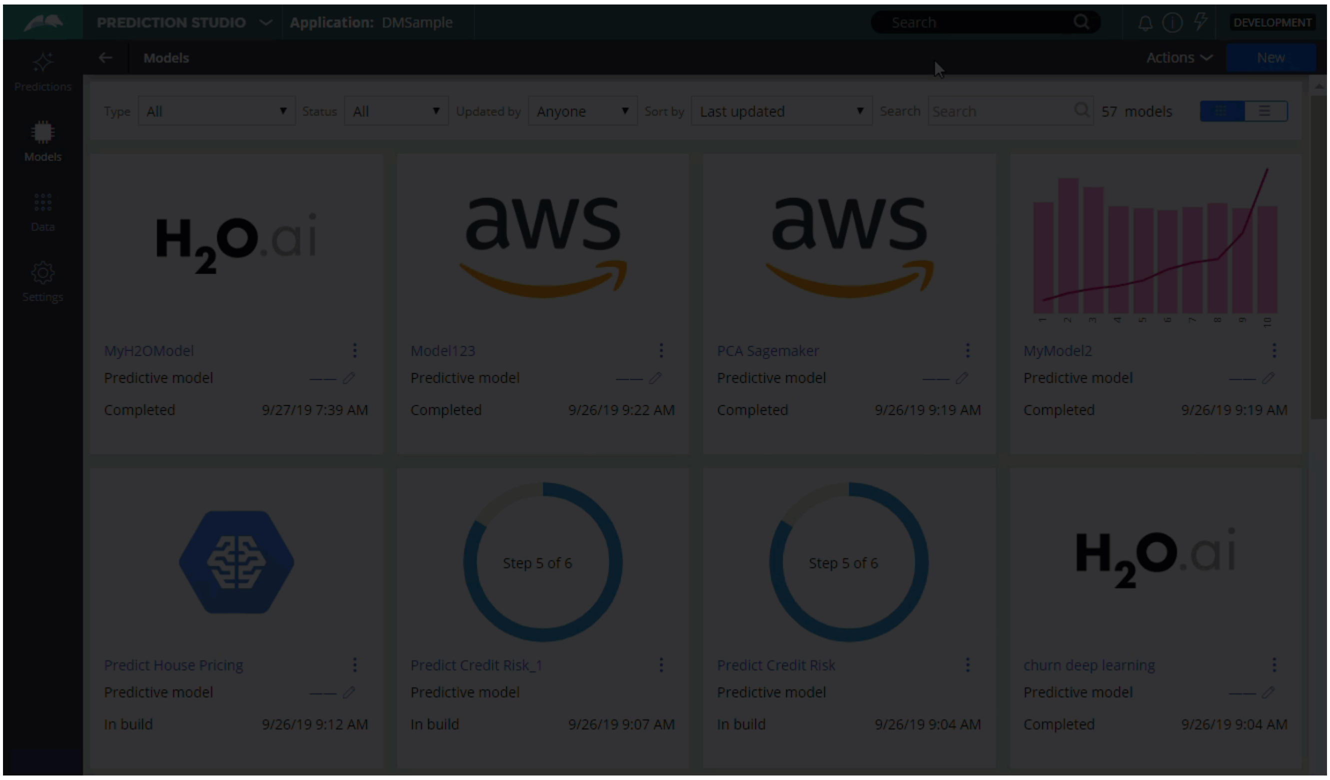
Selecting and importing an H2O model to Prediction Studio

For more information about importing and running H2O models in Pega Platform, see Importing a predictive model.

The following video illustrates how to connect to Amazon SageMaker models in Prediction Studio:



Connecting to an Amazon SageMaker model in Prediction Studio



Connecting to an Amazon SageMaker model in Prediction Studio

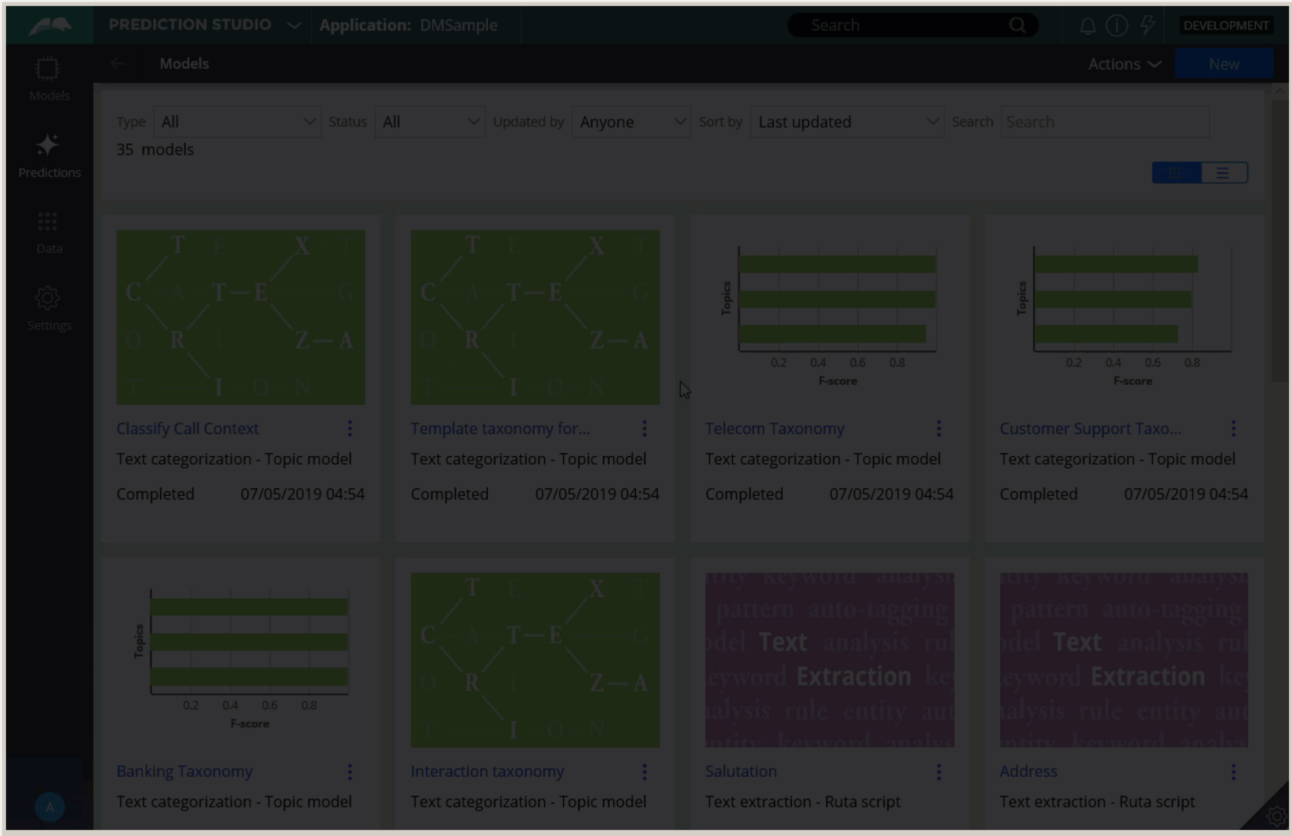
For more information about running Amazon SageMaker models in Pega Platform, see:

- Improve your custom predictive models through machine learning as a service (8.3)
- Connecting to an external model

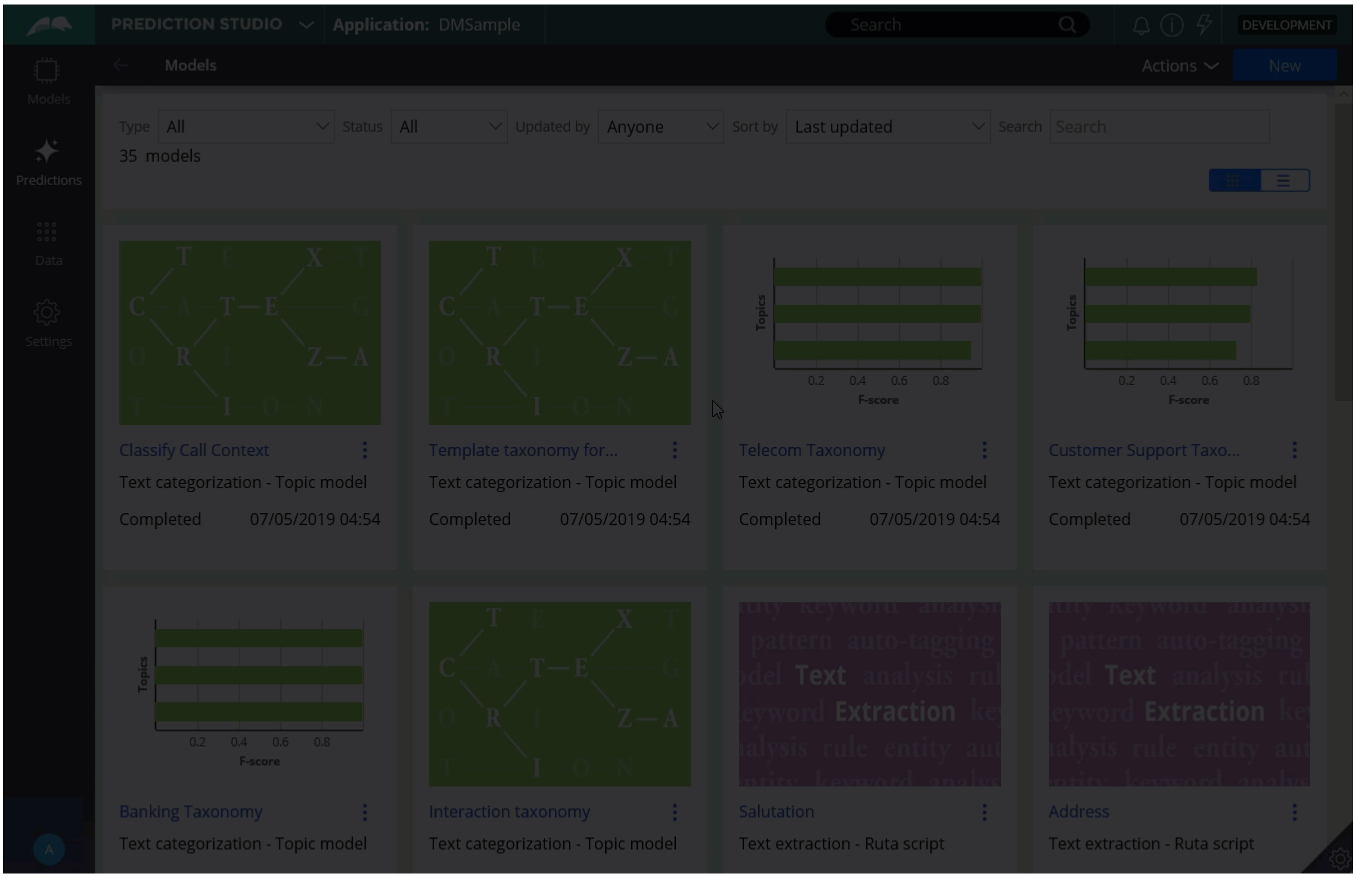
Make better predictions through actionable insights in Prediction Studio (8.3)

You can now detect deteriorating predictive performance of adaptive and predictive models through notifications in Prediction Studio. These notifications are actionable insights that guide you to models with low accuracy. You can use that guidance to discover predictive models that might have become stale and, therefore, require replacement, or to identify adaptive models with predictor issues.

The notifications provide status information about monitoring parameters such as low performance, uneven response distribution, and a lack of monitoring data for a model.



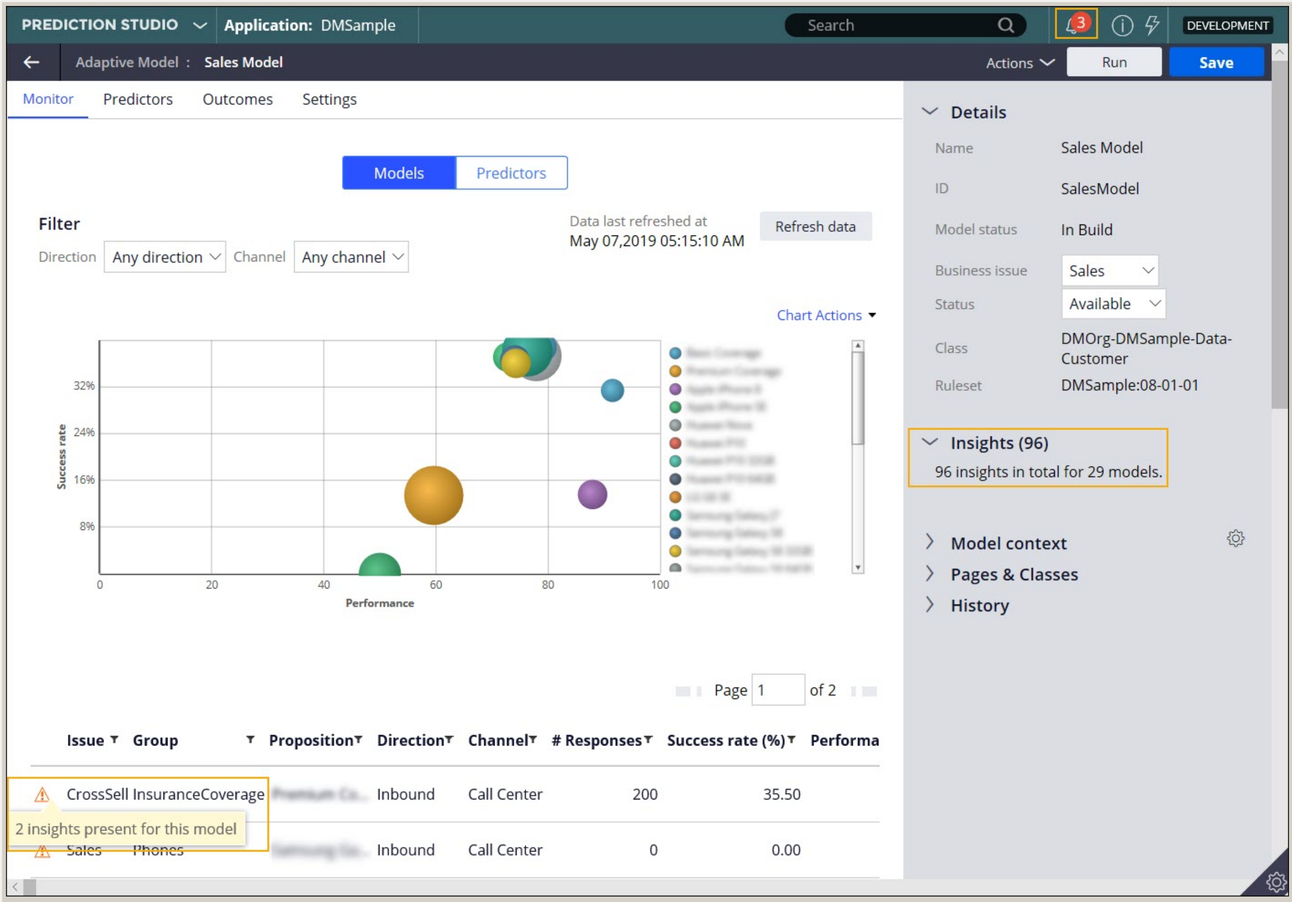
Viewing notifications for a model - example



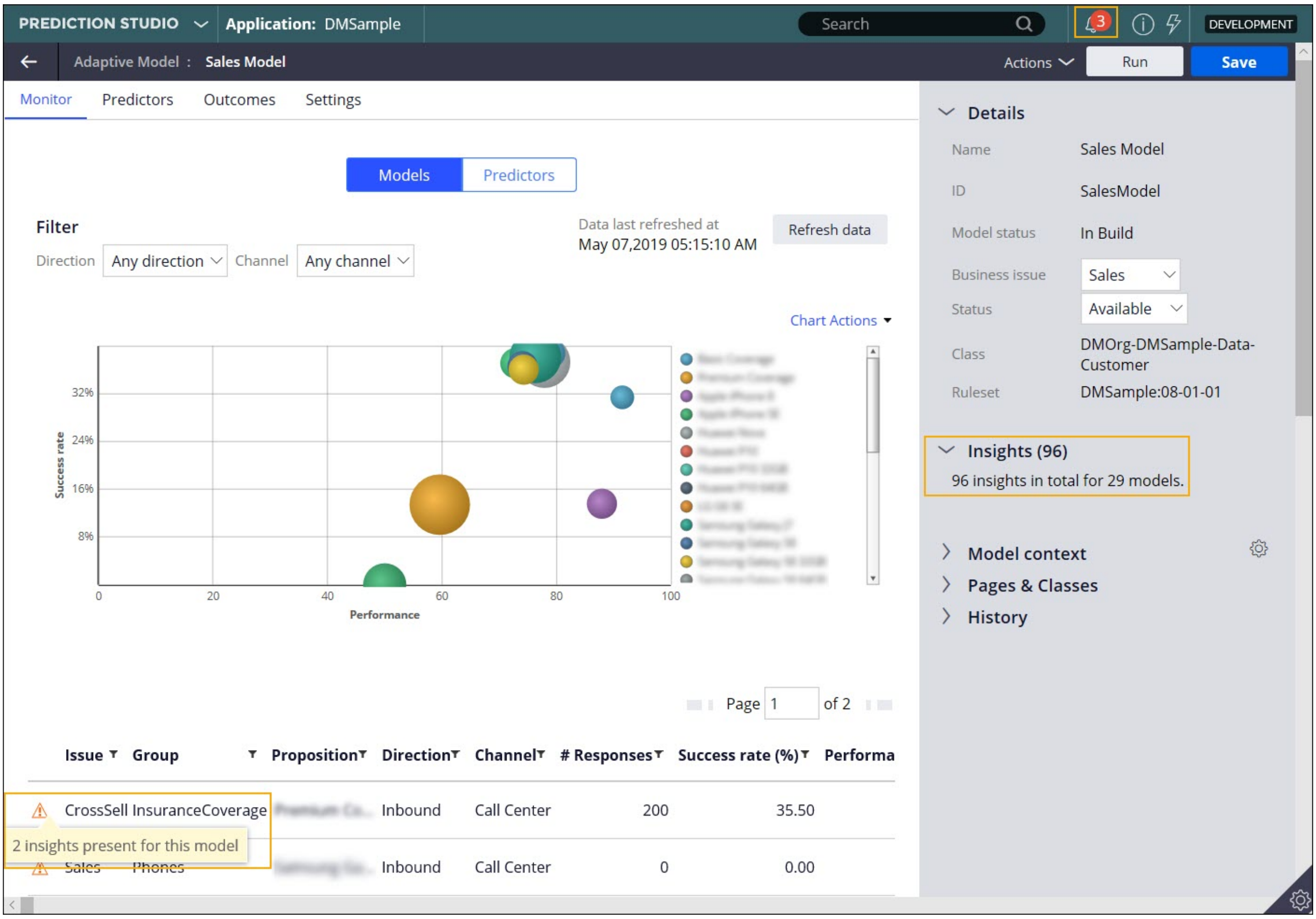
Viewing notifications for a model - example

By acting on the notifications that appear whenever a problem occurs, you can limit the negative effect on your strategies and customer relations that models with low accuracy might have.

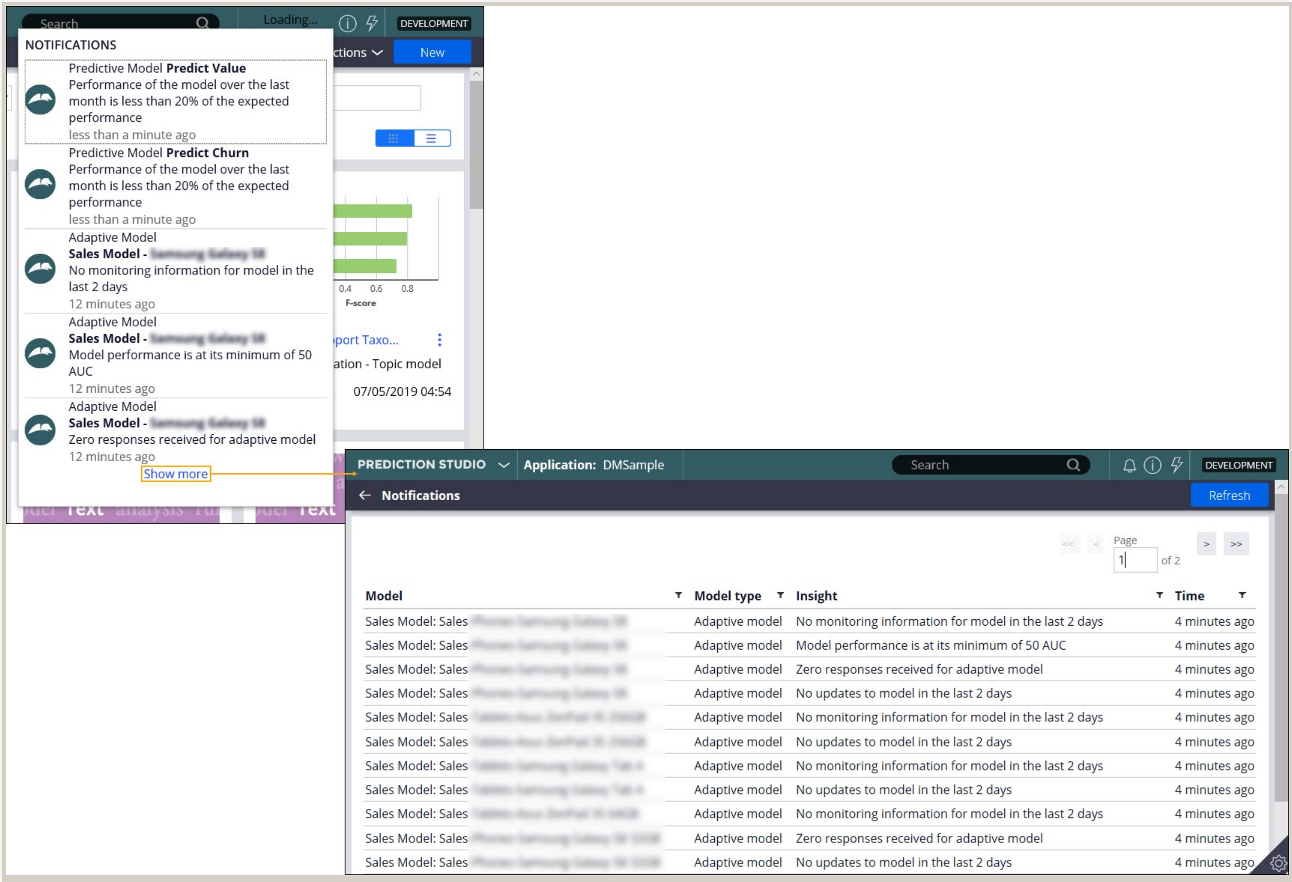
You conveniently access the notifications from the Prediction Studio header, in a model instance, or in the list of instances of a model rule, as shown in the following examples:



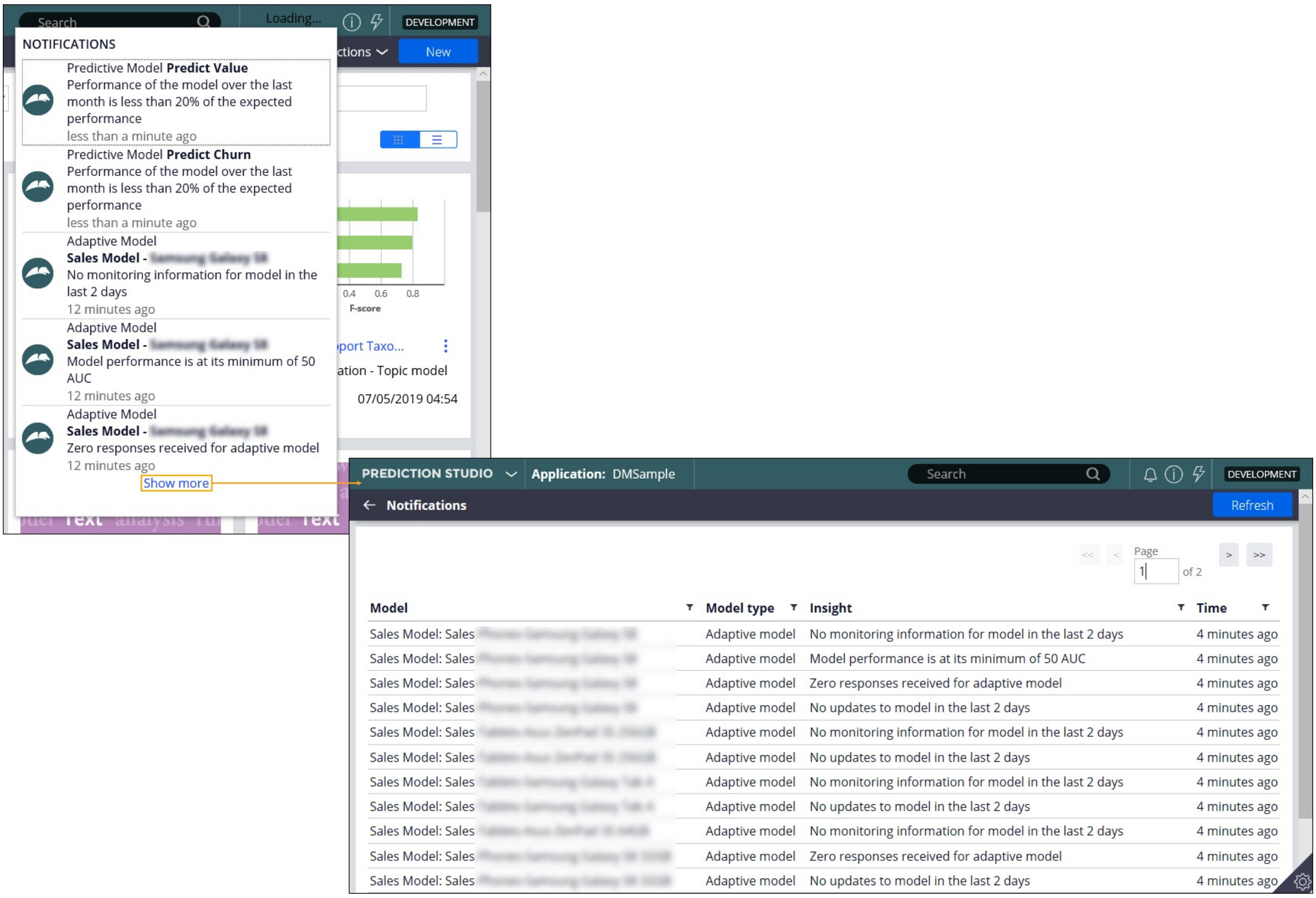
User interface controls for accessing notifications - Adaptive Model rule



User interface controls for accessing notifications - Adaptive Model rule



User interface controls for accessing notifications - Notifications icon



User interface controls for accessing notifications - Notifications icon

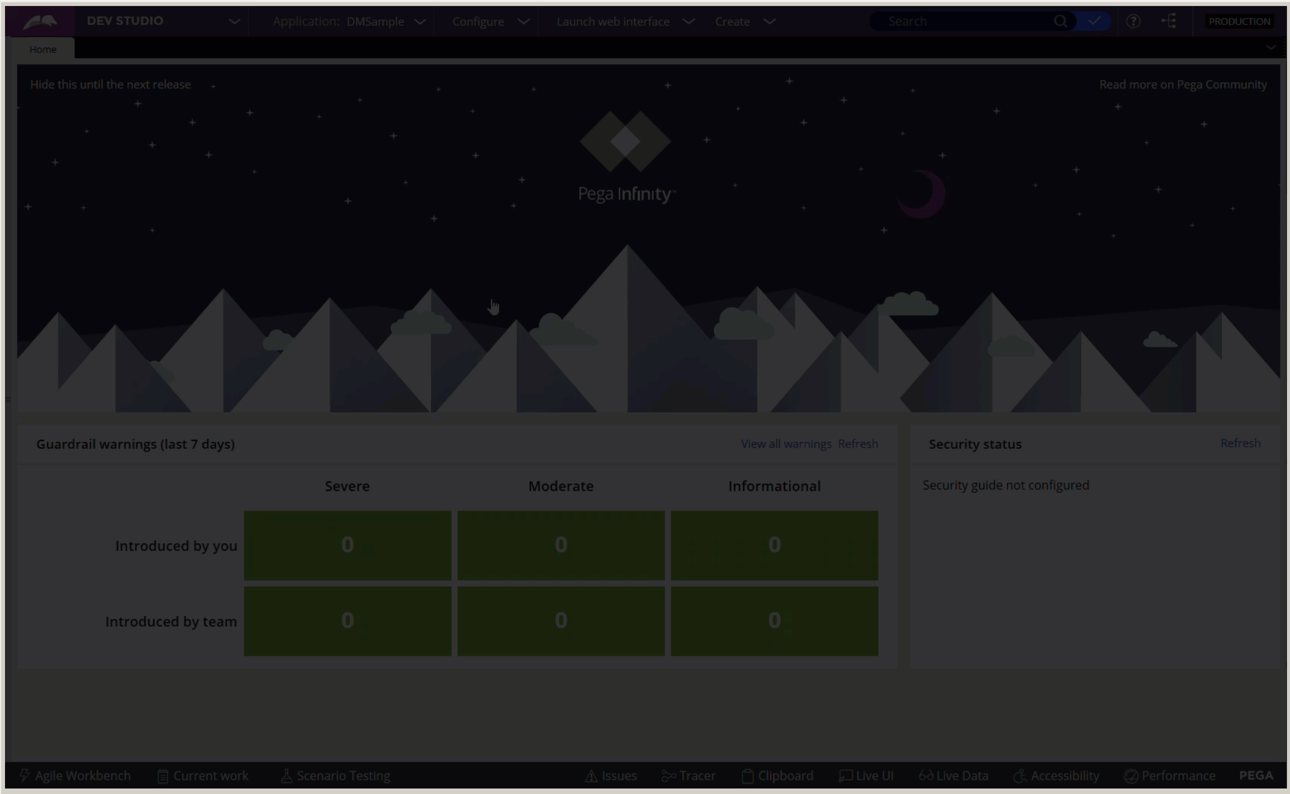
For more information, see [Accessing Prediction Studio notifications] and [Prediction Studio notification types].

Sample, migrate, and test production data in a simulation environment (8.3)

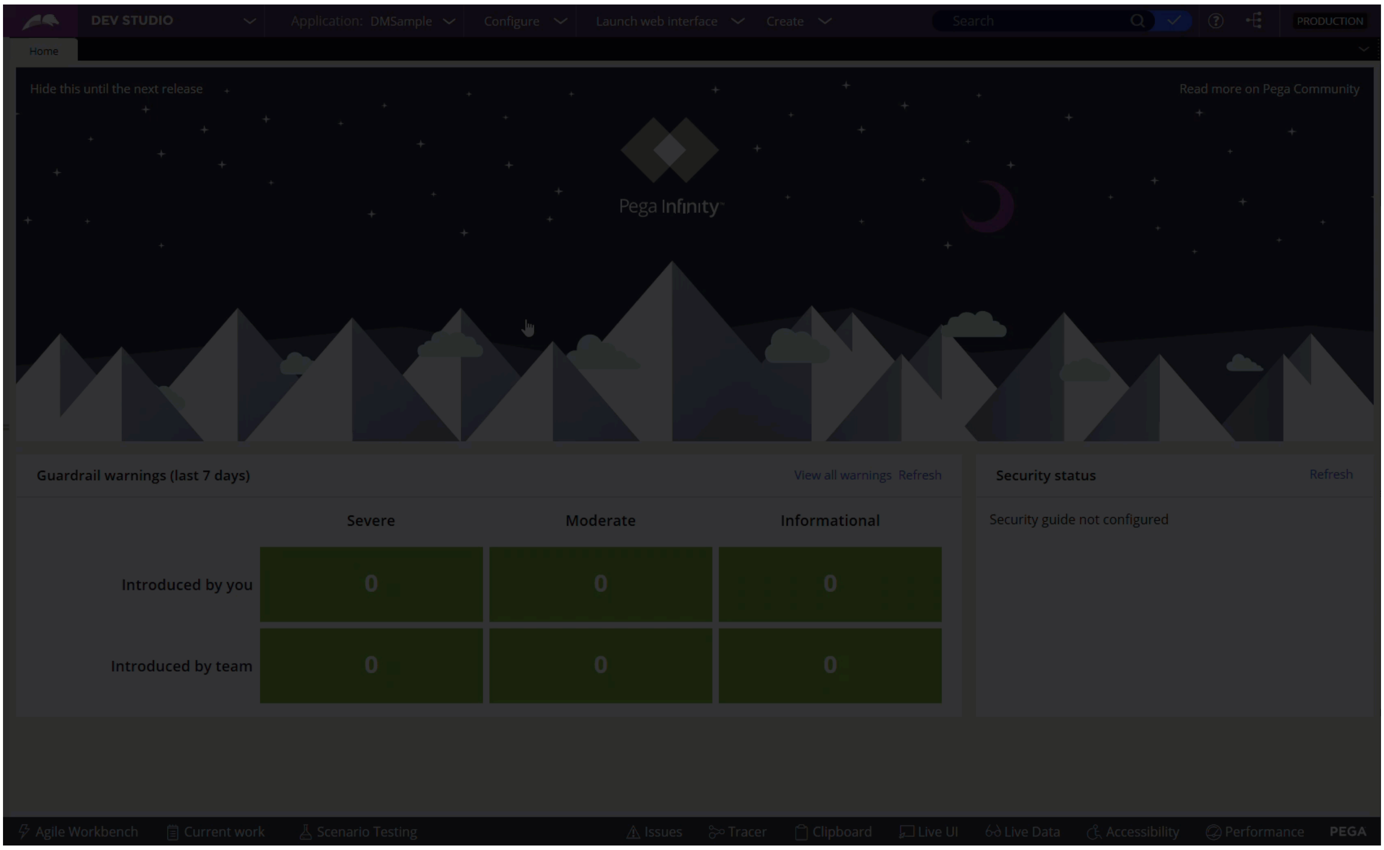
Verify how the changes to your decision logic impact strategy results by running simulations on a production data sample. With this functionality, you can predict whether your application changes produce the expected results, without testing them on a live production environment. Based on that information, you can ensure that the decision process provides the next-best-action suggestions that fully reflect your customers' needs.

You can now migrate a sample of your production data to a dedicated simulation environment, and then run tests in Pega Customer Decision Hub™ or Pega Marketing™, before deploying the changes to the production environment. The sample data includes customer information, Adaptive Decision Manager data, and interaction history details.

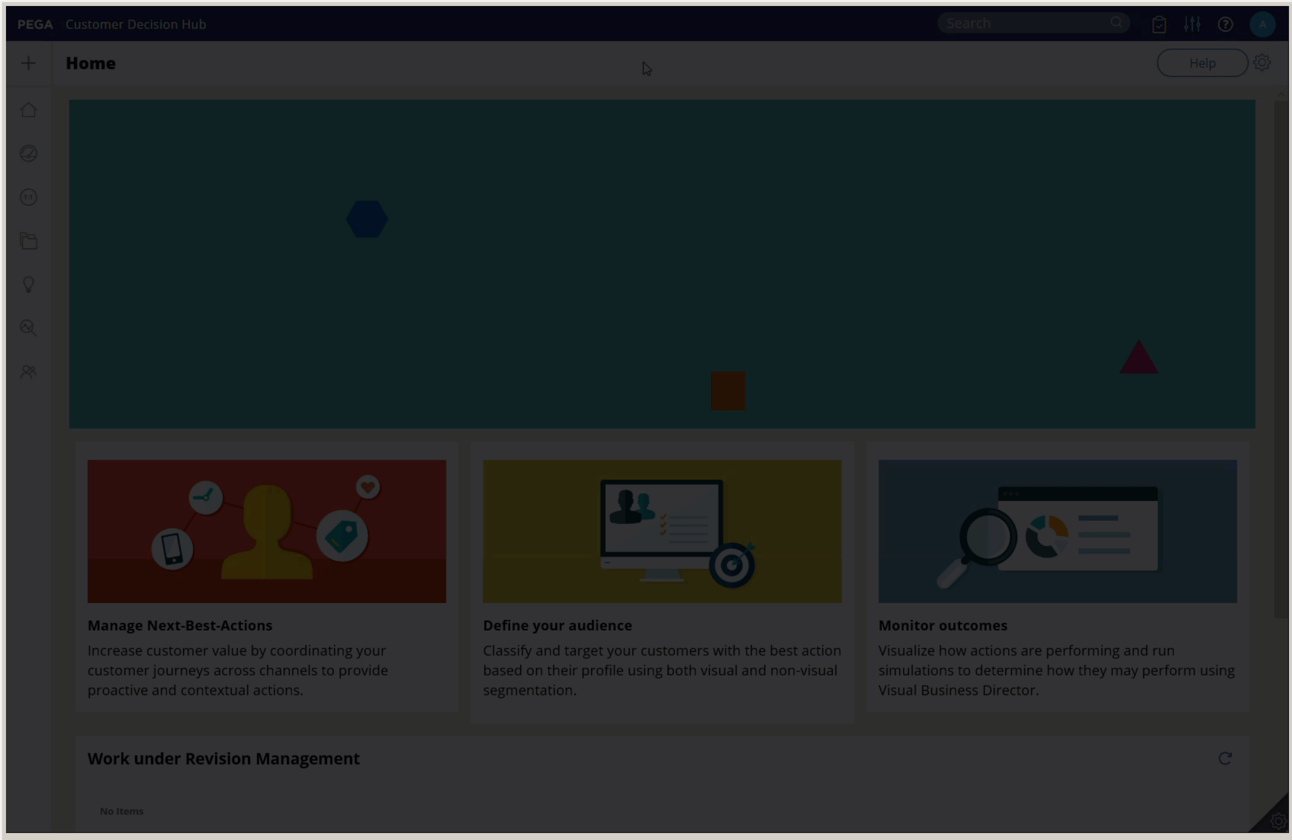
The following examples show how you can configure data migration in Pega Platform™, and then run a simulation in Pega Marketing:



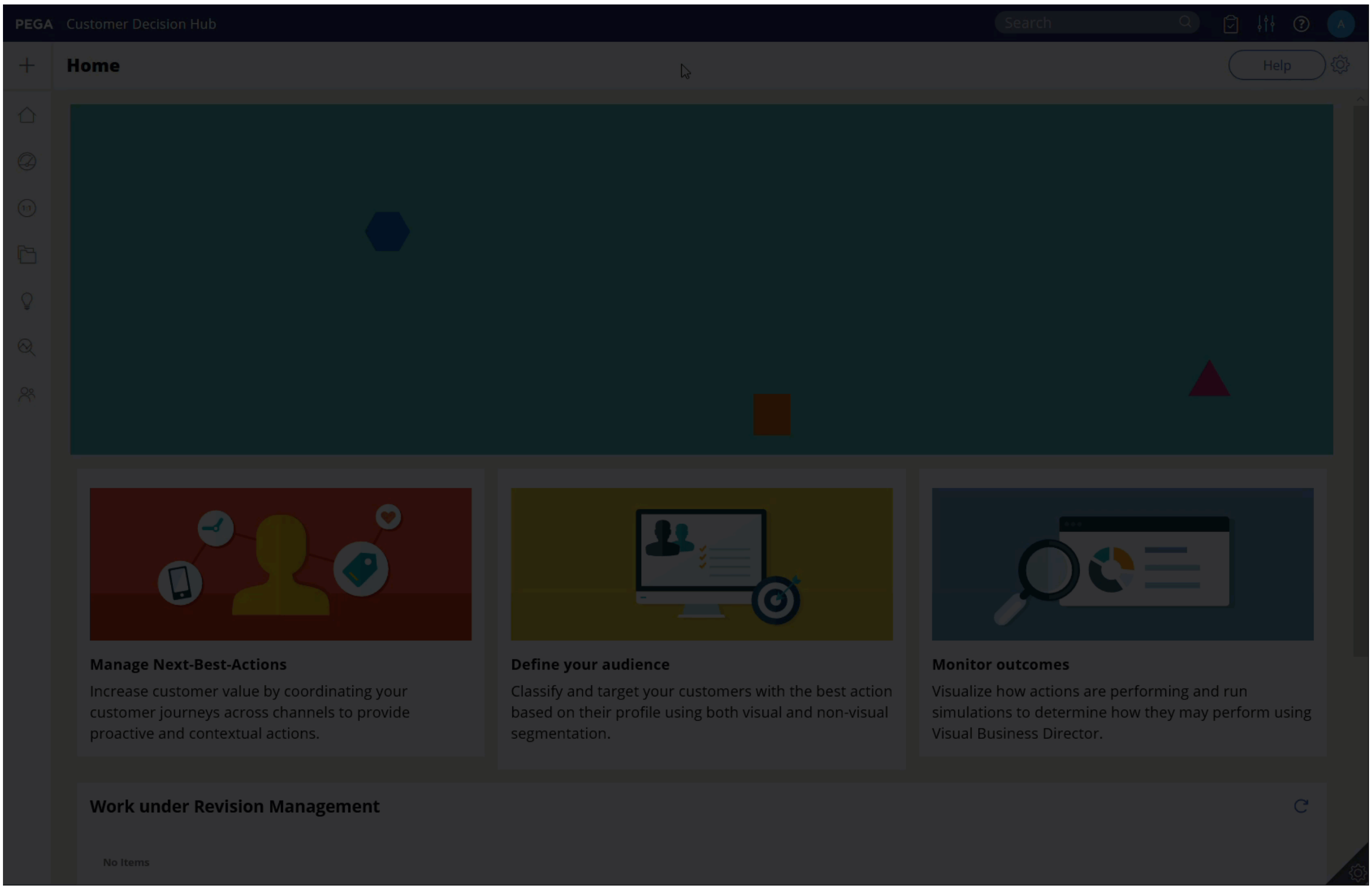
Configuring data migration settings



Configuring data migration settings



Running a simulation on sampled production data



Running a simulation on sampled production data

For more information, see [Deploying sample production data to a simulation environment for testing](#).

Release urgent business rule updates through fast-track change requests (8.3)

You can now address high-priority business needs more efficiently through fast-track change requests. This new type of change request provides a mechanism to quickly deploy urgent changes, without disrupting revisions that are in progress.

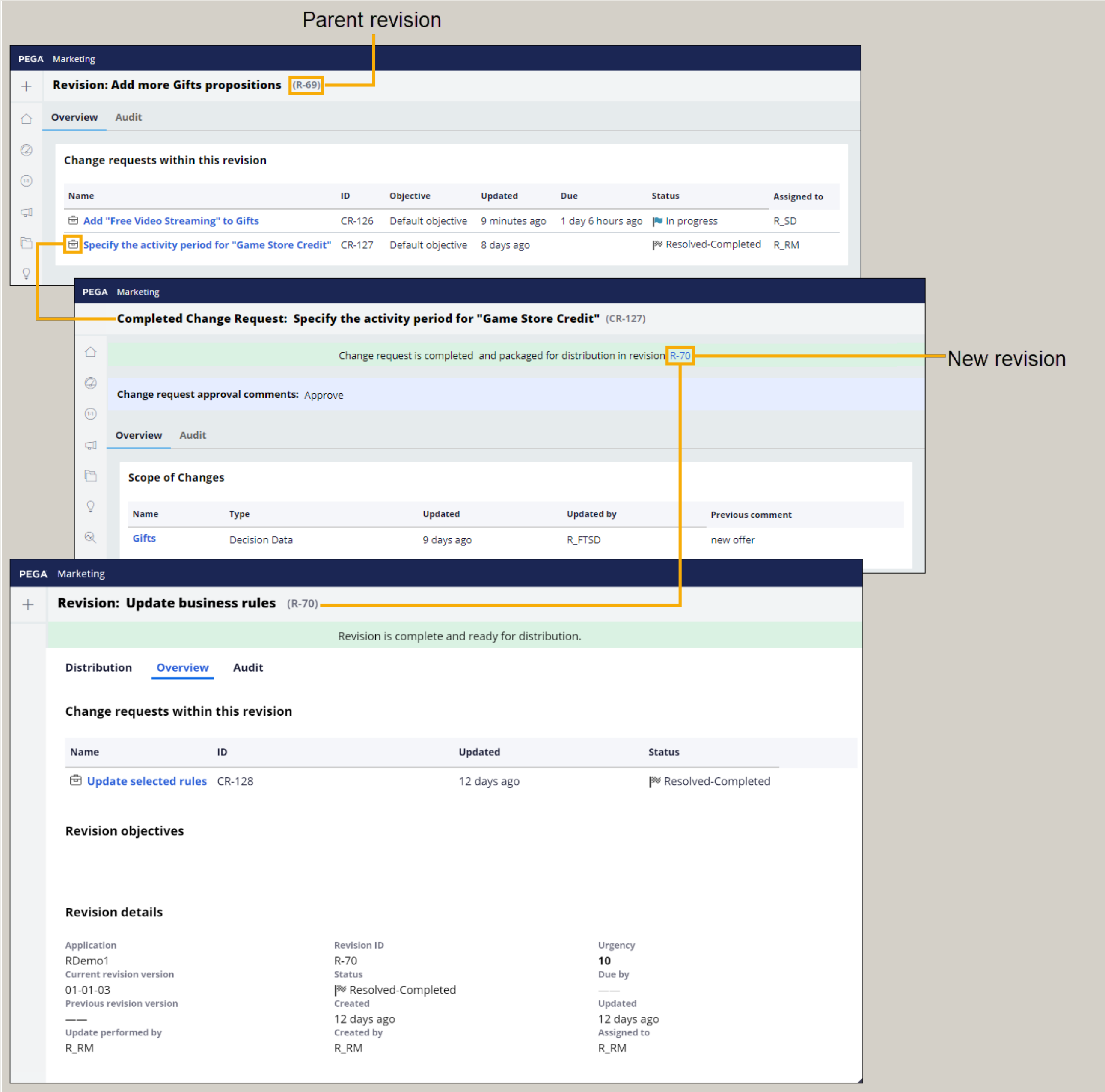
To complete a fast-track change request, strategy designers can address high priority changes within the context of the enterprise application, isolated from the regular revision process. Upon approval, such change requests are immediately ready for deployment as part of a new, automatically created revision.

As a revision manager, you can create a fast-track change request in the following ways:

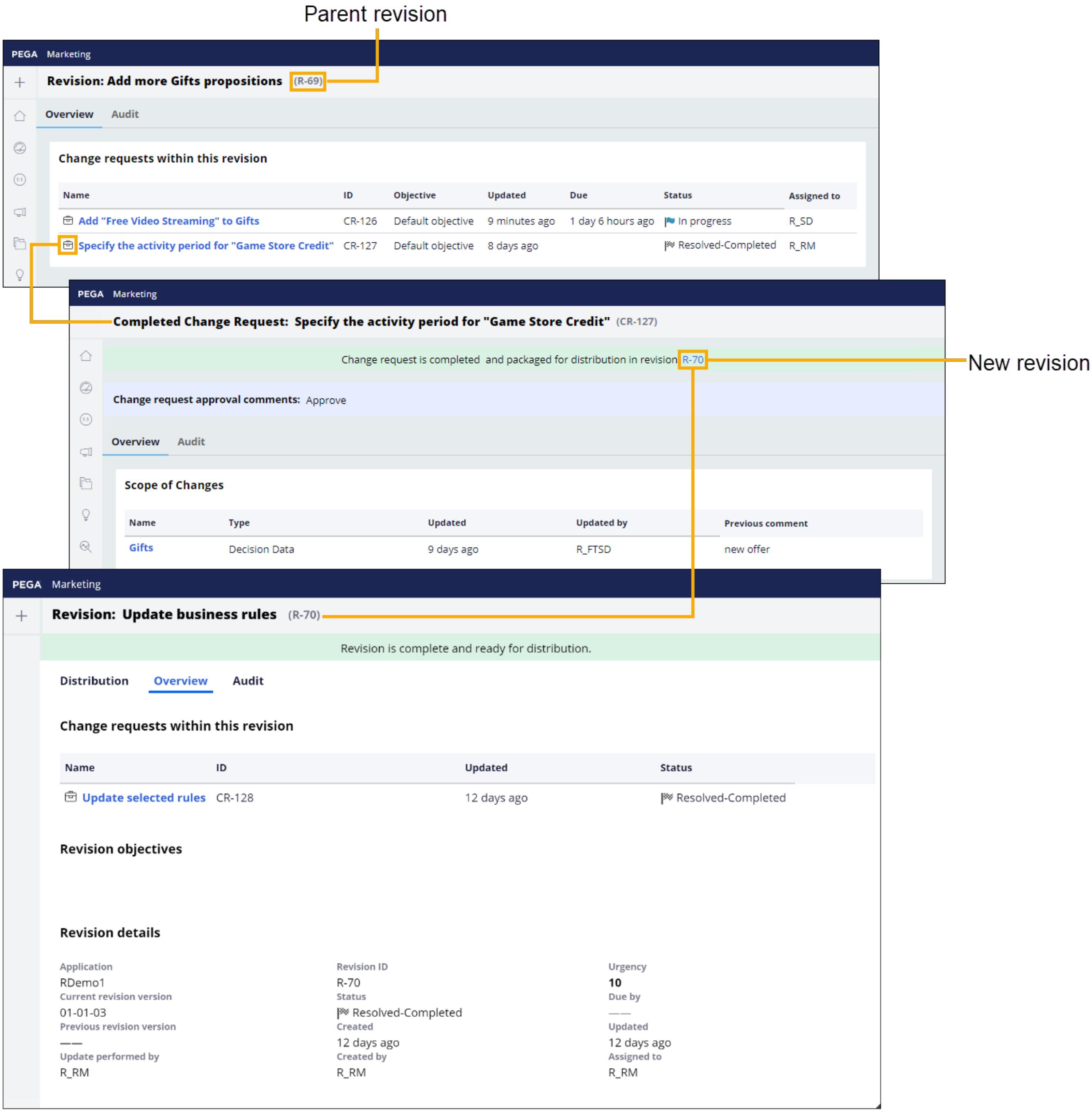
- Create a dedicated fast-track change request.
- Convert a regular change request that has been approved.

The following video demonstrates how to create and resolve a fast-track change request in a Pega Marketing application:

The following example provides an overview of a revision that contains two change requests, one of which is a fast-track change request. The fast track change request is approved and packaged. You can deploy it while the regular change request is still in progress.



Regular and fast-track change requests in a revision



Regular and fast-track change requests in a revision

For more information, see:

- Creating application overlays
- Resolving fast-track change requests

Resolving fast-track change requests

Address high priority or emergency rule changes through fast-track change requests. This type of change request provides the mechanism for making urgent business rule changes in a separate context, without the need to disrupt a revision that is in progress.

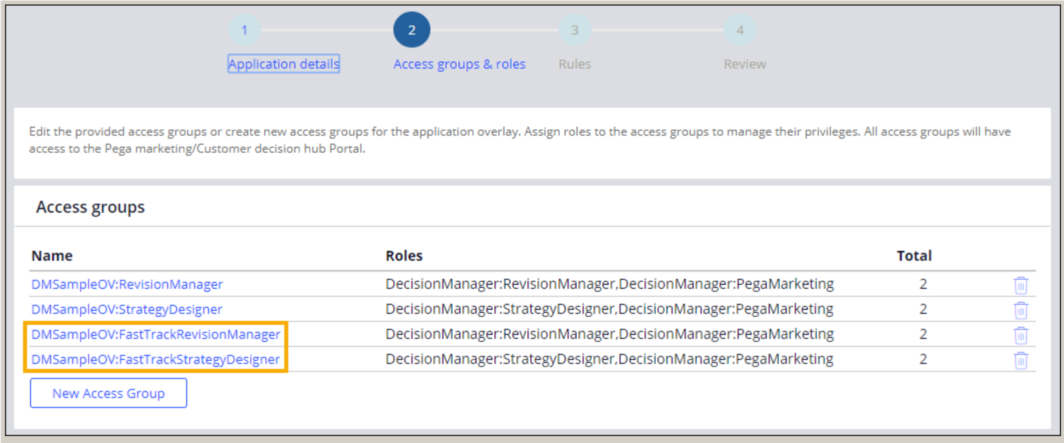
Initiate fast-track change requests with caution. For changes that do not require immediate deployment, create standard change requests instead.

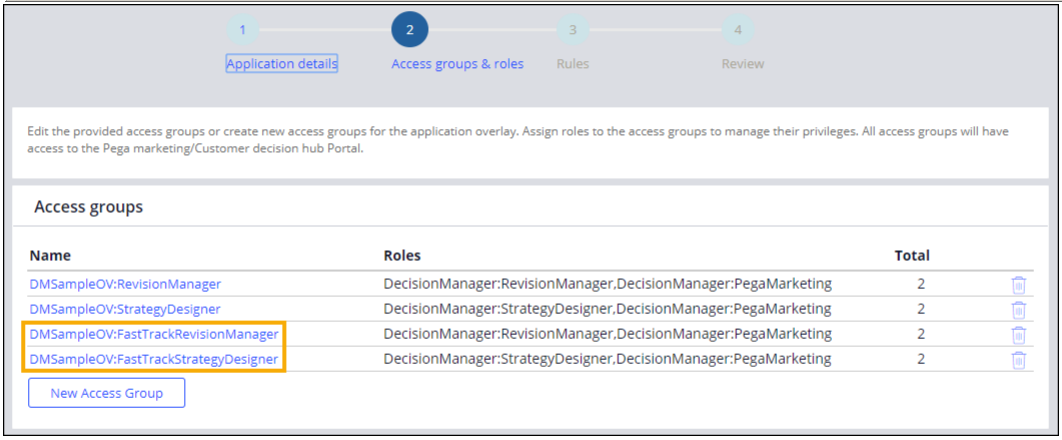
Enabling fast-track changes

As a system architect, enable fast-track change requests in your application by assigning business users with the following access groups:

- <overlay_name>:FastTrackRevisionManager
  This operator can create and approve fast-track change requests.
- <overlay_name>:FastTrackStrategyDesigner
  This operator can amend the rules directly in the context of an enterprise application and submit the changes for approval.

These access groups are available by default when you create an application overlay for revision management, as shown in the following example:





Access groups that enable fast-track change requests

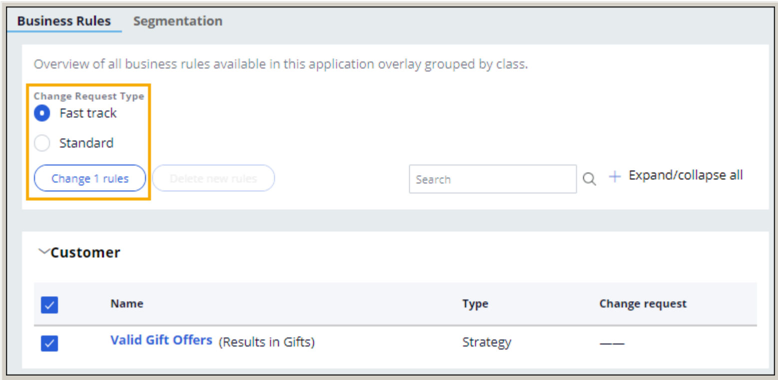
For more information, see Creating application overlays.

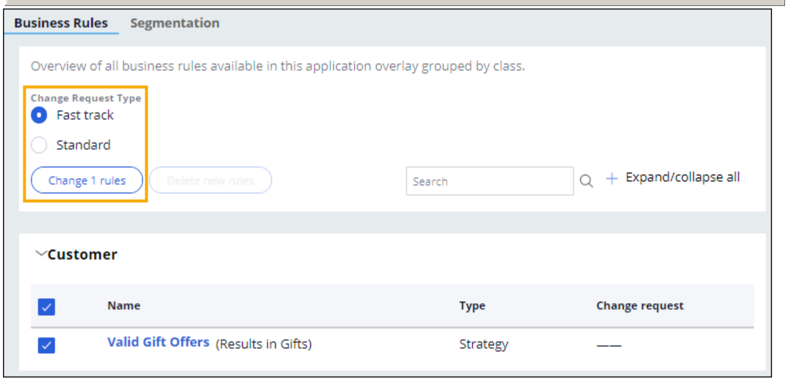
Initiating business changes outside of the standard revision management process

As a revision manager, you can start fast-track change requests directly on the Revision Management landing page. In addition, you can convert an approved standard change request to a fast-track change request.

Creating a fast-track change request

1. In the Change Request Type section, select Fast track.
2. Select the checkbox next to each rule that you want to include in the change request.
3. Click Change *<X>* rules, where *X* is the number of rules that you included in the change request. For reference, see the following example:





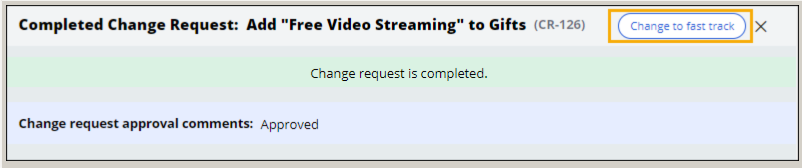
Initiating a fast-track change request

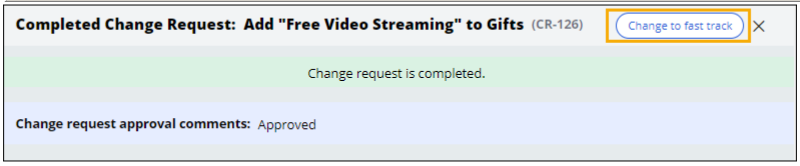
Converting standard change requests to fast-track change requests

You can increase the priority of business changes by converting standard change requests to fast-track change requests.

1. On the Revision Management landing page, open a revision that is in progress.

2. Open a standard change request that has been approved.
3. In the top-right corner, click Change to fast track, as in the following example:

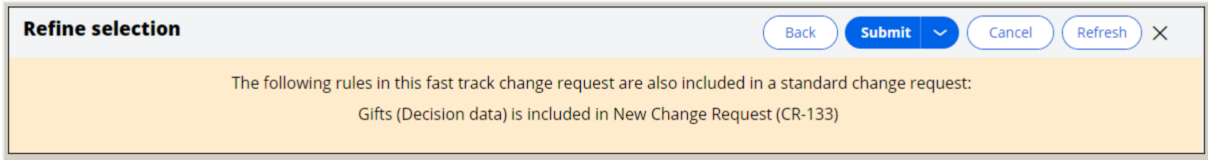


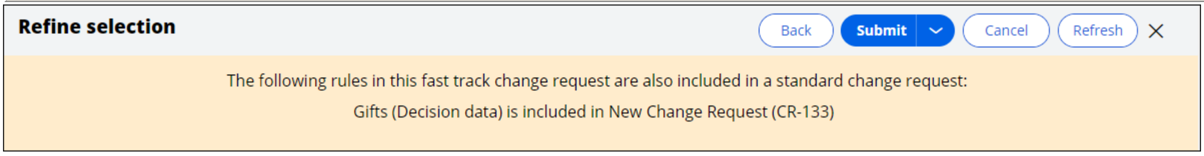


Converting a standard change request to a fast-track change request

4. Review the change request contents and click Submit.

If the changes in a fast-track change request conflict with any standard change request, the following error message is displayed:





Resolve potential conflicts by manually propagating the rule changes to the standard change request or by withdrawing the conflicting rules from the standard change request. Otherwise, the changes that you introduced in the standard change request overwrite any changes that you made in advance.

Completing a fast-track change request

As a strategy designer, you can work on a fast-track change request by switching the context to the fast-track application to ensure that your work is isolated from the other changes. By using this solution, you can safely release fast-track changes in advance of standard revision work.

Before you begin

Ensure that the list of your access groups includes the <overlay_name>:FastTrackStrategyDesigner access group.

1. Log on to Pega Marketing™ or Customer Decision Hub™ portal.
2. Switch the application context to the fast-track application by performing the following actions:
   a. Click on your operator icon.

   b. From the Switch apps menu, select the fast-track application.

      The fast-track application is always the enterprise application on top of which you built the revision management overlay. This application has all the previous revisions that were deployed and contains no revisions that are in progress. This separate context isolates urgent business rule changes from the standard revision management process.
3. In the My Work section, access the change request and perform rule changes according to the change request description.
4. Submit your changes for the revision manager's approval.

Resolving a fast-track change request

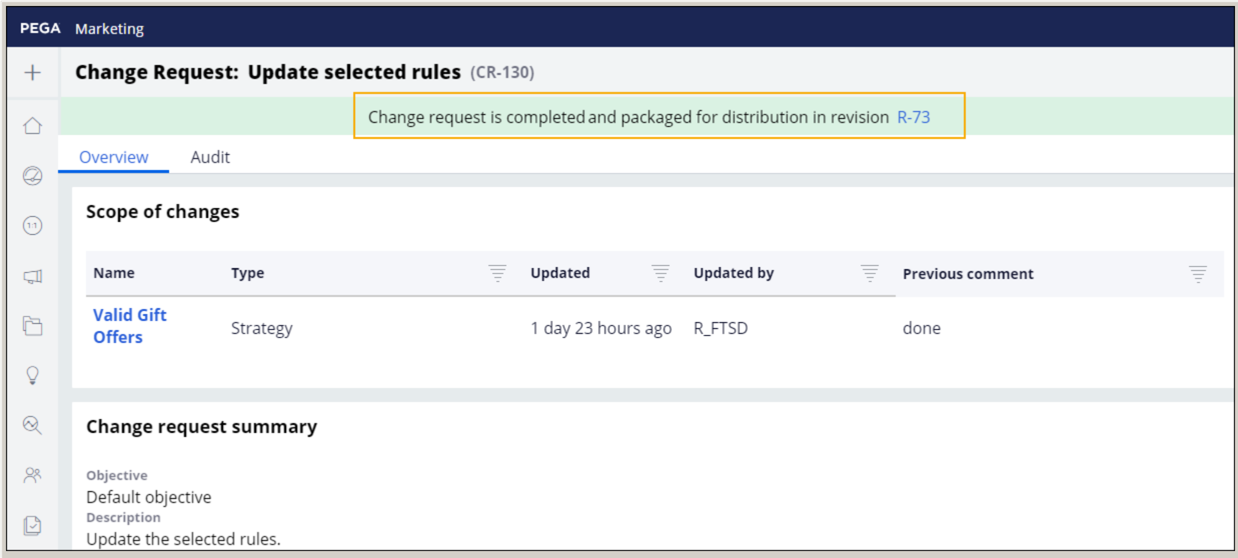
As a revision manager, you can review and approve fast-track change requests similarly to standard change requests. After you approve a fast-track change request, that request is automatically packaged in a new revision for download or direct deployment. In addition, a new revision ruleset version is created.

Perform the following actions to resolve a fast-track change request:

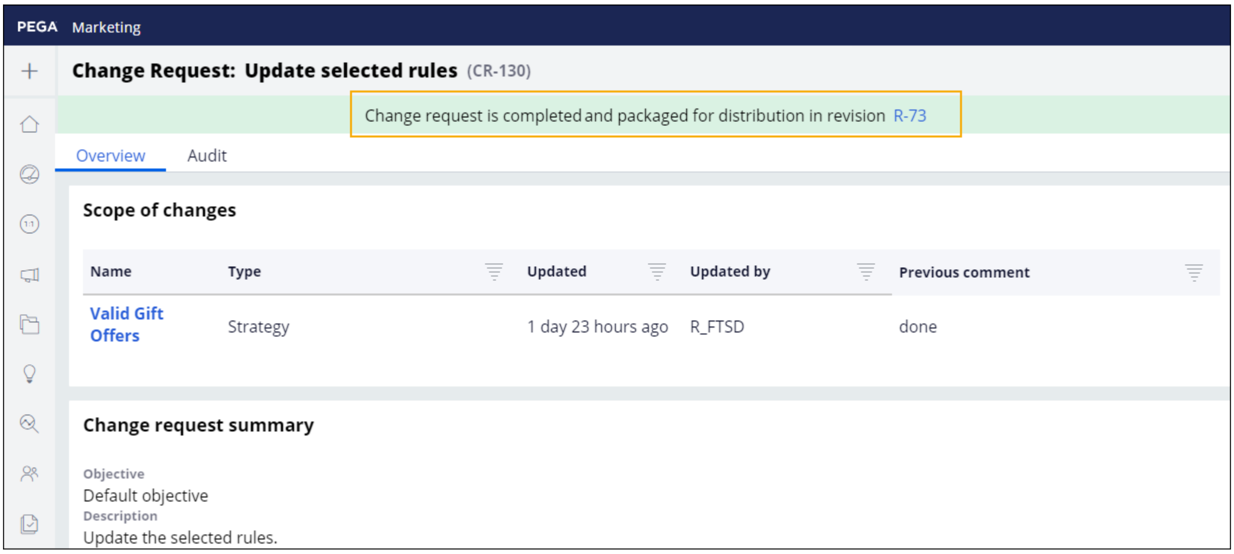
1. Switch the application context to the fast-track application.
2. On the Revision Management page, in the My work section, open the fast-track change request that you want to approve.
3. Review the changes, and then click Approve.

Conclusions

You resolved the change request. That change request is now packaged and ready to deploy as part of a separate revision, as shown in the following example:



A fast-track change request that has been resolved and approved



A fast-track change request that has been resolved and approved

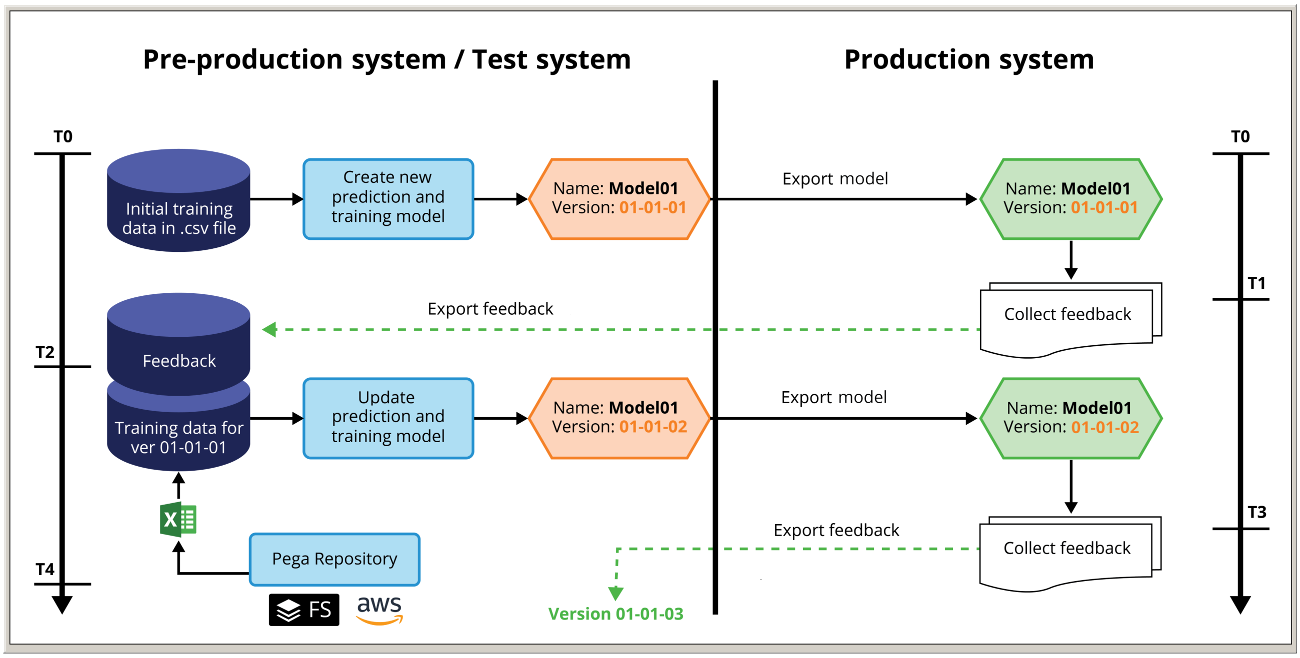
Increase the accuracy of text analytics models with imported feedback data (8.3)

You can now increase the accuracy of text analytics models in pre-production environments by updating them with new data, for example, with feedback data that you collect. With this feature, you can achieve a better understanding of your customers' needs, which helps you retain and grow your customer base.

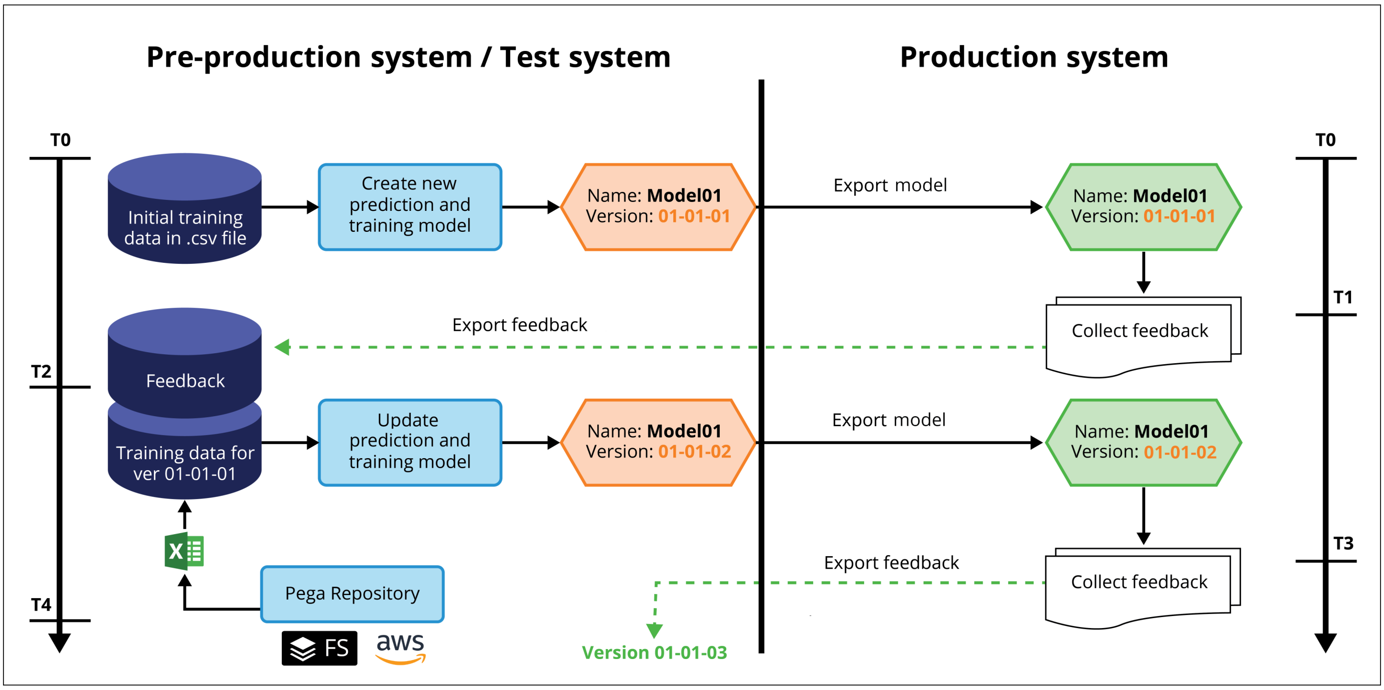
To improve the management of the text analytics models in your application, use model versions. For example, you can switch back to a previous model version if the new version does not meet your business requirements.

You can further increase the model's accuracy by adding more training data to an existing text analytics model. Edit the training data that is available in the system, for example, to recover from errors.

Consult the following diagram to learn about how you can use text analytics model migration and versioning to update the model with feedback data:



Adding feedback data to a text analytics model



Adding feedback data to a text analytics model

For more information about updating text analytics models, see Updating training data for text analytics models.

For more information about migrating text analytics model, see Exporting text analytics models and Importing text analytics models.

Evaluate event strategies through unit testing (8.3)

Automate Event Strategy rule testing through unit tests. By unit testing event strategies, you can detect design flaws that produce errors or return unexpected results. In addition, the option to unit test an event strategy decreases the number of resources that are required for testing coverage by eliminating the need to create a Data Flow and Data Set rules only for testing purposes.

By unit testing event strategies, you can perform the following actions to ensure that the event strategy configuration meets the design requirements:

- Test whether the property values of emitted events meet specific criteria.
- Verify whether the aggregation of the incoming events matches the expected results. You can assert that an event is emitted only when a specific aggregation threshold is reached (for example, only after three dropped calls are detected).
- Affirm the number of events emitted. For example, you can check if an event strategy emits only one event that corresponds to a unique customer ID, in a specific time window.

The following example demonstrates how to create and run unit tests in event strategies. In this example, the test ensures that the following design criteria are met:

- The number of aggregated input events per an emitted event is equal to 3.
- The number of emitted events equals 1 for a unique customer ID.

  Creating and running event strategy unit tests

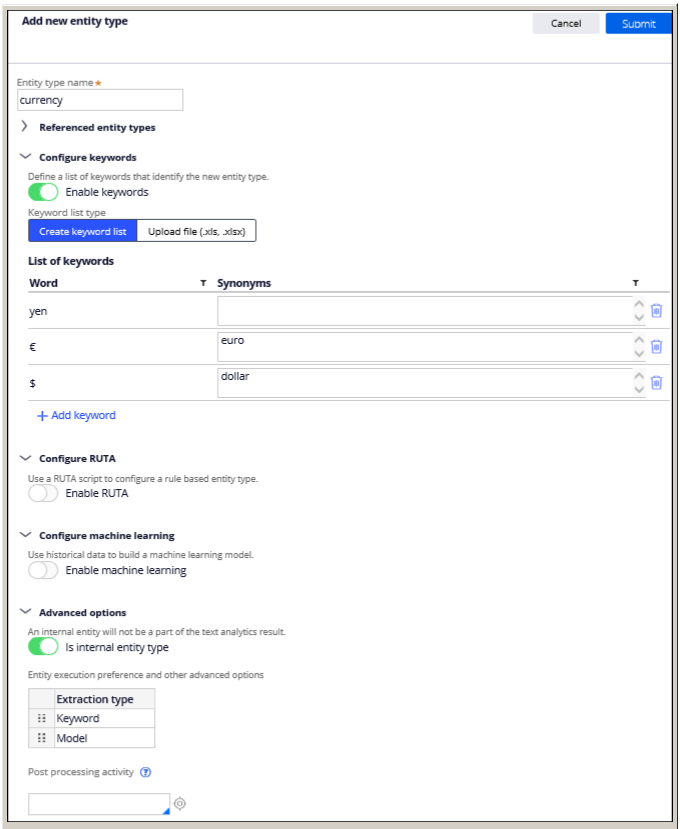
For more information, see Unit testing event strategies.

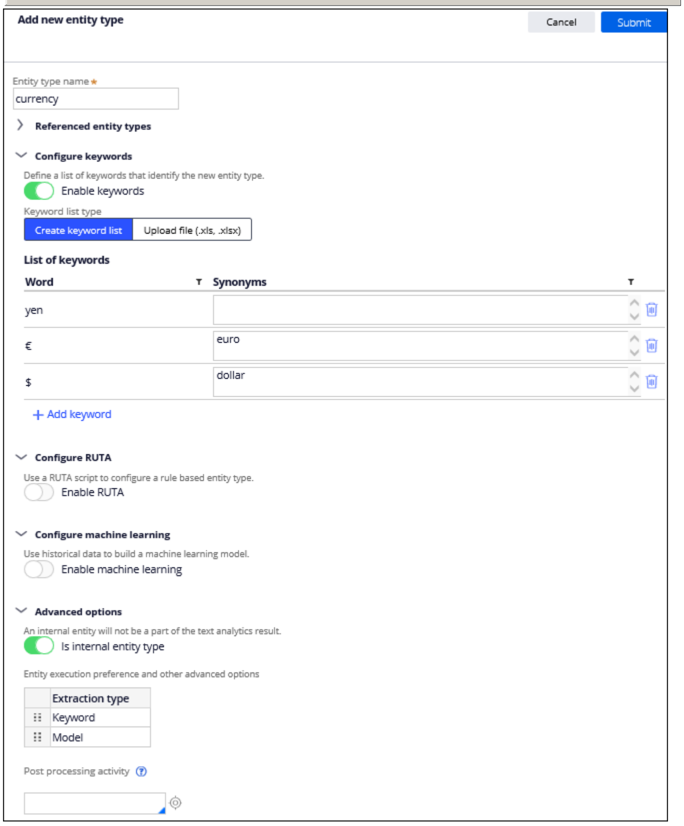
Improve the management of text extraction models through entity types (8.3)

Create a case, populate a form, or route an assignment by using entity types that locate and classify keywords and phrases in unstructured text into such classes as Person Name, Monetary Value, Currency, Location, Organization, and so on. Each entity type can integrate such detection methods as Apache Ruta, keywords, and machine learning in order of priority to provide versatile and robust text extraction.

Entity types simplify the management of complex models that contain entities that are nested. For example, theAddress entity type can nest such entity types as Country, Province, City, Postal Code, Street, and so on.

The following example demonstrates the currency entity that is an entity type that can be detected through a list of associated keywords and pattern matching:





Configuring a keyword-based entity type in Prediction Studio

See the following video to learn how to create nested entity types:

Creating nested entity types in Prediction Studio

In addition, the number of default text extraction models has increased. You can now reuse these default models to implement text analytics in your application faster, without the need to gather the training data or to go through the entire process of building models. View and test new entity types, for example, us_airport, time_unit, organization_suffix, area_unit, and so on, by accessing the System Entities and Unit Entities text extraction models in Prediction Studio.

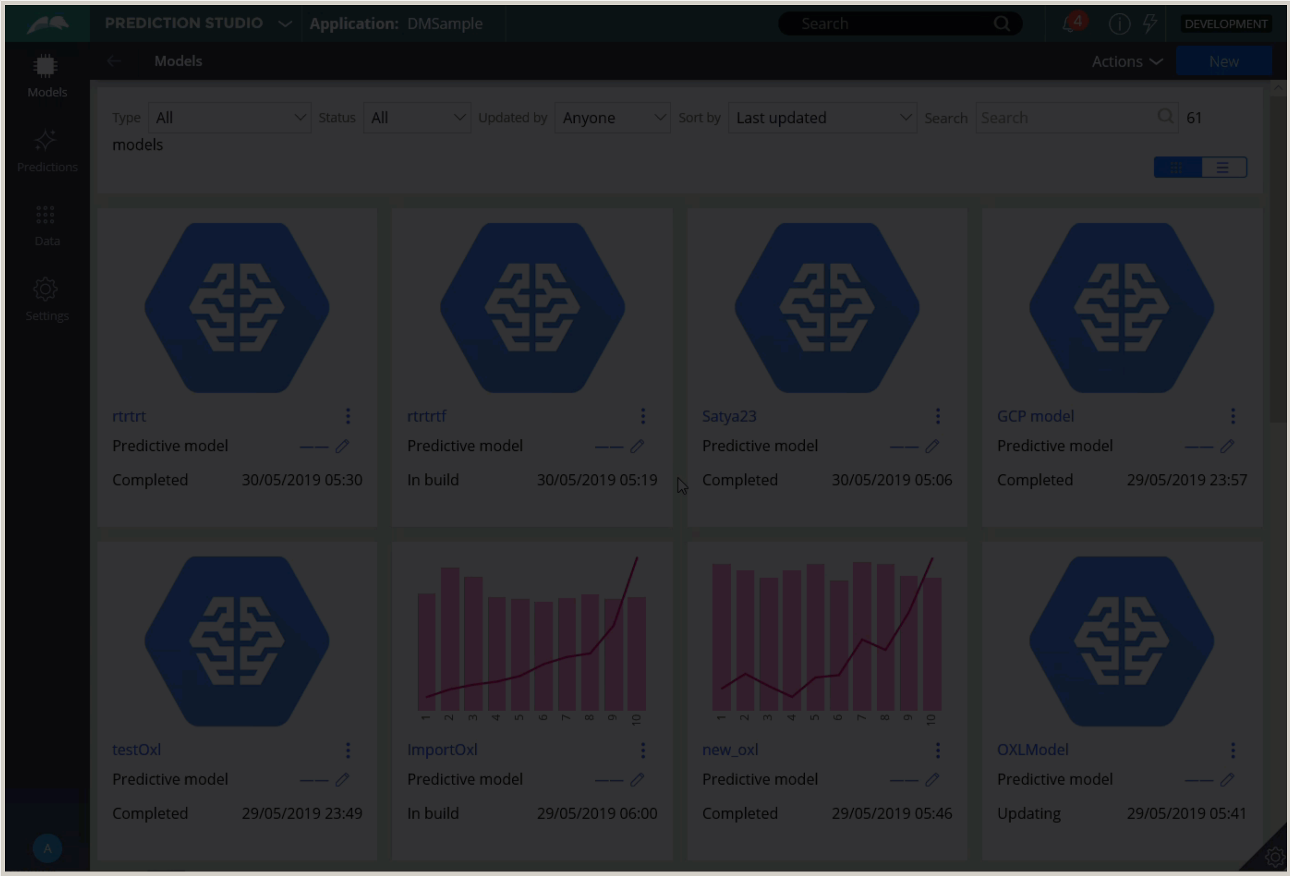
For more information, see:

- Creating entity models
- Text extraction analysis
- Configuring text extraction analysis

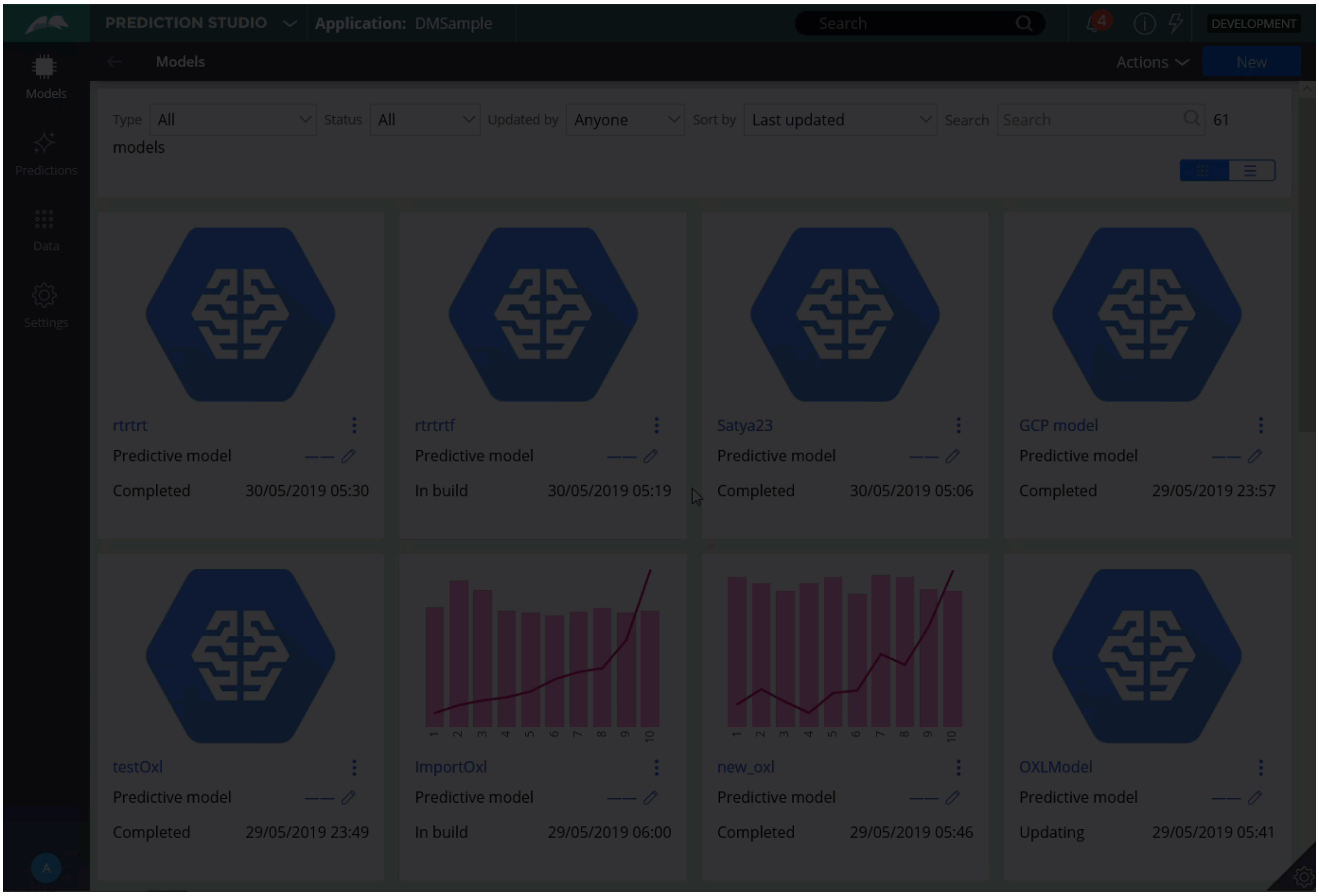
Improve your custom predictive models through machine learning as a service (8.3)

In Pega Platform™, you can now improve custom predictive models that you build externally by running them through machine learning as a service (MLaaS) tools. With this functionality, you can make better customer-related decisions by using the enhanced predictive power of advanced artificial intelligence and machine learning models, including deep learning for TensorFlow, scikit-learn, and XGBoost algorithms.

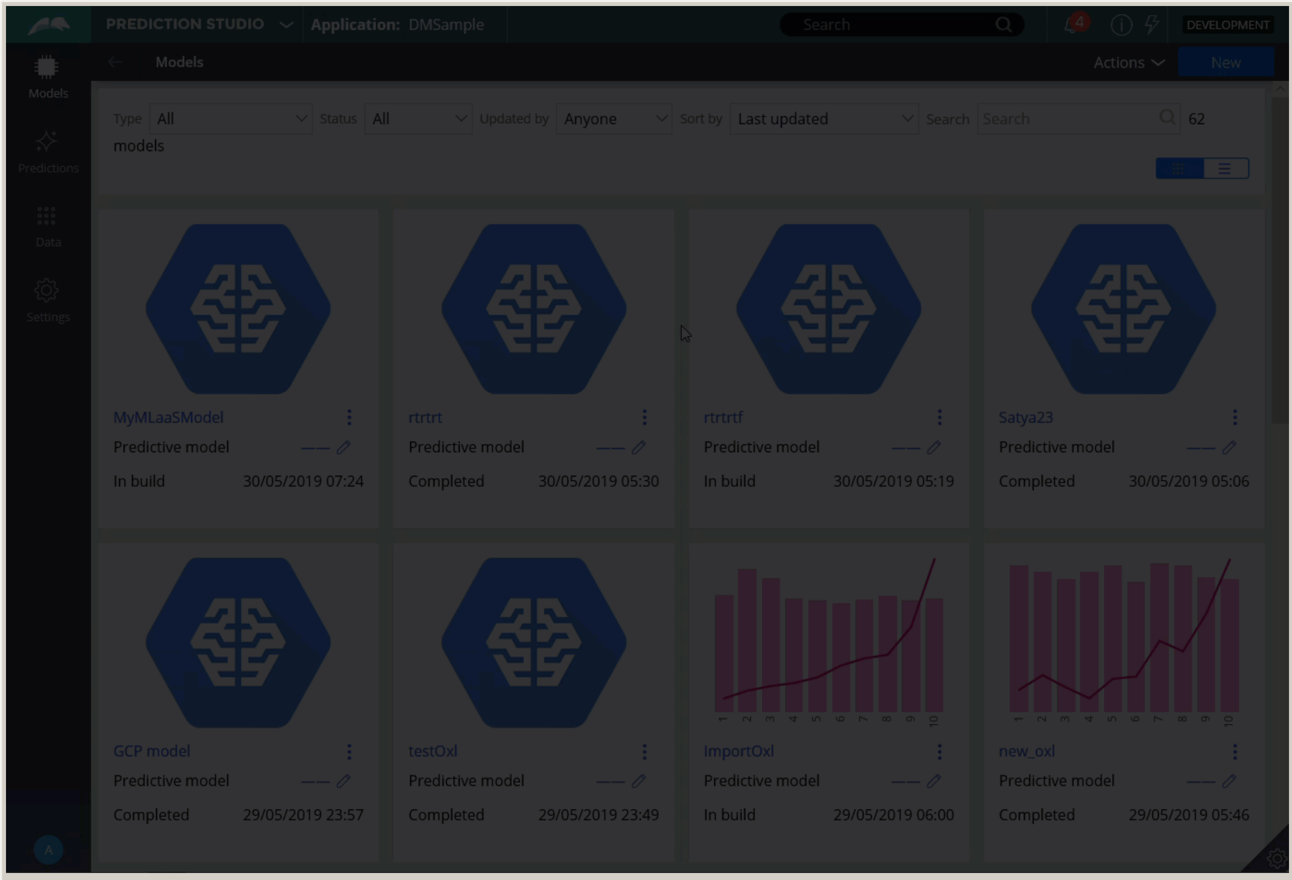
To fully harness the results of your custom state-of-the-art predictive models through MLaaS, Pega Platform now provides an option to configure a connection to Google AI Platform to run such advanced algorithms externally. The following videos illustrate how you can connect to an external predictive model and then use the results in Pega Platform.



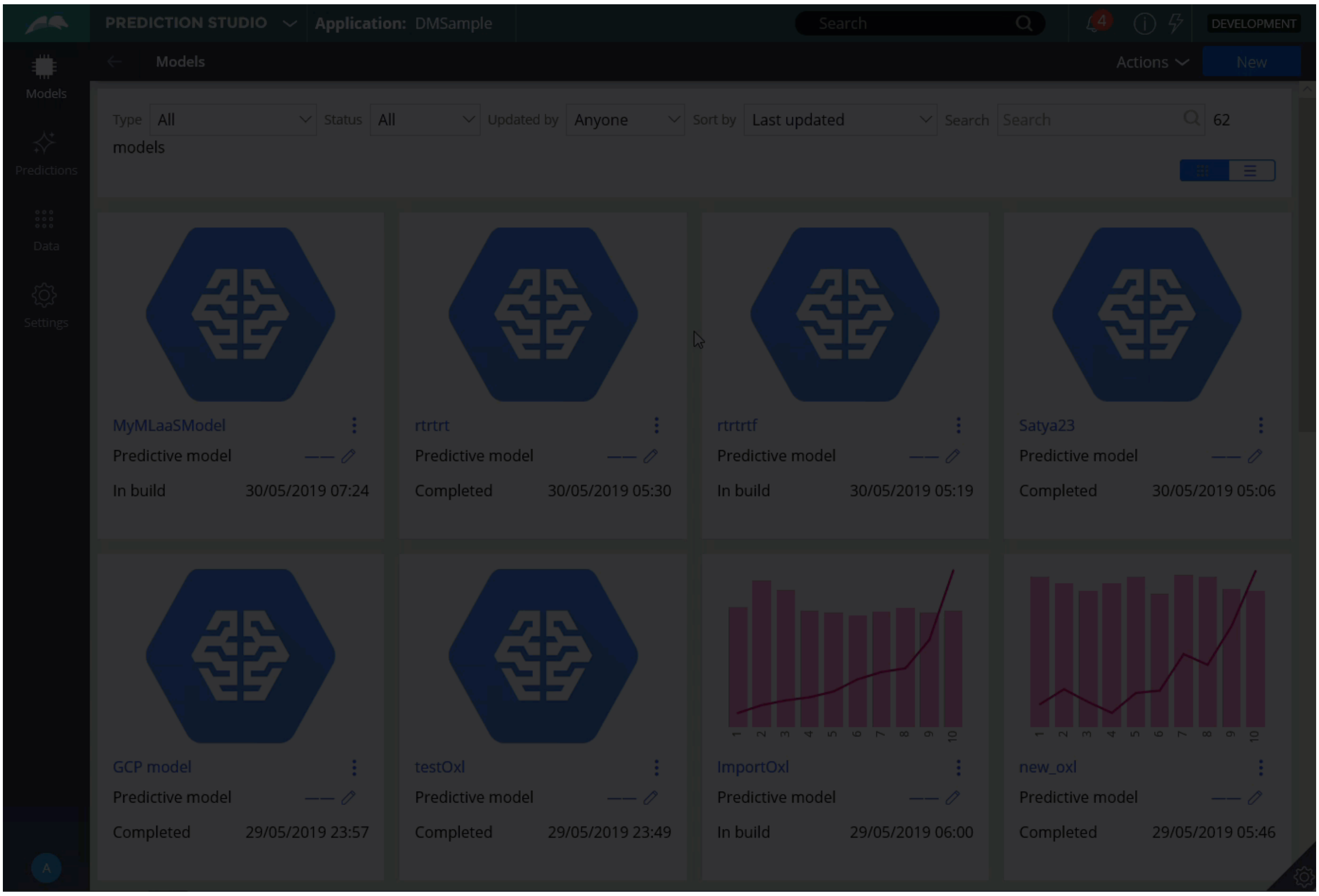
Configuring a machine learning service



Configuring a machine learning service



Connecting to a machine learning model



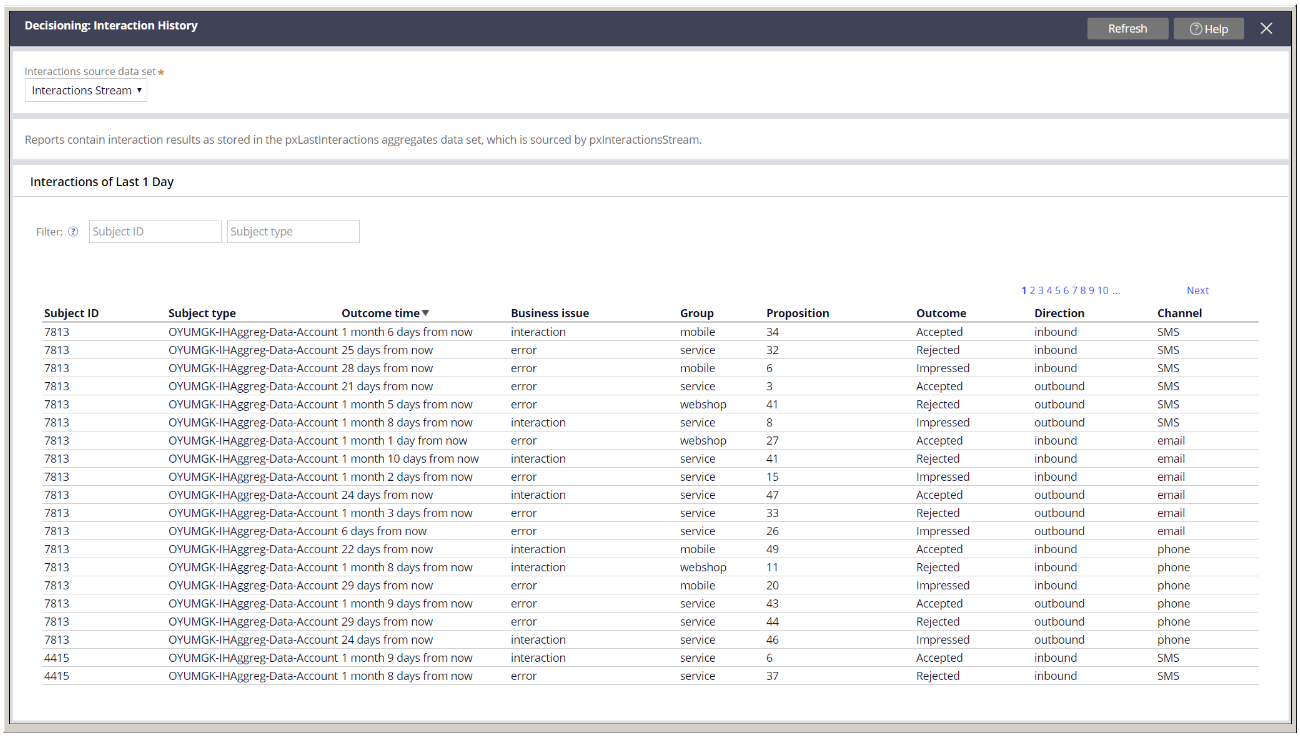
Connecting to a machine learning model

For more information, see Connecting to a Machine Learning as a Service model and Configuring a machine learning service connection.

Process high-volume interactions more efficiently (8.3)

You can now accelerate the processing of high-volume interaction history data by incorporating a stream-based interaction history into your application. For example, you can create a stream-based interaction history summary data set, and then incorporate it into your next-best-action strategy; the strategy will then base its predictions on the latest interactions with your customers and adapt to their expectations in real time.

You can also monitor the streamed interaction history records from the last 24 hours on the Interaction History landing page so that you stay up to date with recent interaction results.



Decisioning: Interaction History

Refresh | Help

Interactions source data set *

Interactions Stream

Reports contain interaction results as stored in the pxLastInteractions aggregates data set, which is sourced by pxInteractionsStream.

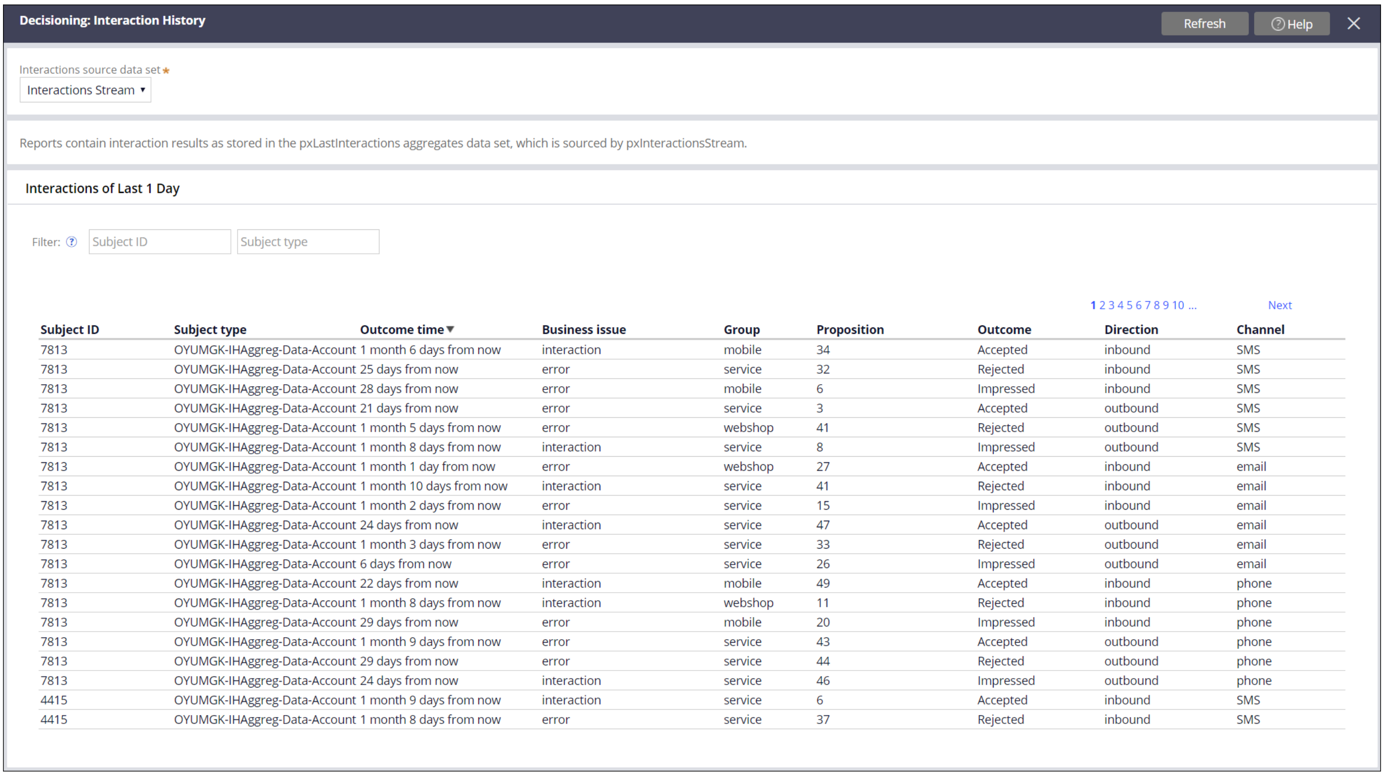
Interactions of Last 1 Day

Filter: Subject ID | Subject type

1 2 3 4 5 6 7 8 9 10 ... Next

Subject ID	Subject type	Outcome time ▼	Business issue	Group	Proposition	Outcome	Direction	Channel
7813	OYUMGK-IHAggreg-Data-Account	1 month 6 days from now	interaction	mobile	34	Accepted	inbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	25 days from now	error	service	32	Rejected	inbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	28 days from now	error	mobile	6	Impressed	inbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	21 days from now	error	service	3	Accepted	outbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	1 month 5 days from now	error	webshop	41	Rejected	outbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	1 month 8 days from now	interaction	service	8	Impressed	outbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	1 month 1 day from now	error	webshop	27	Accepted	inbound	email
7813	OYUMGK-IHAggreg-Data-Account	1 month 10 days from now	interaction	service	41	Rejected	inbound	email
7813	OYUMGK-IHAggreg-Data-Account	1 month 2 days from now	error	service	15	Impressed	inbound	email
7813	OYUMGK-IHAggreg-Data-Account	24 days from now	interaction	service	47	Accepted	outbound	email
7813	OYUMGK-IHAggreg-Data-Account	1 month 3 days from now	error	service	33	Rejected	outbound	email
7813	OYUMGK-IHAggreg-Data-Account	6 days from now	error	service	26	Impressed	outbound	email
7813	OYUMGK-IHAggreg-Data-Account	22 days from now	interaction	mobile	49	Accepted	inbound	phone
7813	OYUMGK-IHAggreg-Data-Account	1 month 8 days from now	interaction	webshop	11	Rejected	inbound	phone
7813	OYUMGK-IHAggreg-Data-Account	29 days from now	error	mobile	20	Impressed	inbound	phone
7813	OYUMGK-IHAggreg-Data-Account	1 month 9 days from now	error	service	43	Accepted	outbound	phone
7813	OYUMGK-IHAggreg-Data-Account	29 days from now	error	service	44	Rejected	outbound	phone
7813	OYUMGK-IHAggreg-Data-Account	24 days from now	interaction	service	46	Impressed	outbound	phone
4415	OYUMGK-IHAggreg-Data-Account	1 month 9 days from now	interaction	service	6	Accepted	inbound	SMS
4415	OYUMGK-IHAggreg-Data-Account	1 month 8 days from now	error	service	37	Rejected	inbound	SMS

Interaction History landing page for a stream-based interaction history



Decisioning: Interaction History

Refresh | Help

Interactions source data set *

Interactions Stream

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Interactions of Last 1 Day

Filter: Subject ID | Subject type

1 2 3 4 5 6 7 8 9 10 ... Next

Subject ID	Subject type	Outcome time ▼	Business issue	Group	Proposition	Outcome	Direction	Channel
7813	OYUMGK-IHAggreg-Data-Account	1 month 6 days from now	interaction	mobile	34	Accepted	inbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	25 days from now	error	service	32	Rejected	inbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	28 days from now	error	mobile	6	Impressed	inbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	21 days from now	error	service	3	Accepted	outbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	1 month 5 days from now	error	webshop	41	Rejected	outbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	1 month 8 days from now	interaction	service	8	Impressed	outbound	SMS
7813	OYUMGK-IHAggreg-Data-Account	1 month 1 day from now	error	webshop	27	Accepted	inbound	email
7813	OYUMGK-IHAggreg-Data-Account	1 month 10 days from now	interaction	service	41	Rejected	inbound	email
7813	OYUMGK-IHAggreg-Data-Account	1 month 2 days from now	error	service	15	Impressed	inbound	email
7813	OYUMGK-IHAggreg-Data-Account	24 days from now	interaction	service	47	Accepted	outbound	email
7813	OYUMGK-IHAggreg-Data-Account	1 month 3 days from now	error	service	33	Rejected	outbound	email
7813	OYUMGK-IHAggreg-Data-Account	6 days from now	error	service	26	Impressed	outbound	email
7813	OYUMGK-IHAggreg-Data-Account	22 days from now	interaction	mobile	49	Accepted	inbound	phone
7813	OYUMGK-IHAggreg-Data-Account	1 month 8 days from now	interaction	webshop	11	Rejected	inbound	phone
7813	OYUMGK-IHAggreg-Data-Account	29 days from now	error	mobile	20	Impressed	inbound	phone
7813	OYUMGK-IHAggreg-Data-Account	1 month 9 days from now	error	service	43	Accepted	outbound	phone
7813	OYUMGK-IHAggreg-Data-Account	29 days from now	error	service	44	Rejected	outbound	phone
7813	OYUMGK-IHAggreg-Data-Account	24 days from now	interaction	service	46	Impressed	outbound	phone
4415	OYUMGK-IHAggreg-Data-Account	1 month 9 days from now	interaction	service	6	Accepted	inbound	SMS
4415	OYUMGK-IHAggreg-Data-Account	1 month 8 days from now	error	service	37	Rejected	inbound	SMS

Interaction History landing page for a stream-based interaction history

For more information, see:

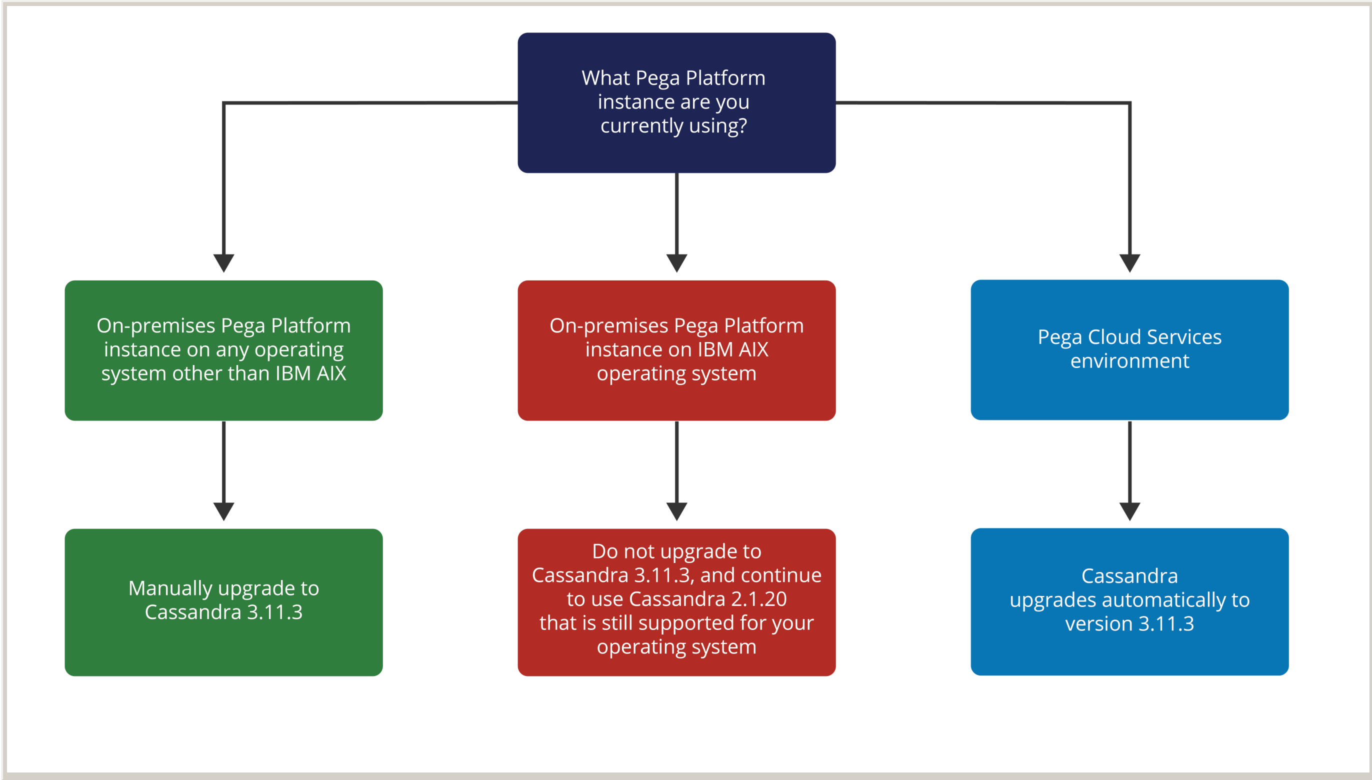
- Creating an interaction history summary data set
- Monitoring interaction results
- Transitioning to a stream-based interaction history

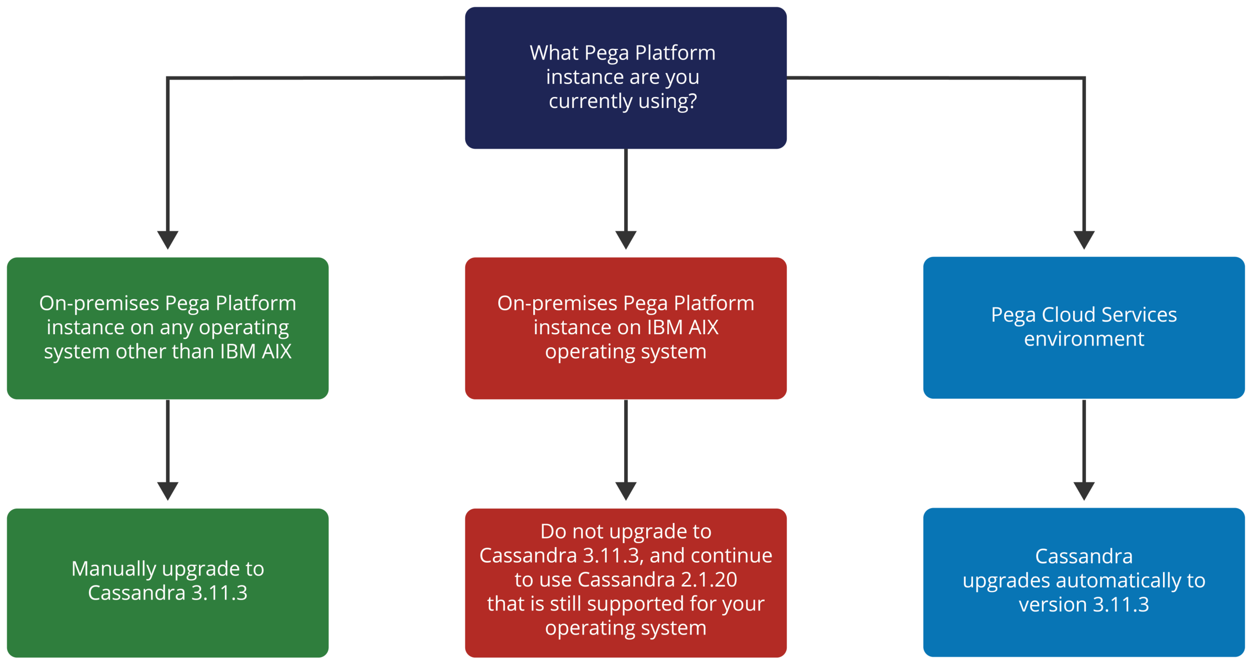
Increase your system's reliability by upgrading to Cassandra 3.11.3 (8.3)

Increase your system's reliability and reduce its memory footprint by upgrading the internal Cassandra database to version 3.11.3.

By upgrading Cassandra to version 3.11.3 on the Decision Data Store (DDS) nodes in your system, you ensure that your system runs against a reliable and fully-supported database.

Pega offers a procedure for seamlessly upgrading the database without any downtime. Use the following diagram to learn about how you can upgrade to Cassandra 3.11.3:





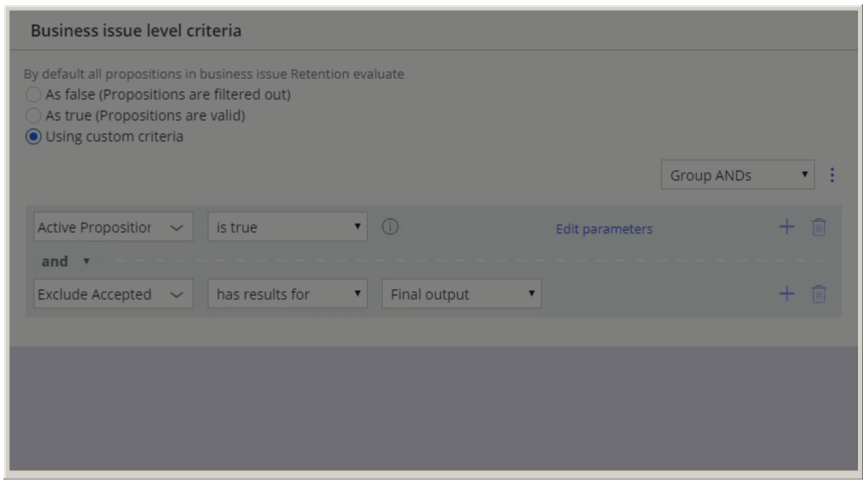
For more information on how to manually upgrade to Cassandra 3.11.3, see the Pega Platform 8.3 Upgrade Guide for your server and database at [Deploy Pega Platform](#).

Create custom criteria for Proposition Filter rules by using the condition builder (8.3)

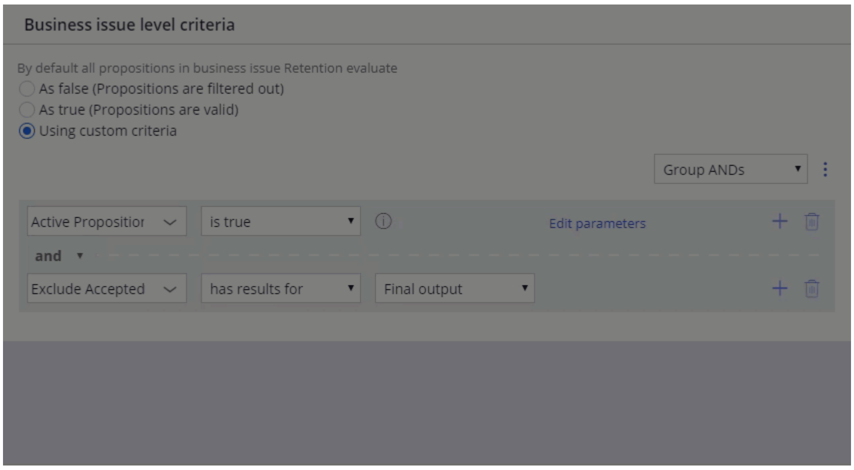
Proposition filters now use the condition builder to define the criteria that a proposition or group of propositions must match in order to be offered to the customer. The condition builder provides a simple, flexible tool to select and group the entry criteria.

On the Default criteria tab of a Proposition Filter rule, specify the conditions that apply to all propositions that belong to a business issue by selecting Using custom criteria. You can also specify how you want to evaluate groups of conditions. The following example shows how to select criteria and then change the evaluation to Group ORs so that conditions grouped by the OR operator are evaluated together. That is, only propositions that are active and have results from either Exclude Accepted or Capture Feedback are offered to the customer.

Conditions that are evaluated as a group are displayed on a single block of gray background, so you can identify them more easily.



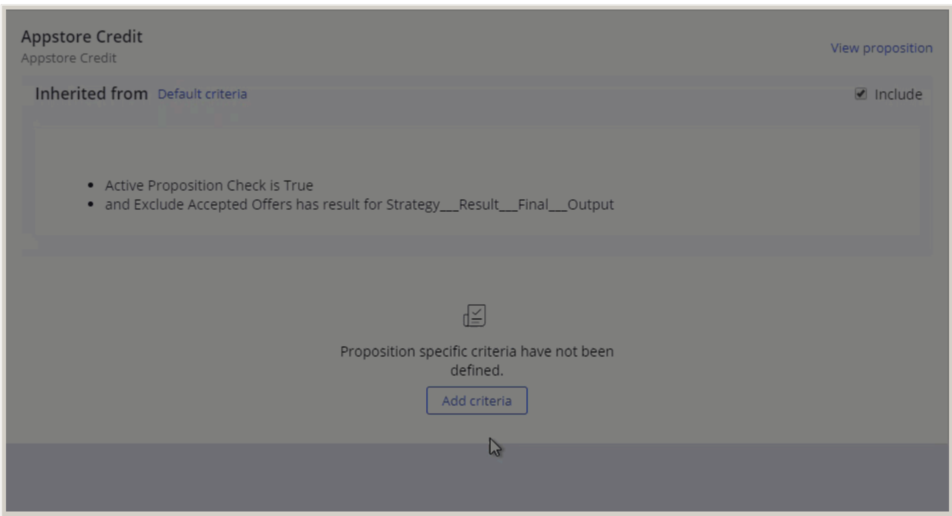
Using the condition builder to select business issue level criteria and grouping them by the OR operator



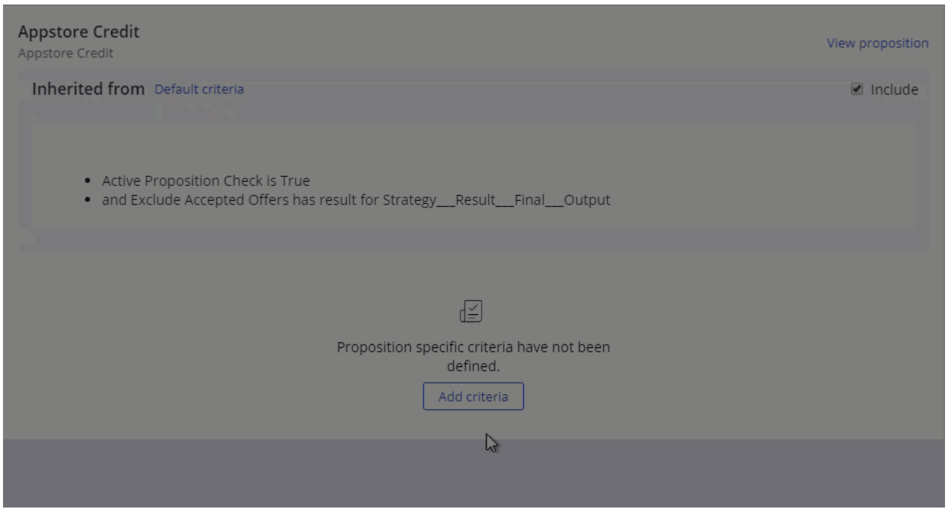
Using the condition builder to select business issue level criteria and grouping them by the OR operator

In addition to specifying criteria for all propositions in a business issue, you can define individual criteria for one or more propositions on the Specific criteria tab. By default, any criteria defined on the issue level are inherited by these propositions. You can exclude a proposition from being evaluated under the issue-level criteria if you clear the Include check box in the Inherited from section.

The following example shows how to select criteria for an individual proposition, in addition to criteria inherited from the business issue level. Inherited criteria are visible in the Inherited from section.



Using the condition builder to create criteria for individual propositions



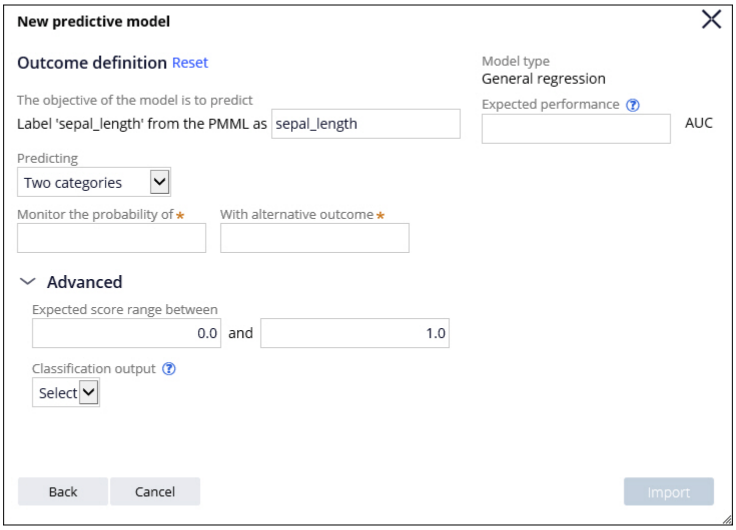
Using the condition builder to create criteria for individual propositions

For more information about the condition builder, see [Defining conditions with a condition builder](#).

Improve prediction accuracy by monitoring predictive models (8.2)

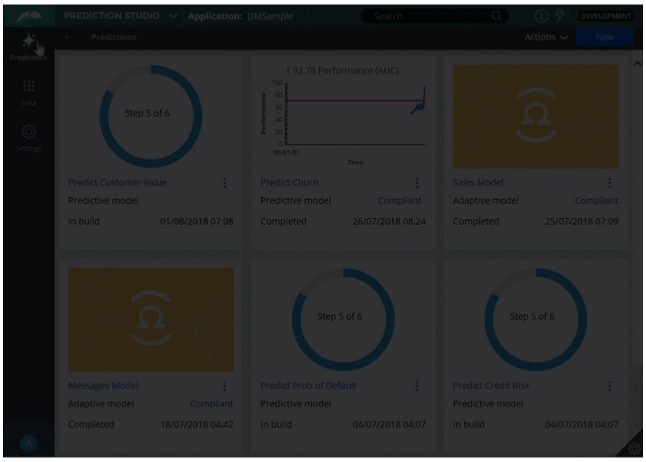
You can improve predictions of your customer needs and decisions by closely monitoring the predictive models that you use, for example, in customer-oriented strategies.

Whether you build your own model or import an existing one, you can analyze and compare both types by using advanced statistical metrics. If you decide to create a model, you do not need to define the outcomes to monitor because the Pega Platform™ templates already contain their standard definitions; if you import a preconfigured model from a PMML file, you can specify the outcome that you want to monitor by using an improved import feature:

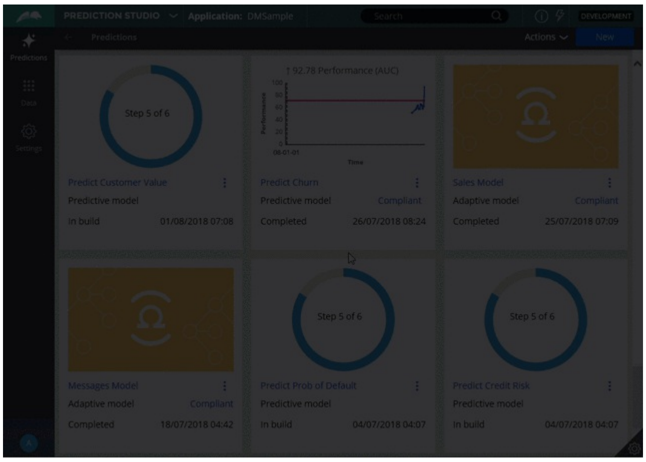


Sample PMML model outcome definition options

After defining the outcome that you want to monitor and running a model to gather responses over time, you can use detailed metrics to verify the model performance:


Monitoring a predictive model

Additionally, you can compare the performance of all predictive models of the same type in summarized reports:


Viewing predictive model reports

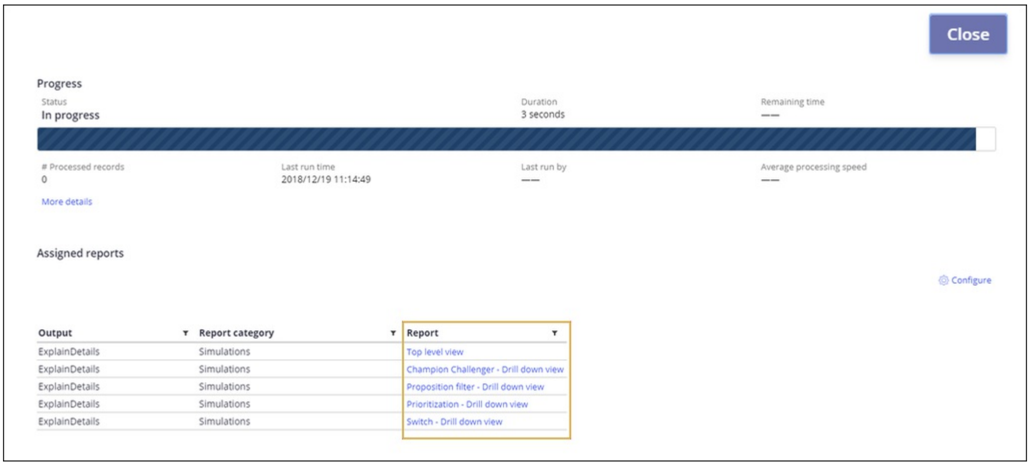
For more information, see:

- [Tutorial: Monitoring predictive models]
- [Predictive models monitoring]

Interpret the decision funnel with simulation tests (8.2)

Gain a better understanding of how strategy components influence decision outcomes by using decision funnel explanations. By running simulation tests with the new Decision funnel explanation purpose, you can now break down the results of a decision funnel into granular analyses to assess how certain components and expressions influence the overall outcome. For example, you can create a simulation test to investigate whether a new business logic affects the frequency with which propositions would be offered across a segment of customers.

You can create and run simulation tests on the Simulation Testing landing page. Selecting Decision funnel explanation as the purpose for a simulation test adds predefined reports that drill down to the details of proposition counts by Champion Challenger, Proposition Filter, Prioritization, and Switch components.



Predefined decision funnel reports

If your environment includes Pega Marketing 8.2, you can also view the details of proposition counts by Geofence, Segment Filter, and Contact Policy.

Creating a decision funnel simulation test

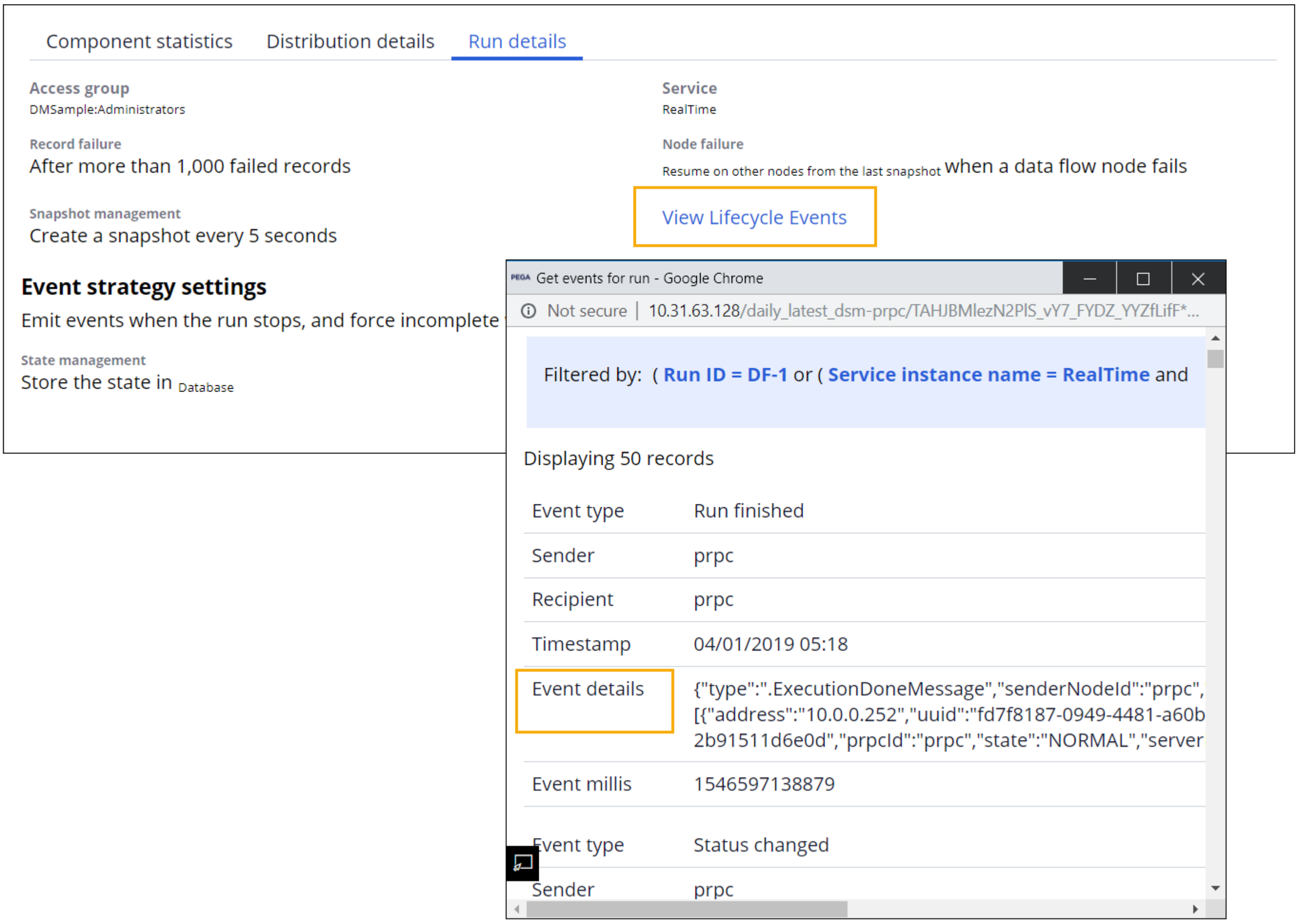
Watch the below video to see how to create a decision funnel simulation test in Customer Decision Hub.

Creating a decision funnel simulation test

For more information and detailed steps, see [Creating simulation tests in Customer Decision Hub].

Review the lifecycle events of data flow runs (8.2)

Limit data flow run downtime and troubleshoot issues effectively by generating and reviewing a report on the lifecycle of data flow runs. If a run fails, you can generate an extensive lifecycle report with a single click and analyze the details of the failure event to quickly pinpoint the cause and restore the run. For example:



Sample data flow run report

The following example is a JSON document that constitutes one of the Event details sections of the report:

{"type":".PartitionStatusTransitionMessage", "senderNodeId":"prpc", "timestamp":1546597138260, "runId":"DF-1", "originator":"MultiplePartitionExecution", "reason":"Encountered error while processing run: Severe exception in stage: Three Dropp

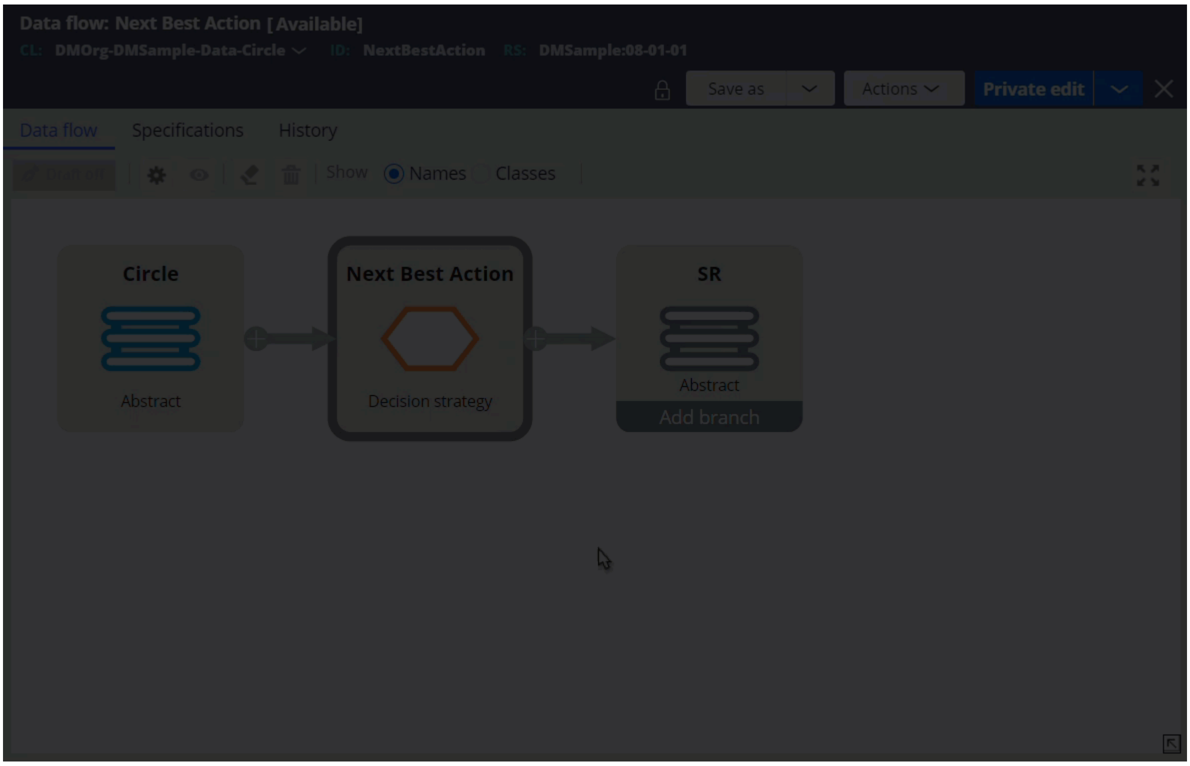
In the report, filter and summarize the records to highlight relevant data and transform the report into a clearer and more digestible form. If you require assistance with debugging an issue, you can export the report to a .pdf or .xls file and share it with Global Customer Support (GCS).

For more information about accessing event details, see Creating a real-time run for data flows and Creating a batch run for data flows.

Optimize decision strategy performance (8.2)

Decision strategies in data flows have been enhanced with automatic optimization and customizable sets of output properties that improve data flow efficiency.

Automatically optimized strategies save time by reducing manual actions to a minimum because you no longer need to manually optimize every strategy component. Strategies in data flow runs achieve a performance increase with no effect on your hardware when you customize the list of output properties. You can accelerate data flow processing by limiting the number of output properties to only the most relevant, as shown in the following example:



Selecting output properties

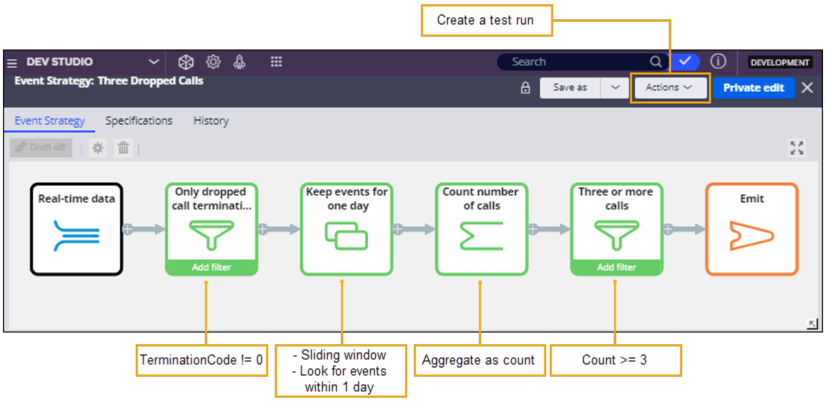
For more information, see [Adding strategies to dataflows](#).

Evaluate event strategies through test runs (8.2)

Design event strategies more effectively by testing your logic against sample events. By sending sample events to an event strategy and evaluating the outcome, you can increase the reliability of the event strategy configuration and troubleshoot potential issues.

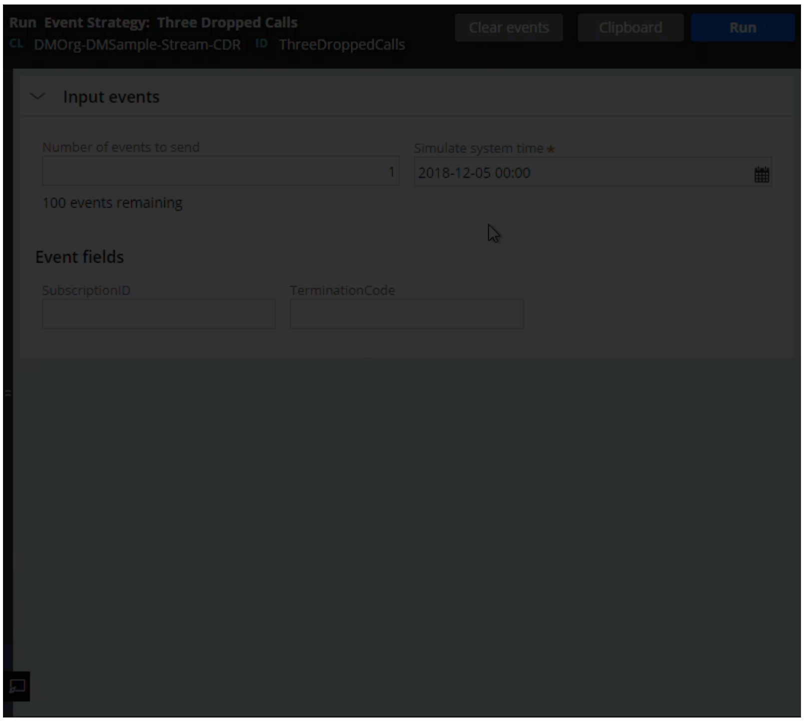
You can create event strategy test runs from the Actions menu on the Event Strategy rule form. Through the Run option, you can assess the strategy logic by simulating real-time events. For each run, you can specify the settings to simulate the number of events to send, the event time, and event fields.

For example, a strategy designer creates an event strategy to respond to customers who made calls that were dropped. The event strategy detects the third dropped call made by a single customer within one day.



An event strategy to detect dropped calls

The strategy should emit exactly one event when a single customer (identifiable through the SubscriptionID property) made at least three unsuccessful calls within the period of one day. Dropped calls are detected when the TerminationCode property value equals 1.



Sending sample events to an event strategy

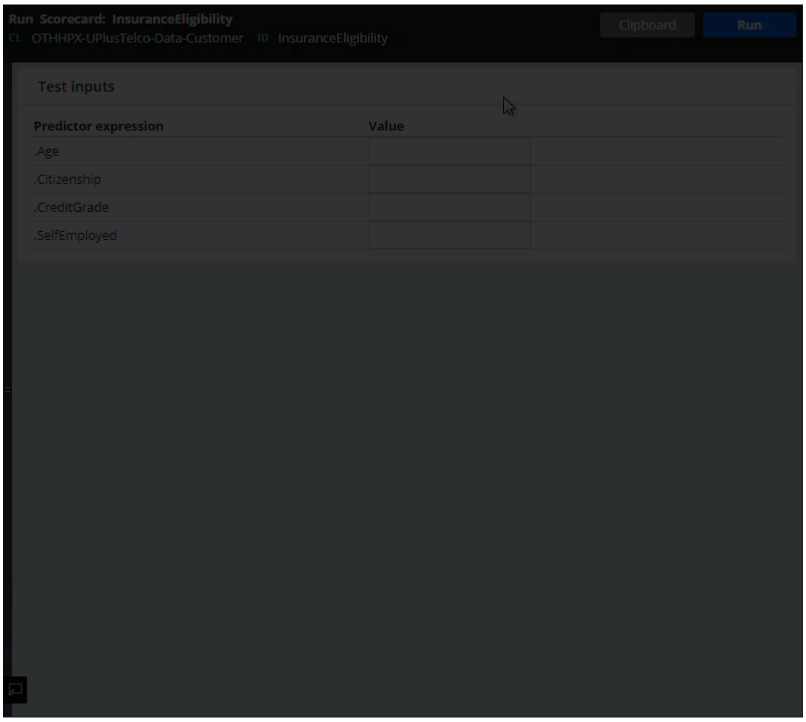
For more information and detailed steps, see [Testing event strategies](#).

Generate scorecard score explanations (8.2)

Facilitate scorecard monitoring for regulatory purposes by generating scorecard explanations. You can view scorecard explanations during scorecard and strategy design to get insight into how scores are calculated. You can also record a detailed score breakdown for every scorecard calculation by enabling scorecard explanations in data flows.

Design scorecard logic more efficiently

Improve your understanding of the scorecard logic through more informative test runs. You can test the scorecard against sample input and view detailed score explanations in the Run window that you can access from the Actions menu on the Scorecard rule form, as shown in the following figure.



How to generate scorecard explanations through the Scorecard rule form

For more information, see [Testing the scorecard logic](#).

Evaluate scorecards more easily while testing strategies

You can evaluate whether the scorecard logic produces the expected results in relation to other strategy components from the Test run panel of the Strategy rule form. Through that panel, you can view the score explanations for all the scorecards that were used on each level of the Next-Best-Action hierarchy.

The following example shows how to generate scorecard explanations in a sample Strategy rule that determines whether customers are eligible to receive certain types of insurance propositions. Proposition eligibility is based on customer age, citizenship, credit score, and whether the customer is self-employed.

Generating scorecards explanations in a strategy

Generate score explanations through data flows

Simplify scorecard auditing by using data flows. When you generate scorecard explanations through a data flow, the strategy results include a score breakdown for each strategy that contains the Scorecard shape.

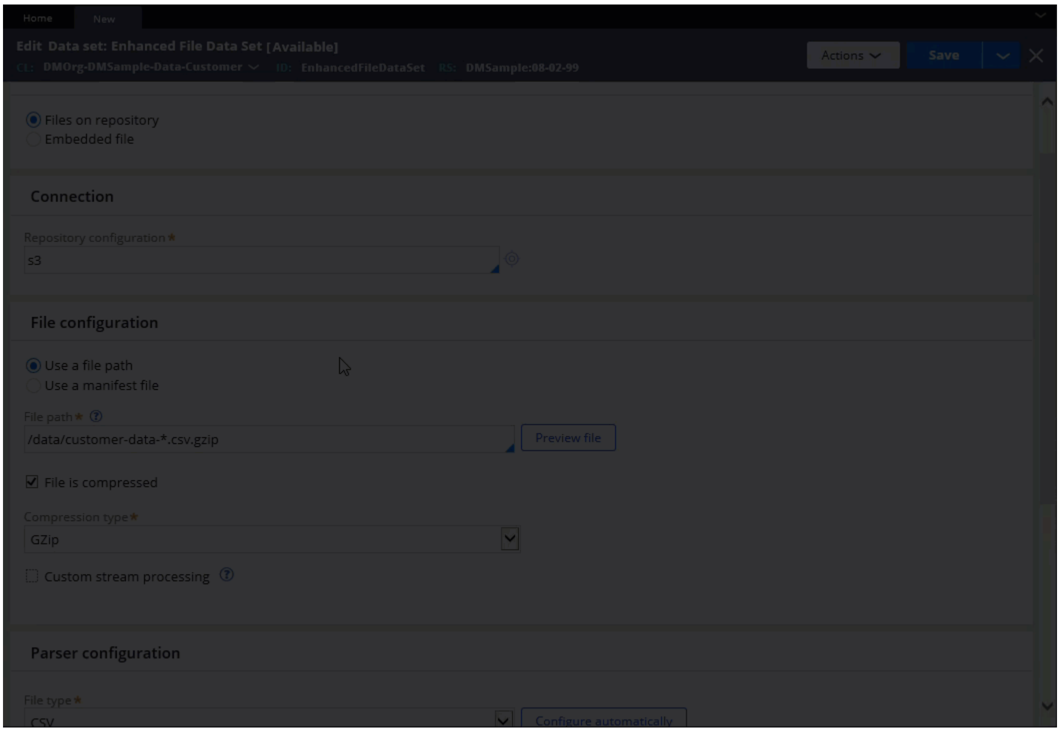
For more information, see [Recording scorecard explanations through data flows](#).

Configure enhanced File data sets (8.2)

You can now define File data sets for more advanced scenarios more flexibly with an additional set of customization options.

Custom stream processing

To improve customer data security, apply encryption and decryption algorithms to write and read that data by implementing your own Java classes. This way you can also add compression methods, in addition to the basic .gzip and .zip formats.



Configuring classes for custom stream processing

Manifest file support

Gain more control over source data by listing the files to read in an .xml manifest file, instead of using a fixed filepath, as in the following example:

<manifest> <files> <file> <name>file0001.csv</name> </file> <file> <name>file0002.csv</name> </file> </files> </manifest>

Meta files created on save

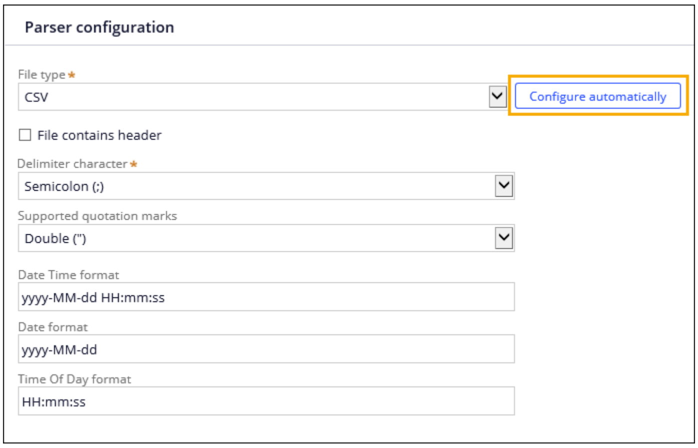
Retrieve detailed information on every file that you save. For every file, the system creates a dedicated meta file which includes the saved file name, size, and the number of records.

Date and time pattern support

To facilitate data management processes, automatically extend the filename of every file with a date and time of creation by adding a Java SimpleDateFormat string to the file path.

Parser configuration on demand

Choose if you want to automatically configure the parser settings for the data in your File data set. This way, even if you update the file path, your parser configuration and the .csv file column mapping do not change.



Parser configuration on demand

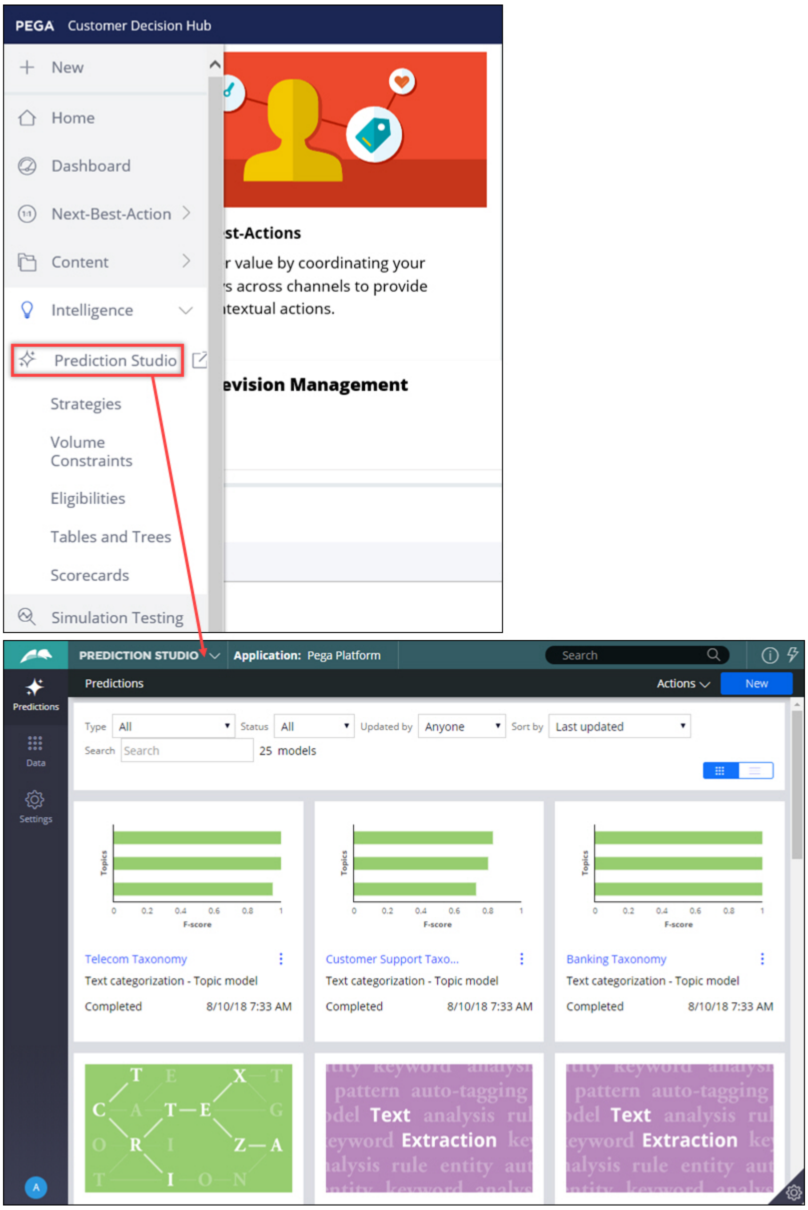
For more information, see Creating a File data set for files on repositories and Requirements for custom stream processing in File data sets.

Build machine-learning models in Prediction Studio

Prediction Studio is an authoring environment for data scientists to develop artificial intelligence (AI) and machine-learning models in the form of adaptive, predictive, and text analytics models.

Automatic transitions to and from Prediction Studio enable you to create or update models in the context of your application so that you maintain focus and work more quickly because the transitions are seamless.

For example, you can edit a Strategy rule in a business portal, such as Customer Decision Hub, and then switch to Prediction Studio to edit an Adaptive Model rule that is part of the Strategy. When you are done, you can quickly return to your business portal to resume editing the Strategy.



Transitioning from Customer Decision Hub to Prediction Studio

In Prediction Studio, data scientists can perform the following activities:

- Build machine-learning and rule-based models for predictive, adaptive, and text analytics.
- Monitor the model performance after that model has been deployed in your application by using various downloadable report types.
- Optimize models as needed.
- Create data sets.
- Explore data sets through Interaction History summaries.
- Manage taxonomies and sentiment lexicons.

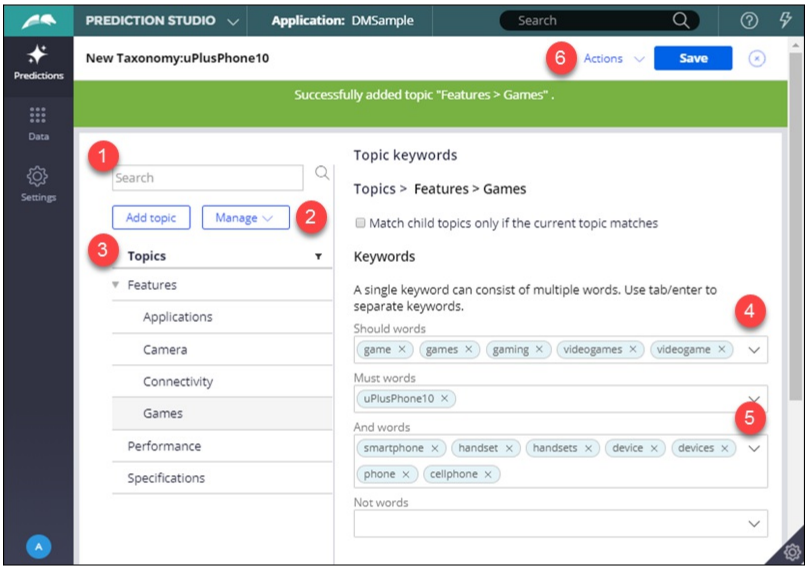
For more information, see:

- Prediction Studio overview
- Adaptive analytics
- Predictive analytics
- Text analytics
- Exploring data
- Configuring global settings

Create taxonomies more efficiently

You can use Prediction Studio to define a taxonomy for topic detection in your application. The new method of defining taxonomy provides better user experience with the following enhancements (the numbers in brackets refer to the Prediction Studio example below):

- Searching for topics across complex taxonomies (1).
- Simplified topic management, for example, adding child topics, copying and pasting topics, changing a position in the taxonomy, and so on (2).
- Implementing multiple levels of topics that are embedded within the parent topic through the simplified and easy-to-navigate topic hierarchy view (3).
- Dedicated sections for various types of keywords, such as should words, and words, must words, and not words, in the interface for the taxonomy definition (4).
- Separating keywords from one another (5).
- Less erroneous keyword specification by using the Tab or Enter keys to add entries.
- Eliminating the prerequisite to create a CSV file with topics and keywords. If you already defined a taxonomy in a CSV file, you can still import it to Prediction Studio for editing (6).
- Instant taxonomy testing on real-life data (6).



Creating a taxonomy in Prediction Studio

By using taxonomies in Pega Platform, you can classify customer queries into various categories, which simplifies content management and can decrease the time that a customer service representative needs to respond to a customer.

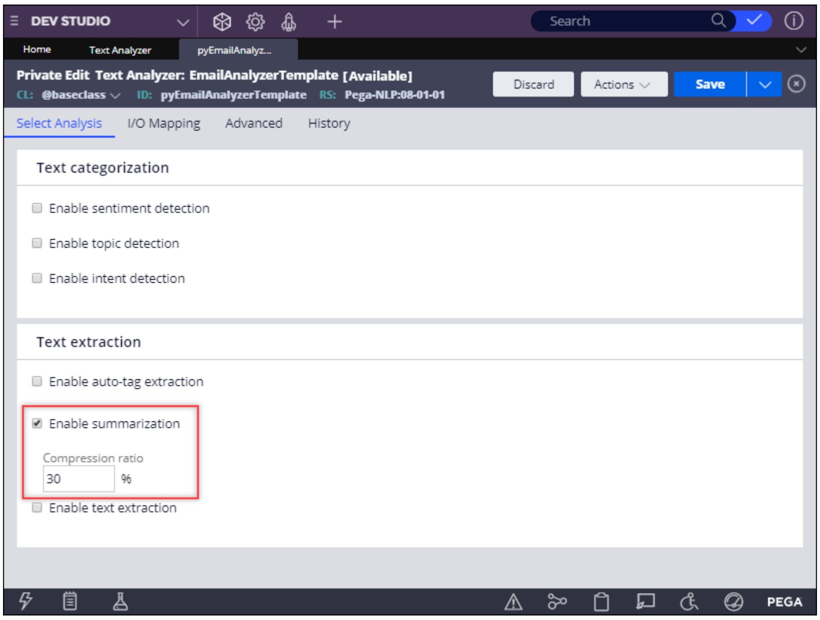
For more information, see:

- Tutorial: Configuring a topic detection model for discovering keywords
- Creating keyword-based topic detection models

Extract meaningful summaries from text

You can automatically extract highly informative chunks of text to create a meaningful and coherent summary. To accommodate for various use cases, you can control the compression ratio of the input text to extract summaries of various size. For example, to extract only a few most important sentences from large bodies of text, such as business emails or review articles, you can specify the compression ratio as 10% of the original text.

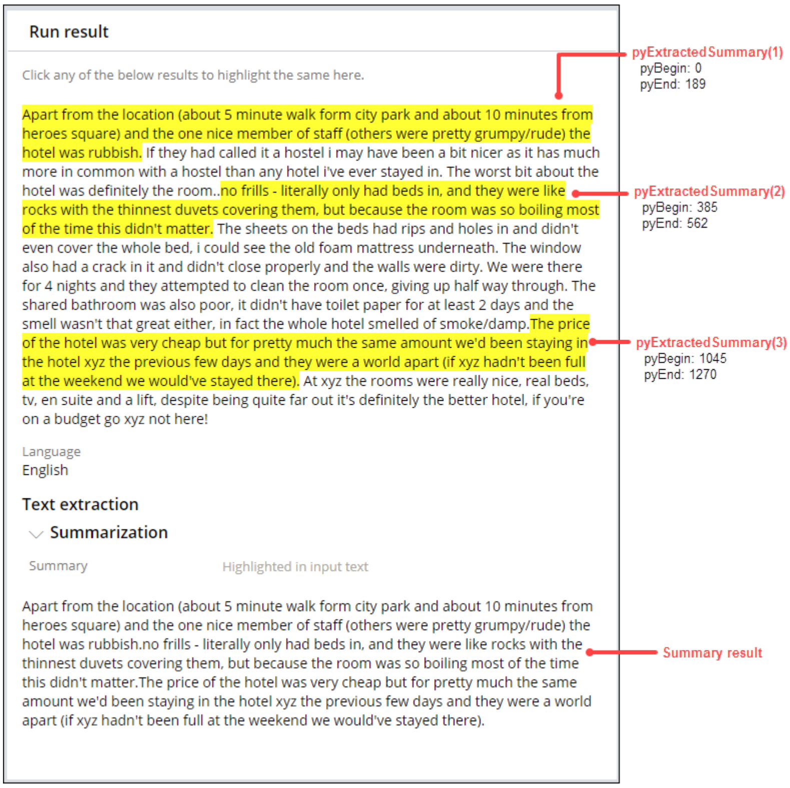
The following figure shows the summarization settings in a Text Analyzer rule.



Summarization settings

Each summarization result consists of a number of sentences that the internal algorithm selected as the ones that carry the most meaning and information in relation to the length of the input text and the compression ratio setting. Each of these sentences is represented in your application as the pyExtractedSummary property with a subscript value.

The beginning and end of each sentence are marked as pyBegin and pyEnd integer properties that represent the place in the sequence of characters within the input string. The following figure illustrates example input text, items in the pyExtractedSummary list, and the corresponding summary result:



Summarization results

The summarization feature can help you automatically extract the text context by combining summarization with topic and intent detection, entity extraction, and sentiment analysis. For example, by extracting the context from the text, customer service representatives or business executives can make business decisions without the need to read the full text of a lengthy email, article, comment, and so on.

For more information, see:

- Tutorial: Extracting email context with Text Analyzer rules
- Text extraction analysis

Configure managed data flow runs

You can now have Pega Platform manage the life cycle of real-time data flow runs by including them in your application. This improvement helps you save time and reduce maintenance efforts.

Managed runs pause, update, and restart automatically when you make changes to the associated data flow or the run itself. When you move your application between environments, such as testing and production, you no longer need to recreate the runs because they are automatically imported as part of the ruleset. Each time that you import an updated version of the run, the existing run pauses to implement the changes and restarts with no further action required from you.

The following video demonstrates the creation of managed data flow runs:

Managed runs remain active until you exclude them from your application or they exceed the number of failed records that you defined.

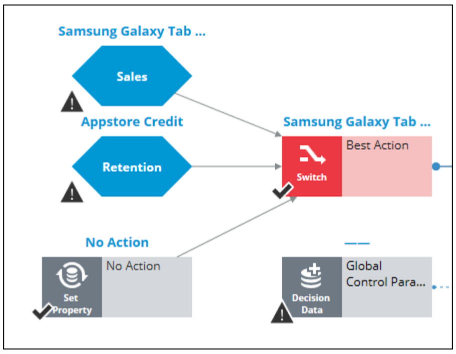
For more information, see Tutorial: Using managed data flow runs.

Benefit from improved decision strategies and test runs

Strategy rules and test run panels have been improved with better performance, optimization capabilities, and more intuitive presentation of information.

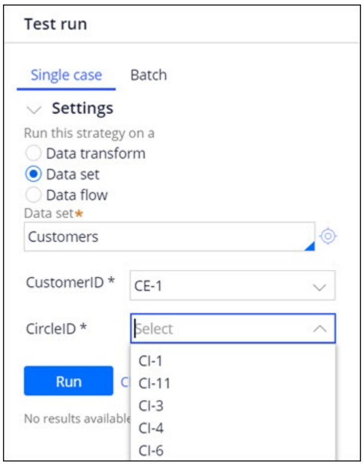
With the new optimization view, you can now see if a strategy component is optimized (a check mark) or not (a warning sign). You can hover over non-optimized components to get more information about how you can improve their performance.

The following figure displays component optimization on the strategy canvas:



Optimized components (check mark) and non-optimized components (a warning sign)

With the redesigned Test run panel, apart from running single and batch test runs to analyze strategy performance, you can now locate and prevent potential issues and optimize strategy components. Test runs now also support data sets and data flows with multiple key properties and the first 10 keys are immediately visible, as seen in the following figure:



The redesigned Test run panel

The Test run panel is also more intuitive and highlights the most relevant details, such as the business issue and group at the top of the test results:

Redesigned test results

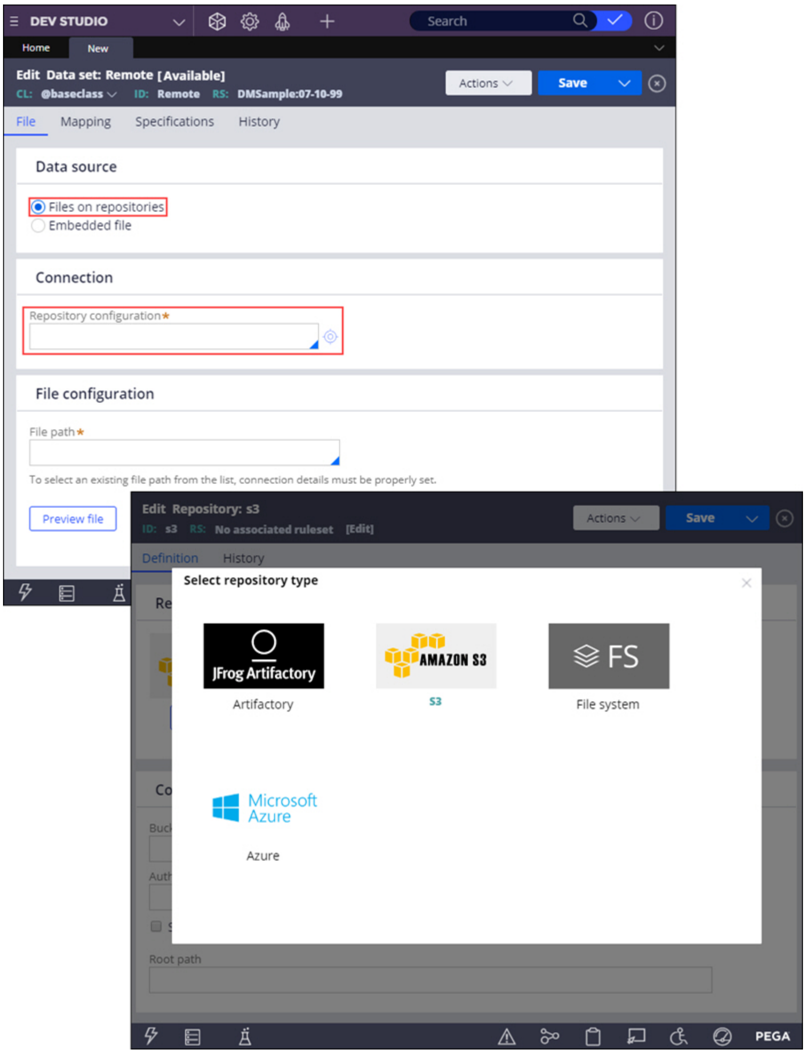
For more information, see:

- Configuring a single case run
- Configuring a batch case run

Connect to remote repositories through File data sets

You can now transfer data between cloud-based storage systems and your applications in the cloud by using data flows. Instead of creating and maintaining relational databases to transfer data to or from remote files, you can add a reference to a remote repository in a File data set. The files may contain information, such as customer data, purchase lists, or offer details, that you can apply to your applications by using parallel loads from CSV or JSON files, including compressed ZIP and GZIP archives.

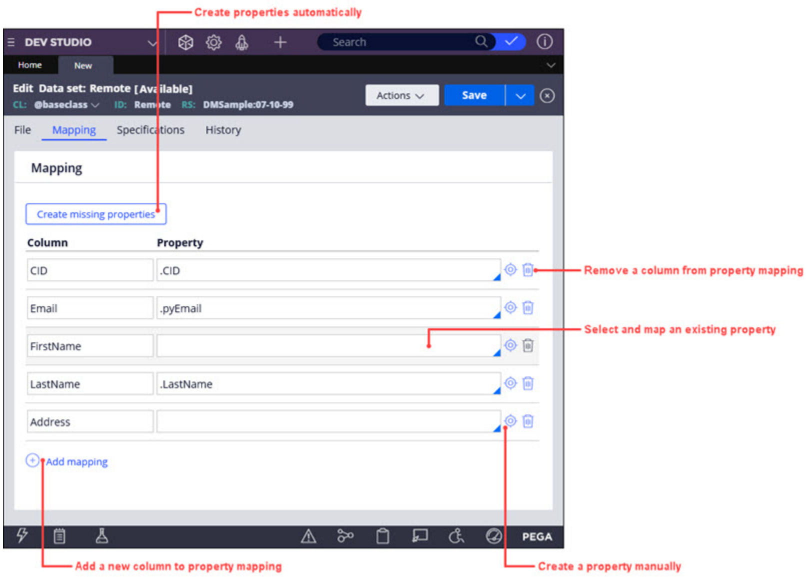
The following figure presents the configuration of remote repositories:



Data set configuration - remote repositories

Configuring a File data set with a remote repository connection allows you to automatically process that data in various scenarios. For example, by referencing that File data set from a data flow in a decisioning strategy for promotional offers, you can automatically download a detailed list of customers that is stored in a collection of GZIP archives in a Microsoft Azure cloud directory and let the strategy model select the clients who receive new discount offers.

By using the updated data set interface, you can map Pega Platform properties to the relevant columns in the remote file:



Data set configuration - mapping properties

See the following video for a sample data set creation process:

Apart from sourcing data, you can also configure an automatic export of data to a set of remote files at the same time through wildcards.

Currently, Pega Platform supports connections with the following repositories:

- JFrog Artifactory

- Amazon S3
- Microsoft Azure
- local file system

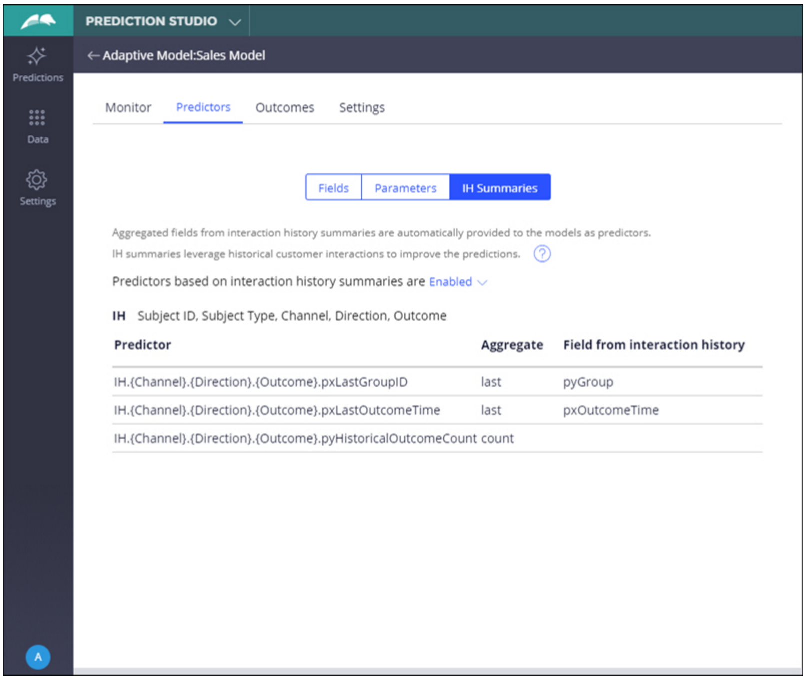
For more information, see:

- Tutorial: Configuring a remote repository as a source for a File data set
- Tutorial: Referencing remote repository data in a data flow
- Creating a File data set record for files on repositories

Add predictors based on Interaction History

You can now define more accurate adaptive models, as they automatically use information from historical interactions to improve their predictive power. For example, an adaptive model for sales can automatically suggest a premium mobile plan for a customer who has recently enabled an additional service in their standard plan.

A list of predictors based in Interaction History summaries is enabled by default, without any additional setup, for all new adaptive models. The more channels are used for communicating with customers, the more predictors are automatically available in an adaptive model. To enhance the accuracy of predictions, six new predictors are added for every inbound communication via a channel, as demonstrated in the following example:



Enabling Interaction History predictors

By default, a new predictor is added for each unique combination of the Channel, Direction, and Outcome values in Interaction History.

For more information, see:

- Enabling predefined Interaction History predictors for existing adaptive models
- Creating summaries

Comply with customer data management regulations

You can stay compliant with regulations such as the General Data Protection Regulation (GDPR) by implementing mechanisms that allow you to process your customers' requests to view, change, remove, and restrict the use of their personal data. For example, you might need to provide your customer with all of the information that you collected about them, or restrict the use of their data to a specific channel.

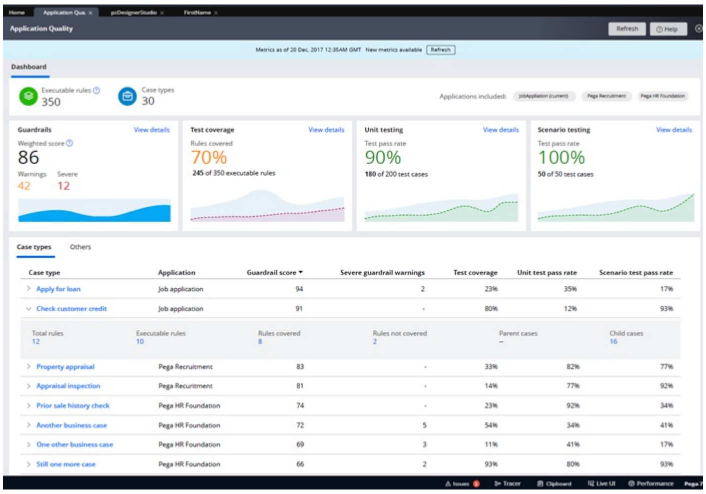
You can now deploy a ready-made GDPR request management application that streamlines the process by allowing clients to make change requests through a dedicated web interface. The GDPR request management application is included with Pega Infinity CRM applications, such as Pega Marketing. You can configure it to support other Pega applications in your system.

For more information, see:

- Managing customer data for regulatory compliance with GDPR and other regulations
- Supporting EU GDPR data privacy rights in Pega Infinity with client-based access control

DevOps and Automated Testing

Key DevOps enhancements in this release of Pega Platform™ include improvements to Pega unit tests, application quality monitoring, and Deployment Manager. For example, in Deployment Manager 4.4 and later, you can now use the Merge Branches wizard to merge branches and start a continuous integration and delivery pipeline in a distributed, branch-based environment.



Application Quality dashboard

DevOps and Application Testing includes the following enhancements:

- Start a deployment manager deployment in a distributed, branch-based environment by using the Merge Branches wizard (8.3)
- Manage test and application changes separately in Deployment Manager by using a separate product rule for test cases (8.3)
- Improve your experience with creating and cleaning test data for automated tests (8.2)
- Improve your application quality by monitoring test coverage metrics (8.2)
- Monitor application quality in real time by using the REST API to fetch quality metrics (8.2)
- Clean up Pega unit test cases that use inactive or deleted rules (8.2)
- Manage your deployments in a dedicated portal (8.2)
- Improve user access to Deployment Manager (8.2)
- Configure notifications in Deployment Manager (8.2)
- Manage your artifacts by using custom repositories (8.2)
- Get test coverage from multiple testing sessions
- Use trend charts to visualize application quality and view more metrics
- Organize Pega unit tests with nested test suites
- Create UI-based tests with automated scenario testing
- Quickly access Deployment Manager features with an intuitive interface
- Easily configure Deployment Manager pipelines with a simplified setup
- Deploy with confidence by enforcing quality metrics
- Manage aged application updates in Deployment Manager
- Diagnose pipelines and view troubleshooting information
- Run Pega unit tests for a suite or an access group
- Run Pega unit tests on branches in Deployment Manager

To learn about all the new features in **DevOps**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

Visit www.pega.com to learn more about Pega Infinity™.

Visit What's New in Pega Platform to discover all the exciting new features in this release.

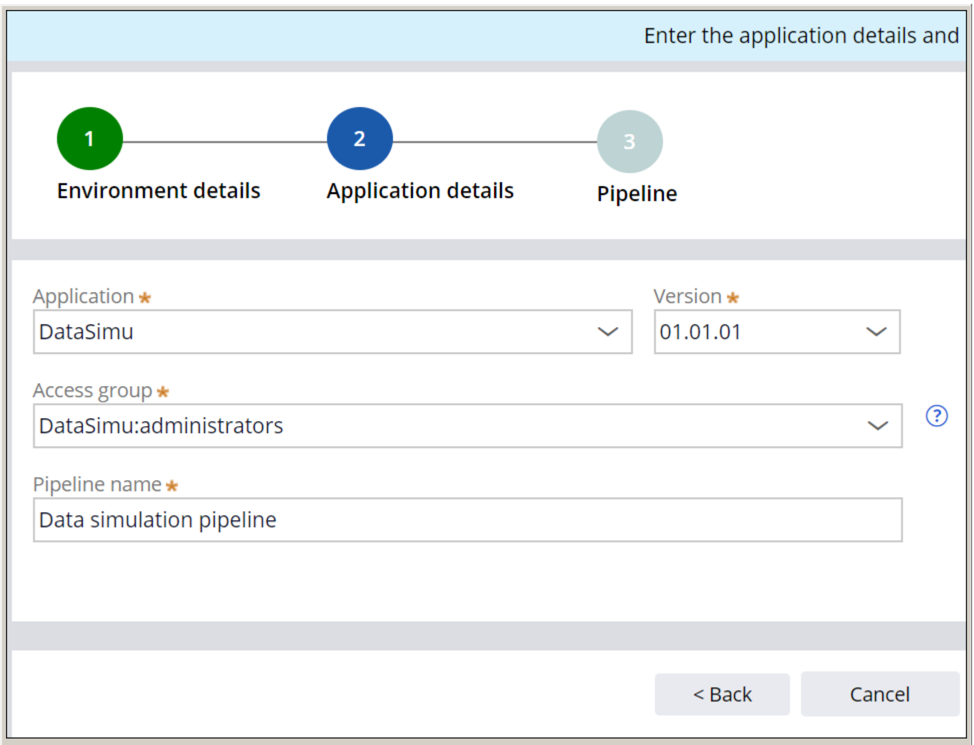
Export and import simulation data automatically with Deployment Manager (8.4)

Beginning with Deployment Manager 4.6.x, you can create and run data migration pipelines to automatically export simulation data from a production environment into a simulation environment for testing. You can also use a job scheduler rule to run pipelines during a specified period of time.

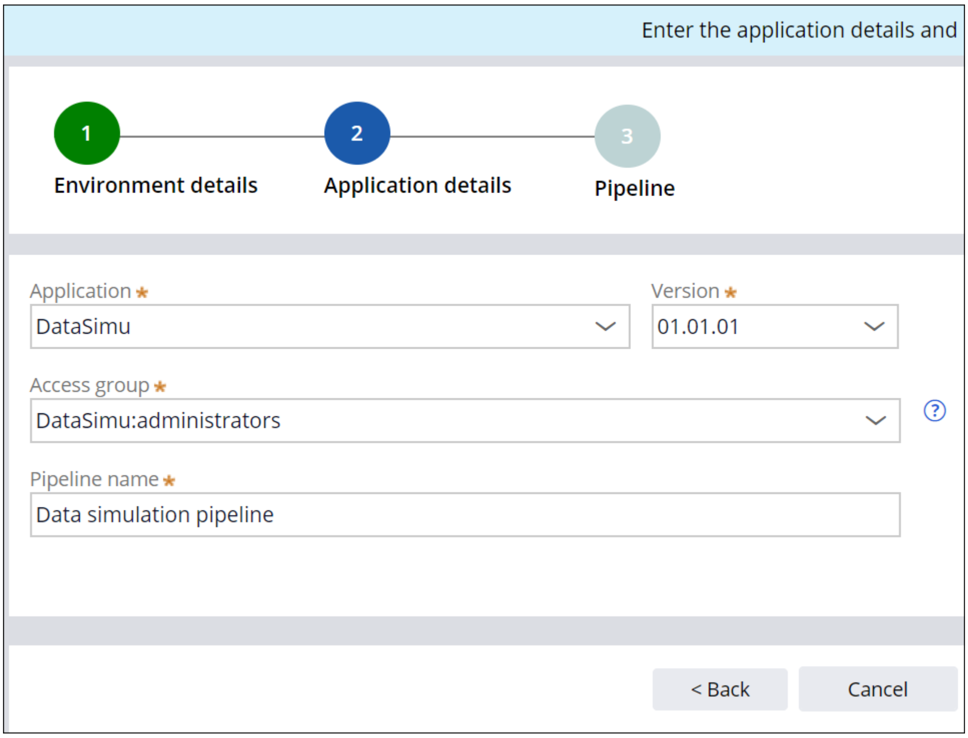
Simulation tests provide you with significant insight into how your changes to decision logic affect the results of your strategies. To ensure that simulations are reliable enough to help you make important business decisions, you can migrate a sample of your production data to a dedicated simulation environment for testing.

When you create a data migration pipeline, you configure the production and simulation environment details and also the application information for which you are creating the pipeline.

The following figure shows an example of creating and configuring a data migration pipeline in Deployment Manager.



Creating a data migration pipeline in Deployment Manager



Creating a data migration pipeline in Deployment Manager

You can run a pipeline manually either from the Pipelines page, the Data migration pipelines page, or from within the pipeline details.

For more information about simulation pipelines, see Simulation pipeline overview.

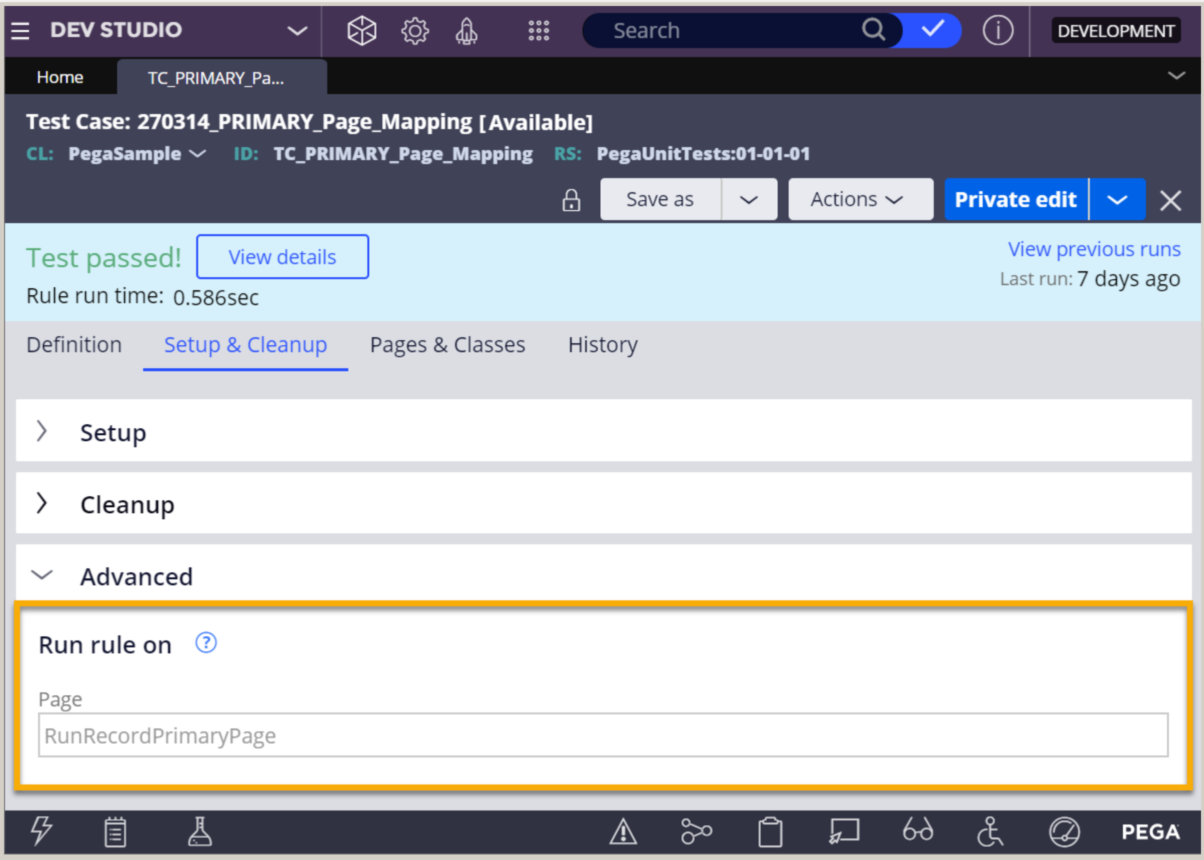
For more information about using Deployment Manager with data migration pipelines, see Data Migration pipelines with Deployment Manager 4.6.x.

Improve your test cases with new testing features (8.4)

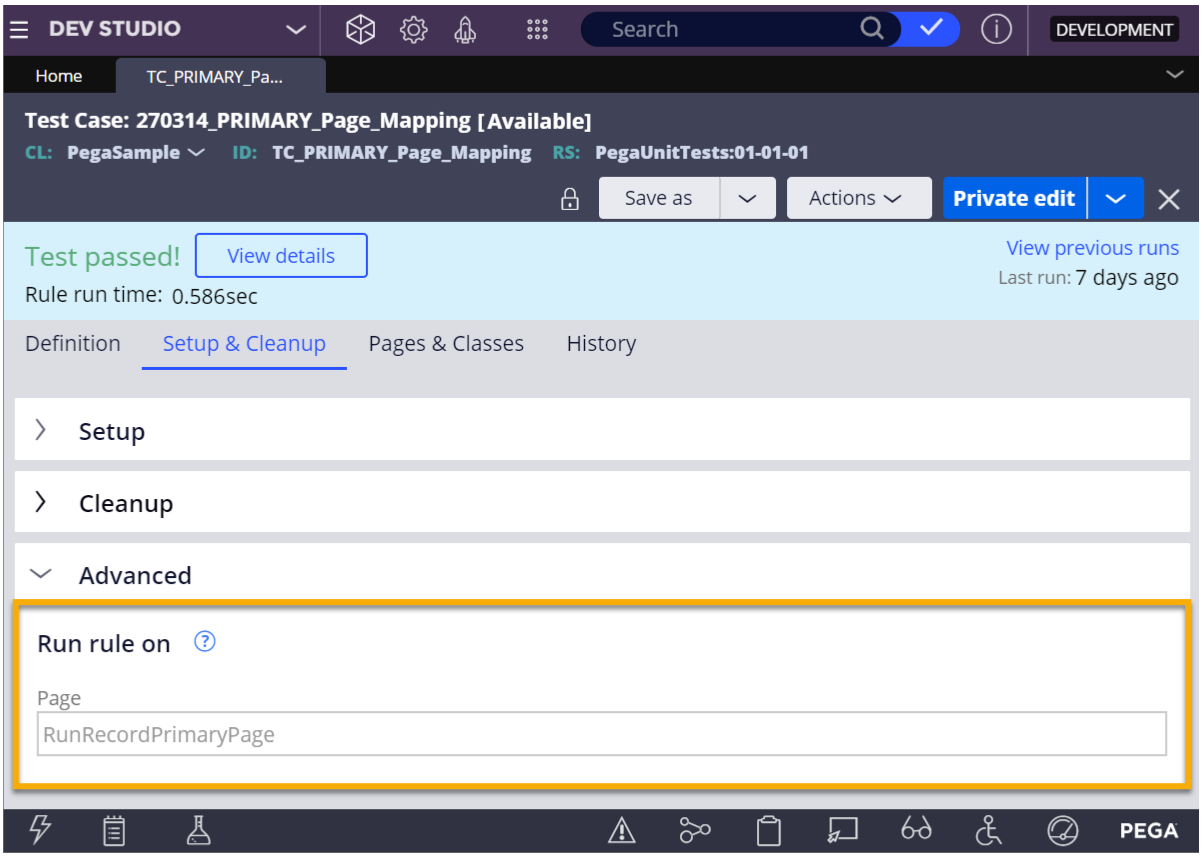
Discover new testing features that can save time and make your test cases more precise and flexible. Focus your tests on those areas of your application that matter the most and easily keep your test cases up to date with changes made to your application.

With the new testing features, you now can:

- Change the class and rule of unit test cases.
- Create assertions that validate specific error messages on pages, properties, and activities.
- Automatically update decision result assertions with property changes that were made to a rule, and modify properties from the assertion.
- Select a page on which to run the rule.



Selecting a page on which to run a test case



Selecting a page on which to run a test case

For more information, see:

- Updating scenario tests
- Setting up your test environment
- Configuring page assertions
- Configuring property assertions
- Configuring decision result assertions

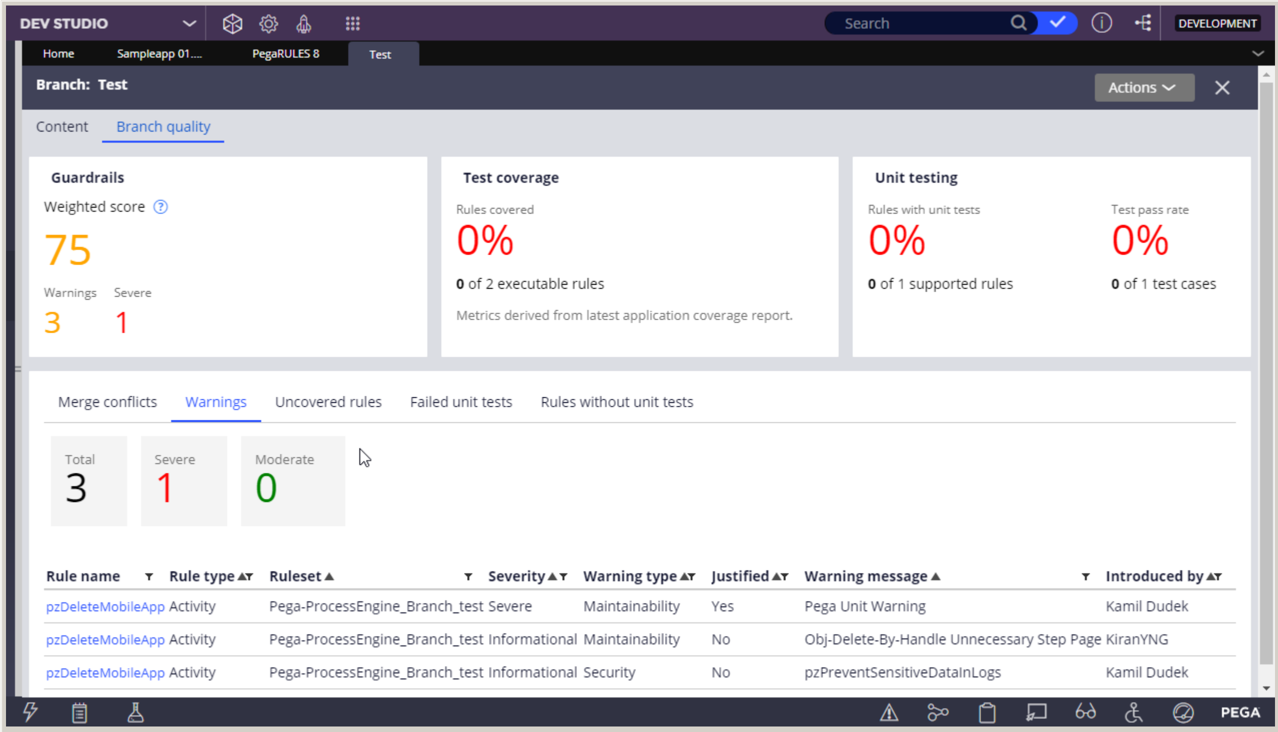
Monitor branch quality with the new branch quality dashboard (8.4)

You can track the quality metrics of your branch by using the new branch quality dashboard.

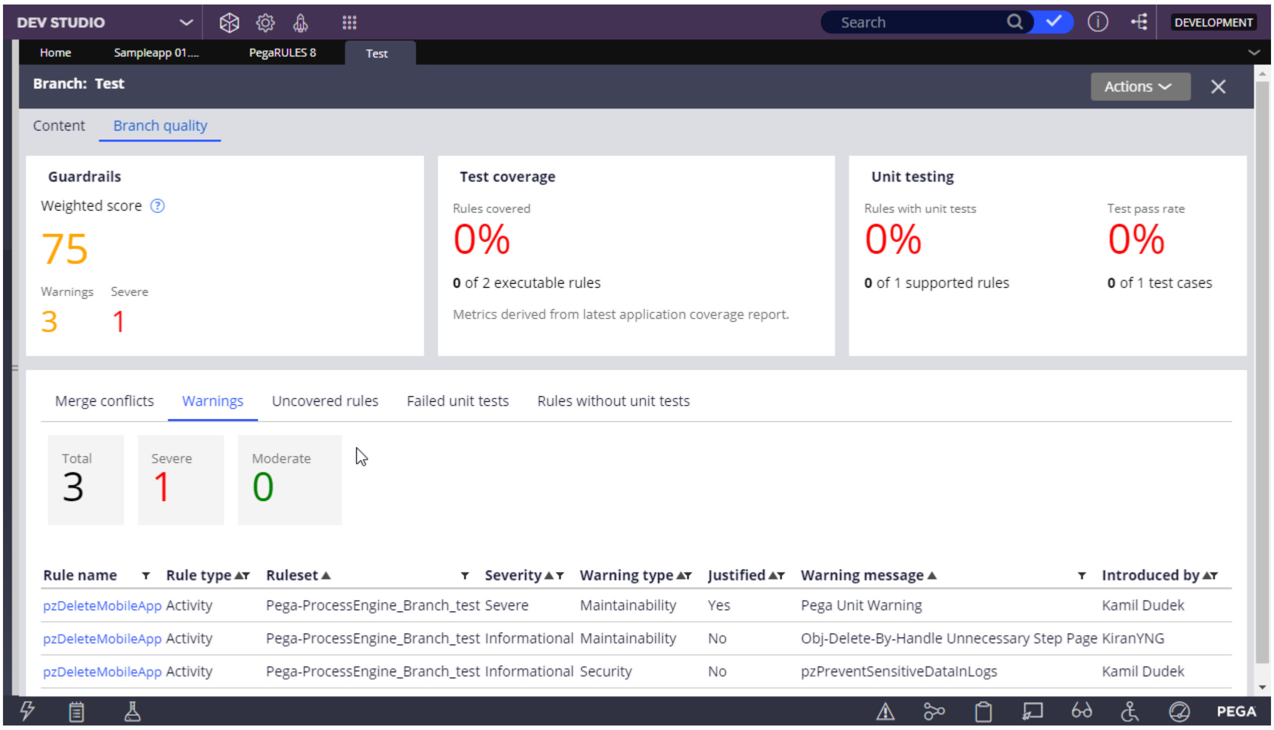
By monitoring the condition of your branch, you can detect and address potential problems at an early stage to make sure that the eventual merge process runs smoothly.

You can access the branch quality dashboard in Dev Studio. The data is refreshed every time that you open the dashboard. You can also manually refresh the data at any time.

The following figure shows the layout of the new branch quality dashboard.



Branch quality dashboard



Branch quality dashboard

You can use the new dashboard to track the branch guardrail compliance score and the number of guardrail violations. You can check the percentage and number of rules that the tests cover. You can also monitor the percentage and number of unit tests that passed for the selected branch.

You can analyze the quality of your branch in detail by viewing the these branch quality metrics:

- Merge conflicts: Check the details of potential merge conflicts between your branch and the main application trunk.
- Warnings: View, filter, and check individual guardrail warning details.
- Uncovered rules: View, filter, and select the details of rules that are not covered by test cases.
- Failed unit tests: Analyze the details of unit tests that have failed.
- Rules without unit tests: See the details of rules that do not have any associated unit tests.

For more information about the branch quality dashboard, see Viewing branch quality and branch contents.

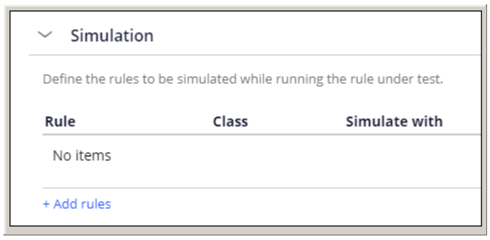
Simulate calls to data page and connector rule types when unit testing (8.4)

You can now configure your test environment to use simulated data for testing connector and data page rules.

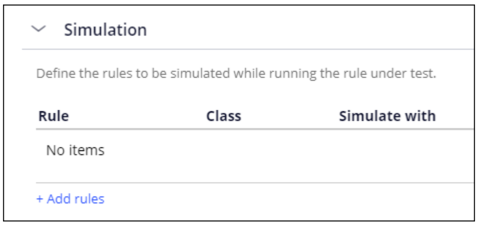
Create tests that are independent of third-party connections

If you want to test a rule that makes a call to an external database, your test is dependent on that database's availability.

To avoid this dependency, you can now configure the rules that you want to test to use simulated data, instead of making actual connections to external data sources. By simulating data, you are not dependent on any third party when running your tests.



Simulating connections to data pages and third parties



Simulating connections to data pages and third parties

Connector and data page rule types

You can set up simulated data for the following rule types:

- Data page
- Connect-Cassandra
- Connect-CMIS
- Connect-dotNet
- Connect-EJB
- Connect-HBase
- Connect-HTTP
- Connect-Java
- Connect-JMS
- Connect-MQ
- Connect-REST
- Connect-SAP
- Connect-SAPJCo
- Connect-SOAP

For more information about simulating connections to data pages and third-parties, see Simulating data pages and third-party connections.

Troubleshoot pipelines in Deployment Manager with improved diagnostics (8.3)

Beginning in Deployment Manager 4.5, you can now automatically diagnose more issues with your pipelines so that you can spend less time manually troubleshooting.

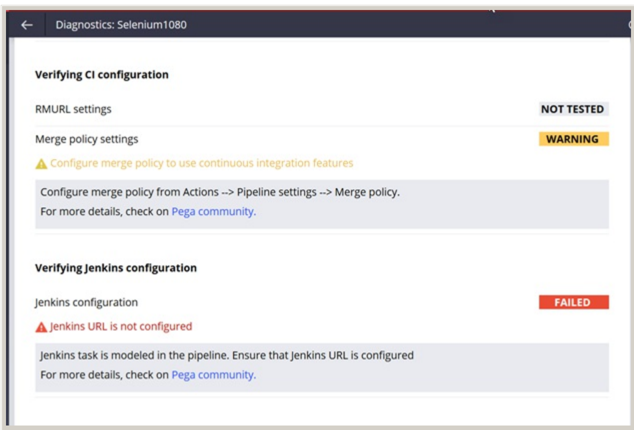
You can now use the diagnostic tool to do the following actions:

- Verify that Jenkins information is appropriately configured in pipelines with Jenkins steps. For example, you can now verify that the authentication profile and URL are correct.
- Verify that you are not logged in to the local host of the orchestration server so that deployments run successfully.
- Verify that the CICD and API service packages are properly configured.
- Obtain more information about access groups and application configuration. For example, you can now verify that the operator ID is logged in to the PegaDeploymentManager application.
- Obtain more information about repository connections. For example, troubleshooting tips now provide more detailed information such as verifying that your repositories have read/write privileges.

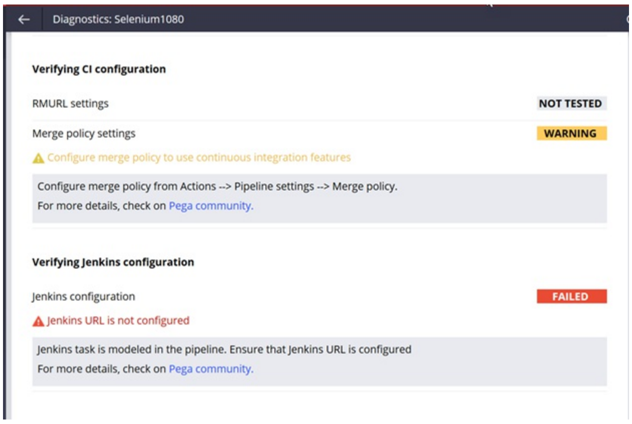
To diagnose issues with your pipeline:

1. If the pipeline is not open, in the navigation pane, click Pipelines, and then click the name of the pipeline.
2. Click Actions > Diagnose pipeline.
3. In the Diagnostics window, review the errors, if any.

The Diagnostics window displays errors and troubleshooting information, as shown in the following figure:



Deployment Manager diagnostics



Deployment Manager diagnostics

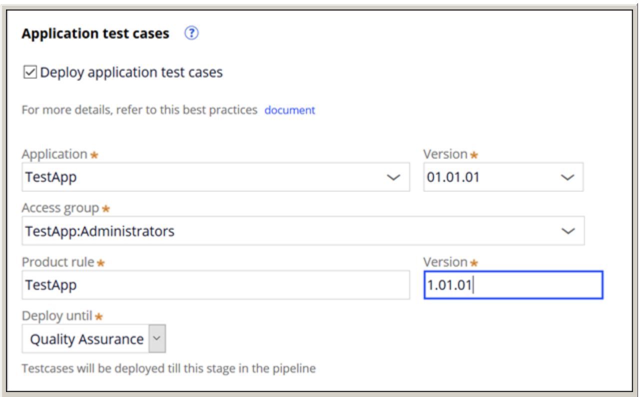
For more information, see Deployment Manager.

Manage test and application changes separately in Deployment Manager by using a separate product rule for test cases (8.3)

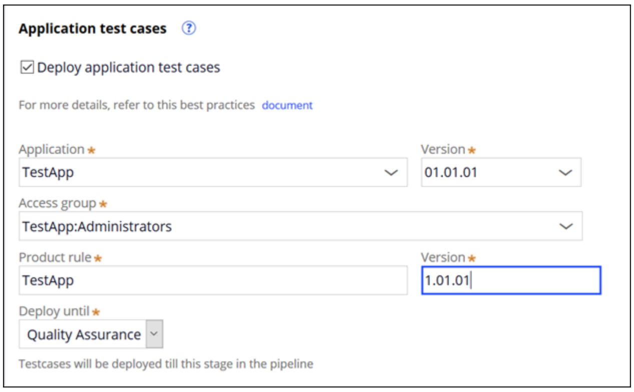
You can now separately manage application changes and test cases that are in the same pipeline by creating a separate product rule that contains only test cases. You also have the flexibility to choose the stage until which test cases are deployed to ensure that test cases are not deployed on higher environments, such as staging and production, where they might not be needed.

When you create test and production applications in Deployment Manager on your development system by using the New Application wizard, the wizard automatically creates separate product rules for your production and test applications.

Then, when you configure a pipeline in Deployment Manager for your application, you specify the product rules to use for both your production and test applications. After you specify that you want to deploy your test cases by selecting the Deploy application test cases check box, you select the details for the test cases application, including the pipeline stage to which you want to deploy the test cases, as shown in the following figure.



Specifying test cases in Deployment Manager



Specifying test cases in Deployment Manager

For more information about configuring pipelines, see Using Deployment Manager 4.4.x.

For more information about using test cases with Deployment Manager, see Managing test cases separately in Deployment Manager.

Start a Deployment Manager deployment in a distributed, branch-based environment by using the Merge Branches wizard (8.3)

Beginning with Deployment Manager 4.4, the configuration of a distributed, branch-based environment has been simplified. You have the flexibility to deploy test cases only on the stages where they are needed and can avoid deploying them to higher environments, such as staging or production, where they might not be needed

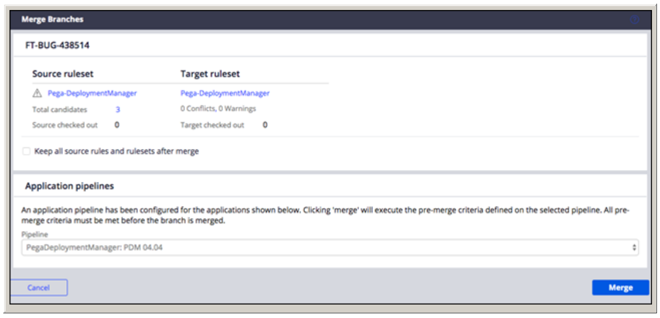
You can now use the Merge Branches wizard on the remote development system to start a Deployment Manager deployment without using a Pega repository. However, backward compatibility is maintained, and you can also publish a branch to a Pega Platform™-supported development repository on the main development system to start a build.

To merge a branch:

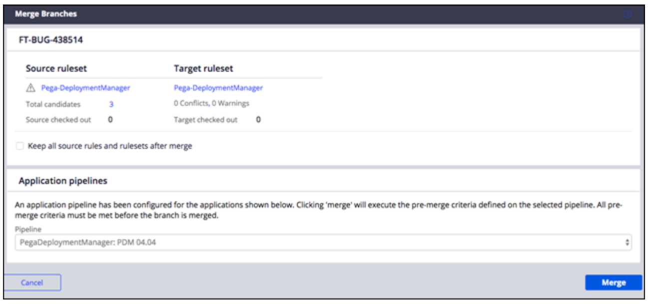
1. Click App > Branches.
2. Right-click the branch that you want to merge and click Merge.

3. Click Proceed.

To start a deployment, in the Application pipelines section of the Merge Branches wizard, from the Pipeline list, select the application into which you want to merge branches, as shown in the following figure.



Selecting a pipeline application in the Merge Branches wizard



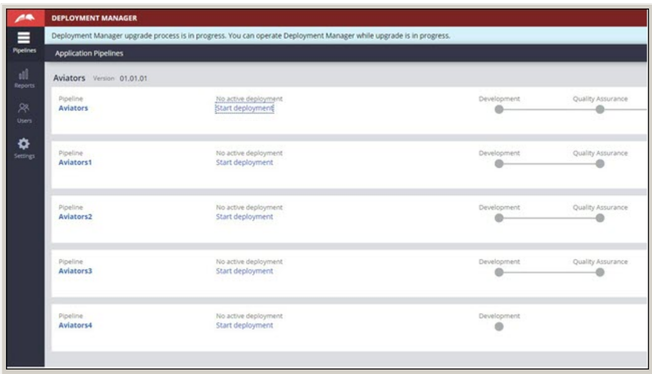
Selecting a pipeline application in the Merge Branches wizard

For more information, see Deployment Manager.

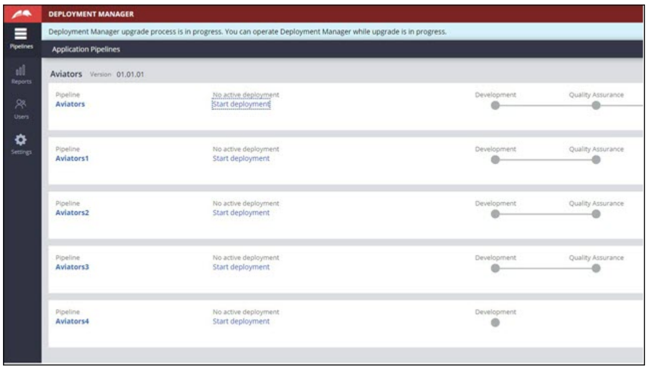
Upgrade Deployment Manager without running post-upgrade steps (8.3)

When you are upgrading to Deployment Manager 4.5.1 from 3.2.1 or later, manual post-upgrade steps are no longer required for either on-premesis or Pega Cloud Services environments. After Deployment Manager upgrades, a health check is run on your system; after it passes, post-upgrade steps run automatically.

By eliminating manual post-upgrade steps, you can quickly upgrade to new versions of Deployment Manager with ease. Additionally, on cloud, you can continue to use Deployment Manager without data loss while the post-upgrade steps complete.



Deployment Manager upgrade



Deployment Manager upgrade

For more information, see Deployment Manager.

Track changes for branch merges in Deployment Manager (8.3)

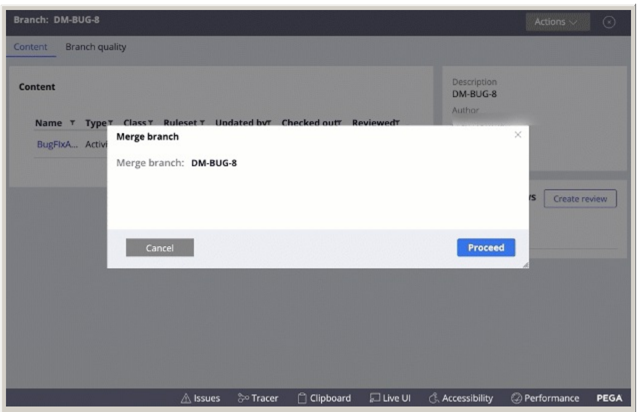
Beginning in Deployment Manager 4.5, you can now associate bugs and user stories with branch merges so that you can track your branch changes. Doing so enables your team to understand the entire life cycle of Agile Workbench items from development to production, ensures that Deployment Manager users can verify that only the correct changes are being migrated, and provides insight into what changes are on each of your candidate systems.

When you start a deployment by submitting a branch into the Merge Branches wizard, you can add a description and associate user stories and bugs from Agile Workbench. This information appears when you view deployment details for the pipeline.

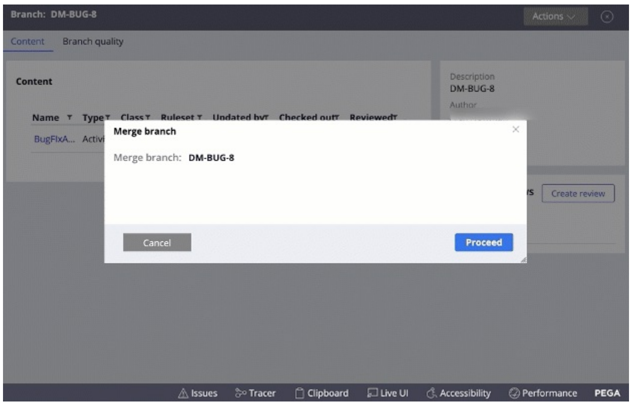
To submit a branch into the Merge Branches wizard and track changes:

1. In the navigation pane in Dev Studio, click App, and then click Branches.
2. Right-click the branch and click Merge.
3. Click Proceed.
4. In the Application pipelines section, from the Pipeline list, select the application for which the pipeline is configured into which you want to merge branches.
5. In the Merge Description field, enter information that you want to capture about the merge.
6. In the Associated User stories/bugs field, press the Down arrow key and select the Agile Workbench user story or bug that you want to associate with this branch merge.
7. Click Merge.

The following figure shows an example of entering a description and associating a bug with the merge in the wizard.

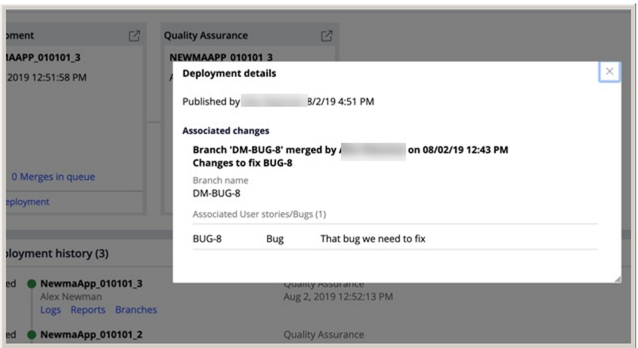


Adding a description and associating bugs and user stories in the Merge Branches wizard

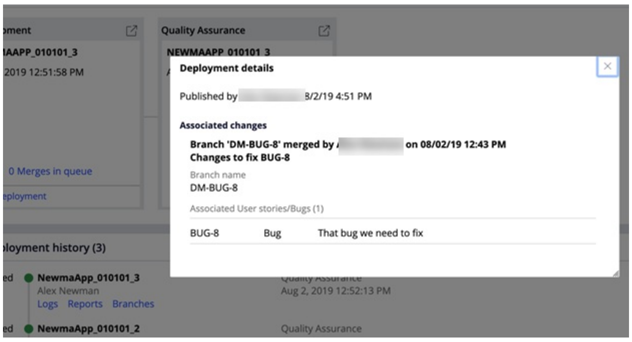


Adding a description and associating bugs and user stories in the Merge Branches wizard

When you view deployment details for the pipeline, the description that you entered and the bugs and user stories that you associated with the merge appear.



Description and associated changes in deployment details



Description and associated changes in deployment details

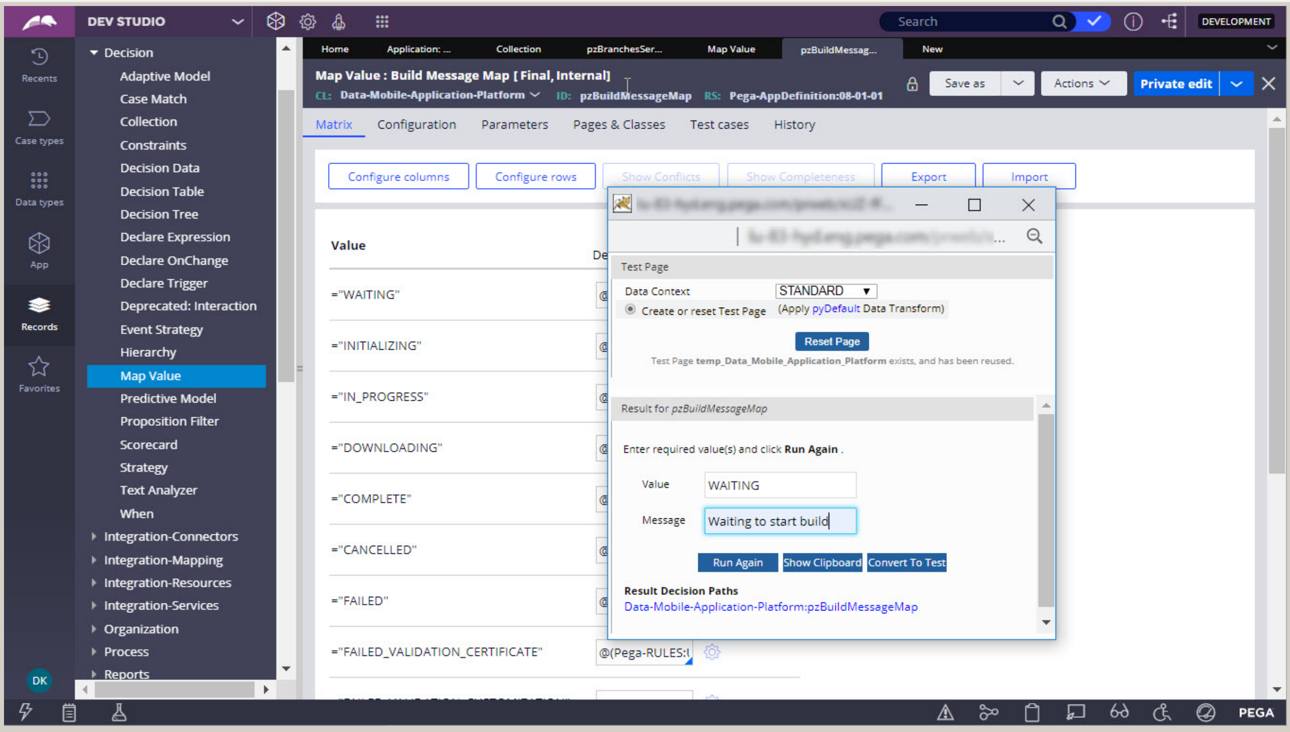
For more information, see Deployment Manager.

Unit test more rule types and configure activity status assertions (8.3)

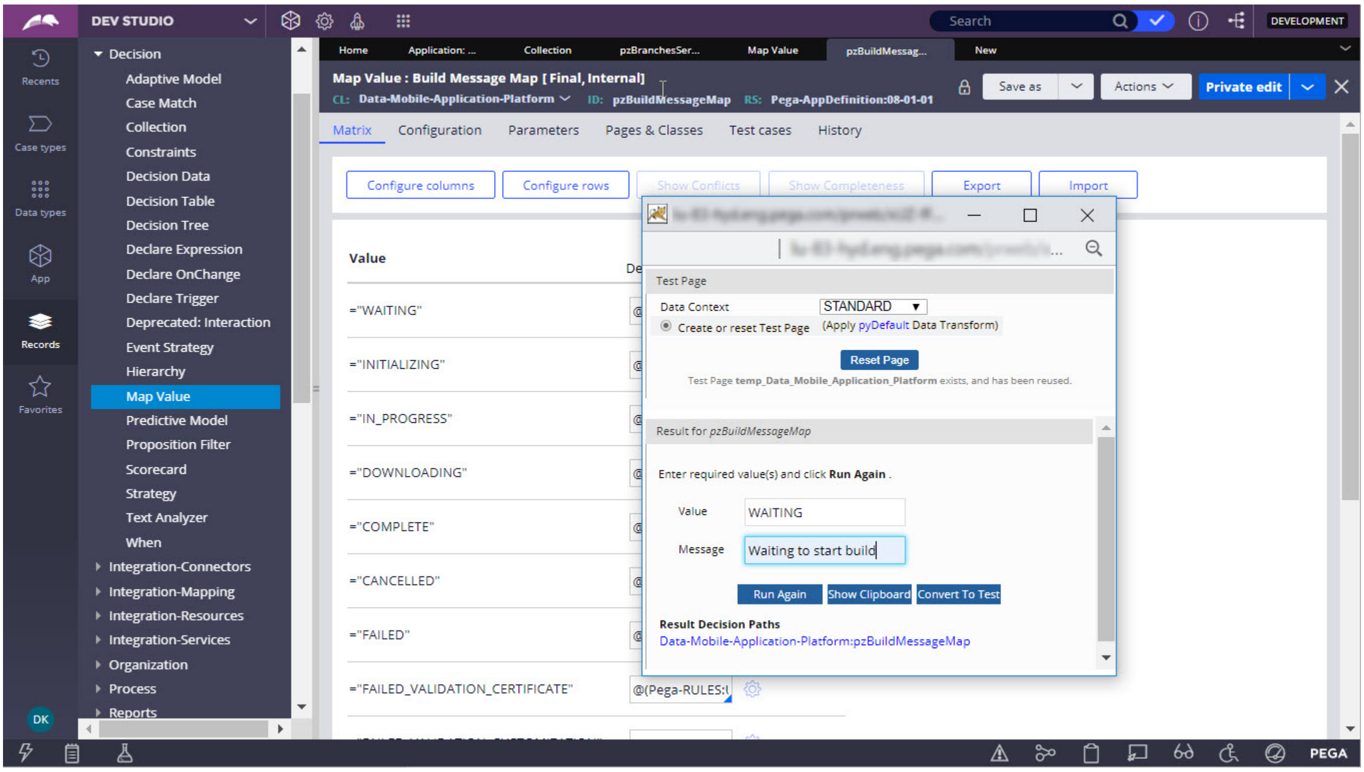
Perform more comprehensive regression testing and verify application quality by unit testing more rule types and configuring activity status assertions. By unit testing more rule types and configuring activity status assertions, developers can more easily make sure the application meets requirements and functions as expected when they make changes.

Unit test more rule types

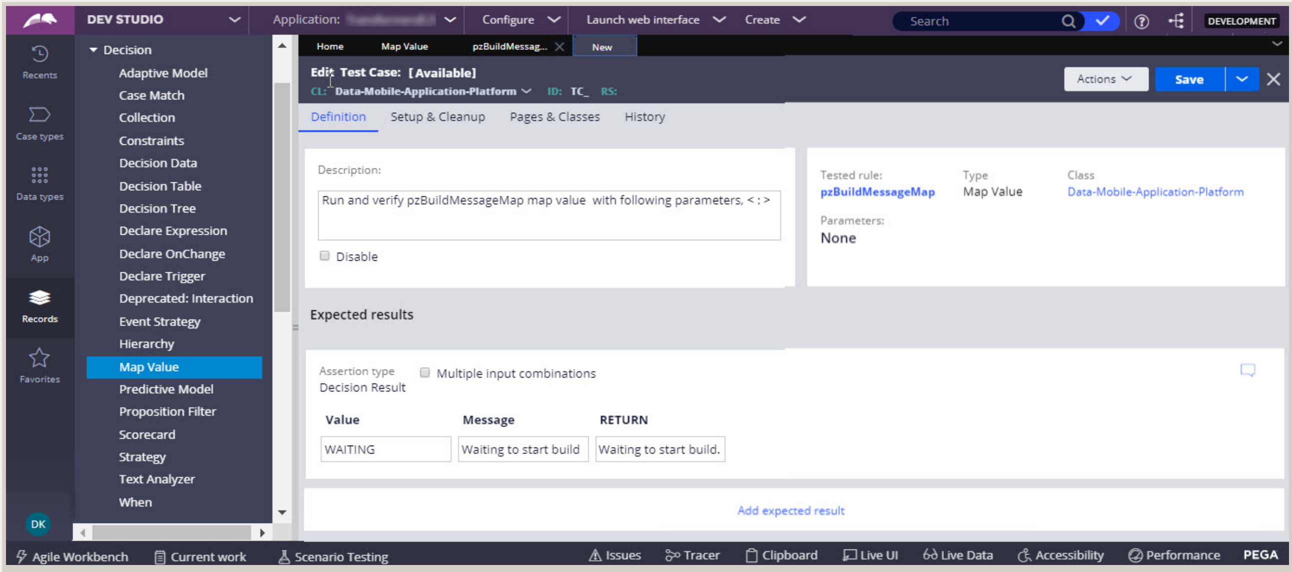
Unit test collection, declare expression, map value, and report definition rules and then convert the test runs into test cases. As with all automated unit tests for other rule types, Pega Platform™ compares test results to the expected results defined for the rule's assertions (test conditions). If the test results do not meet the defined assertions, then the test fails.



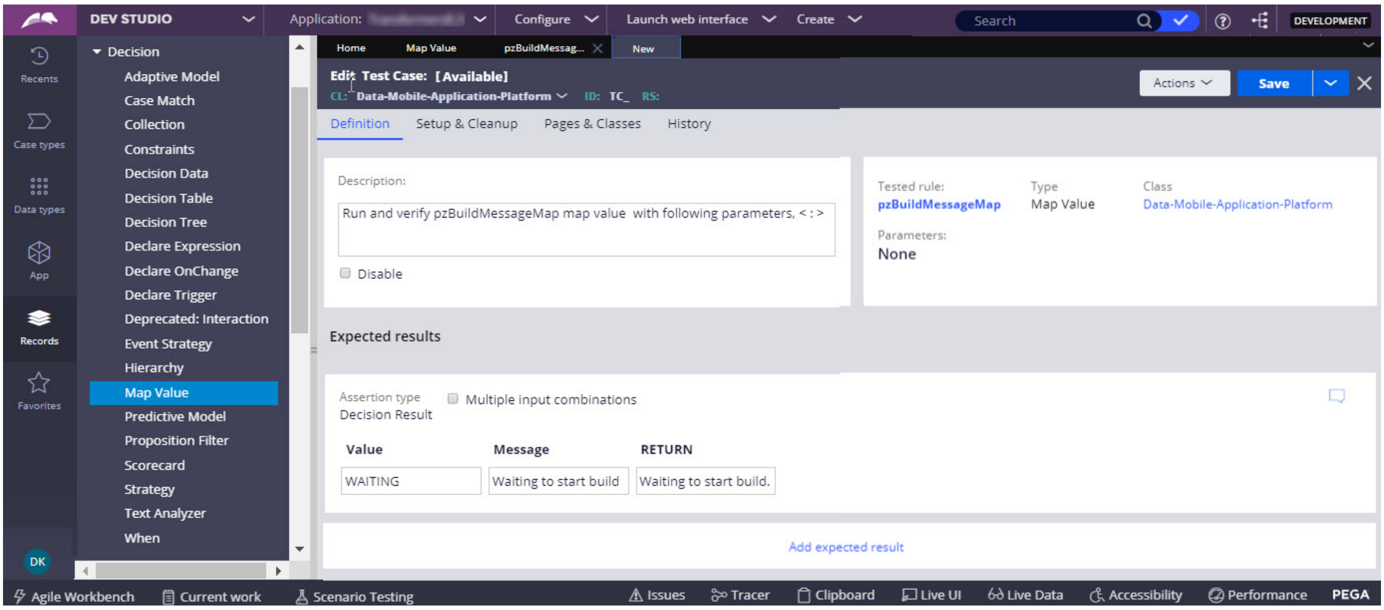
Unit testing map value rules



Unit testing map value rules



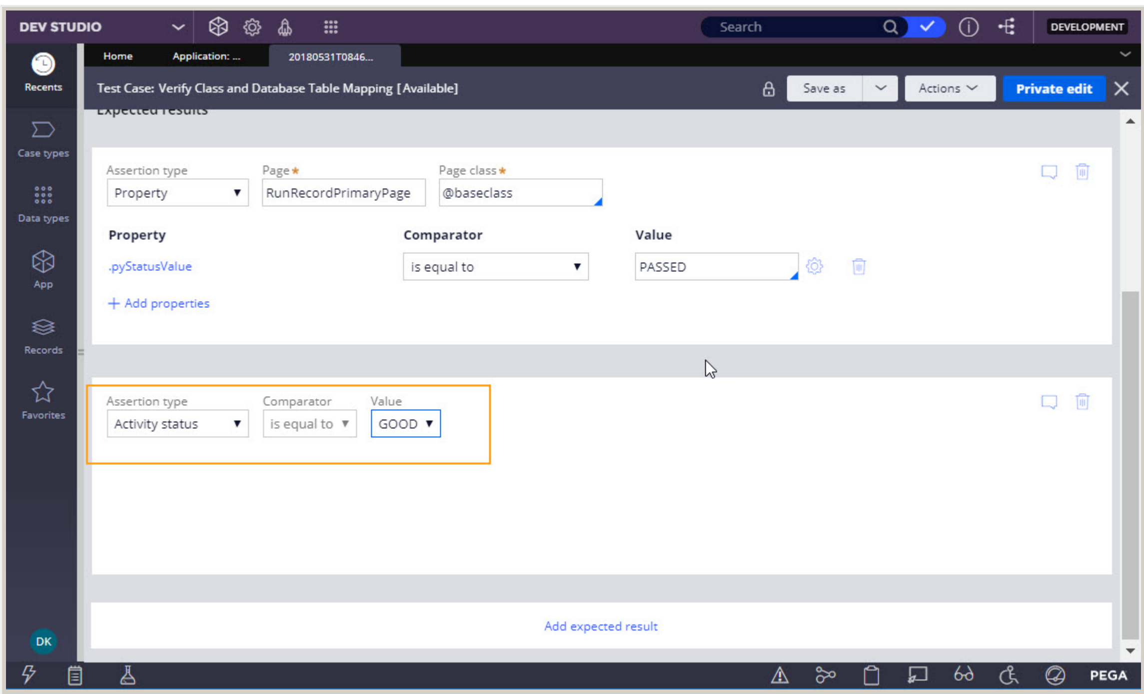
Creating a map value test case from a unit test run



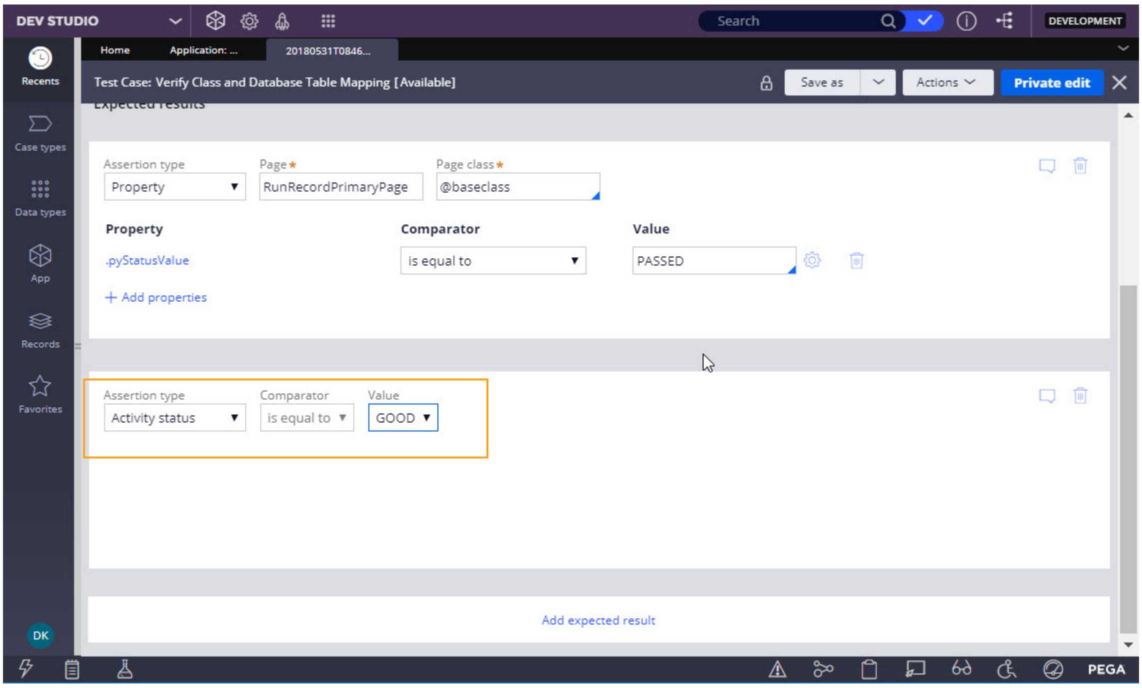
Creating a map value test case from a unit test run

Configure activity status assertions

Verify that an activity behaves as expected when it runs by configuring an activity status assertion that defines the status required for the activity to pass the test.



Configuring activity status assertions



Configuring activity status assertions

For more information about unit test cases, see [Pega unit test cases](#).

For more information about configuring activity status assertions, see [Configuring activity assertions](#).

Update and adapt existing scenario tests to UI changes (8.3)

You can save time and effort by adapting existing scenario tests for new scenarios instead of creating new tests from scratch. By editing existing tests, you can focus on maintaining a smaller number of functional tests that you can repurpose for different use cases.

After a user interface or process flow changes, you do not have to discard old tests. Simply browse existing tests and open the one that you want to update or reuse for a different business scenario. You can add and remove steps or record the test again from a specific step of the scenario, as shown in the following demos. In addition, you can continue recording scenario test cases after a browser refresh.


Removing and adding steps in a scenario test

Removing and adding steps in a scenario test

Recording from a specific step in a scenario test

Recording from a specific step in a scenario test

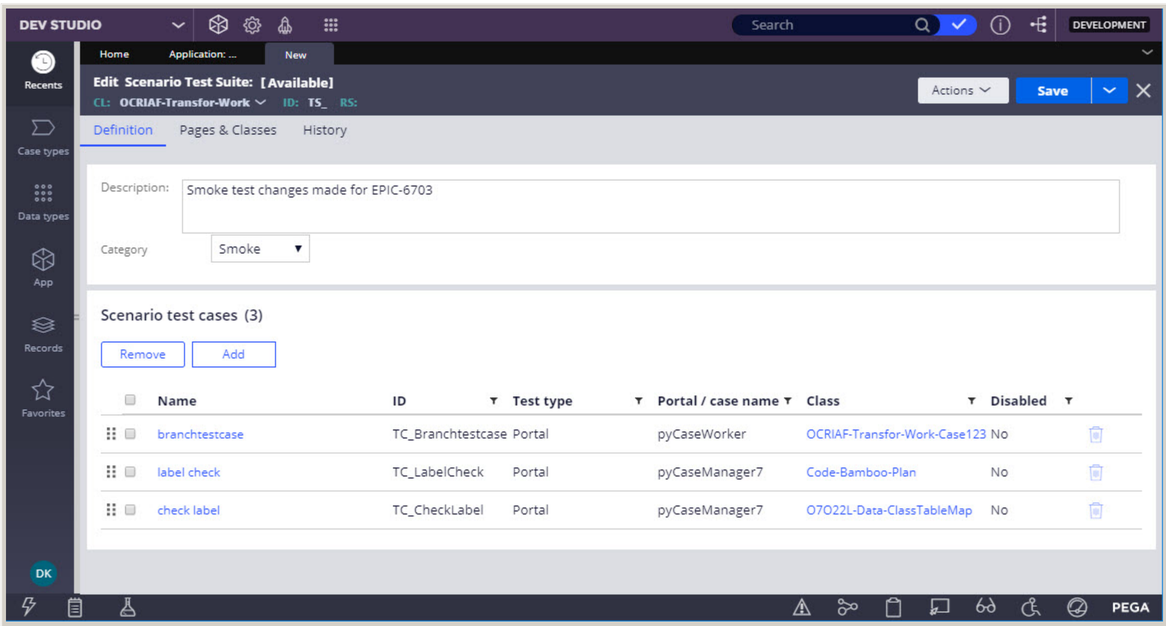
For more information, see [Updating scenario tests](#).

Group related scenario tests into suites (8.3)

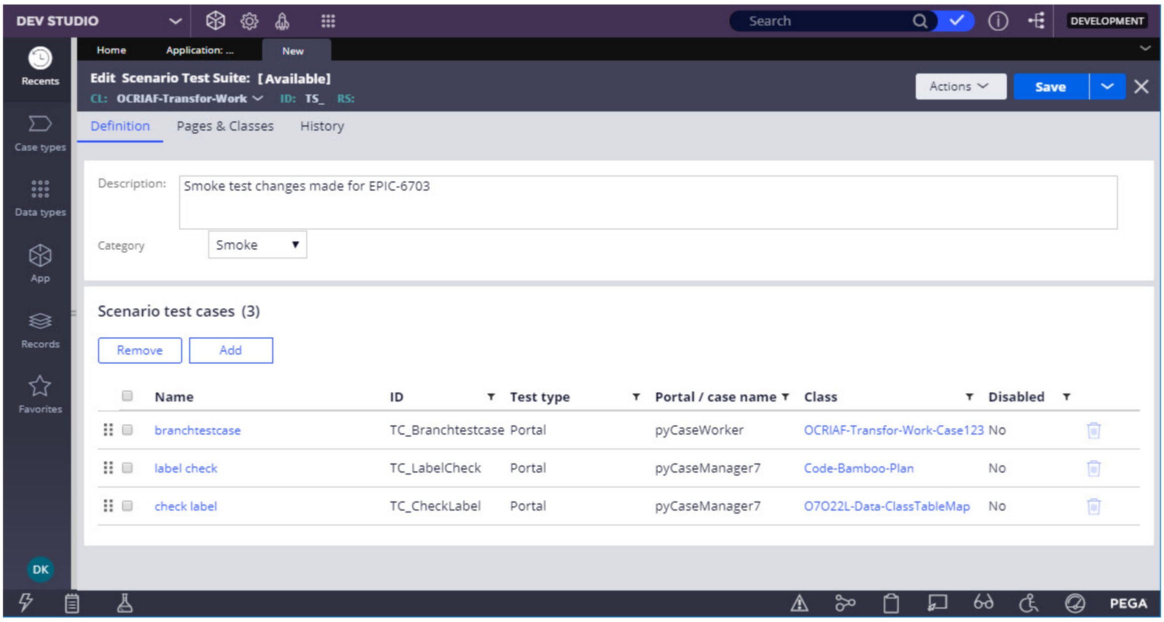
Group scenario tests into test suites to run multiple related test cases as part of purpose-specific UI tests, such as smoke tests, regression tests, and outcome-based tests. By using scenario test suites, you can more effectively perform targeted testing of application changes.

Creating scenario test suites

Create a scenario test suite, add scenario test cases to the suite, and then specify the order in which you want the tests to run. You can also modify the context in which to save the scenario test suite, such as the development branch or the ruleset.



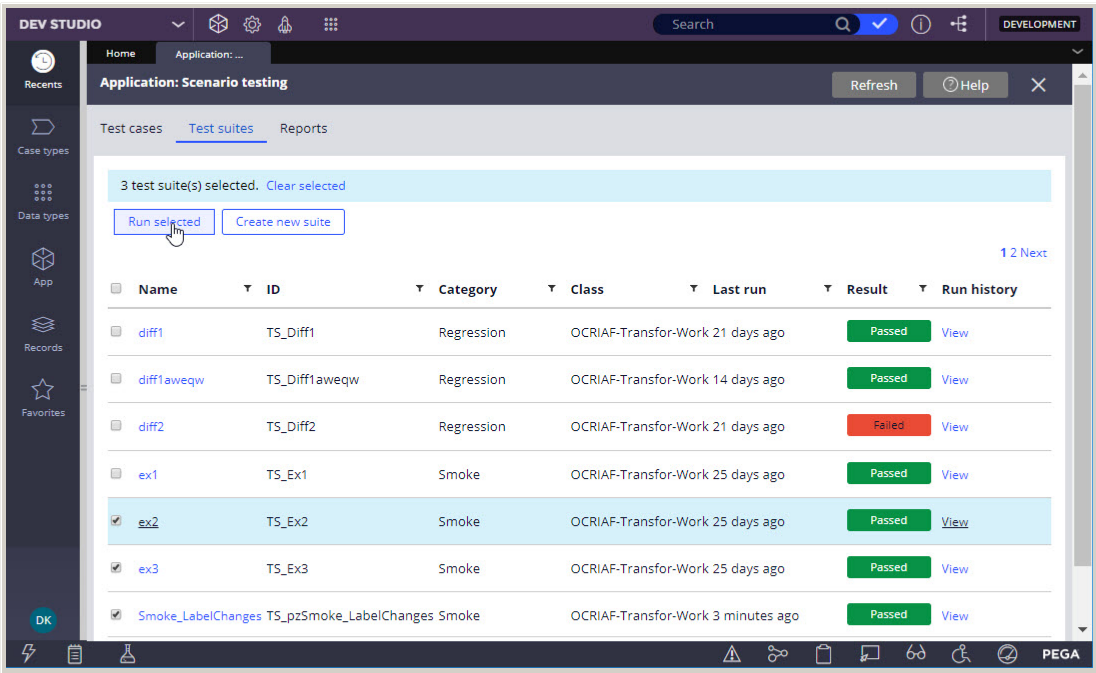
Creating a scenario test suite



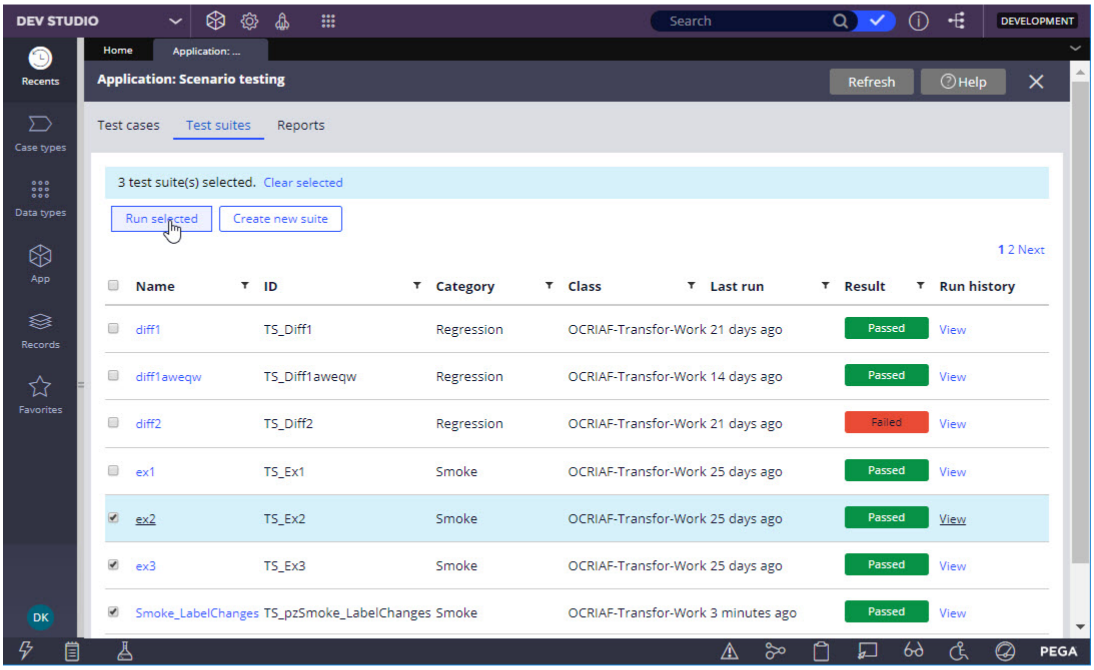
Creating a scenario test suite

Running scenario test suites

Run test suites to check application functionality. You can view the run history, disable or quarantine individual test cases, add or remove test cases from the suite, or reorder the test cases before running the suite.



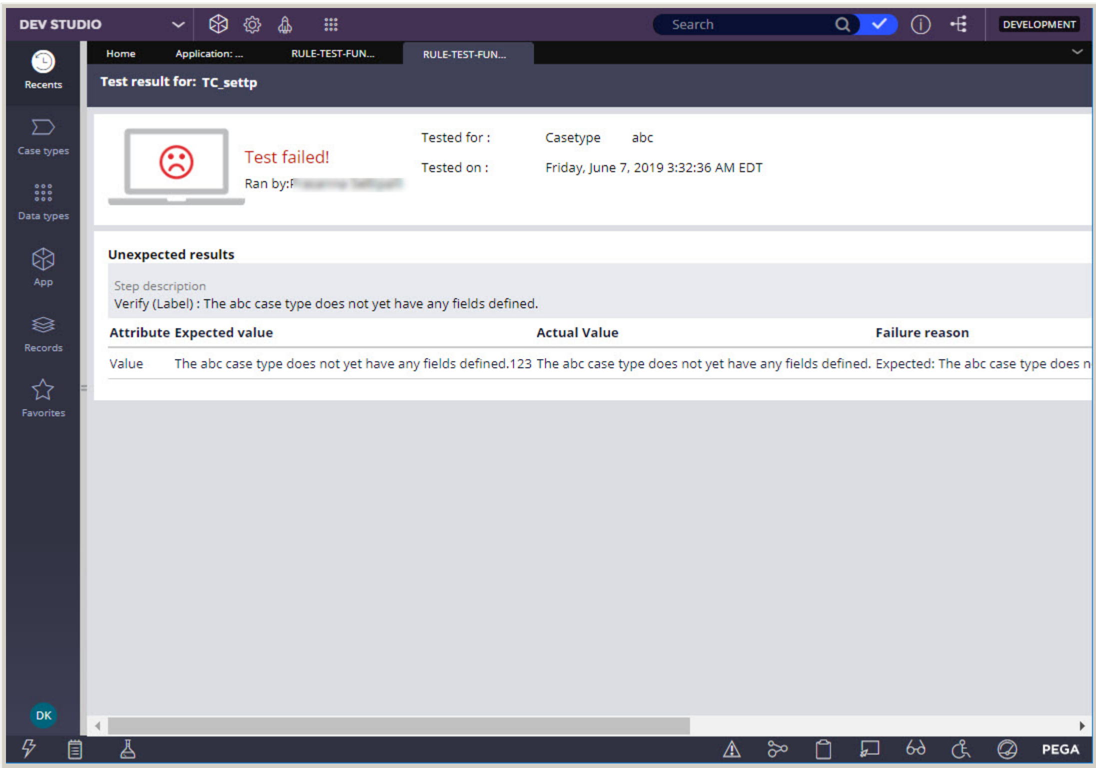
Running a scenario test suite



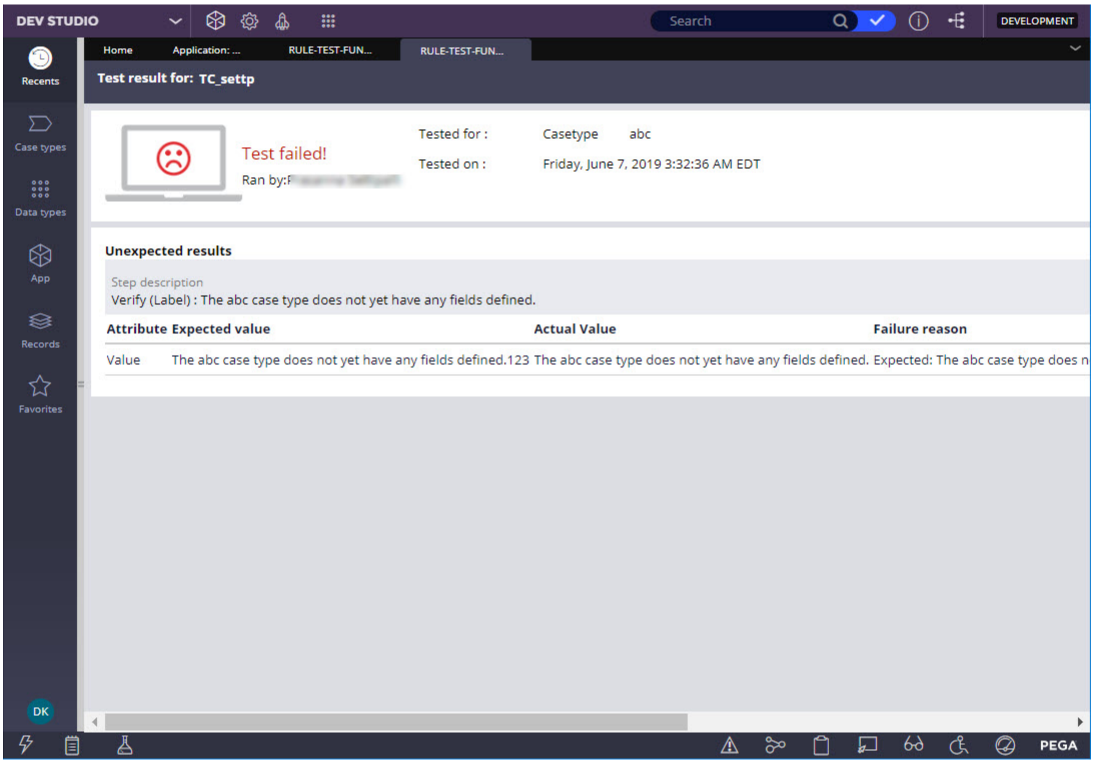
Running a scenario test suite

Viewing scenario test suite results

After you run a scenario test suite, you can view the test results. For example, you can compare the expected and actual output for assertions that did not pass. You can then debug the test case or fix the assertions so that they pass the test case.



Viewing a failed test for a scenario suite

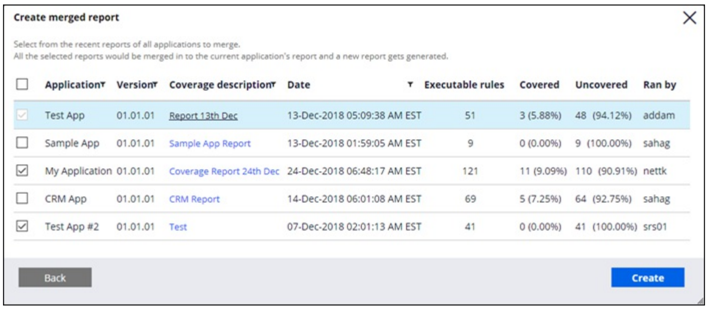


Viewing a failed test for a scenario suite

For more information about scenario test suites, see Grouping scenario tests into suites.

Improve your application quality by monitoring test coverage metrics (8.2)

Evaluate the overall quality of all your applications by viewing merged coverage reports without manually gathering the metrics. A merged report consolidates most recently generated application-level test coverage reports, including other merged reports. Use these metrics to quickly assess the overall test coverage in multiple applications. By generating and analyzing merged reports, you can identify and address gaps in test coverage to improve the reliability and quality of your product.



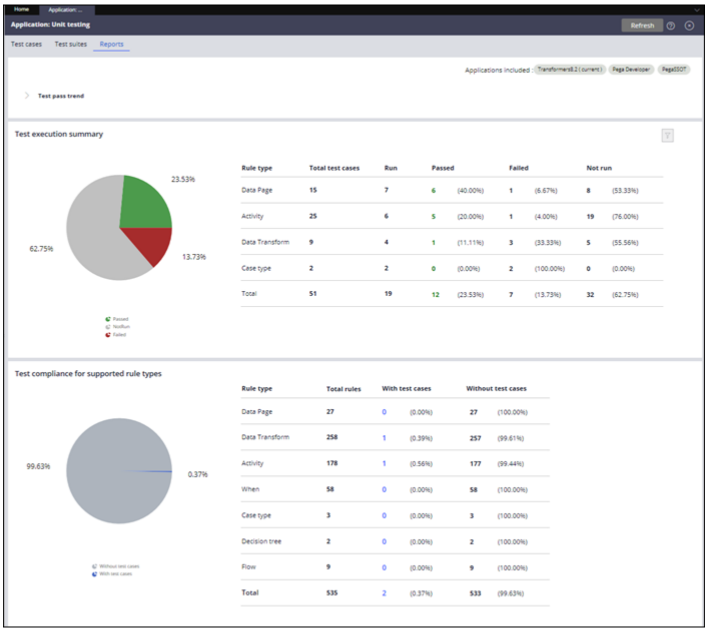
Creating a merged report

For more information, see Generating a merged coverage report.

Monitor application quality in real time by using the REST API to fetch quality metrics (8.2)

You can use the REST API to fetch quality metrics for the Pega unit tests of your applications, such as test compliance and execution results. You can use the metrics that are returned by the service for gating purposes in a release pipeline, for example, to stop the release of the application until the metrics are satisfactory. You can also receive daily reports about the quality level of your Pega unit tests by configuring an external tool such as Jenkins.

The metrics that are fetched are also available on the Reports tab of the Application: Unit testing landing page, as shown in the following figure:



Application: Unit testing landing page

Data that is returned by the service is in JSON format, which can be adapted for a report or a dashboard on an external webpage.

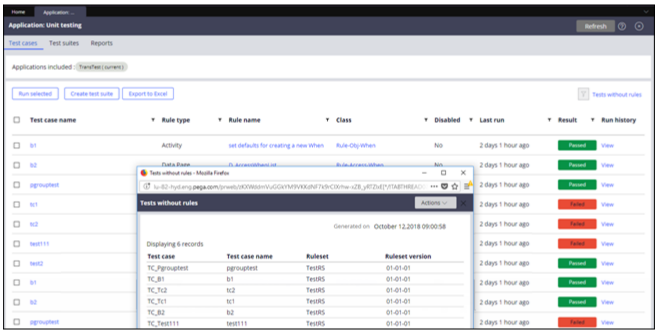
JSON output returned by the REST service

For more information, see Pega API for Pega Platform.

Clean up Pega unit test cases that use inactive or deleted rules (8.2)

You can now view a list of all Pega unit test cases that are associated with inactive or deleted rules in the currently included applications. You cannot use these test cases because they will always fail.

To view the list of these cases, on the Test cases tab of the Application: Unit testing landing page, click Tests without rules.



Application: Unit testing landing page

Either remove these test cases or reactivate the rules that they are associated with.

For more information, see [Application: Unit testing landing page](#).

Manage your deployments in a dedicated portal (8.2)

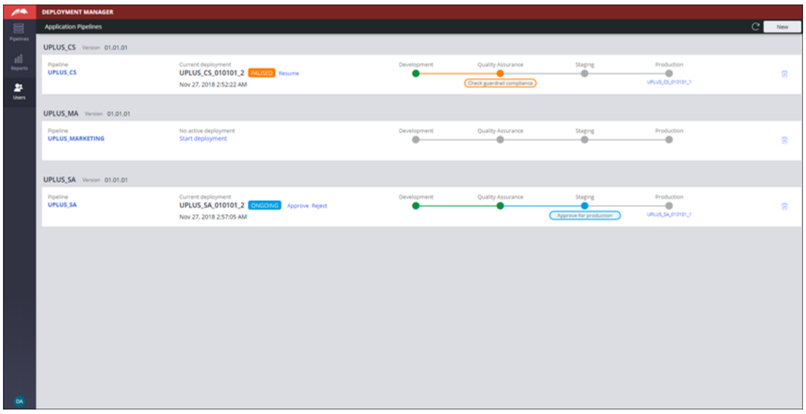
Beginning with Deployment Manager 4.2, you can use a dedicated Deployment Manager portal to manage continuous integration and delivery (CI/CD) workflows for your Pega applications.

By using the new portal, you have greater control over access to Deployment Manager. You can limit access for specific operators who need to perform only release management tasks. An operator no longer needs access to the Dev Studio portal to use Deployment Manager.

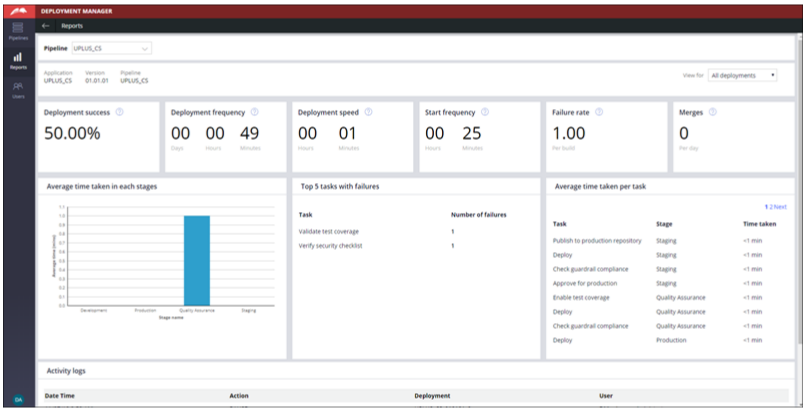
From the Deployment Manager portal, you can administer your deployments more easily by doing the following actions:

- Navigate to specific pipelines to start deployments and perform other actions.
- Access the reports for specific pipelines directly from the navigation pane.
- Switch seamlessly to Dev Studio to manage your repositories and authentication profiles.

The following figures show the dedicated Deployment Manager portal.



Pipelines view in the new portal



Reports view in the new portal

For more information, see [Using Deployment Manager 4.2.x](#).

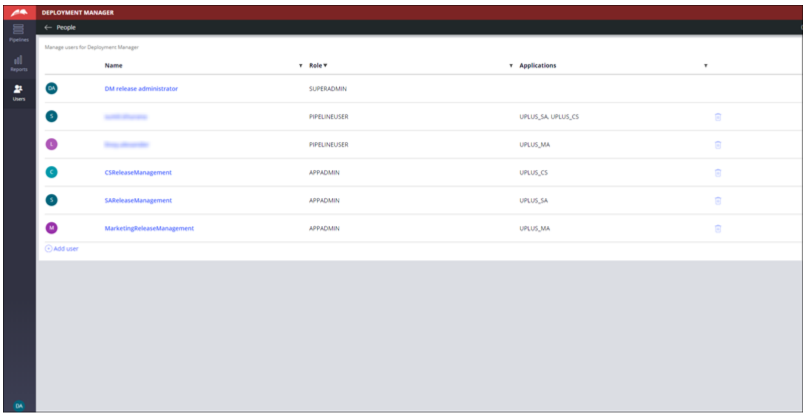
Improve user access to Deployment Manager (8.2)

Beginning with Deployment Manager 4.2, you can control access to Deployment Manager more effectively by implementing an authorization strategy.

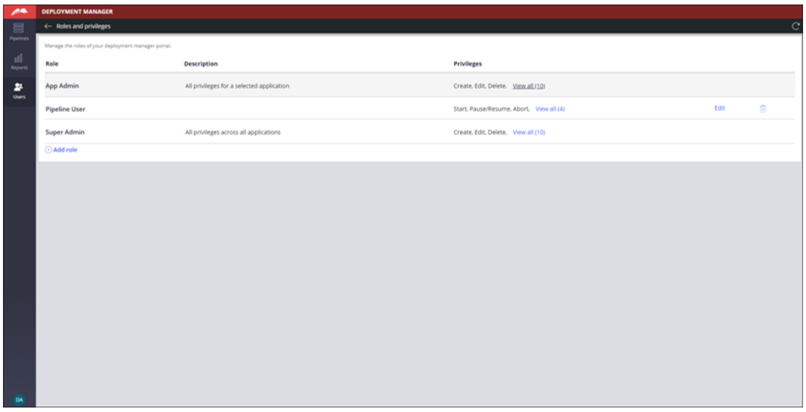
You can now create users with specific roles and privileges so that you can control the actions that users can perform on application pipelines that they are authorized to access. Use this enhancement to manage specific application pipelines and their user bases.

The Deployment Manager portal defines two default roles for super administrator and application administrator. You can create additional custom roles that match the needs of your organization.

The following figures show the Deployment Manager pages where you set up users, roles, and privileges.



Manage users for Deployment Manager



Manage roles for the users of Deployment Manager

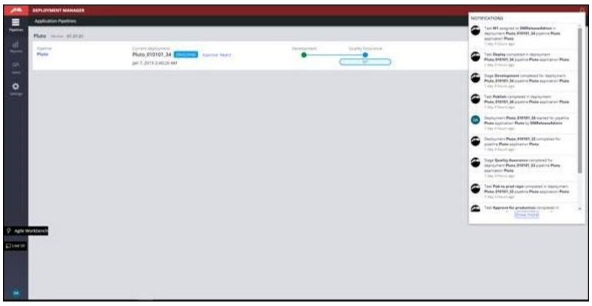
For more information, see [Using Deployment Manager 4.2.x](#).

Configure notifications in Deployment Manager (8.2)

Beginning with Deployment Manager 4.3.x, you can configure notification preferences and subscribe to notifications so that you can be notified about the events that are important to you. You can receive notifications through the Notifications gadget, email, or both. Additionally, you can create custom notification channels to receive notifications through other means such as text messages and mobile push notifications.

When you subscribe to receive notifications through the gadget, you view your notifications by clicking the Notifications gadget in the Deployment Manager header.

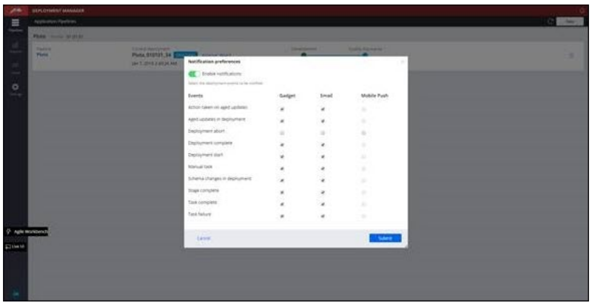
The following figure displays an example of notifications that you receive in the Notifications gadget.



Deployment Manager notifications in the Notifications gadget

To specify your preferences, click your operator ID initials, and then click Notification preferences.

The following figure displays how you can set your preferences.

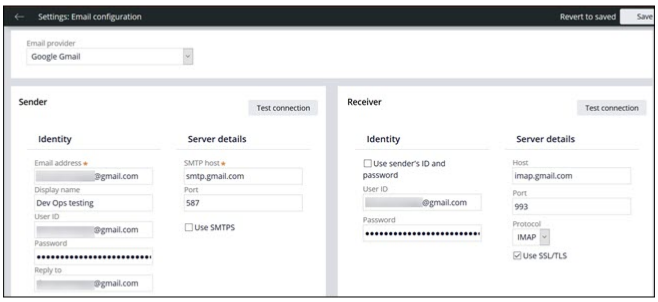


Deployment Manager notification preferences

Additionally, you can create email accounts within Deployment Manager without having to use Dev Studio.

To set up email senders and recipients, in the Deployment Manager navigation panel, click Settings, and then click Email settings.

The following figure displays the Email configuration page on which you configure your email settings.



Deployment Manager Email settings page

For more information, see [Deployment Manager](#).

Manage your artifacts by using custom repositories (8.2)

Beginning with Deployment Manager 3.1.1, you can create custom repository types to store and move your artifacts.

By default, Deployment Manager supports Amazon S3, JFrog Artifactory, Microsoft Azure, and file system repository types. You can now also set up custom repository types and use them in your Deployment Manager workflows. By using custom repositories, you maintain the continuity of applications that already use these types of repositories.

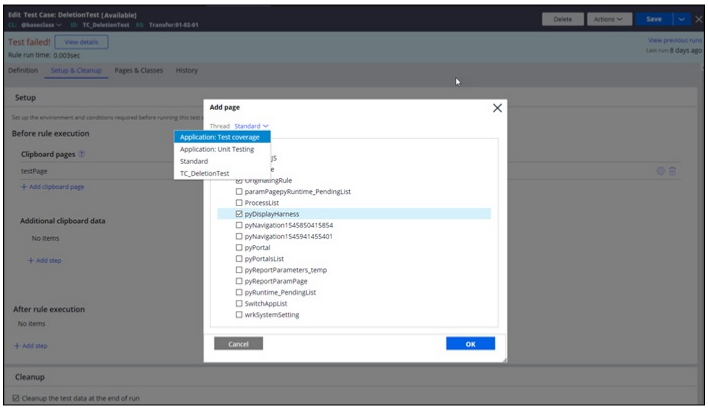
For more information, see Creating and using custom repository types in Deployment Manager.

Improve your experience with creating and cleaning test data for automated tests (8.2)

When creating test data for automated tests, you now have more tools at your disposal and more fine-grained control. For example, you can separately define actions that will happen before and after rule execution during the test run.

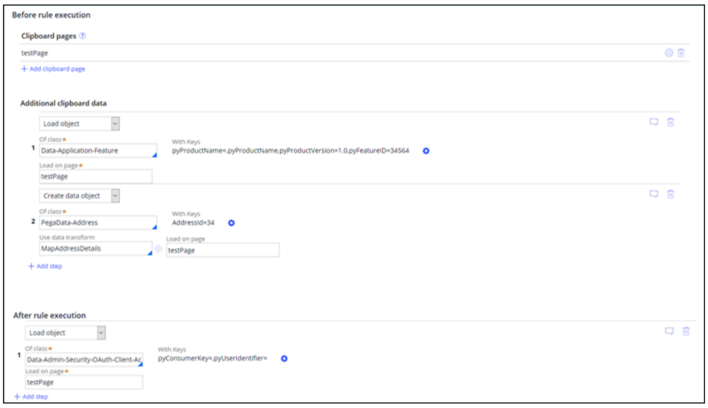
You can also add multiple user pages from the clipboard and configure them. These pages will be copied to the clipboard at test run time.

The following figure shows the option for adding clipboard pages in the Setup & Cleanup tab of the Edit Test Case page.



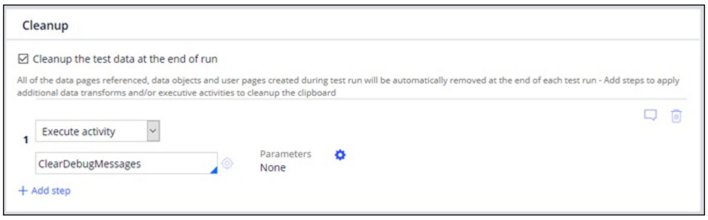
Adding clipboard pages to the test case

When creating or editing a test case, you can also load objects and create work or data objects that will be available during test run time, either before or after rule execution. The following figure shows these configuration options.



Configuring a test case

By default, all the created test data is automatically cleaned up after the test run ends. You can override this behavior and keep the test data in the clipboard after the test has been completed. This option is useful if you want to create a series of tests cases that need data from previous tests. The following figure shows the cleanup options.



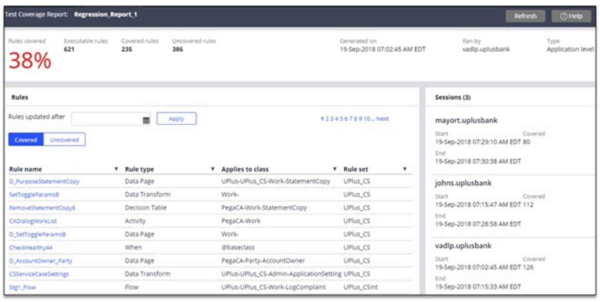
Configuring cleanup options in the test case

For more information, see Setting up your test environment and Cleaning up your test environment.

Get test coverage from multiple testing sessions

You can now generate a single consolidated test coverage report from multiple testing sessions. This report shows the cumulative coverage of your application from different testing activities, which is especially useful when your team is performing a test on a particular application and each tester is assigned a different area to test. You can also use a single report to get aggregate coverage from running all the automated and manual test cases in a release pipeline.

You can also generate the test coverage report for an application release pipeline by using REST APIs that start and stop test coverage. You can find these APIs by clicking Pega API > DevOps in Pega Platform™. In addition, Deployment Manager provides built-in support for generating a test coverage report for an automated release pipeline.



Results of application-level test coverage report

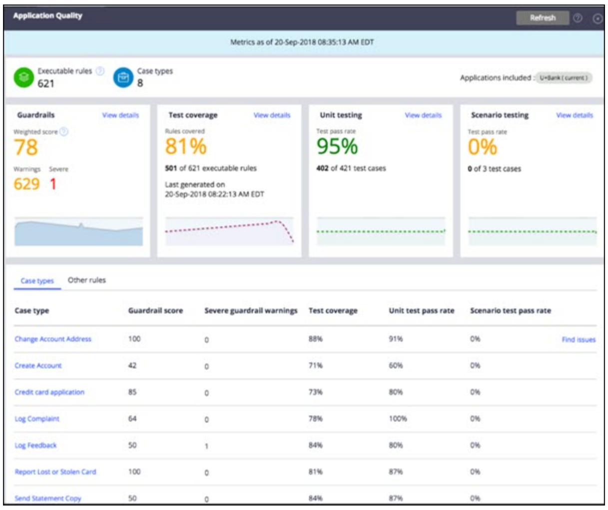
For more information, see Test Coverage landing page.

Use trend charts to visualize application quality and view more metrics

The overall look and feel of the Application Quality dashboard has been redesigned to provide a better user experience to help identify problem areas for the following metrics:

- Guardrail scores
- Test coverage
- Test pass rate for unit and scenario testing
- Quality metrics for case types

The Application Quality dashboard now displays trend charts for each quality metric, so that you can track changes in metrics over time. You can also see detailed trend charts about test coverage and unit testing by opening landing pages for them. In addition, a tile for scenario testing has been added to the Application Quality landing page, and you can click View details to open the Scenario testing landing page.



Application Quality landing page

You also can configure the display and reporting settings of your Application Quality dashboard by clicking Configure > Application > Quality > Settings. You can view the following types of information:

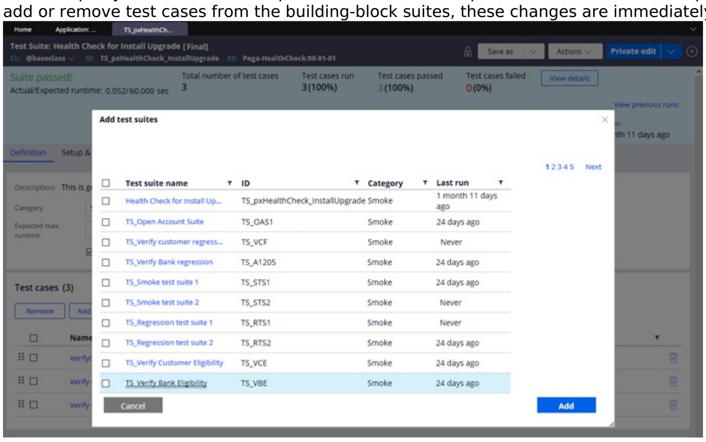
- Applications in the application stack to include in the metrics
- The duration of time for trend charts
- Configuration options for scenario and unit testing

For more information, see [Application Quality landing page](#).

Organize Pega unit tests with nested test suites

You can now better organize your Pega unit tests with nested test suites. A test suite can now contain both test cases and other test suites. Additionally, test suites within a top-level test suite support further nesting of test suites. By nesting test suites, you can reuse existing test suites to build up new test suites, which saves time and avoids duplication of test suites.

For example, you can create multiple suites that contain specific test cases, and then put these building-block suites inside higher-level, master test suites. Then, if you add or remove test cases from the building-block suites, these changes are immediately reflected in the master suites, so you do not have to modify each suite manually.



Adding test suites to test suites

For more information, see [Pega unit test suites](#).

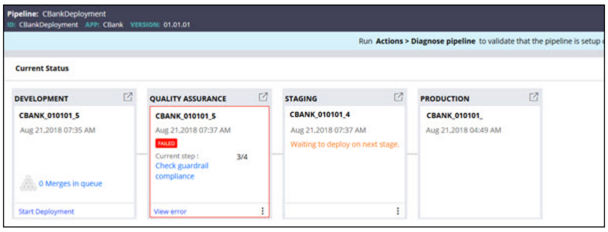
Quickly access Deployment Manager features with an intuitive interface

Beginning in Deployment Manager 4.x, Deployment Manager has been redesigned to have a more intuitive interface so that you can easily and quickly access features as you interact with your pipeline.

The Deployment Manager landing page now displays all your pipelines categorized by application, and you can start your deployment. The landing page also displays a snapshot of your pipeline configuration, which provides status information. For example, you can see whether a deployment failed, view information about the error, and also see the step and system on which the failure occurred.

Deployment Manager landing page

Additionally, when you click a pipeline to open it, Deployment Manager now displays important information about your pipeline so that you can quickly see the status of your deployment. For example, you can see how many branches on the development system are queued to be merged onto the next stage in the pipeline, and then access information about all the branches in your application.



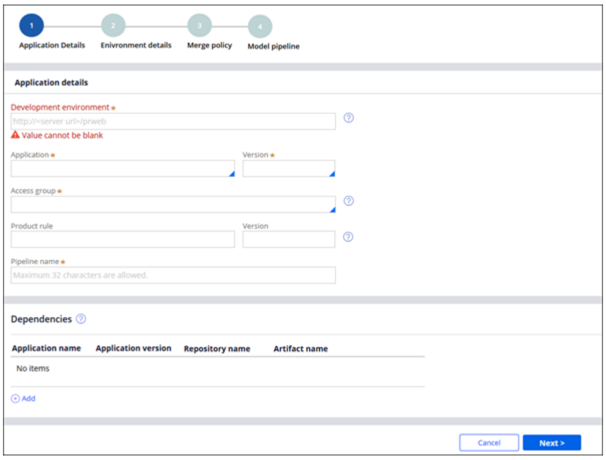
Deployment Manager pipeline view

For more information, see [Using Deployment Manager 4.1.x](#).

Easily configure Deployment Manager pipelines with a simplified setup process

Deployment Manager 3.2.x and later now provides a new, intuitive wizard when you add a pipeline either on premises or on Pega Cloud. The wizard guides you through and simplifies pipeline configuration so that you can quickly add and set up your pipelines. Additionally, if you are using Pega Cloud, Deployment Manager automatically detects the URLs of all your candidate systems, so that you do not need to configure them.

Also, when you install Deployment Manager on premises, default operators and authentication profiles are shipped with the application, which further simplifies and speeds up installation.



Deployment Manager New pipeline wizard

For more information, see Installing, upgrading, and configuring [Deployment Manager 4.1.x](#).

Deploy with confidence by enforcing quality metrics

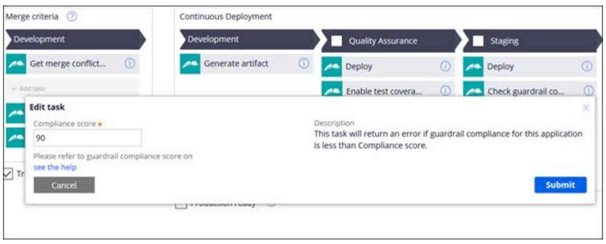
Deployment Manager 4.1.1 includes built-in support for running tests and enforcing quality metrics such as test coverage that you can use to validate every update that is made to your application.

These new tasks allow you to model a DevOps pipeline for your Pega application to ensure that changes that your developers make to the application run through all the necessary regression tests and pass your quality criteria, such as guardrail compliance score and test coverage percentage. If any of the quality criteria are not met, the pipeline will fail. You can work with the developers to improve guardrail compliance, test coverage, failing regression tests, or other issues that need to be addressed before deploying to higher environments. These tasks ensure that only high quality and verified application changes are migrated into critical production environments.

The following tasks are provided in Deployment Manager to enforce quality metrics:

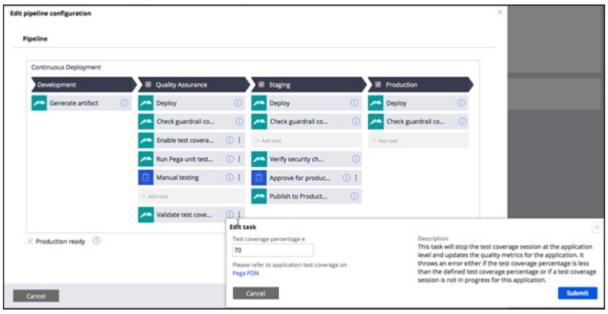
- Check guardrail compliance
- Enable test coverage and validate test coverage
- Run Pega unit tests
- Run Pega scenario tests
- Verify security checklist

Use the check guardrail compliance task to verify that your application’s guardrail score meets the threshold that is set for this application. The default value is set to the recommended score of 90.



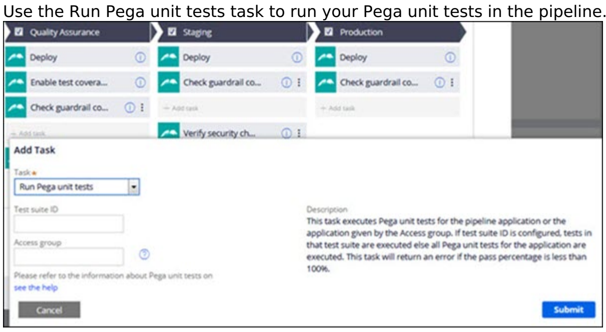
Check guardrail score task

Use the Enable test coverage task to start test coverage, and then collect the coverage metrics for all the tasks that run before the Validate test coverage task. The default value is set to 70% coverage.



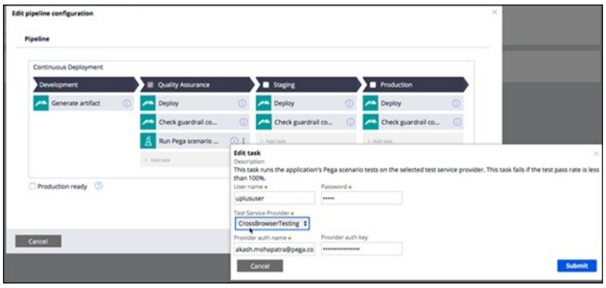
Validate test coverage task

Use the Run Pega unit tests task to run your Pega unit tests in the pipeline. All the Pega unit tests must pass for this quality gate to pass.



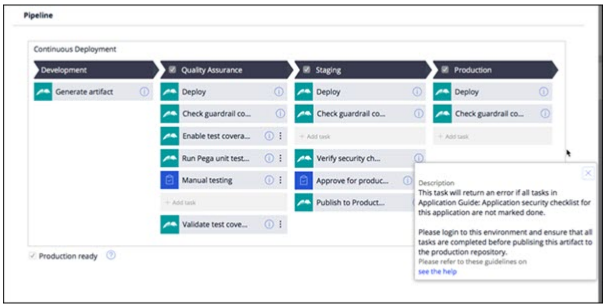
Run Pega unit tests task

Use the Run Pega scenario tests task to run your scenario tests in the pipeline. You can run these scenario tests by using test service providers such as CrossBrowserTesting, Sauce Labs, Browser Stack, or your own stand-alone Selenium Grid service. All the scenario tests must pass for this quality gate to pass.



Run Pega scenario tests task

Use the Verify security checklist task to ensure that your pipeline complies with security best practices. This task is automatically added to the stage before production when you create a pipeline.



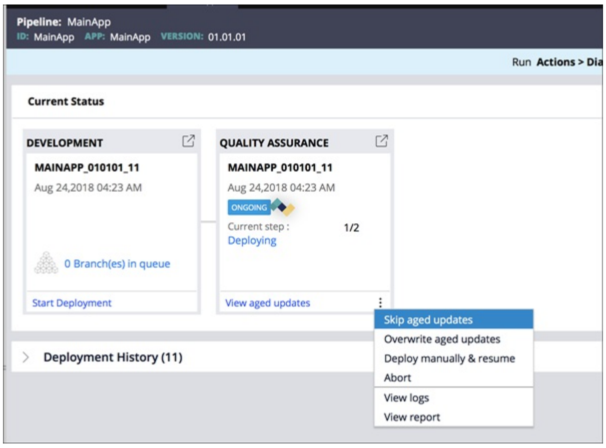
Verify security checklist task

For more information, see [Using Deployment Manager 4.1.x](#).

Manage aged application updates in Deployment Manager

Beginning in Deployment Manager 4.x, can now manage aged application updates. An aged update is a rule or data instance in an application package that is older than an instance that is on a system to which you want to deploy the application package. By being able to import aged updates, skip the import, or manually deploy the application package on a system, you now have more flexibility in determining the rules that you want in your application and how you want to deploy them.

For example, you could update a Dynamic System Setting on the quality assurance system, which has an application package that contains the older instance of the Dynamic System Setting. Before Deployment Manager deploys the package, the system detects that there is a newer version of the Dynamic System Setting on the system than in the package and creates a manual step in the pipeline. From this step, you can select if you want to import the aged update that is in the package into the system to override the newer Dynamic System Setting instance or if you want to skip the import. You can also choose to skip the manual step and then use the Import Wizard to manually deploy the package.



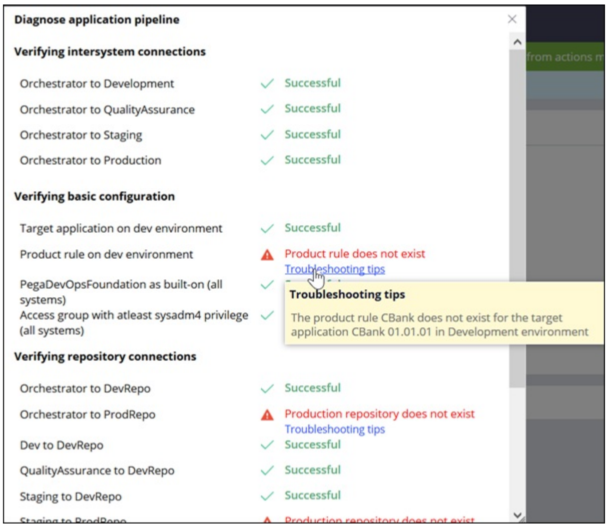
Deployment Manager aged updates options

For more information, see Using Deployment Manager 4.1.x.

Diagnose pipelines and view troubleshooting information

In Deployment Manager 3.3.x and later, you can now diagnose your pipeline to verify that it is configured properly and to view and troubleshoot any issues that are discovered. For example, you can verify that the target application and product rule are on the development environment, connectivity between systems and repositories is working, and premerge settings are correctly configured. By diagnosing your pipeline, you can quickly fix issues that could prevent your application from being deployed. In addition, you view troubleshooting tips for errors, which provide helpful information so that you can quickly resolve issues in your pipeline.

After you click a pipeline, you can diagnose your pipeline by clicking Actions > Diagnose pipeline.



Diagnose pipeline dialog box

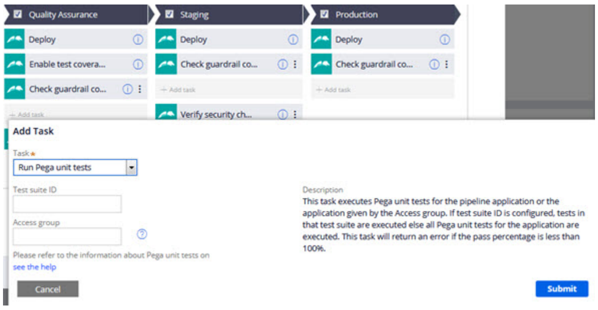
For more information, see Using Deployment Manager 4.1.x.

Run Pega unit tests for a suite or an access group

In Deployment Manager, you can run Pega unit tests, which you use to validate your application functionality, on the candidate systems in your pipeline, such as quality assurance. By running Pega unit tests, you can ensure that you quickly deploy higher quality software to production.

In addition to running Pega unit tests for the pipeline application, you can now run Pega unit tests for another application by specifying an access group.You can also run Pega unit test suites so that you do not need to run all the Pega unit tests in your application. For example, Pega unit ad-hoc test suites can informally test a feature, and smoke test suites can verify that critical application functionality is working as expected. By using a test suite, you can quickly test your application by running only the Pega unit tests that you need to validate the functionality for your application.

When you add or edit a pipeline, you can add the Run Pega unit test task on your candidate systems and specify a Pega unit test suite ID that contains the Pega unit tests that you want to run. You can also specify whether you want to run Pega unit tests for another application by providing an access group.



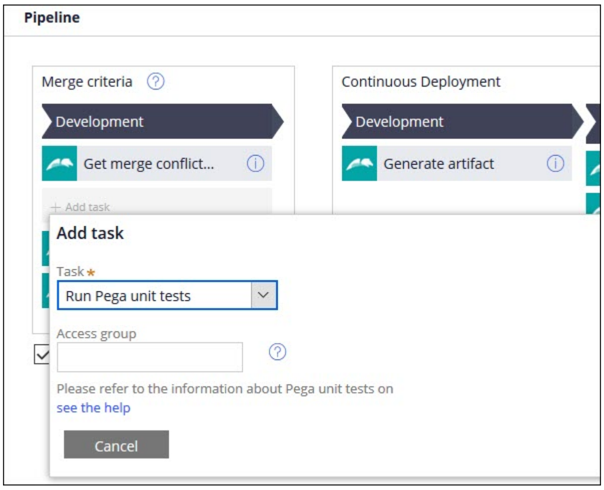
Run Pega unit tests task in pipeline

For more information, see Using Deployment Manager 4.1.x.

Run Pega unit tests on branches in Deployment Manager

Beginning with Deployment Manager 4.1.1, you can run Pega unit tests for your application to validate branches before you merge them. By running Pega unit tests on branches, you can quickly identify and correct issues so that you can deploy higher quality applications.

You can add a task to run Pega unit tests on the development system when you add or edit a pipeline.

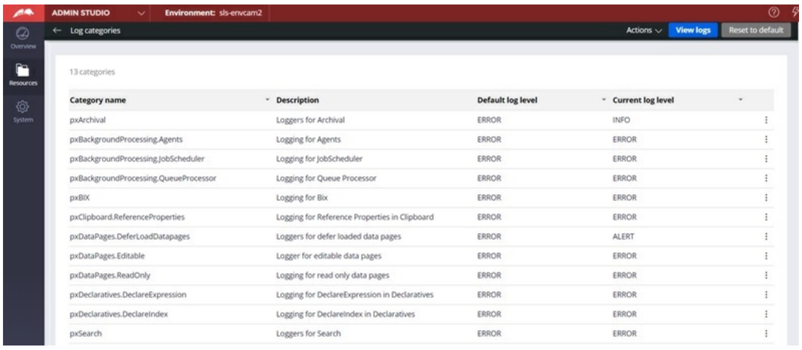


Pega unit test task

For more information, see [Using Deployment Manager 4.1.x](#).

Engine

Several enhancements to background processing, indexing, and reporting improve work processing throughput and scaling, and help you to quickly generate reports against large amounts of data in your application.



Log categories landing page

Engine includes the following enhancements:

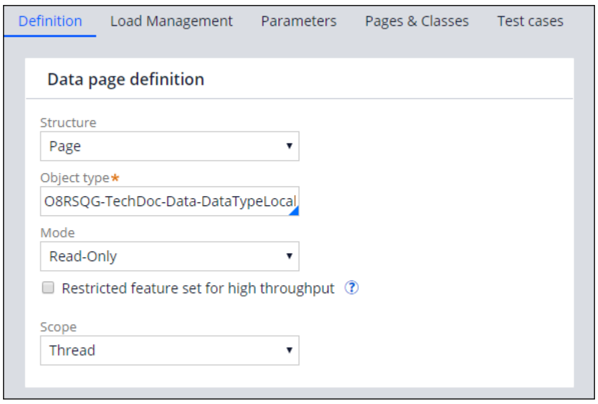
- [Improve editable data page performance using high-throughput mode](#) (8.2)
- [Increase search index performance using a queue processor](#) (8.2)
- [Enhance report performance with new Elasticsearch features](#) (8.2)
- [Improve reporting performance by configuring Elasticsearch indexing](#)
- [Monitor background processing efficiently with Job Scheduler](#)
- [Meet highly challenging background processing requirements](#)
- [Debug applications more efficiently by grouping loggers](#)
- [Improve application performance by configuring your own node types](#)

Visit [www.pega.com](#) to learn more about Pega Infinity™.

Visit [What's New in Pega Platform](#) to discover all the exciting new features in this release.

Improve editable data page performance using high-throughput mode (8.2)

Improve clipboard performance in editable data page processing by using the high-throughput mode option. Access this option in Dev Studio on the Definition tab of the data page rule form.



High-throughput mode option

This mode supports the following clipboard features:

- Hierarchical structure – Arbitrarily deep and complex tree structure formed by pages, lists, groups, and so on.
- Legacy API compatibility via adapters

- Mutations
- Complex references – APIs on the page support arbitrarily complex property reference strings, including list subscript symbolics such as <APPEND>, <FIRST>, and so on.
- Messaging – Message metadata can be attached to properties and pages, for example, as a result of validation, Rule-Declare-Constraints, or various APIs and activity methods
- Dictionary – Information specified on the Property rule form is available during clipboard processing.
- Serialization/deserialization – Page structure and contents can be stored on disk or in a database; then later restored into memory.

The following clipboard features are not supported:

- Autopopulate
- Linked properties
- Referenced properties
- Limited support for declaratives
- Change tracking for property value updates in the user interface

For more information about configuring data pages, see [Data page rules - Using the Definition tab](#).

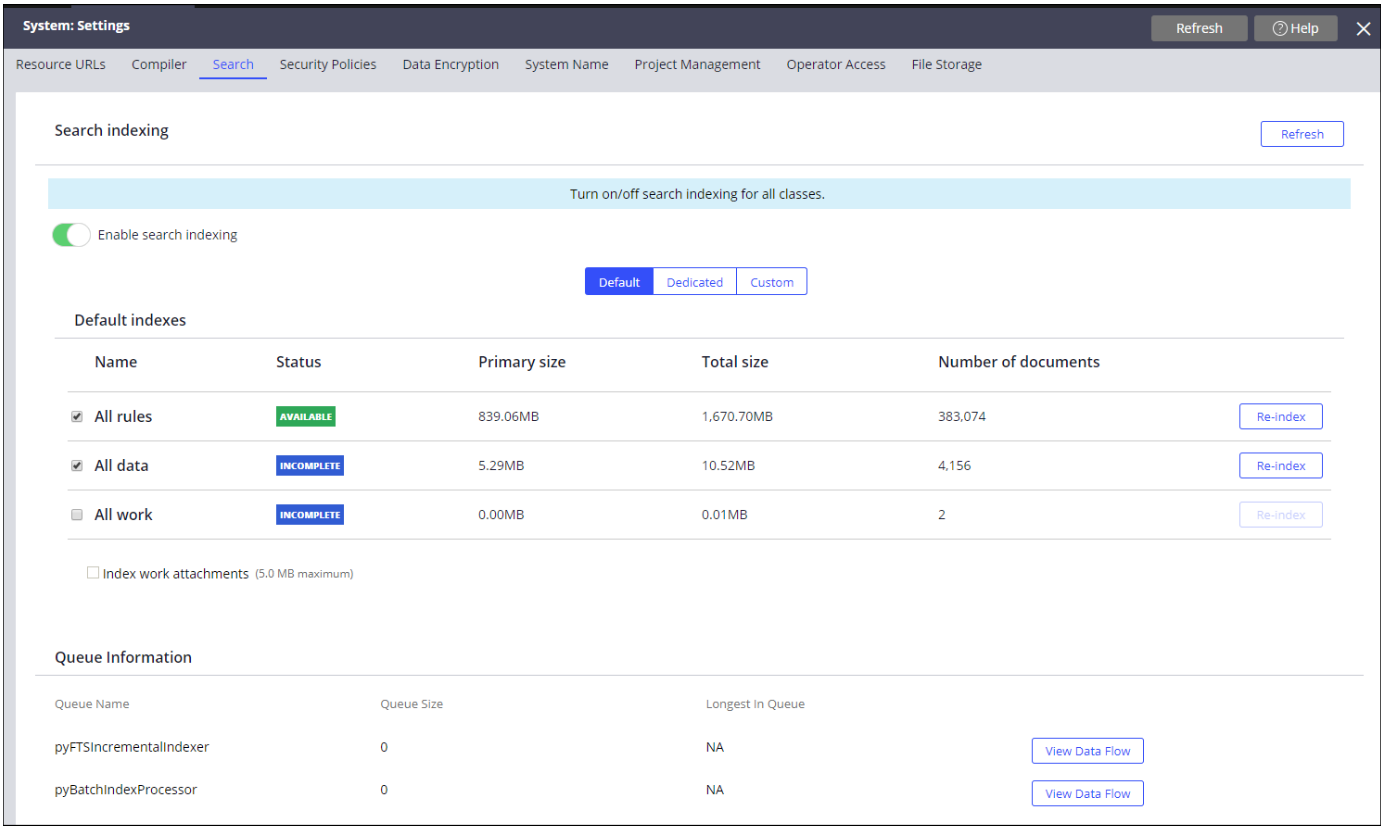
Increase search indexing performance using a queue processor (8.2)

Search indexing now uses a queue processor, resulting in a significant performance improvement. In addition, indexing is restartable. For example, if the database goes down during indexing, indexing automatically restarts when the database becomes available, saving time because you do not have to manually start reindexing from scratch.

Search processing in multitentant systems has not been updated to use the queue processor.

As a result of using the queue processor for indexing, the following changes have been made to the Search landing page:

- You cannot cancel indexing from the Search landing page. Cancel indexing by stopping the queue processor from the Data flow landing page.
- The progress message is not shown. View progress on the Queue Processor landing page.
- Queue processor information has been added.



Search landing page

For more information, see [Stopping or pausing search reindexing](#).

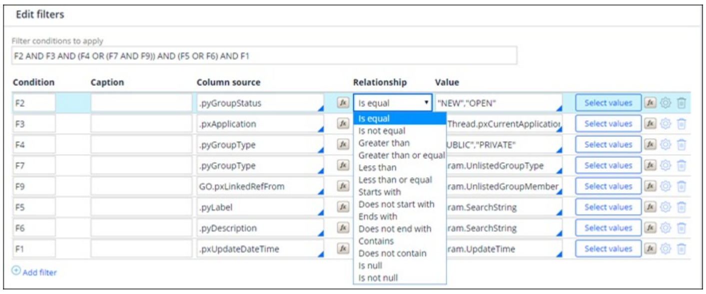
Enhance report performance with new Elasticsearch features (8.2)

New Elasticsearch enhancements improve reporting performance and the reporting and searching experience.

- Filtering in reports is now case-insensitive. You can turn off case-insensitive filtering, for example, by using an activity. You might want to do this if your index is too big or if the length of time it takes for indexing affects performance.
- Reports that use string comparison operators in filters can now run queries against Elasticsearch instead of querying the database. The following operators are supported for Elasticsearch queries:
    - Starts with, Ends with, Does not start with, and Does not end with
    - Contains and Does not contain
    - Greater than, Less than, Greater than or equal, and Less than or equal

  In cases where a query cannot be run against Elasticsearch, the query is run against the database, for example, if the query includes a join. To determine if a query was run against Elasticsearch, use the Tracer tool and enable the Query resolution event type.

The following image shows the filters on the Report Definition.



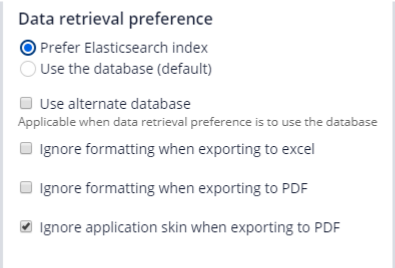
Report Definition filters

For more information about report filtering, see [Editing filter conditions](#).

For more information about tracing events, see [Tracer event types to trace](#).

Improve reporting performance by configuring Elasticsearch indexing

Improve reporting performance on large data sets by configuring a report to use Elasticsearch. Configure a report to use Elasticsearch by setting the data retrieval preference on the Report Definition Data Access tab to prefer Elasticsearch, as shown in the following figure.



Data retrieval preferences on the Report Definition form

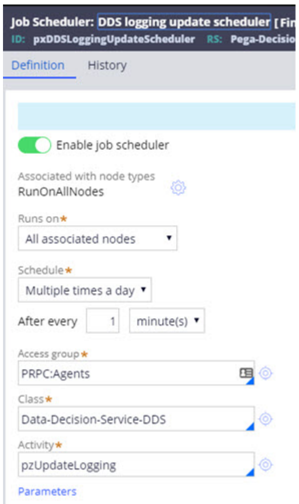
For more information, see [Report Definition Data Access tab](#).

Monitor background processing efficiently with Job Scheduler rules

You can now create job schedulers to manage your scheduled tasks. By replacing advanced agents with job schedulers, you can monitor and maintain background processing more effectively.

You can associate job schedulers with different node types, and control whether they run on one node or all nodes of a specific node type in a cluster environment. You can configure job schedulers to run on a custom schedule, or at a start-up.

The following figure illustrates the job scheduler rule form.



Creating a job scheduler

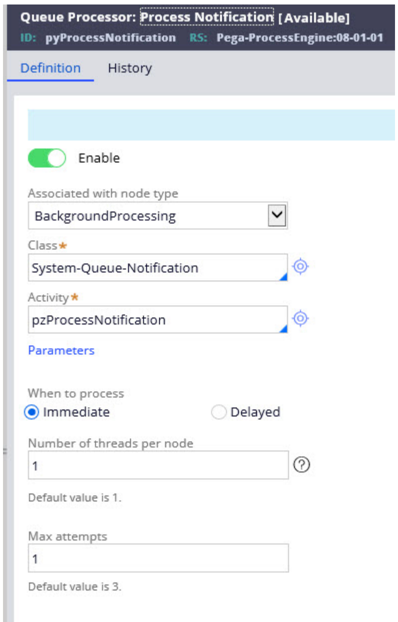
For more information, see [Job Scheduler](#).

Meet highly challenging background processing requirements

You can now create queue processors for queue management and asynchronous processing. By replacing standard agents with queue processors, you can meet highly challenging background processing requirements.

You can use a standard Queue Processor rule that is shipped with Pega Platform, or you can create a dedicated Queue Processor rule for immediate or delayed processing. For higher throughput and improved scalability, queue processors support vertical and horizontal scaling, thus you can increase the number of threads in a node, or you can increase the number of nodes. You can also add a queue processor directly to your case by using the Run in Background smart shape.

The following figure illustrates the Queue Processor rule form.



Creating a dedicated queue processor

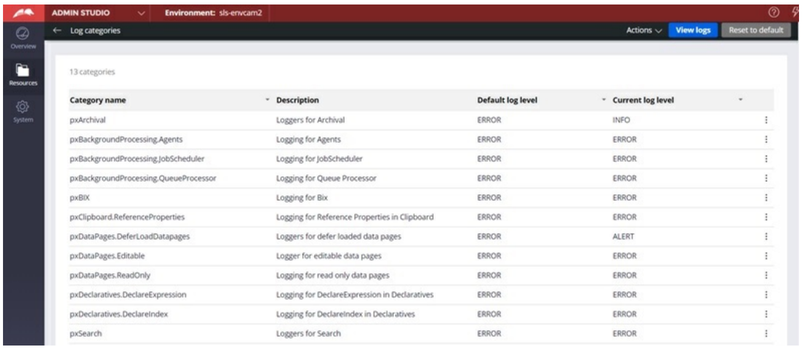
For more information, see [Queue Processor](#).

Debug applications more efficiently by grouping loggers

You can now create log categories and associate them with loggers for more effective debugging. When you group loggers into log categories, you do not have to remember the names of individual loggers that correspond with specific features.

Pega provides a set of default log categories, however, to meet your specific business needs, you can create you own log categories. You can update your log categories by changing the log level and adding or removing the loggers. The changes that you make affect all nodes in the cluster and they persist until you change them, so that you do not have to update each logger individually.

The following figure illustrates the Log categories landing page in Admin Studio.



Log categories landing page

As a best practice, group loggers that correspond with similar features. For example, group loggers that correspond with agents into one category.

For more information, see [Log levels for log categories](#).

Improve application performance by configuring your own node types

You can now configure your own node types to control which agents, listeners, job schedulers, and queue processors run when the node is started for more effective use of Node classification.

For better performance, a Pega application can now have associations that start with specific node types and start agents, listeners, job schedulers, and queue processors only on those specific node types. For more intuitive use, you can assign purpose-specific names to your nodes instead of using default node types that do not have meaningful names.

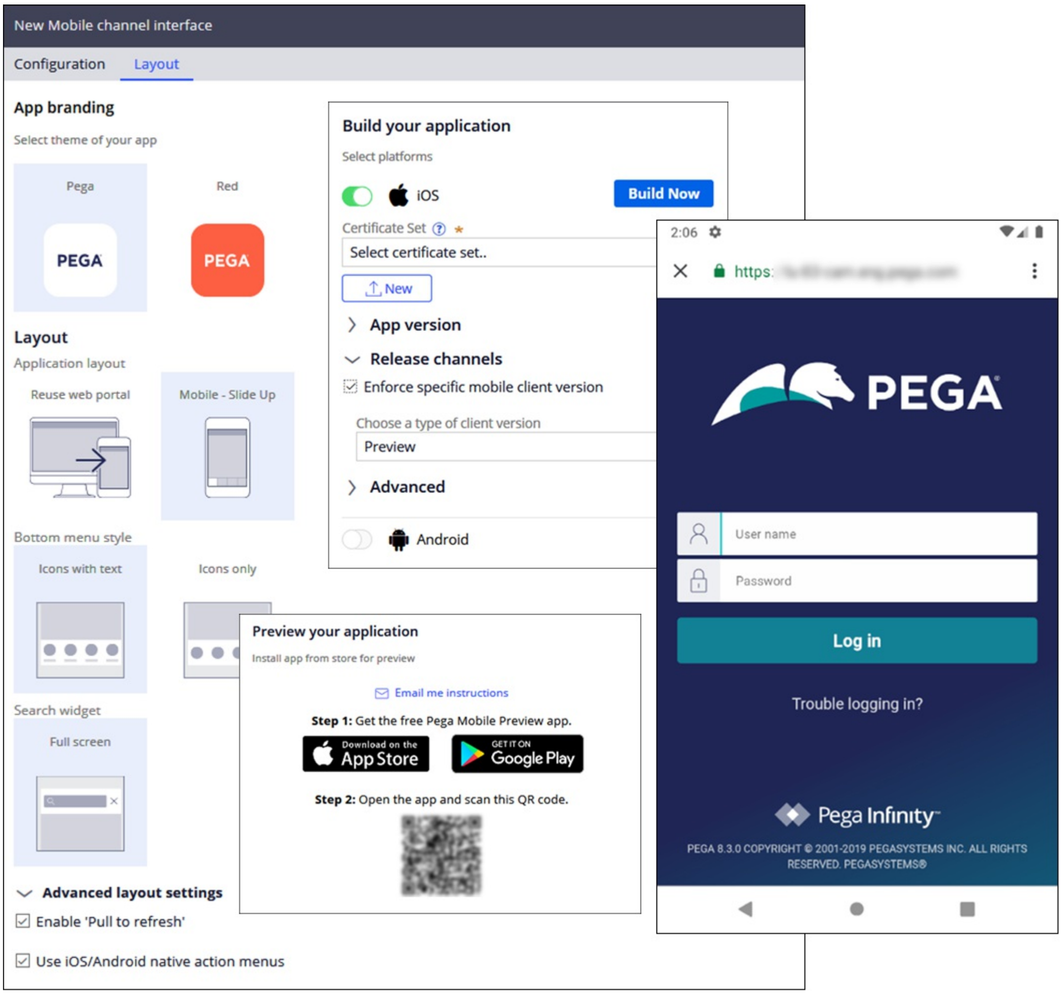
For example, for Pega Marketing you can create PegaMKTEmail and PegaMKTSMS node types, and then only the nodes in the cluster that start with these node types will start associated resources such as agents.

For more information, see [Node classification](#), [Creating configurable node types](#).

Mobile

What's new in Pega Platform Pega Infinity™

With the enhanced mobile capabilities of Pega Platform™, use the updated Mobile channel to build custom mobile apps that launch faster, support single sign-on authentication, help restrict user access, and are quicker to navigate.



Mobile app design

Mobile includes the following enhancements:

- Enhance mobile apps with native components (8.3)
- Improve user experience in mobile apps (8.3)
- Improve user experience with Pega Infinity Mobile Client (8.2)
- Configure, brand, and build custom mobile apps with the redesigned Mobile Channel (8.2)
- Build secure custom mobile apps with the OAuth 2.0 framework (8.2)
- Search faster on mobile with native search gadget
- Secure custom mobile apps by using single sign-on
- Protect a custom mobile app with a device lock
- Build multiple custom mobile apps for a single application

To learn about all the new features in **Mobile**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

Visit www.pega.com to learn more about Pega Infinity™.

Visit What's New in Pega Platform to discover all the exciting new features in this release.

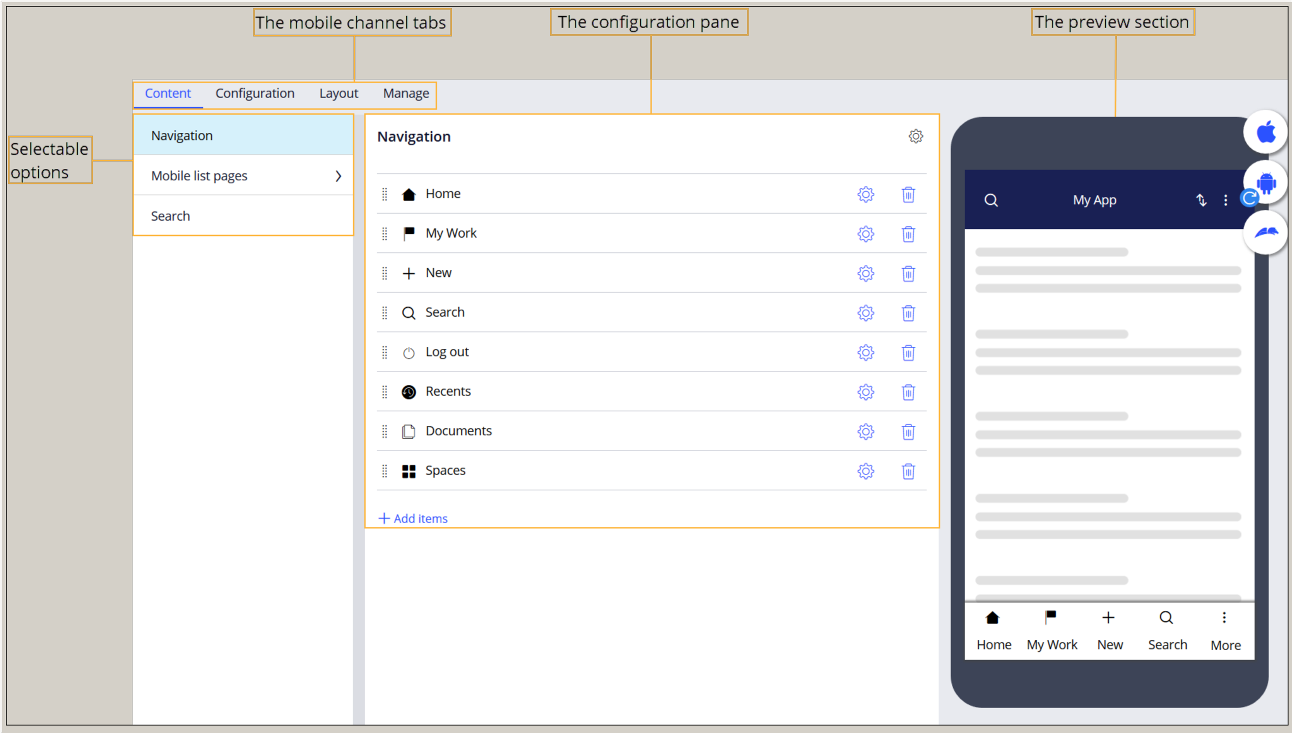
Create professional mobile apps in a low-code environment (8.4)

Configure and build consumer-grade mobile apps with the re-designed mobile channel without any coding. You can do that by using preconfigured design templates, widgets and actions. The improved look and feel of the UI in the mobile channel helps you effortlessly and intuitively configure your mobile apps.

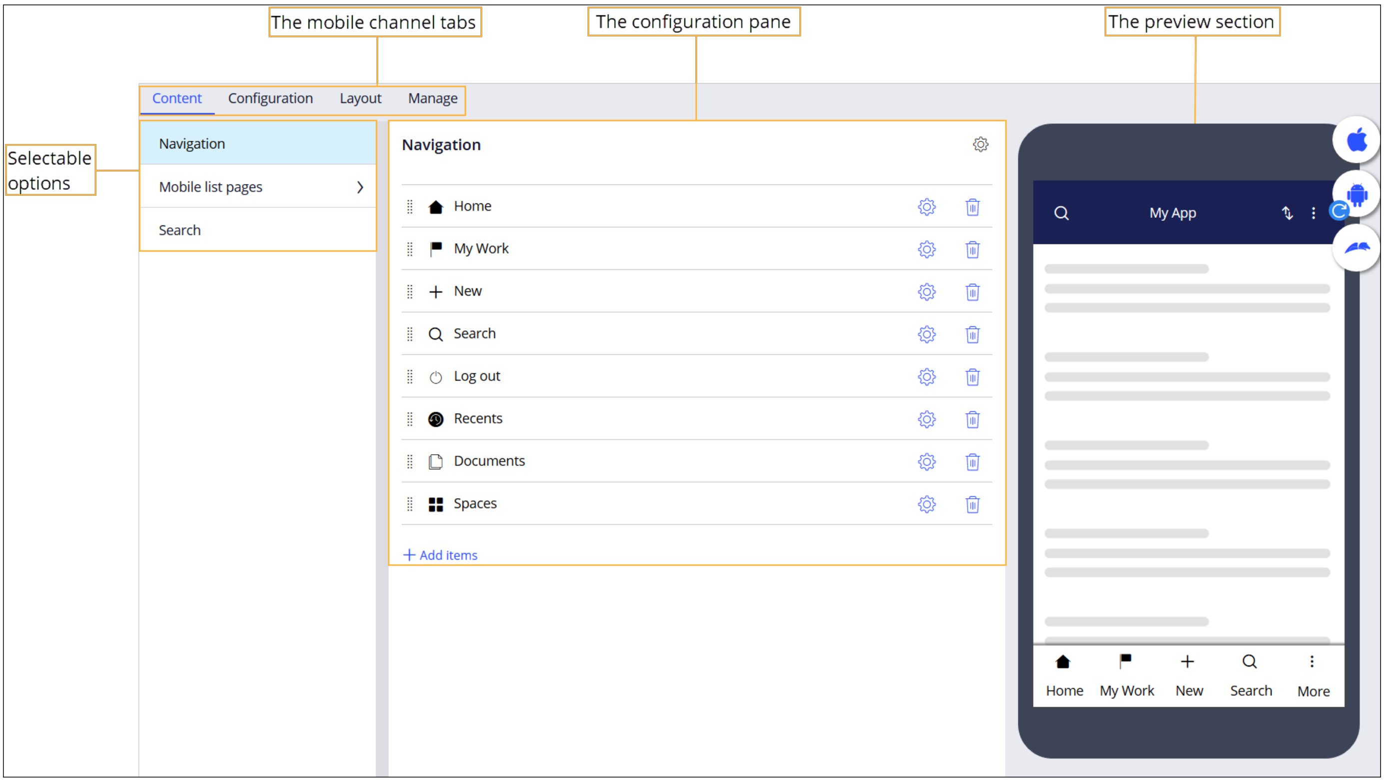
Additionally, the mobile channel configuration now features a live preview that displays the appearance of the app on a mobile device.

The improved look and feel of the mobile channel

The mobile channel is organized into user-friendly tabs, where specific settings are logically grouped together.



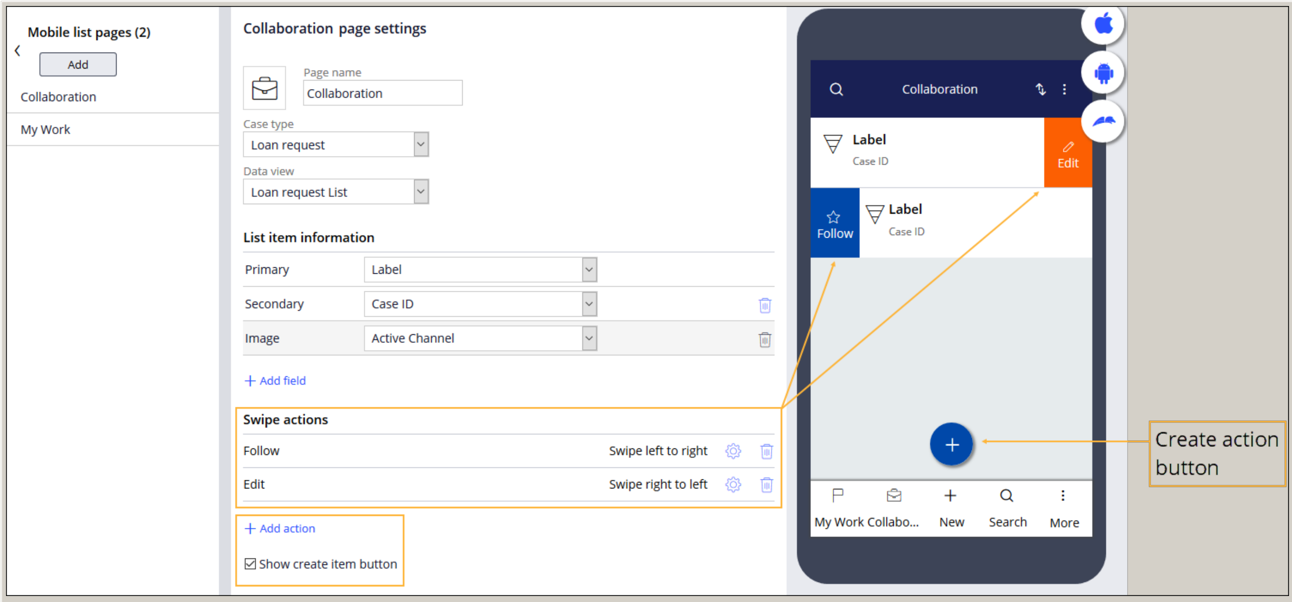
The redesigned layout of the mobile channel



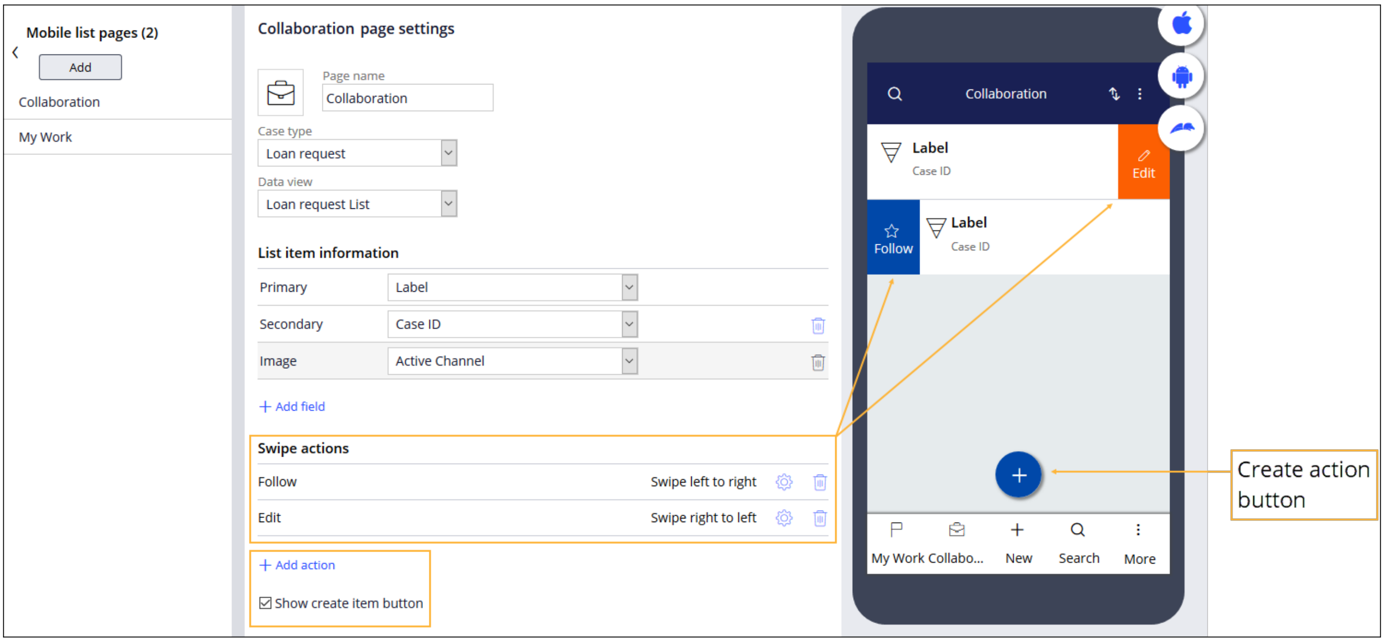
The redesigned layout of the mobile channel

Add more custom pages and reorder them in the bottom navigation menu on the Content tab. You can also add any mobile-specific pages that you created by using appropriate templates in App Studio. The options of the Content and Configuration tabs are now displayed in a pane that is associated with a given menu item.

Include mobile native lists in your new app. The native lists support contextual search, swipe actions, and a floating action button. The mobile channel comes equipped with an out-of-the-box My work list page. New case types that you create have native list pages automatically generated for the new cases.



The mobile native lists, swipe actions and the floating action button



The mobile native lists, swipe actions and the floating action button

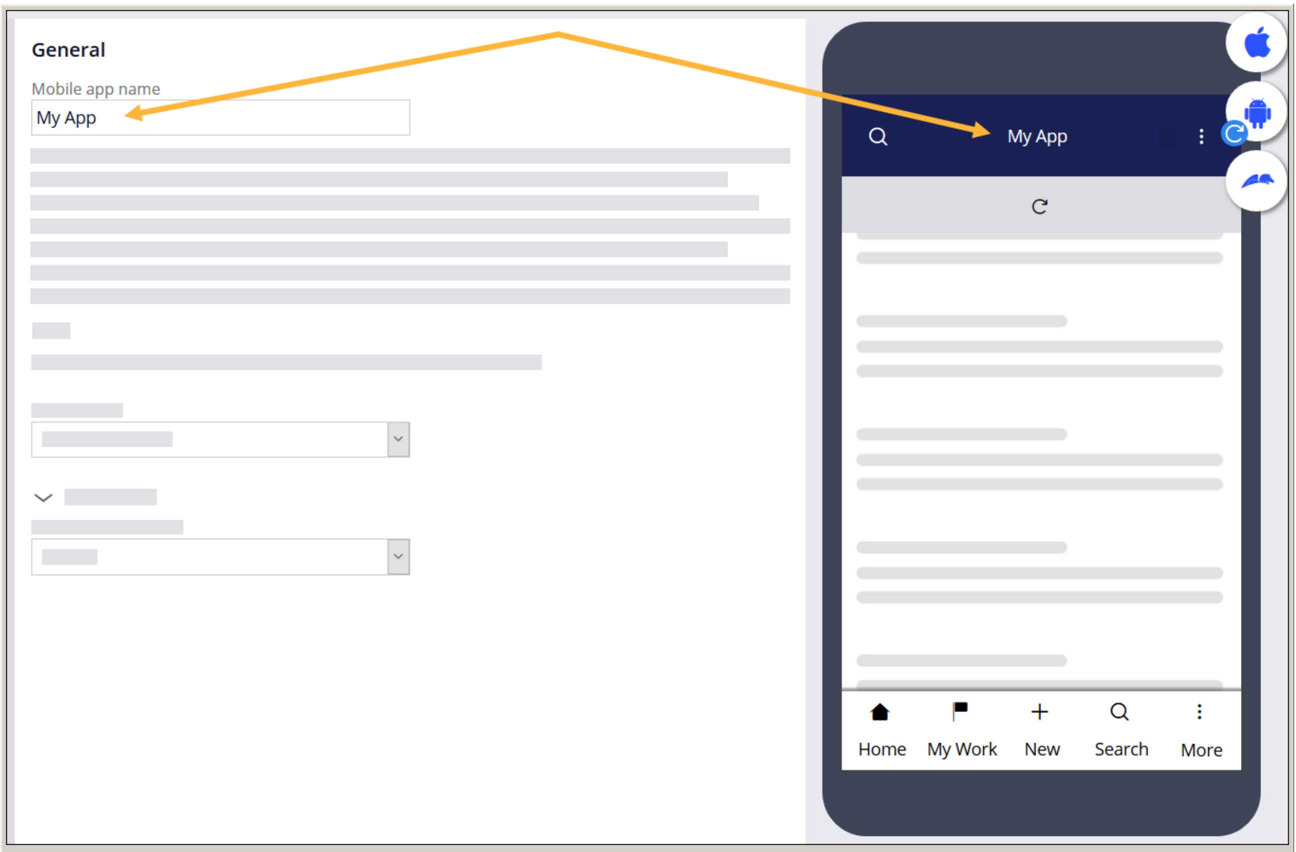
Change the default icon, as well as other styling options, on the Layout tab. You can also upload and use your own files for the icon for more personalization. Control the notifications that you want to push to your users and manage device logs on the Manage tab.

Choose the most frequently-performed actions from a list and add them to the bottom navigation menu of the mobile app so that users can easily access these actions.

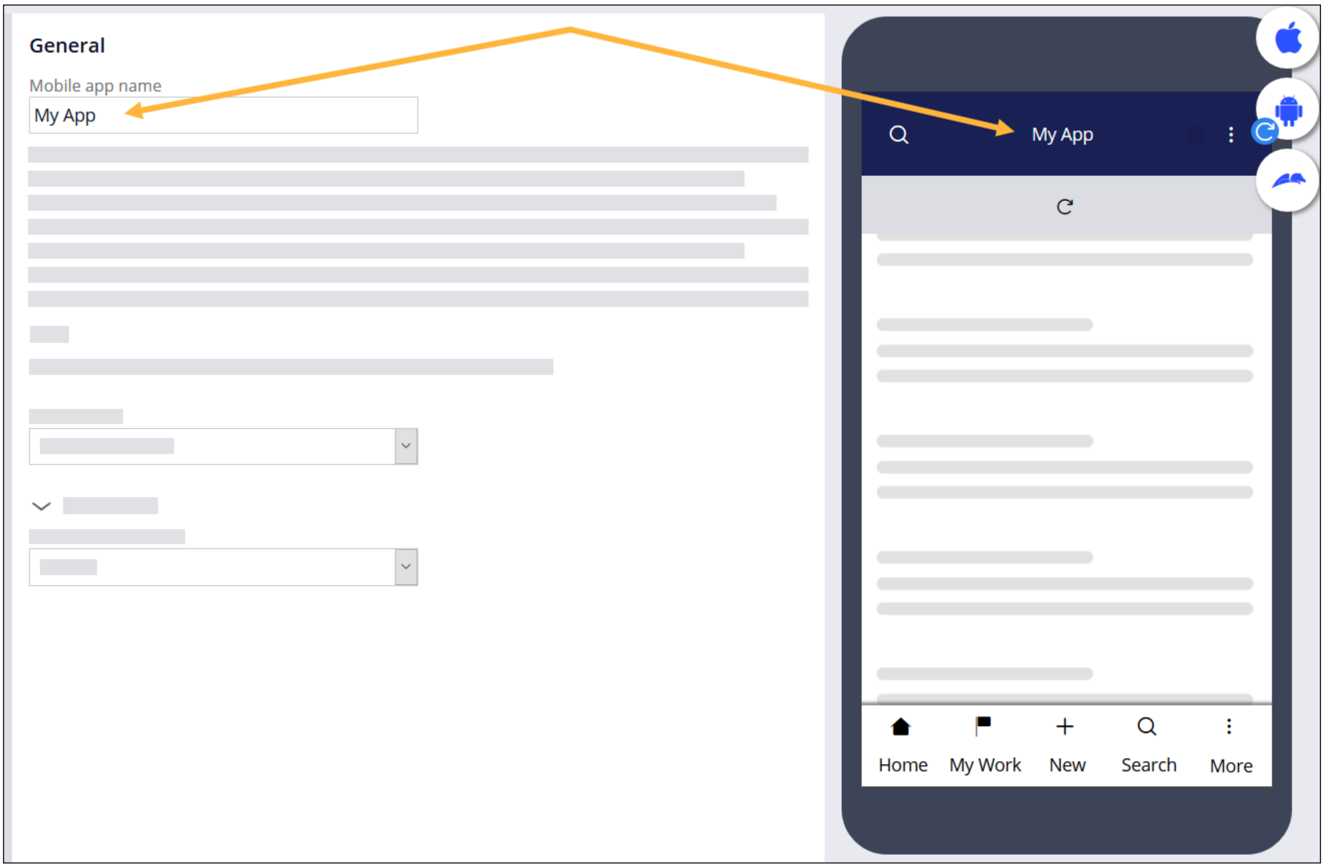
You can also prepare your mobile app for offline mode by enabling this feature and then manually adding pages and configuring case types directly from the mobile channel interface.

The instant preview

Preview the changes that result from the mobile channel configuration to get a clear view of how the mobile app looks when users install the app on mobile devices. Use the live preview to test out any required changes before pushing the application for deployment to end-users.



The instant preview of the mobile app



The instant preview of the mobile app

The bottom navigation menu in the preview section displays options that the default navigation rule contains. You can control some of the settings of the style in which the bottom menu is displayed on the Layout tab. To fully customize the bottom menu, in Dev Studio, you can override the default rule on which the default navigation menu is based.

Customize your mobile app in the low-code mobile channel (8.4)

Use the out-of-the-box mobile channel in each new Pega application to fully customize a mobile app that you want to make available to your users. You can use the existing mobile channel to immediately build a consumer-grade app, or modify it to meet your specific needs.

Core features

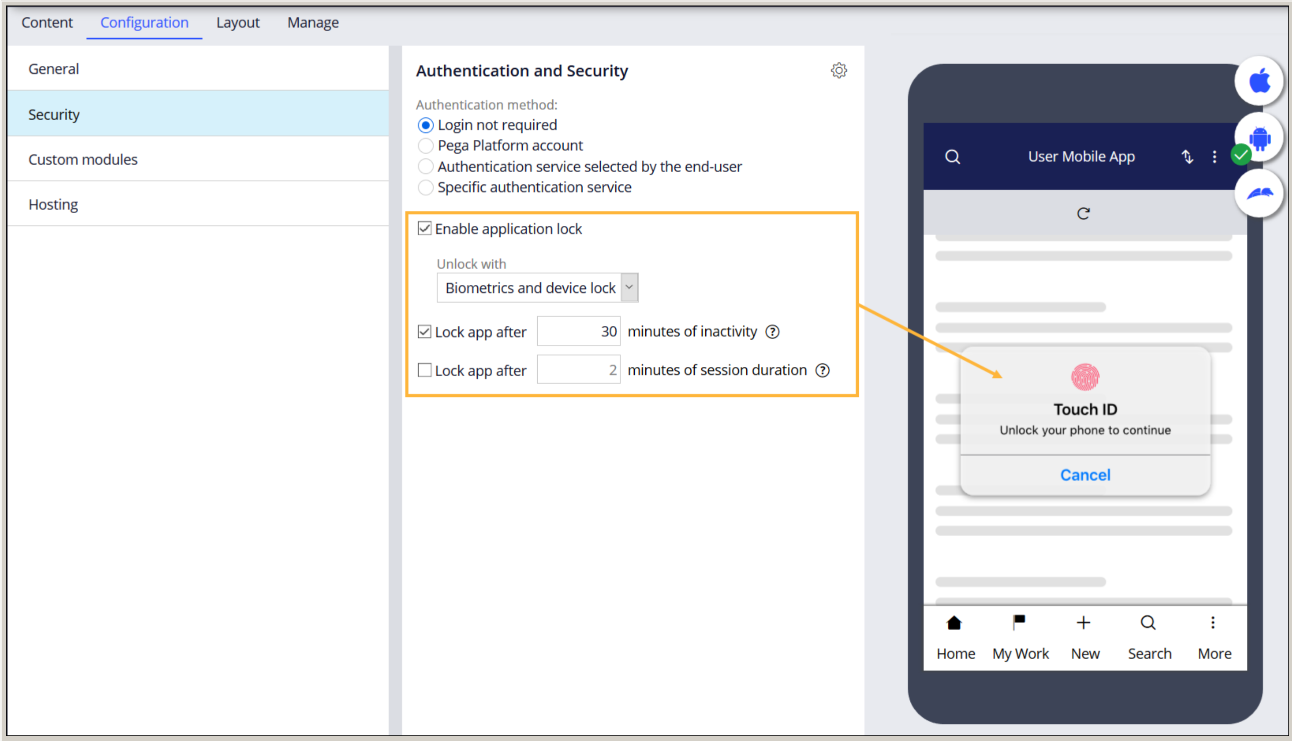
Because mobile channels are now stored as rules in your application, you can easily manage the channels, without having to create new data records with every application upgrade. You can also build new versions of your mobile apps by using the same mobile channel if the configuration for the channel itself remains unchanged.

Template-based pages that you add to your app take full advantage of the available native components that the new Pega Mobile Client offers. You can reuse the existing templates and modify them with mobile functionality in mind.

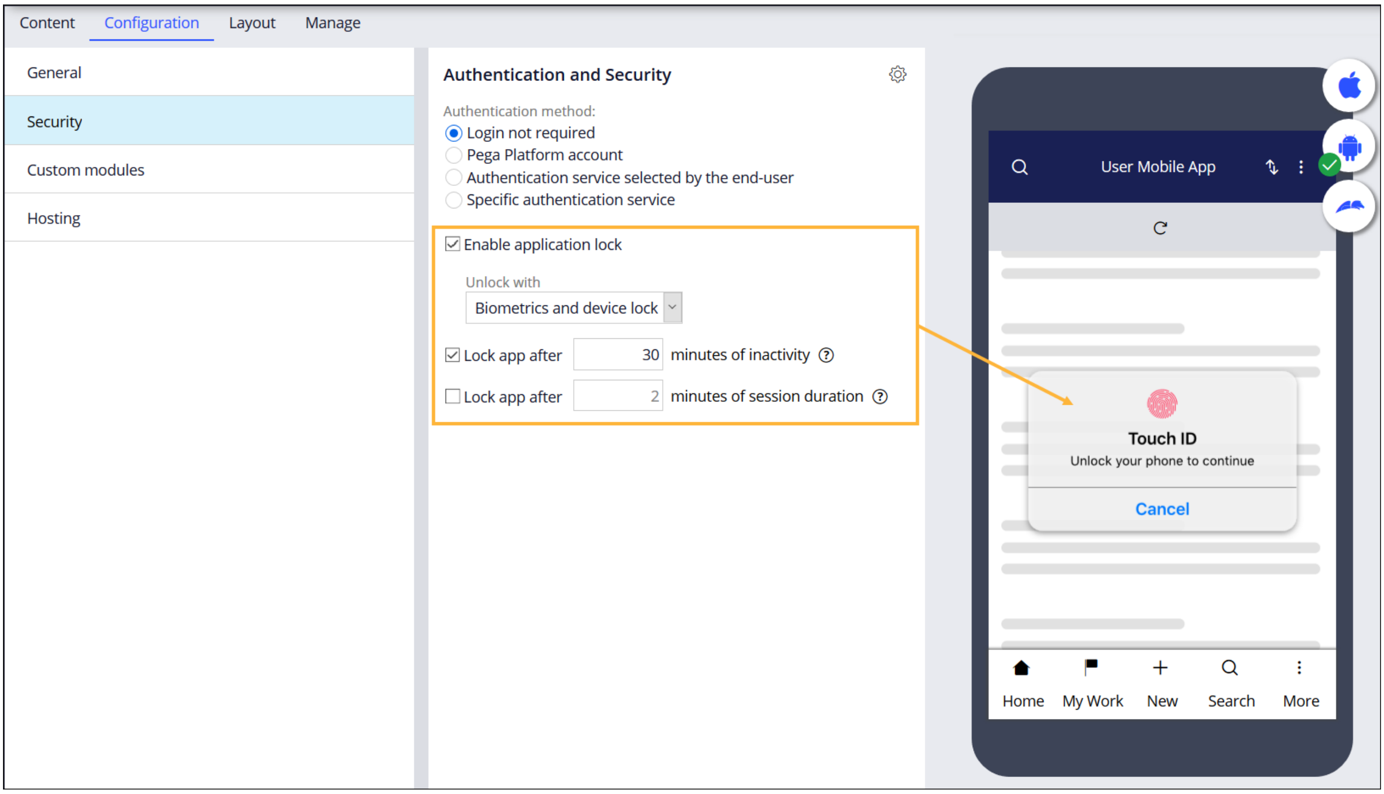
Simplified for convenience

Configure your app for offline mode in a more convenient way by using a single Offline page, on which the settings from various locations are now grouped. From this page, you can copy an existing design template for a case and customize the template to match the requirements for your personalized, offline-enabled app.

Make your app more secure with the new and simplified Security tab, where you can select an authentication model and configure the locking settings for your app. You can now also disable authentication requirements for users who want to access the app.



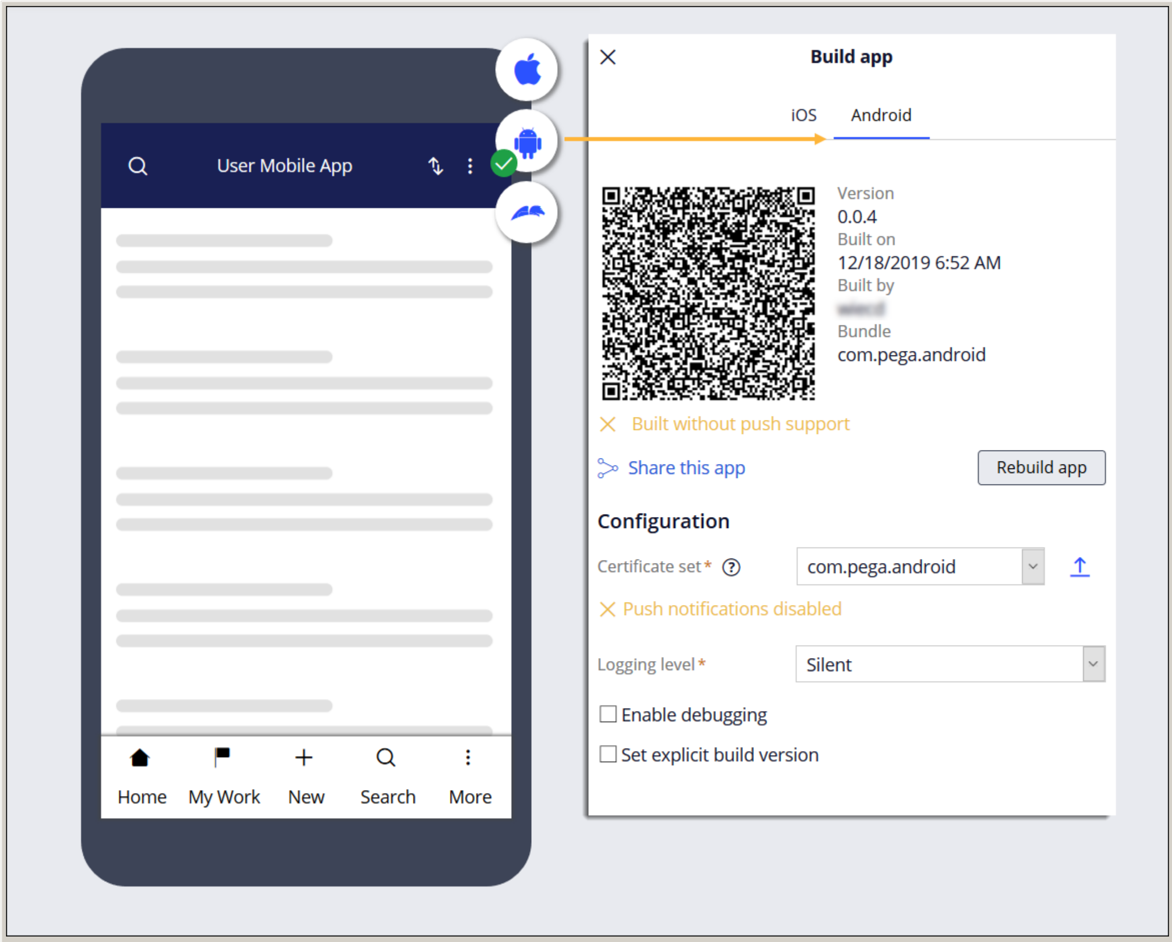
Authentication and locking settings



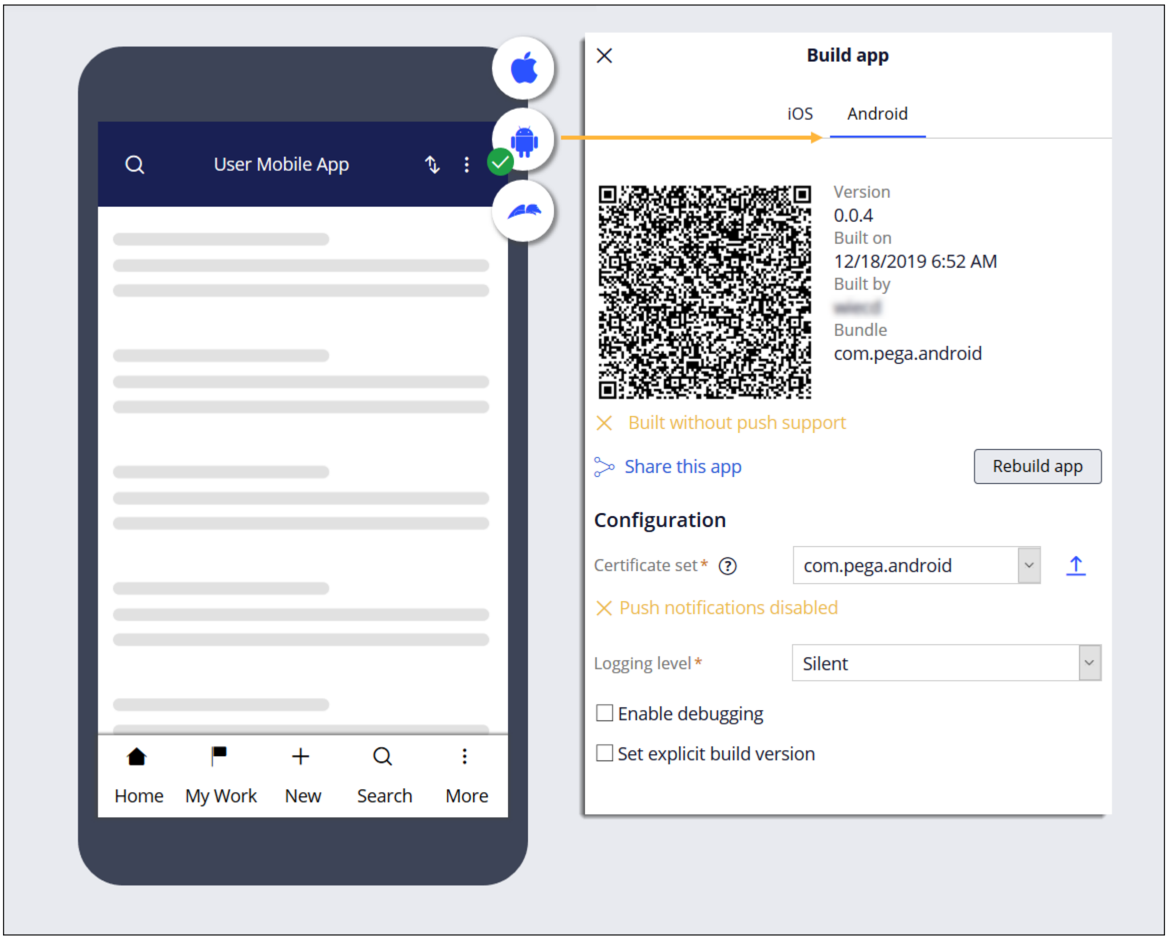
Authentication and locking settings

The Build app pane

Access the Build app pane to quickly configure the build settings of your app and finalize it for deployment. When building new mobile apps, you can add your own certificates. If your app is already built, you can use a QR code to view the build properties. The version of the app is automatically refreshed after each successful build, but you can also set the build version manually.



The Build app pane in the preview



The Build app pane in the preview

The new Build app pane also reports the most common issues for mobile app builds and deployment. You can learn directly from within the mobile channel about such issues as missing credentials, incorrect configuration for the mobile build server, or connectivity.

A red status badge for the platform button is displayed if your app experiences issues after the configuration for the app is modified. A blue status badge notifies you if at least one platform requires rebuilding. A green status badge indicates that your app is up to date.

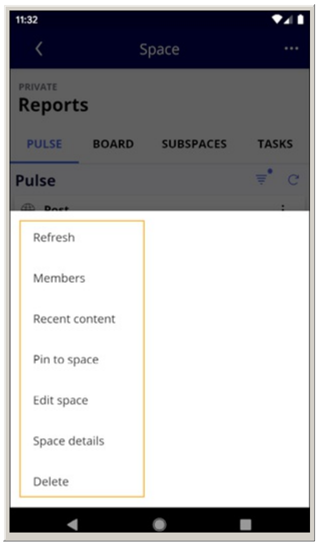
Enhance mobile apps with native components (8.3)

Improve the user experience by using native components in mobile apps that are built with Pega Infinity Mobile Client™. Native components enhance the performance of mobile apps by providing users with a responsive and consistent interface that they recognize from other native apps. You can enable the following new enhancements in your mobile apps:

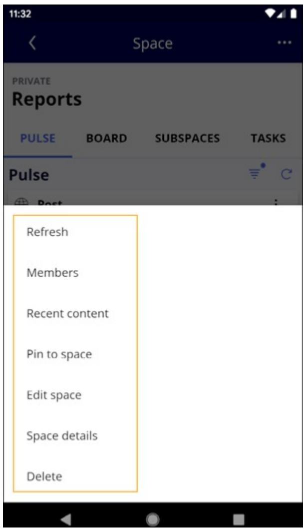
- Native action menus
- Native header
- Full screen when users scroll down

Native action menus

Implement native action menus to display them in a more accessible manner and to ensure that the users of your apps can access all menu items without issues. By using an action sheet for iOS and a modal bottom sheet for Android, you also standardize the user experience in your apps across various devices.



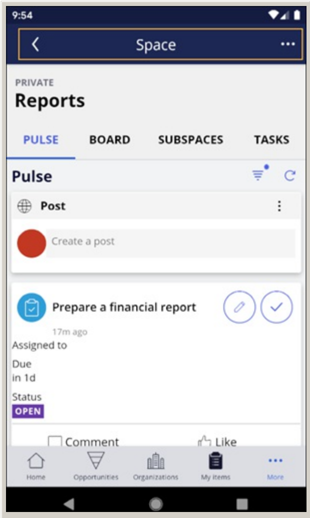
Native action menu in an Android app



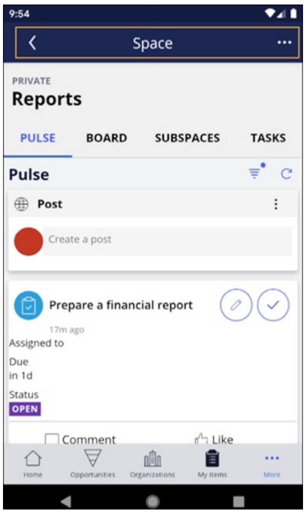
Native action menu in an Android app

Native header

Improve the navigation experience in your apps by taking advantage of the features of the native header. When you enable a native header, your apps can delegate navigation to the operating system which provides animations and transitions that are familiar to users. Users can navigate to the previous screen by using the default native back button in Android apps, or by swiping right in iOS apps. In addition, you can also configure custom right and left actions on the header, such as a native search button.



Native header with the back navigation button



Native header with the back navigation button

Full screen when users scroll down

Increase the display area by configuring your mobile apps to hide the top and bottom bars when the user scrolls down the content. By scrolling up, users can display the bars again.

For more information about the native action menus and the interactions of the top and bottom bars, see [Advanced layout options](). For more information about the native header, see [Enhancing a mobile app with the native header]().

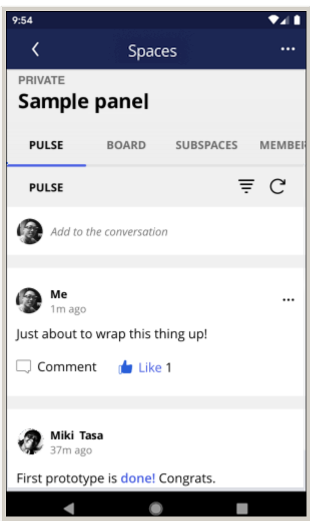
Improve user experience in mobile apps (8.3)

Improve the user experience in mobile apps that are built with Pega Mobile Client™ and Pega Infinity Mobile Client™ by using the following features:

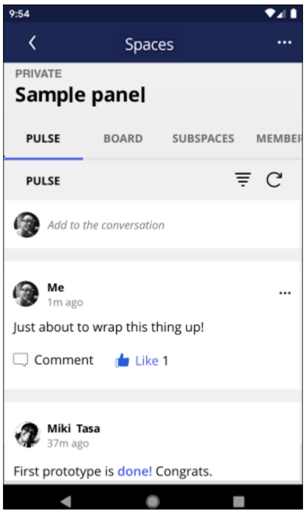
- [Improved spaces component]()
- [Bottom bar with additional action types]()
- [Customizable fonts for the native components of the mobile app]()
- [Improved Attach content control]()

Improved spaces component

Promote collaboration between users of mobile apps that you build with Pega Infinity Mobile Client. With the enhanced spaces component, which now occupies the whole screen area, mobile users can navigate between content tabs such as Pulse, Boards, Subspaces, and Tasks. With native selection controls, mobile users can choose from the same space-specific actions that are available to users of desktop-based applications, for example, Refresh, Edit space, Pin to space, Leave space, or Delete space.



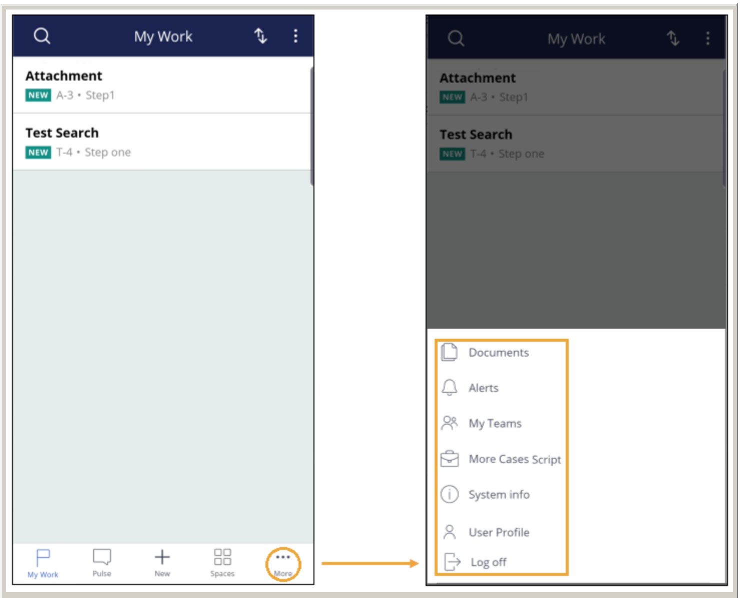
Enhanced Spaces view in a mobile app



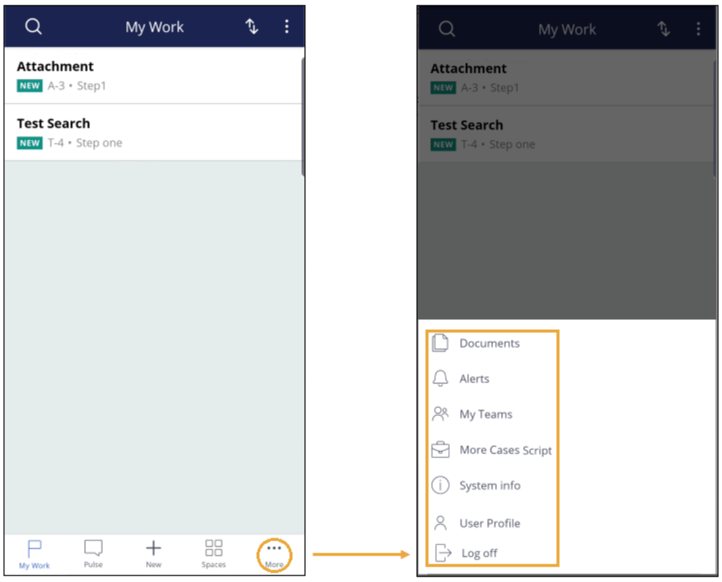
Enhanced Spaces view in a mobile app

Bottom bar with additional action types

Users can now save time and perform various actions directly from the bottom bar of the mobile app. When you configure the layout of the Pega Infinity Mobile Client-based mobile app, you can be flexible and define a bottom bar that includes such actions as creating a case, logging out, running a script, or displaying a menu.



Bottom bar with new actions

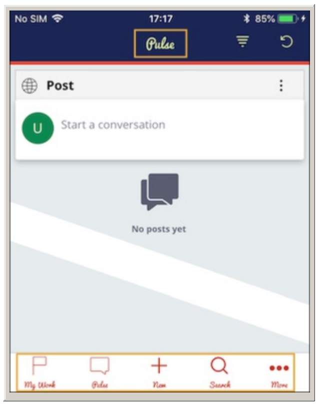


Bottom bar with new actions

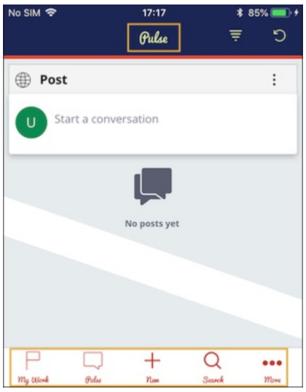
For more information, see Configuring the bottom bar.

Customizable fonts for native components of the mobile app

Improve the readability of the screen content or comply to your custom branding. Native elements of mobile apps that you build with Pega Infinity Mobile Client contain both text and icons. You can now modify the skins that define the styling of the native header and the bottom bar, and then build mobile app executable files that include your selected font packages. With the font files included in the executable files, the mobile app displays correctly on every device.



Mobile app with a custom font

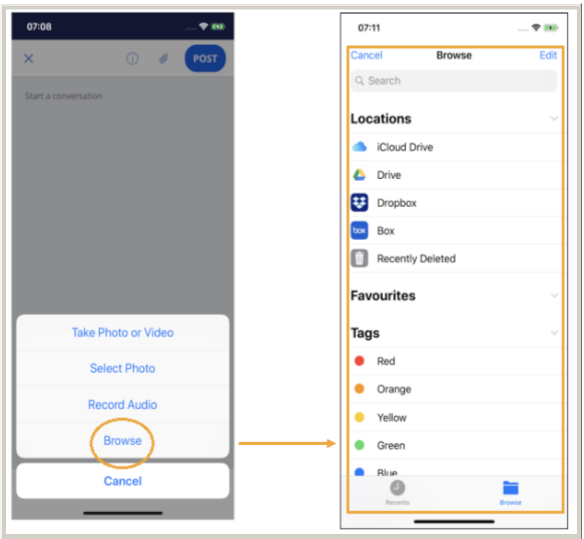


Mobile app with a custom font

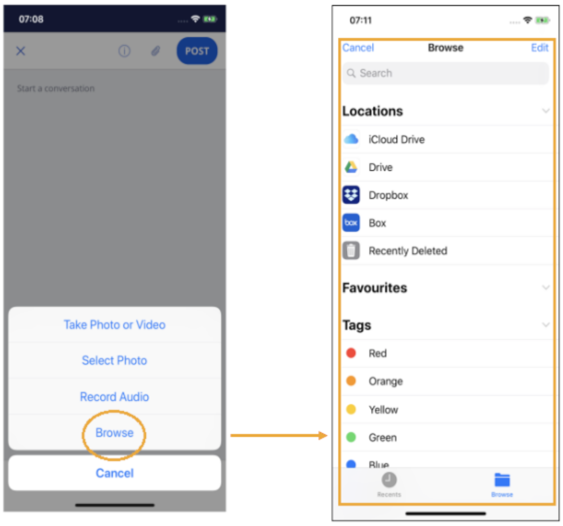
For more information, see [Customizing fonts for the native mobile app components](#).

Improved Attach content control

Users can now attach any type of files from the device storage, or from other mobile apps that are installed on the device, for example, Google Drive, iCloud, Audio Recorder, or Camera. When you build mobile apps with Pega Infinity Mobile Client, they now use the enhanced Attach content control, which also supports sharing file attachments with external mobile apps, except for signature files.



Attach content control with new file sources



Attach content control with new file sources

For more information, see [Enabling attaching files to an application](#).

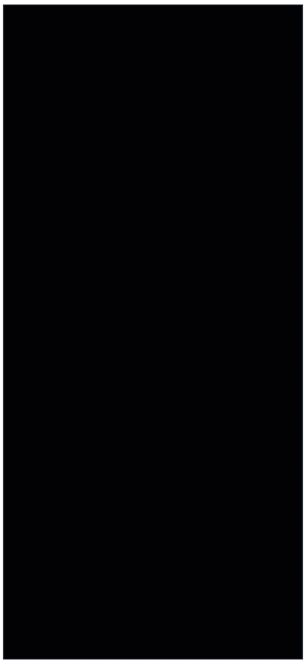
Improve user experience with Pega Infinity Mobile Client (8.2)

Build customer-grade custom mobile apps that are faster and more responsive thanks to the user experience enhancements in the new Pega Infinity Mobile Client™.

Use Pega Infinity Mobile Client to build online apps that launch quickly, provide instantaneous navigation, and immediately react to user input. By adopting Pega Infinity Mobile Client, you shorten the build time and improve the run-time performance of your custom mobile apps.

Build your custom mobile apps with Pega Infinity Mobile Client to include such native components as the initial login screen, the bottom menu bar and the full screen search screen. Use the native bottom bar to instantly navigate between the screens of your custom mobile app. Every tab opens in its own webview, which accelerates switching between the tabs.

Quickly navigate between the documents within a single tab by swiping from the left edge of the screen, and conveniently refresh your screen with a pull-down gesture.


Instant navigation within Pega Infinity Mobile Client

Pega Infinity Mobile Client guarantees that your sensitive information is secure. Sign in to your custom mobile apps by using safe and convenient single sign-on authentication, and restrict user access with additional locking mechanisms.

For more information, see [Pega Mobility and mobile clients](#).

Configure and build custom mobile apps more efficiently with the redesigned Mobile channel (8.2)

Build customer-grade custom mobile apps more efficiently thanks to the completely redesigned Mobile channel.

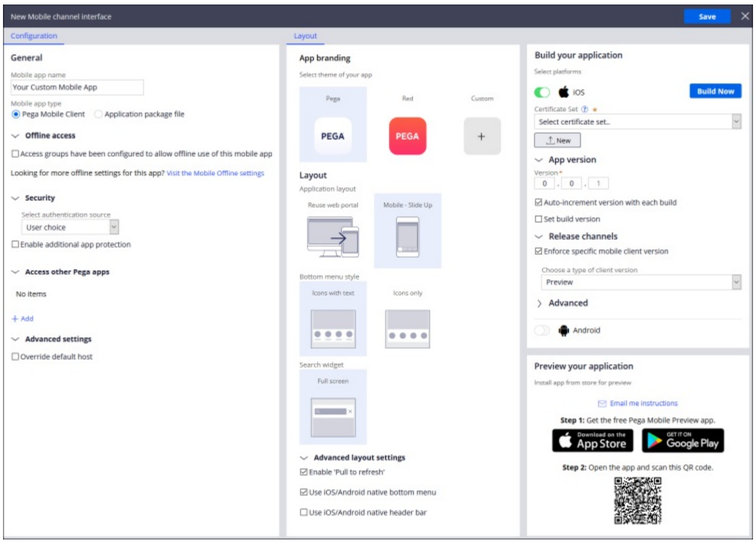
The Mobile channel now dynamically renders options, supports several enhancements to the Pega Infinity Mobile Client™, and provides custom mobile app options that are arranged in a more intuitive, consistent, and convenient way to help provide direct access to the custom mobile app settings.

By default, custom mobile apps that you configure within the Mobile channel are generated with Pega Infinity Mobile Client. You can also build a custom mobile app with Pega Mobile Client 7, or select a specific version of the client application, for example, to avoid compatibility issues with the devices in your organization.

When you build custom mobile apps with Pega Infinity Mobile Client, you can reuse an existing single webview web portal or a multi webview application layout, and then configure such options as: the bottom bar navigation rule, the bottom bar style, and the full screen search widget. The new settings also include switches for activating pull-to-refresh feature and native user interface components for better integration with mobile devices.

When you want your custom mobile app to provide offline support, use Pega Mobile Client 7 and follow a direct link to the offline settings. You also use Pega Mobile Client 7 when your custom mobile app relies on custom modules, or utilizes JavaScript APIs.

No matter which client application you use, you can instantly configure the custom mobile app security. You have options to: select and configure an authentication source, define additional custom mobile app protection features, and configure login and inactivity timeouts.



Custom mobile app settings on the Mobile channel

Custom mobile app settings on the Mobile channel

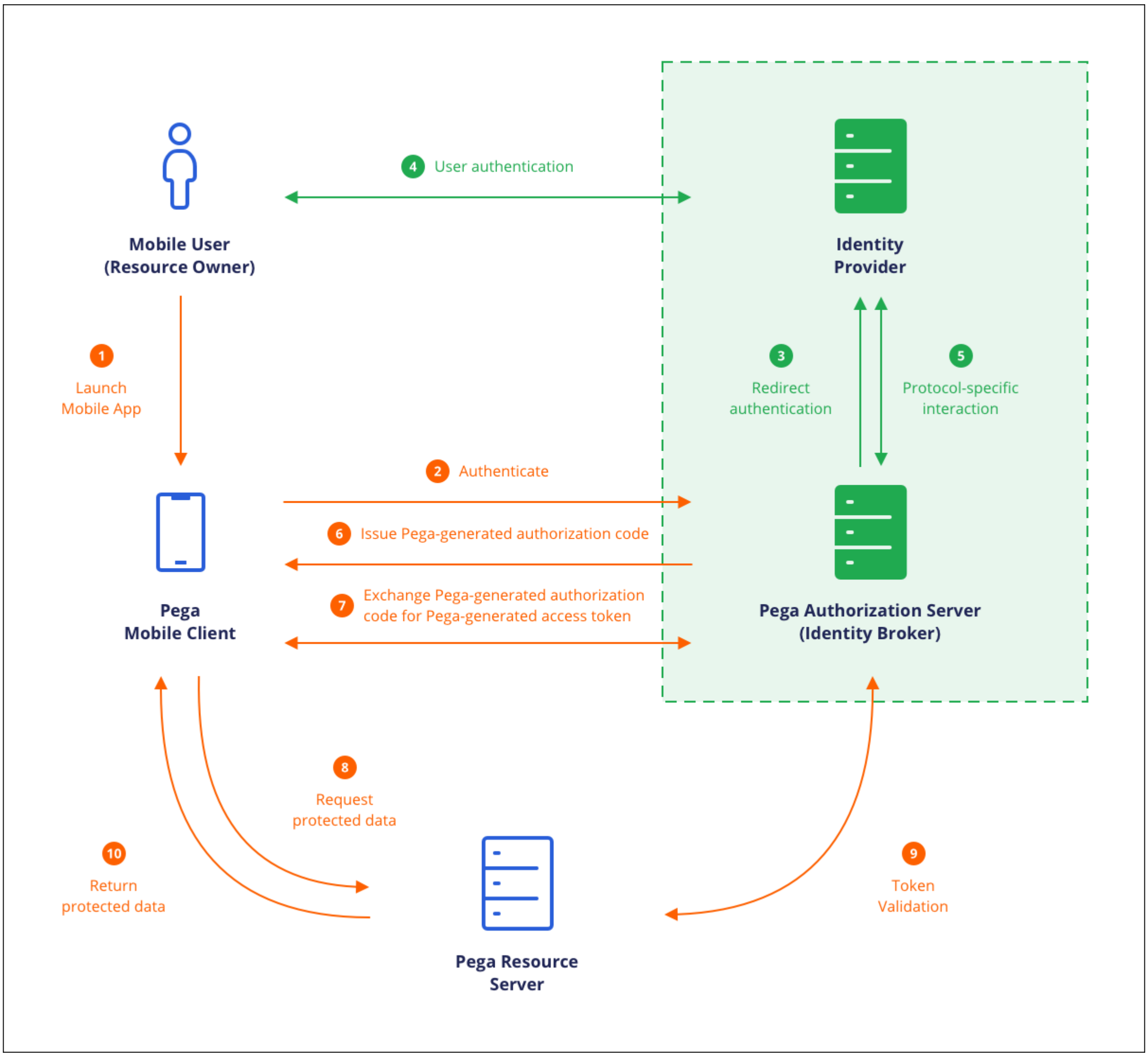
For more information, see [Configuring a custom mobile app](#).

Build secure custom mobile apps with the OAuth 2.0 framework (8.2)

Build secure custom mobile apps by using Pega Infinity Mobile Client or Pega Mobile Client 7 with the OAuth 2.0 authorization code grant flow.

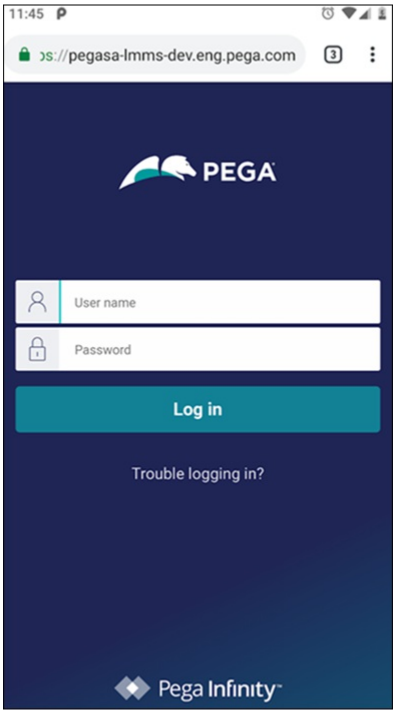
Your custom mobile apps delegate authorization and authentication to trusted sources. Your apps must also use HTTPS and a trusted SSL certificate to authenticate. This enhancement ensures custom mobile apps protection with an industry-standard authorization and authentication protocol in all stages of app development.

You do not have to manually configure such settings as endpoints or client secret because authorization and authentication service configuration is automatic when you build an application. You can edit this configuration by browsing for your mobile channel name in the list of client registration instances.



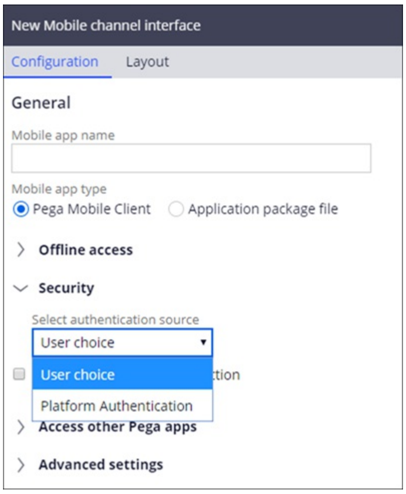
Oauth 2.0 authorization code flow

To build secure custom mobile apps more quickly, choose the default Platform Authentication service. In this configuration, Pega Platform acts as an identity provider, authorization server, and resource server. For example, you can use Platform Authentication to build and test custom mobile apps during development and quality assurance stages without configuring a custom authentication service.



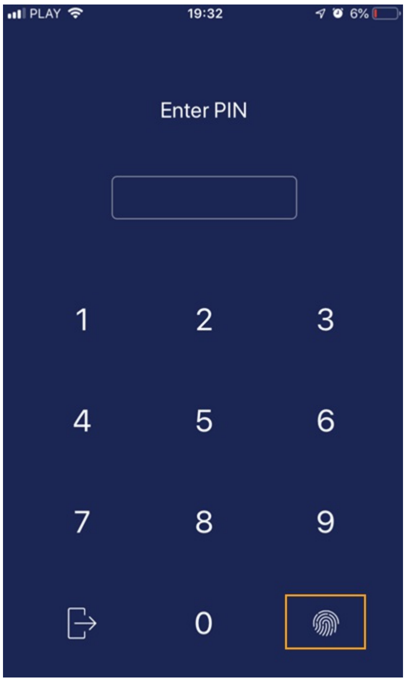
Secure sign-in using an external agent

You can set up a custom mobile app to either redirect to a login screen of a specific identity provider, or display a selection of available identity providers.



Selecting an authentication service

You can also configure an additional protection scheme for custom mobile apps, such as a device locking mechanism or biometric sensor authentication. You can use these protection methods to unlock an app that is in offline mode.



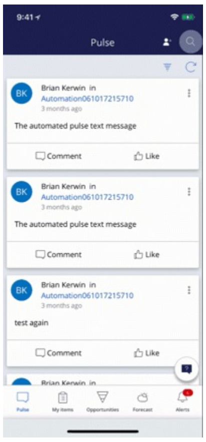
Unlocking an app with custom pin or biometric sensor

For more information, see [Configuring additional custom mobile app security for Pega Infinity Mobile Client](), [Configuring additional custom mobile app security for Pega]()

Mobile Client 7, and Selecting an authentication service.

Search faster on mobile with a native search gadget

The ability to search is a critical requirement for any custom mobile app. The new native search gadget is a fast and responsive solution to that requirement. After you define which data should be available locally on a device, the data is synchronized to the device, so that search results are displayed immediately, as you type the query. Search results can be categorized and presented on tabs, and additional results are pulled asynchronously from the server when the device connects to the network. When you select a search result, it opens in the main webview of the custom mobile app.



Native search in Pega Mobile Client

For more information, see Configuring search in custom mobile apps, Native search capability in custom mobile apps, and Configuring categories for mobile search.

Secure custom mobile apps by using single sign-on

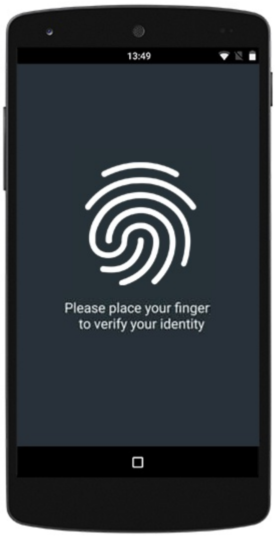
With the improvements to Pega Platform™, single sign-on (SSO) users can now sign in to custom mobile apps with any OpenID-compatible identity provider, such as Google, Auth0, Okta, and NetIQ. To use external login with SSO, you do not have to modify your custom mobile app. It is easy to configure SSO at the Pega Platform application level.

By using external login with SSO, you make your custom mobile apps more secure. Custom mobile apps cannot access Pega Platform application resources without presenting a valid access token. The token is granted after an external login screen opens in a system browser, and the user provides login credentials to the identity provider. Login credentials are not disclosed to the custom mobile app. The login screen is displayed again only if the mobile app can no longer obtain a valid access token. Also, if an optional refresh token was issued, the user can refresh the access token without repeating the login process. To improve security even further, mobile devices use the Proof Key for Code Exchange (PKCE) security extension to OAuth 2.0 for public clients.

For more information, see Configuring a custom mobile app to use external login with OpenID Connect.

Protect a custom mobile app with a device lock

Users can now unlock a custom mobile app that was built with Pega Platform™ by using a personal identification number (PIN) or a biometric sensor instead of specifying a user name and password. This feature is available in custom mobile apps that use any external OpenID Connect-compatible identity provider. If the custom mobile app has a valid access token, the user does not have to repeat the external login process. A custom mobile app can also be protected with the same mechanism that the device uses, such as a biometric sensor with a PIN fallback. You can configure the custom mobile app to lock itself automatically after a specific time, after the app restarts, or after a period of user inactivity.



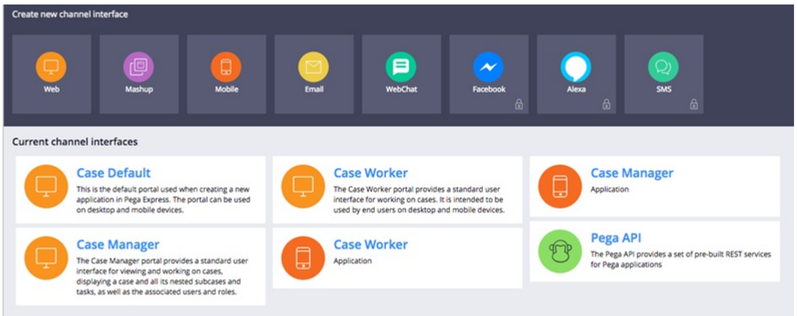
Device lock screen

For more information, see Using a device lock to protect your custom mobile app.

Build multiple custom mobile apps for a single application

You can now build multiple custom mobile apps for a single Pega Platform™ application. You can build custom mobile apps that are targeted at different access groups, or build different versions of the same mobile app for staging, testing, and production purposes. During the build process, you can restrict each custom mobile app to run on only one portal. All the mobile apps that you create are clearly displayed as separate entities on the Channels and interfaces page. You can also easily delete any custom mobile app.

The following figure shows the Channels and interfaces page and its options.



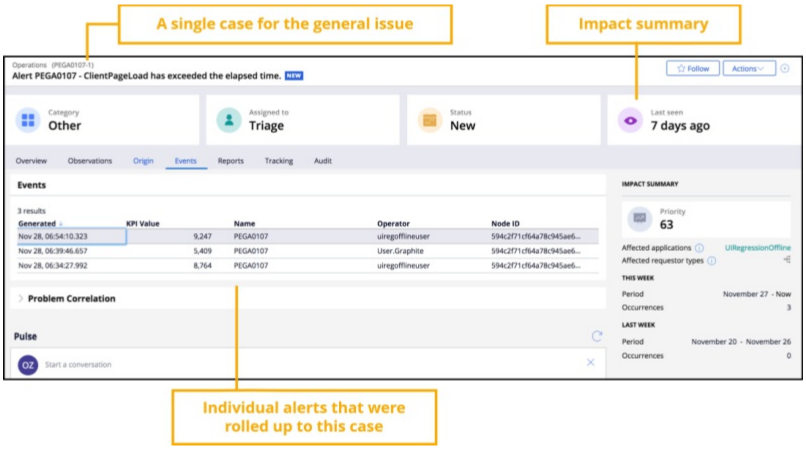
Channels and interfaces page

For more information, see Selecting a portal for a custom mobile app and Configuring a custom mobile app.

Offline Support

Use Pega Platform™ to build effective, dedicated Windows applications that contain your offline-enabled applications, to give your users the experience that is comparable to using custom mobile apps that run on mobile devices.

Monitor the performance of offline-enabled custom mobile apps in Pega Predictive Diagnostic Cloud.



Troubleshooting offline-enabled custom mobile apps in Pega Predictive Diagnostic Cloud

Offline Support includes the following enhancements:

- Build offline-enabled applications using Pega Infinity Mobile Client (8.3)
- Run your offline-enabled applications in a fully functional Windows client (8.2)
- Reduce implementation time with offline support for when rules
- Improve application performance with offline enhancements
- Improve handling of data synchronization requests
- Develop offline-enabled applications with less restrictions
- Troubleshoot offline-enabled applications in a browser

Visit www.pega.com to learn more about Pega Infinity™.

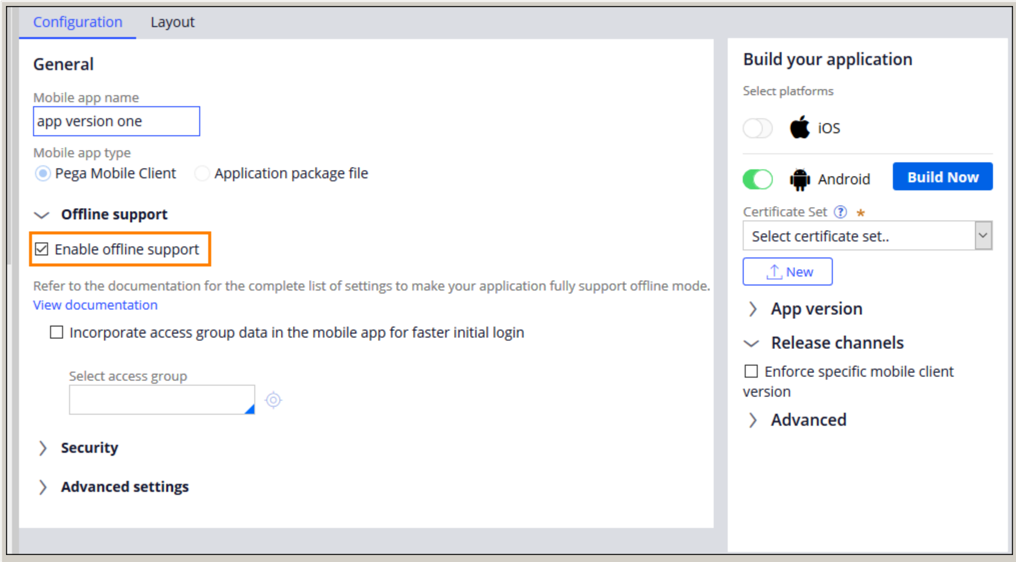
Visit What's New in Pega Platform to discover all the exciting new features in this release.

Build offline-enabled mobile apps with Pega Infinity Mobile Client (8.3)

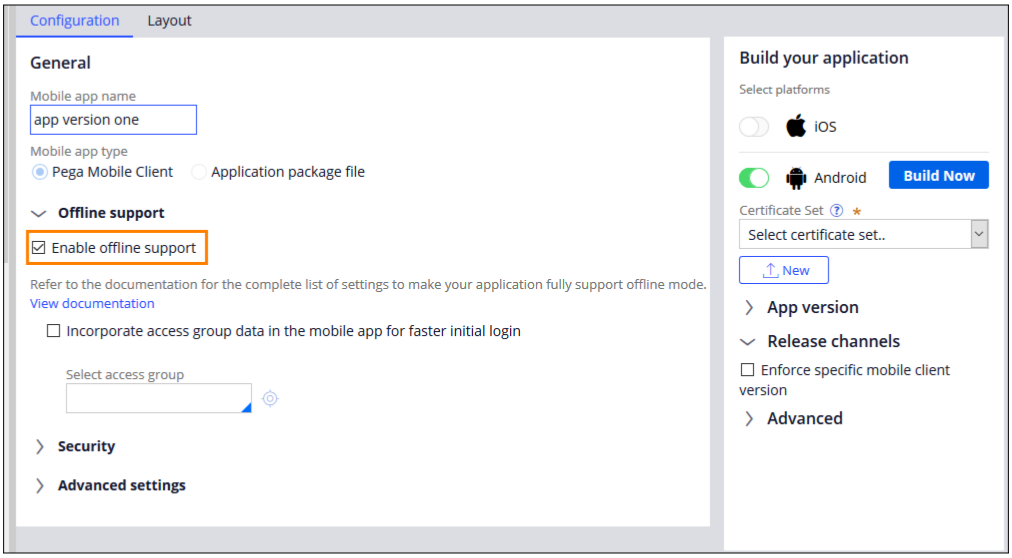
Build offline-enabled mobile apps that load fast, support multiple webviews and automatically benefit from Pega Platform™ security, integration, and management features, because they are based on Pega Infinity Mobile Client™.

By default, Pega Platform uses Pega Infinity Mobile Client to generate mobile app executable files, but if you have an existing mobile app that uses features that are not supported by Pega Infinity Mobile Client, for example, custom modules, you can build an offline-enabled mobile app with Pega Mobile Client.

When you create an offline-enabled app, enable offline support on the mobile channel configuration page, for access groups, and for any case types that need to run offline. For more information, see Configuring offline support for a mobile app.

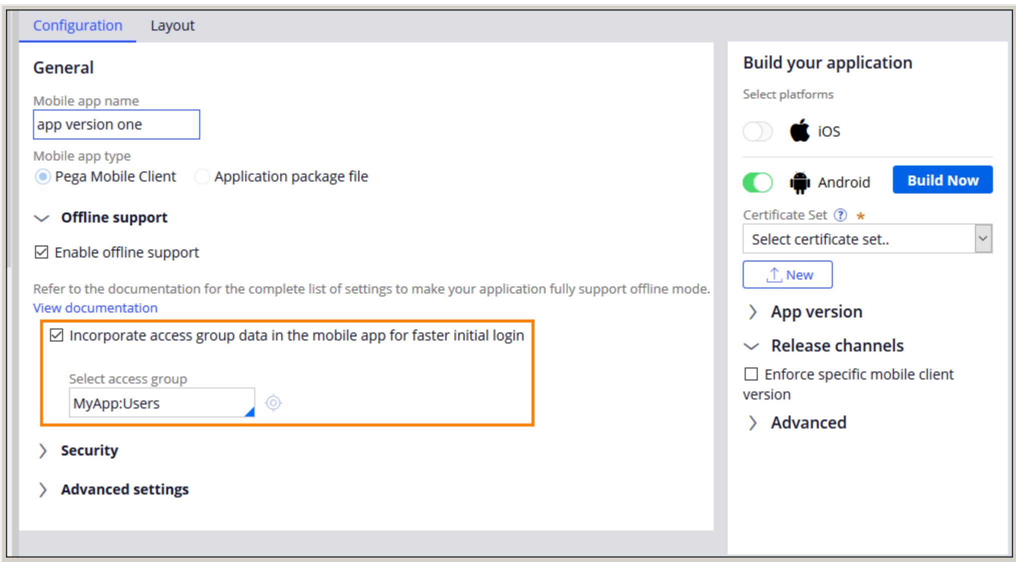


Enabling the offline support on the mobile channel configuration page

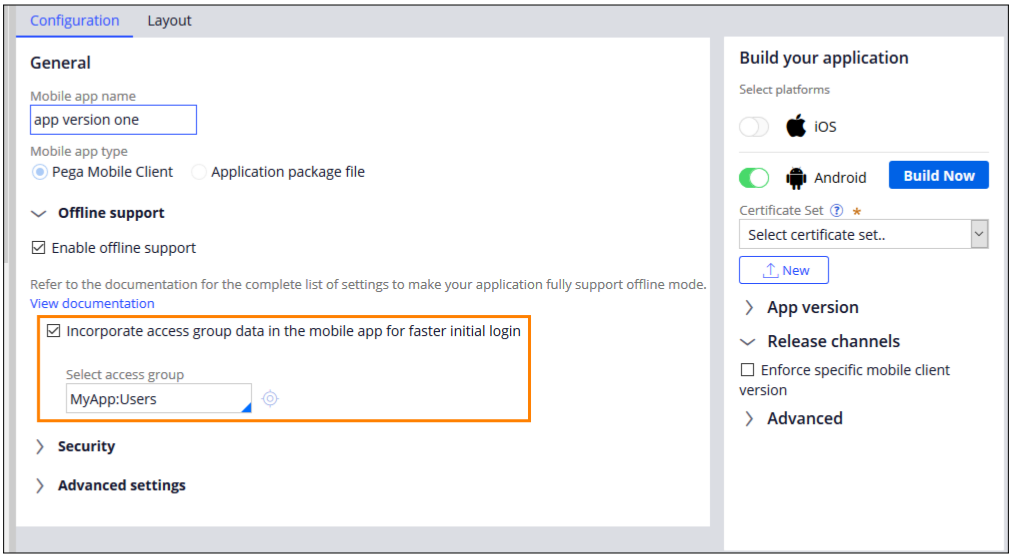


Enabling the offline support on the mobile channel configuration page

To help offline users start working faster, you can build offline-enabled mobile apps that are quicker to launch. To do this, prepackage the rules and static data associated with an access group when you build the mobile app executable files. When the offline-enabled mobile app starts for the first time, only the data that differs between the package and the current server state is synchronized. For more information, see Enabling access group data prepackaging during build.



Enabling access group data prepackaging



Enabling access group data prepackaging

For offline-enabled mobile apps that you build with Pega Infinity Mobile Client, you can also take advantage of a new window.pms.plugins.clientstore JavaScript API. This new JavaScript API replaces the now-deprecated window.launchbox.PRPC.ClientStore JavaScript API and is based on promises and events instead of callbacks and listeners.

For more information, see and [Offline-enabled mobile app and Pega Infinity Mobile Client]

Run offline-enabled applications in an enhanced Windows client (8.2)

With the latest release of Pega Client for Windows, you can build effective, dedicated Windows applications that contain your offline-enabled applications, to give your users the experience comparable to using custom mobile apps that run on mobile devices.

Pega Client for Windows can now store and synchronize large binary data items and their corresponding actions from the action queue. As a result, offline-enabled application users can view, attach, and delete data files from within a case view, whether the Windows-based device is online or offline. To use this feature, you must enable offline case attachment support, which allows offline-enabled applications to synchronize case attachments between Pega Platform and the device.

Another update that enhances the Pega Client for Windows experience is that application users can choose within a case view between attaching a file by using a native file picker control, or taking pictures with the camera that is available on the device. When the user takes a picture, the picture is immediately attached to the case. Picture file names are created based on a time stamp. If the device has no camera, the client skips the source selection step and the native file picker control opens.

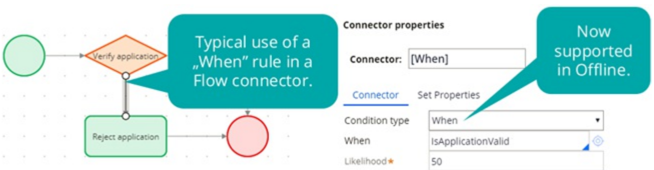
Attaching pictures in Pega Client for Windows

Offline-enabled applications that are built on Pega Client for Windows can now collect and store geolocation data at a case level, increasing your safety when working in the field. Your location can be monitored regardless of the status of your connection to the server.

For more information, see Enabling offline case attachments support and Attach content support in offline mode.

Reduce implementation time with offline support for when rules

Added support for when rules in offline-enabled applications reduces your application implementation time. This enhancement is a result of automating the case processing that derives conditional logic directly from the model. When you create offline-enabled applications that use when rules, you do not need to create custom JavaScript code. You can use when rules in offline-enabled applications without any additional configuration.



When rule configuration

For more information, see When rule support in offline mode.

Improve application performance with offline enhancements

Several important enhancements in the offline capability improve the overall performance of Pega Platform™ and offline-enabled applications. The system now can now disable attachment processing during datasync operations. Furthermore, synchronization uses the Redux Clipboard implemented by the core engine, which is lightweight and improves memory consumption and CPU performance. The processing of cases and assignments in the offline queue uses an advanced defer commit algorithm. The offline package size is reduced to changes done in a workpage. To help you troubleshoot problems, error handling during datasync operations is also enhanced.

You can also benefit from better support for large-scale projects that use the offline capability, providing a more robust synchronization of offline-enabled applications. Datasync requests in the lightweight and easy-to-read JSON format now support GNU ZIP (GZIP) compression. In addition, datasync communication does not contain any redundant data. For large-scale projects, the server receives user actions in bundles, which limits processing overhead. The initial datasync operation is executed faster on the client side, which results in shorter login times.

Improve handling of data synchronization requests

Pega Platform™ offline-enabled applications now synchronize more efficiently, even in poor network conditions or when a server is overloaded, resulting in less waiting time on the part of the user. The server receives datasync requests in chunks, making it easier to continue processing, despite connection issues. Datasync requests are also queued on the server before processing so that clients can upload data securely and efficiently, despite heavy processing load.

For more information, see [Offline mobility guidelines](#).

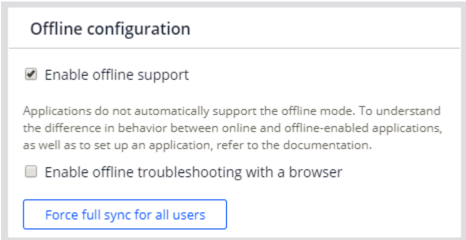
Develop offline-enabled applications with fewer restrictions

Fewer restrictions on how you configure large data pages mean that you can now develop offline-enabled applications more easily. Large data pages that are sourced from report definitions no longer require at least one record to appear in the report. Furthermore, large data pages in offline-enabled applications now support page type properties.

For more information, see [Creating and sourcing large data pages to store large reference data in offline-enabled applications](#).

Troubleshoot offline-enabled applications in a browser

You can now use your web browser to both develop and troubleshoot your offline-enabled applications. You no longer need to use a mobile device. You can also verify business logic in simulated offline scenarios, and use standard developer tools for the browser, such as Tracer, the JavaScript console, and others.

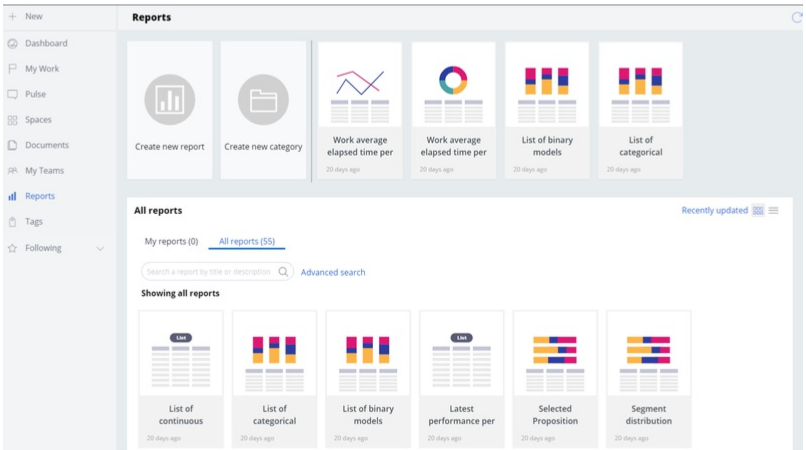


Offline configuration section in Advanced tab for Access Group rule

For more information, see [Troubleshooting offline-enabled applications with the Tracer tool in a browser](#) and [Application debugging using the Tracer tool](#).

Reporting

Easily navigate and discover reports, gain better data insight through the process gauge and double donut charts, and improve chart presentation in the improved Report Browser.



Report Browser

Reporting includes the following enhancements:

- [Navigate through reports easily in the enhanced Report Browser](#) (8.2)
- [Get better data insight with new charts](#) (8.2)
- [Improve chart presentation](#) (8.2)

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Visit [What's New in Pega Platform](#) to discover all the exciting new features in this release.

Navigate through reports easily in the enhanced Report Browser (8.2)

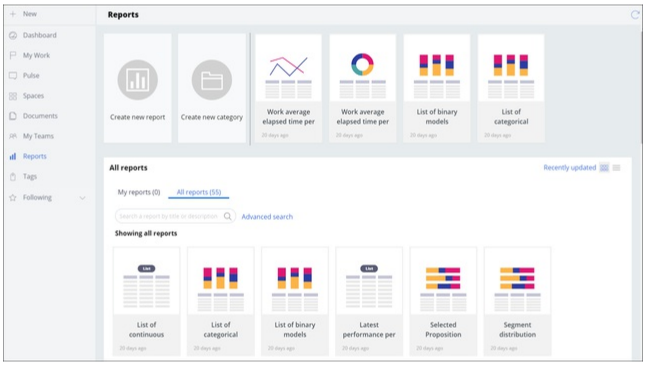
The Report Browser has been enhanced to provide easier navigation and discovery of reports.

Available reports are now displayed in a new tile view. The report tiles provide a thumbnail preview of each report, which makes it easier for you to identify reports at a glance, without having to open each report. Recently accessed reports are displayed at the top of the browser, along with options to create a new report or report category.

You can perform the following actions from the tile view in the Report Browser:

- Create a new report or report category
- Open, edit, move, copy, or delete reports
- Schedule and subscribe to reports
- View all reports, or only your reports
- Search reports by name or description, and search across categories
- Sort reports alphabetically in ascending or descending order, or sort based on recent updates
- Toggle between the tile view and the list view

The following figure shows the thumbnail previews in the Report Browser tile view.



Report Browser tile view

For more information, see [Report Browser features](#).

Gain better data insight with new charts (8.2)

The new progress gauge and double donut charts provide you with even more choices for creating data visualizations to help you effectively analyze and interpret data. By choosing visualizations that best meet your needs, you can gain better insight into your data and make better business decisions.

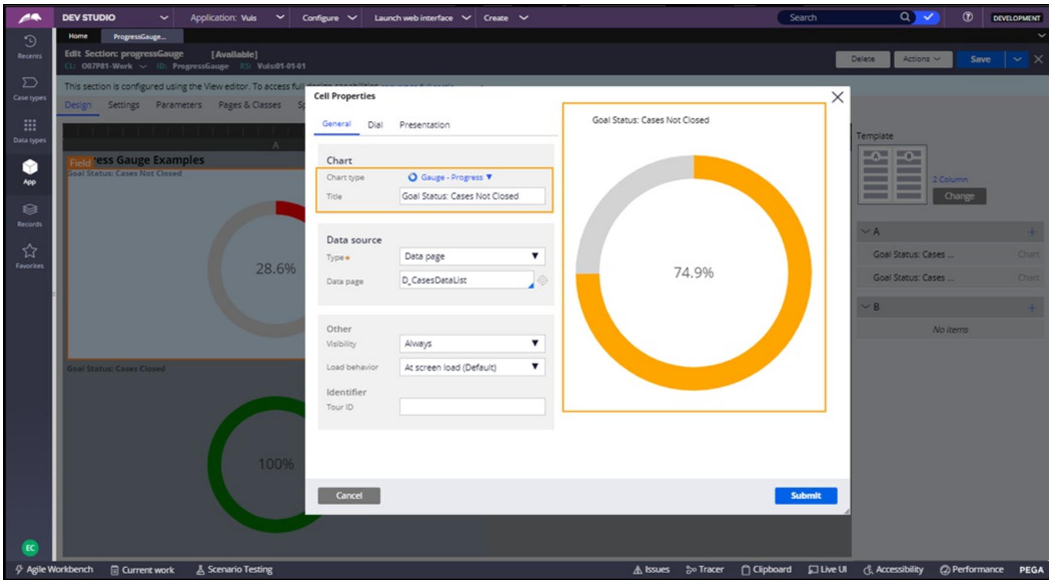
- [Progress gauge chart](#)
- [Double donut chart](#)

Progress gauge chart

To measure the progress of a goal, create a progress gauge chart by using Chart Control. You can include the chart in a harness, section, or flow action form.

For example, you have a goal to close a certain percentage of cases over a specified period, as defined on a data page. If you need a report that shows the percentage of cases that have not met the goal, you can create a progress gauge chart.

The following figure illustrates creating the progress gauge chart. The whole dial represents the entire goal and the colored portions of the dial depict the work that has been completed.



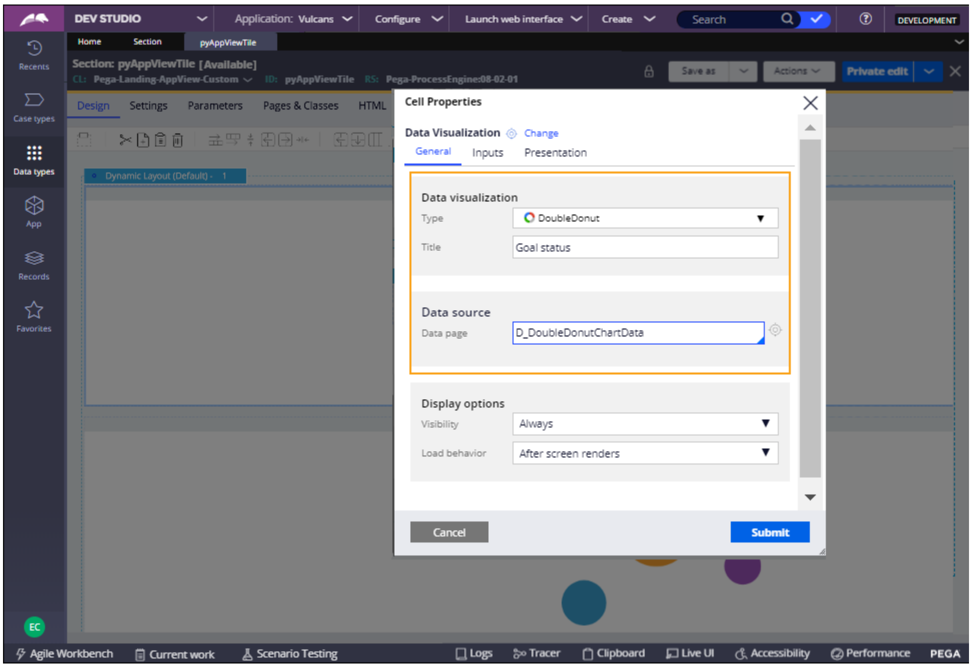
Creating the progress gauge chart

Double donut chart

If you need an interactive chart that shows a large amount of hierarchical data, use the double donut chart widget. This multilevel pie chart dynamically shows values for components that make up a larger data set.

For example, the progress gauge chart in the previous example can keep you up-to-date on the progress of your goal. However, you might find that loans are not being closed fast enough to meet your goal. You can configure a double donut chart that shows both the overall status of the goal and the status of individual loans that are counted toward the goal.

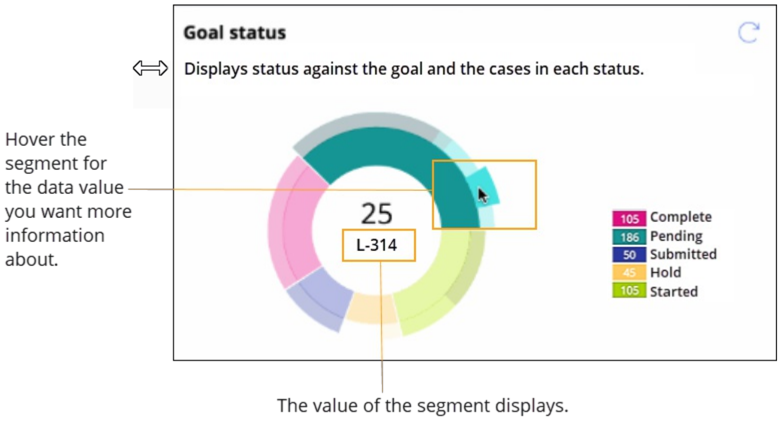
The following figure illustrates creating the double donut chart.



Creating a double donut chart visualization control

After you add the chart visualization control as a dashboard widget, you might see that a large number of loans are pending. To see which loans are pending, hover over the Pending region of the chart.

The following figure illustrates viewing pending cases.



Viewing segment values

After you review the pending loans, you find that most of the loans are pending because of a lack of documentation. With this insight, you can modify the document processing stage of the loan application process to expedite the closing process and achieve your overall goal.

For more information about including charts in reports, see [Harness and section forms - Adding a chart](#).

For more information about configuring a data visualization control, see [Adding and configuring a Data Visualization control](#).

For more information about adding charts to dashboard widgets, see [Adding a widget to your dashboard](#).

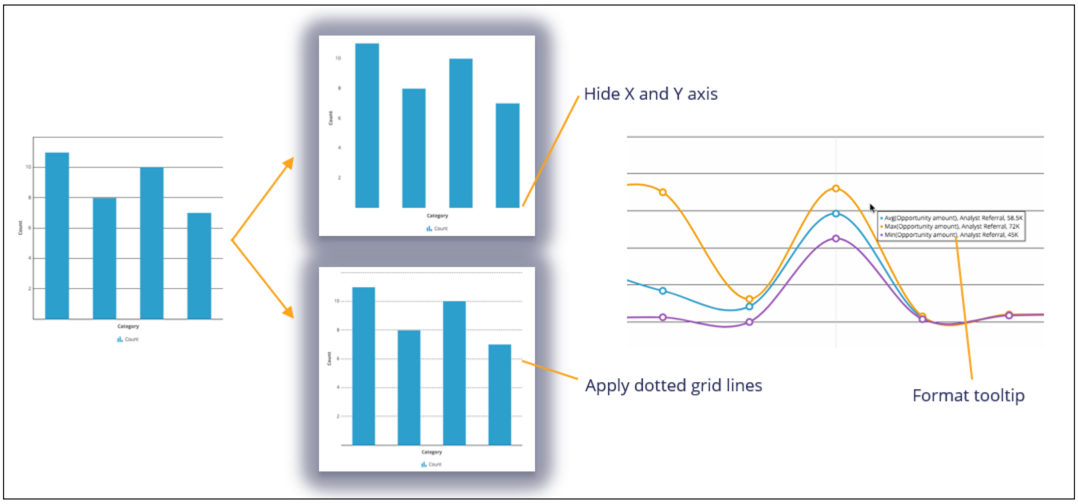
Improve chart presentation (8.2)

Adding a chart to a report harness or section in Dev Studio involves configuring the chart by selecting a chart type, defining the data source, and setting basic display properties, such as chart title and size. More display properties have been added to provide you with more control over the chart design, thereby enabling you to better meet business design needs and more effectively highlight important data.

You can now:

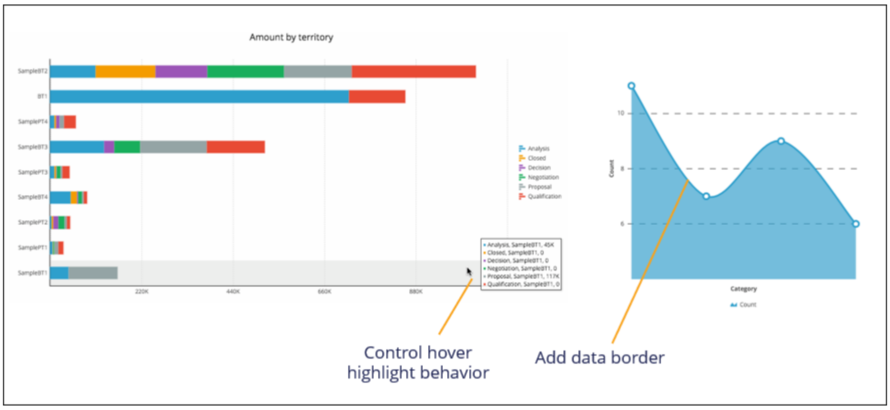
- Set visibility and color options for the X and Y axis
- Set visibility and design options for grid lines
- Define additional presentation options for grids and tooltips
- Apply color formatting by category for single series bar and column charts
- Control hover highlight behavior for data points and legends

The following figure illustrates charts with a hidden X and Y axis, dotted grid lines, and formatted tooltips.



Improve chart presentation by setting presentation options for the X and Y axis, grid lines, and tooltips

The following figure illustrates charts with hover highlight behavior set and a border for data points applied.

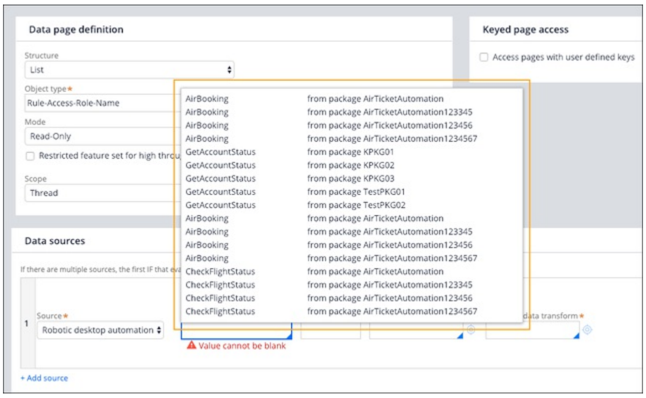


Improve chart presentation by controlling hover highlight behavior and formatting data presentation

For more information about configuring charts, see [Harness and section forms - Adding a chart](#).

Robotic Automation

Optimize the way you work by creating robots that work with you or for you, by improving speed, efficiency, and precision in the process. With new improvements for Robotic Automation, such as a prompted list of the automations that are available in your application, you can resolve your processes faster and easier. In addition, the operating system-specific injection technology is now isolated into the Pega Native Foundation component. This change makes it easier to enhance and respond to operating system changes from Microsoft.



Prompted list of robotic desktop automations

Robotic Automation includes the following enhancements:

- [Integrate Robotic Automations into your application with the Connect Robot rule](#) (8.2)
- [Extract content from image-based files](#)
- [Screen scrape Windows applications](#)
- [Modify Excel files without Excel](#)
- [Automate within Excel by using additional methods](#)
- [Build your own UI connectors](#)
- [Automate Mozilla Firefox](#)
- [Add support for Federal Information Processing Standards (FIPS)](#)

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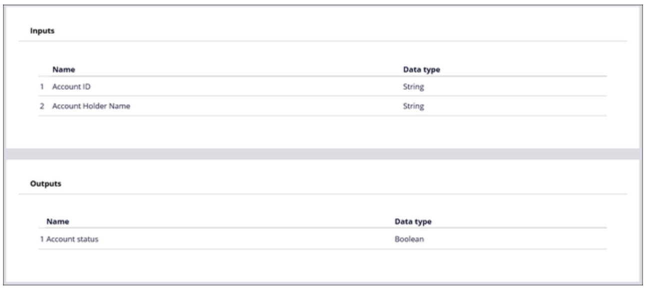
Integrate robotic automations into your application by using the Connect Robot rule (8.2)

Pega Platform™ now supports the Connect Robot rule, so you can more easily incorporate robotic automations into your application. With a Connect Robot rule, you can publish information about automation packages from Robotic Automation Studio directly to Dev Studio.

Also, now when you select a robotic desktop automation as a data source for a data page, Pega Platform automatically displays a list of automations from which you can choose, so you do not have to remember the automation IDs and enter them manually. Each entry in the list represents an instance of the Connect Robot rule. When you open an instance of the rule, you can quickly check its inputs and outputs.

The following figure shows an example of a Connect Robot rule.


Inputs

	Name	Data type
1	Account ID	String
2	Account Holder Name	String

Outputs

	Name	Data type
1	Account status	Boolean

Connect Robot rule definition

For more information, see About Connect Robot rules.

Extract content from image-based files

With the new DocumentOcr component you convert an image-based document that contains text into text that you can manipulate in an automation. Use this component with images, such as a faxed document, or documents that contain both text and images. This component works with image files (such as .png, .jpeg, .tiff), PDF files, and Microsoft Word documents.

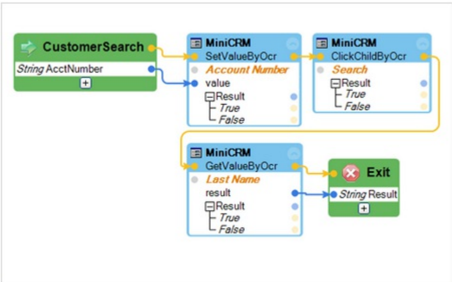
- Use in automations to extract data from the supported file formats.
- Use in automations for searching and copying data from unstructured documents.

For more information, see DocumentOcr Component.

Screen scrape Windows applications

Use the Screen OCR feature to automate Windows applications in Robotic Process Automations (RPA) when it is not possible to use the standard Pega Robotic Automation Studio object-level injection and user interface automation interrogation methods. Also known as screen scraping, the Screen OCR feature uses an image of the application to perform the following tasks:

- Finds the location of the controls that are used in the automation.
- Processes the image using an OCR library included in Pega Robotic Automation. This library tells the system where key words are located on the screen so that you can use Pega Robotic Automation Studio methods to click, double-click, get, and set text relative to those key words.



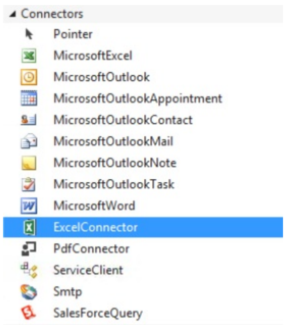
Screen OCR automation example

For more information, see Creating automations using the Screen OCR feature.

Modify Excel files without Excel

Use the new Excel File Connector to work with Microsoft Excel files in robotic automation scenarios where there is no required interaction between the user and the Excel workbook. The Excel File Connector makes it easy to automate large Excel files and provides these benefits:

- Create, modify, and read from Excel workbooks using Pega Robotic Automation without having the Excel application installed in the environment.
- Define ranges of data to work with, such as a table. You can define the range during design in Robotic Automation Studio or by using an automation during runtime.



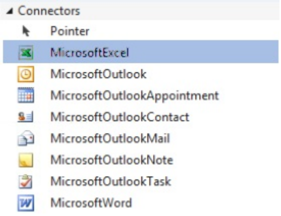
Selecting the Excel File Connector

For more information, see Excel File Connector Overview.

To learn more about all key new features in Pega Platform 8.1, see What's New in Pega 8.1.

Automate within Excel by using additional methods

When you create robotic automations to automate Excel, you can use 44 additional methods and 13 new properties that are in the MicrosoftExcel Connector. These methods perform many functions that are used on workbooks, worksheets, ranges, columns, and rows.



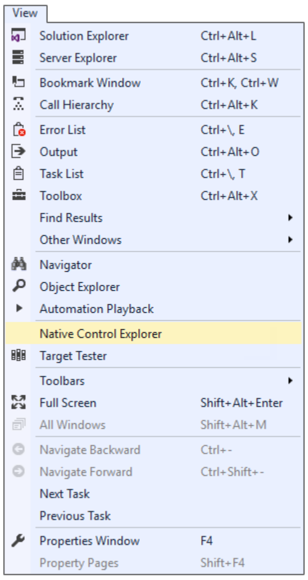
Selecting the MicrosoftExcel Connector

For more information, see MicrosoftExcel Connector.

Build your own UI connectors

Use the UI connectors feature to develop translators for .NET and Java applications and extend support for additional controls. With this feature, you build the integration points that provide the ability to automate the controls for an application.

- Mimic the power and control that Robotic Automation Studio provides out-of-the-box.
- Map the properties and methods of a control to the standard items used by automation developers.
- Use when you interrogate an application and the application controls are not identified.



Exploring a native control to create a UI connector

For more information, see Creating UI connectors.

Automate Mozilla Firefox

With Pega Robotic Automation Studio, you can now automate the following versions of Mozilla Firefox:

- Versions 31-39
- Version 52 and later

For more information, see Mozilla Firefox support in Pega Robotic Automation.

Add support for Federal Information Processing Standards (FIPS)

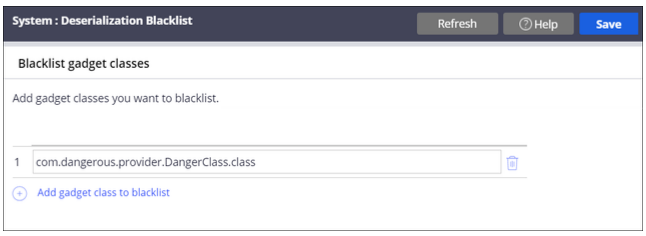
Pega Robotic Automation now supports the Federal Information Processing Standard (FIPS) 140-2 standard. FIPS is a set of cyber security standards that are defined by the National Institute of Standards and Technology (NIST) and are used by the United States and Canadian governments. Support for FIPS can improve the overall security of the automations you create with Pega Robotic Automation.

These standards were developed for use in computer systems by non-military government agencies and government contractors. The FIPS standard defines the minimum security requirements for securing sensitive but unclassified information. FIPS is mandated in some government agencies and is optionally followed in commercial and non-governmental organizations.

For more information, see FIPS General Information and FIPS Support in Robotic Automation.

Security

Increase the security of your applications with new features for General Data Protection Regulation (GDPR) compliance, mobile authentication, keystore management, and deserialization protection.



Deserialization blacklist landing page

The following key features are included in this release of Pega Platform:

- Configure token credentials authentication services (8.3)
- Import certificates without restarting the server (8.3)
- Increase flexibility for key management services (8.3)
- Check for Java injection vulnerabilities (8.3)
- Configure platform authentication with the basic credentials authentication service type (8.2)
- Transition sessions from unauthenticated to authenticated (8.2)
- Create single sign-on authentication services from App Studio (8.2)
- Protect against insecure deserialization (8.2)
- Process personal client data securely with client-based access control
- Authorize applications with the OAuth 2.0 authorization code grant type
- Improve your system security by regenerating the master key
- Enhance keystore maintenance by using dynamic data

To learn about all the new features in **Security**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

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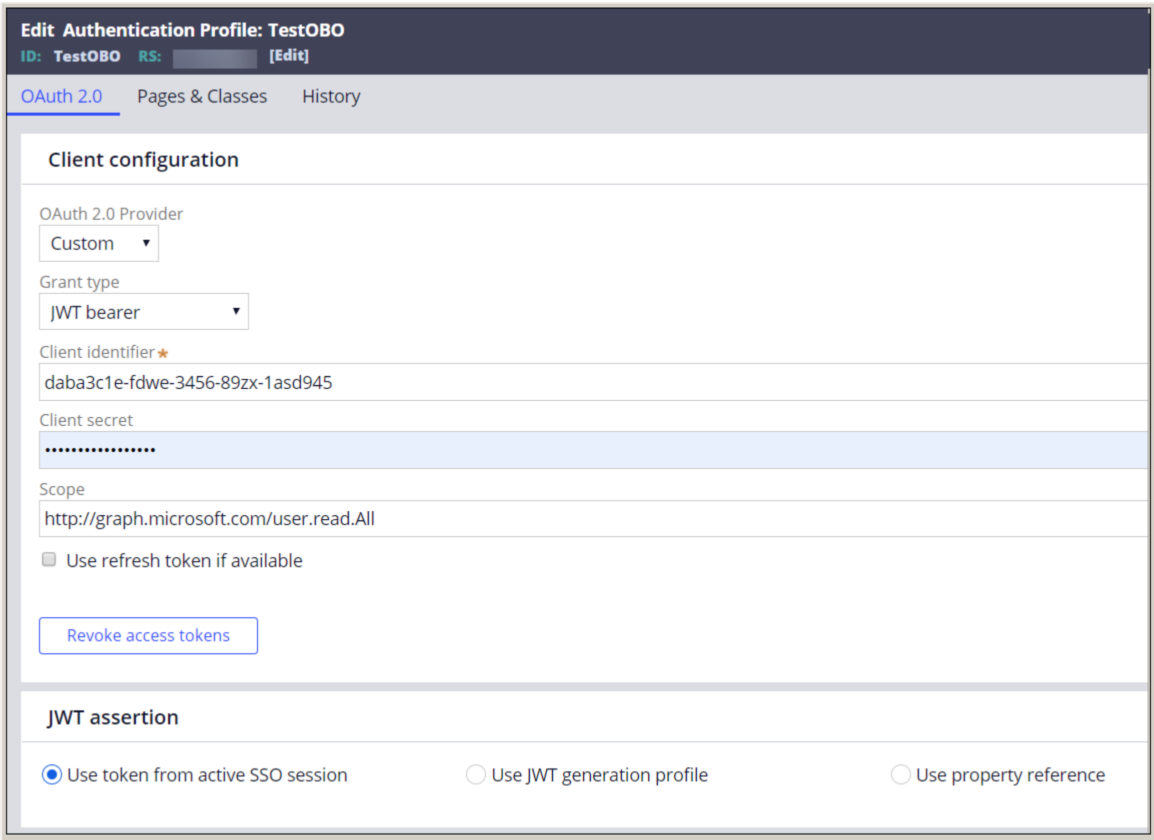
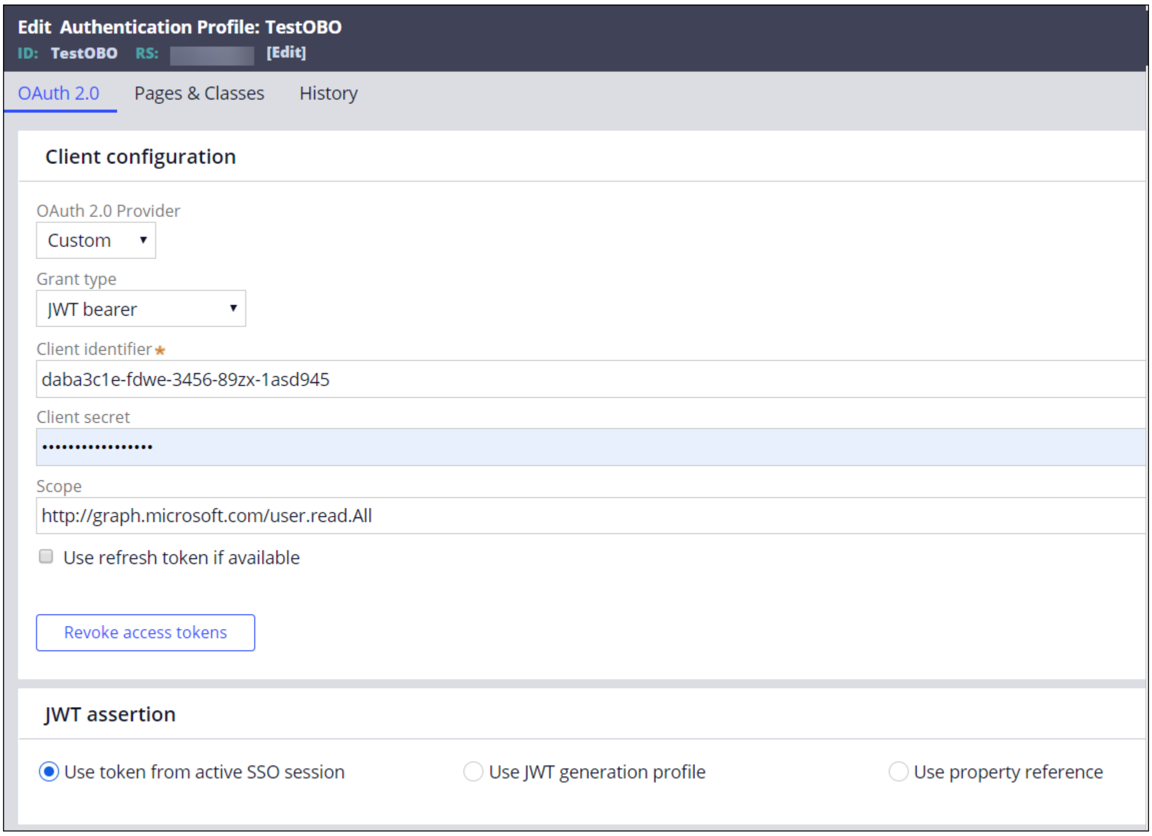
Visit What's New in Pega Platform to discover all the exciting new features in this release.

Configure an authentication profile with a JSON Web Token Bearer grant type (8.4)

You can now connect seamlessly to external APIs by using the OAuth 2.0 JSON Web Token (JWT) Bearer grant type. Authenticate client applications by using a private key-signed JWT. You can configure the authentication profile by specifying the token from your active SSO session, from a token profile, or from a property reference.



An authentication profile configured with the JWT Bearer grant type



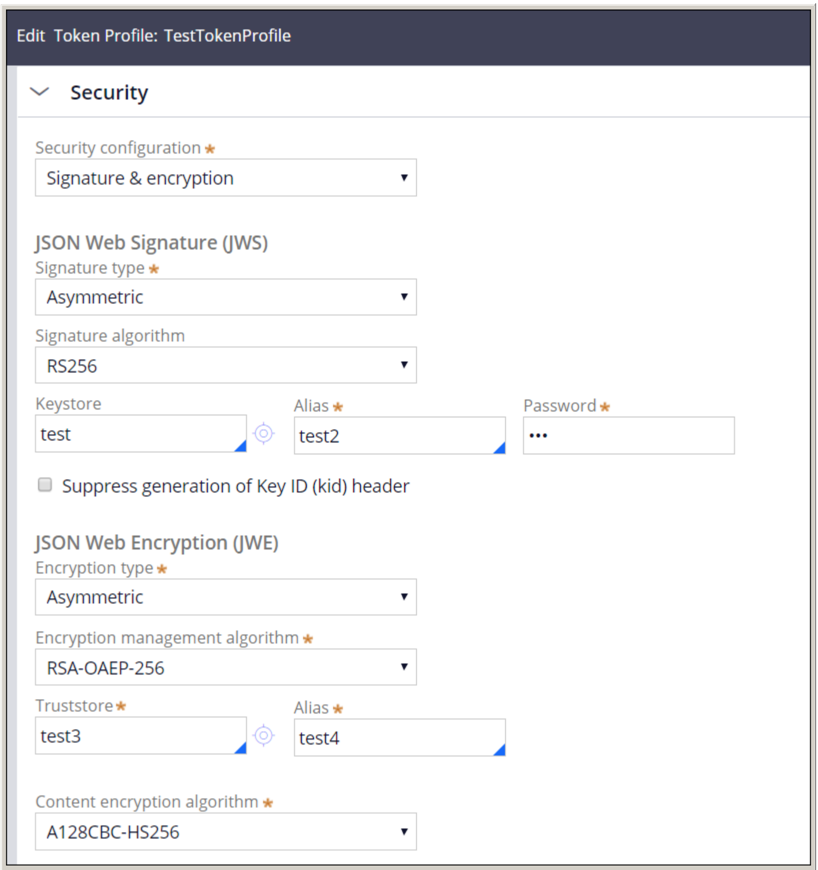
An authentication profile configured with the JWT Bearer grant type

For more information, see <help for OAuth 2.0 auth profile>.

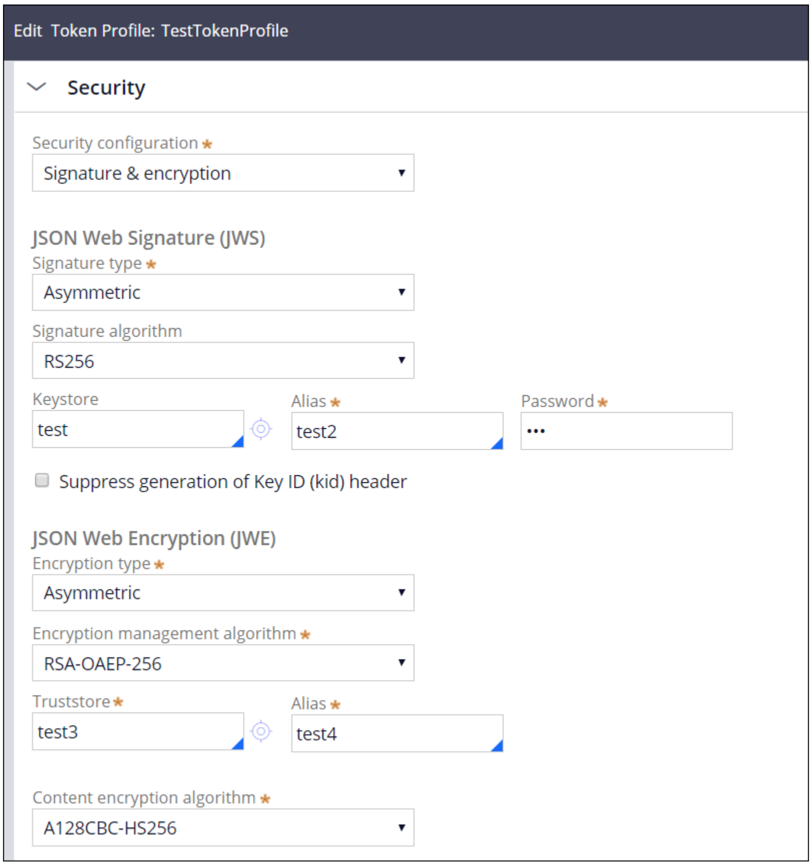
Expanded options for signing and encrypting JSON Web Tokens (8.4)

You can now authenticate using JSON Web Token (JWT) token profiles to symmetrically and asymmetrically encrypt both signatures and content. Pega now supports all algorithms in the Nimbus JWT library, including nested tokens. Custom key identifier headers (kid) are also supported. Use token profiles to securely propagate identities and transfer data between systems.

The following figure shows a sample token profile that encrypts both signature and content with a selected algorithm.



Token profile example with new fields for signature and encryption enhancements



Token profile example with new fields for signature and encryption enhancements

For more information, see [Creating a processing JSON Web token profile](#).

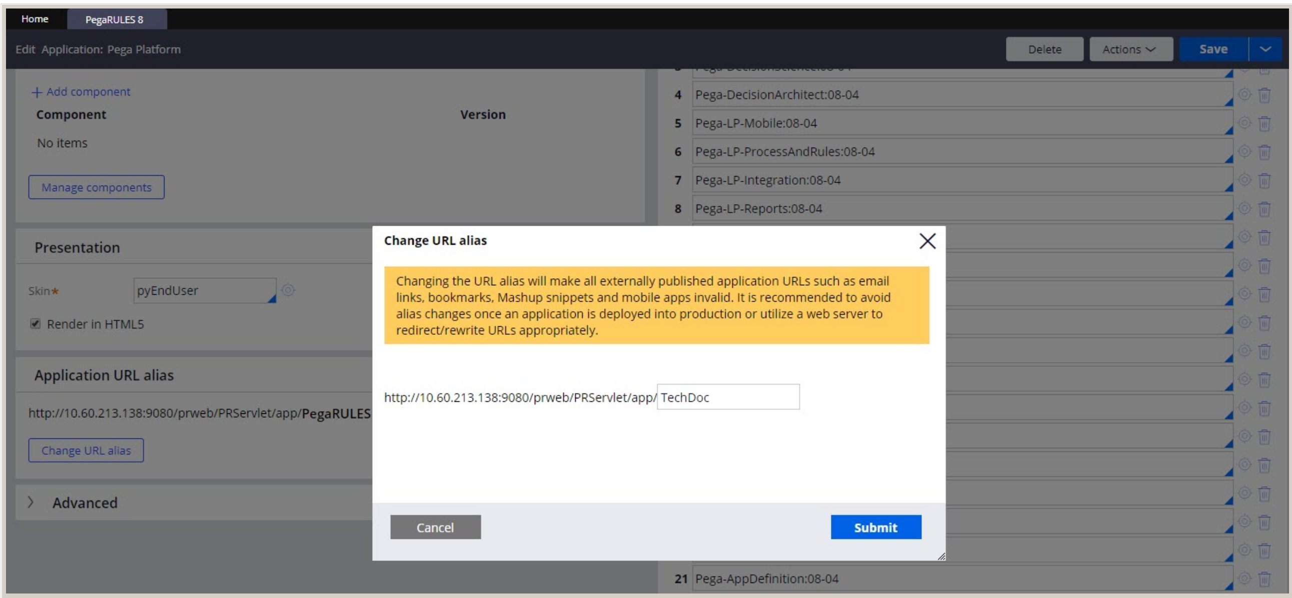
For more information, see [Creating a generation JSON Web token profile](#).

Simplify access with an Application URL alias (8.4)

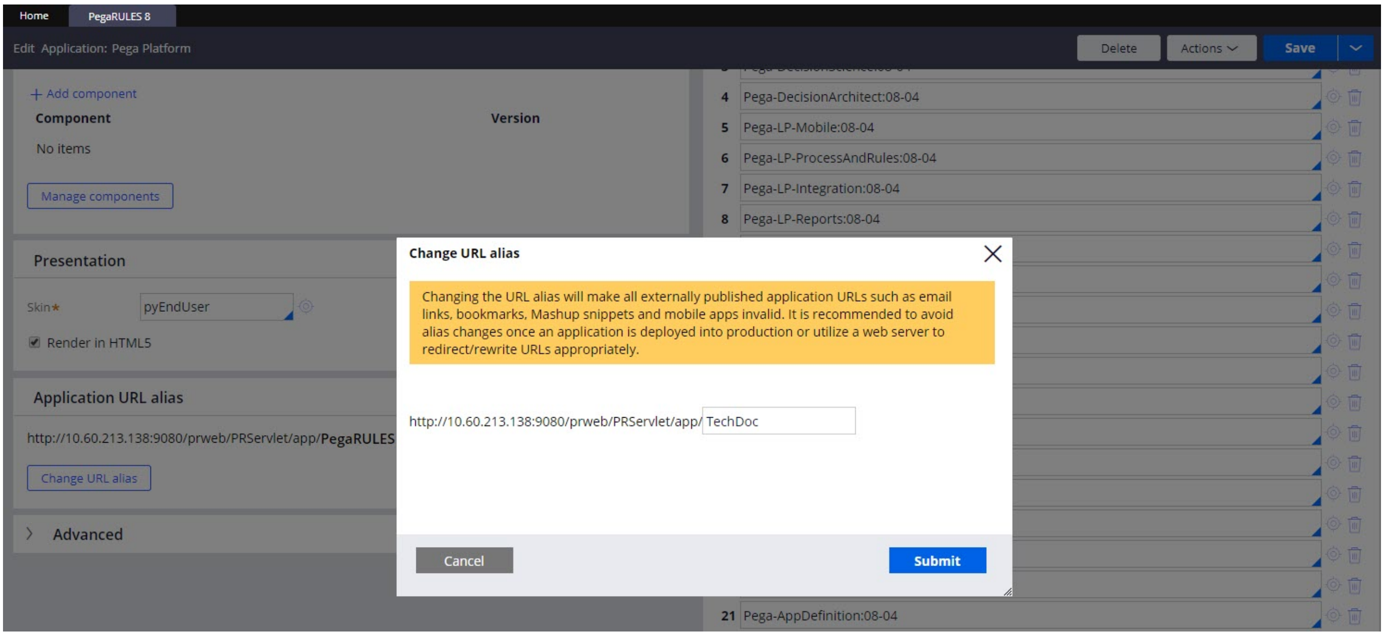
The URL of your Pega application is the starting point for your users. Pega Platform now supports a configurable application URL alias that provides a URL that allows the use of multiple applications simultaneously in the same browser.

Pega applications built prior to Pega Platform 8.4 have a text application identifier appended to the URL for compatibility reasons. These applications can continue to use the application identifier in the URL, or you can configure an application URL alias. If you configure an application URL alias, the old application identifier still launches the application.

Automated tests that follow URL redirects do not require updates. Some automated tests may notice the URL redirect and report a performance impact. Non-auto generated UI rules that manipulate URLs do require updates.



Add a URL alias in the application definition.



Add a URL alias in the application definition.

To add a URL alias, open the application definition and click the Change URL alias button. The text added in the Change URL alias text box is appended to the end of the application URL. Share this URL with your application users, and they can bookmark the new URL.

For more information, see Adding an application URL alias.

Upgrade considerations

Non-auto generated UI rules that manipulate URLs will require updates. These non-auto-generated UI rules need to be updated according to the new URL format with application URL alias. In addition to the URL, the system properties (pxRequestor.pxReqServletNameReal) that describes the components of the URL are also updated. Applications using these properties must be updated.

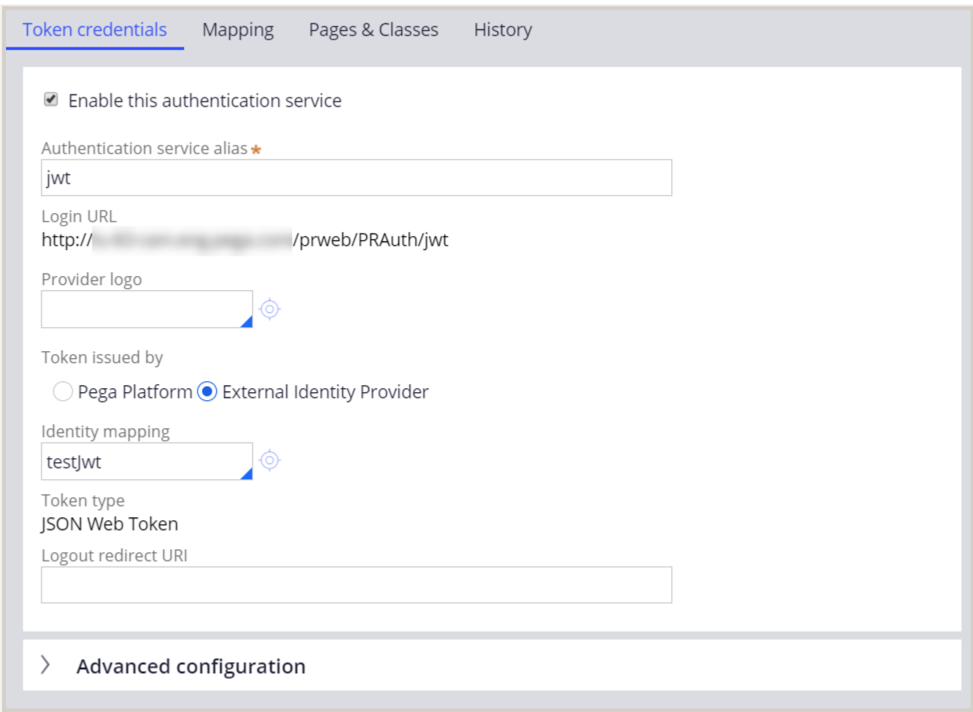
For more information, see the Pega Platform Upgrade Guide at Deploy Pega Platform.

After upgrading, you also need to update your JMeter test scripts. For more information, see Updating JMeter test scripts after migrating to Pega 8.4.

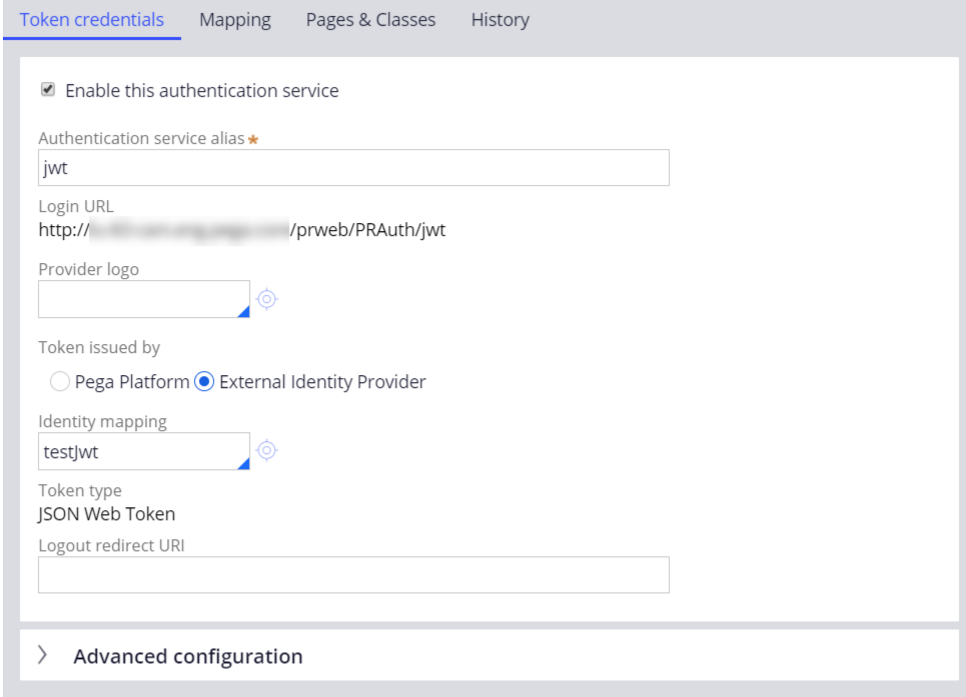
Configure token credentials authentication services (8.3)

A new type of authentication service, token credentials, is useful for offline mobile applications. This service supports authentication that is based on secure tokens that are generated by the Pega Platform™ authorization layer (OAuth 2.0) or issued by an external identity provider. With a token credentials authentication service, Pega Platform clients can securely extend the trust obtained from the identity provider without having to reenter their credentials to access Pega applications.

The following figure shows an example of a token credentials authentication service.



Example of token credentials authentication service



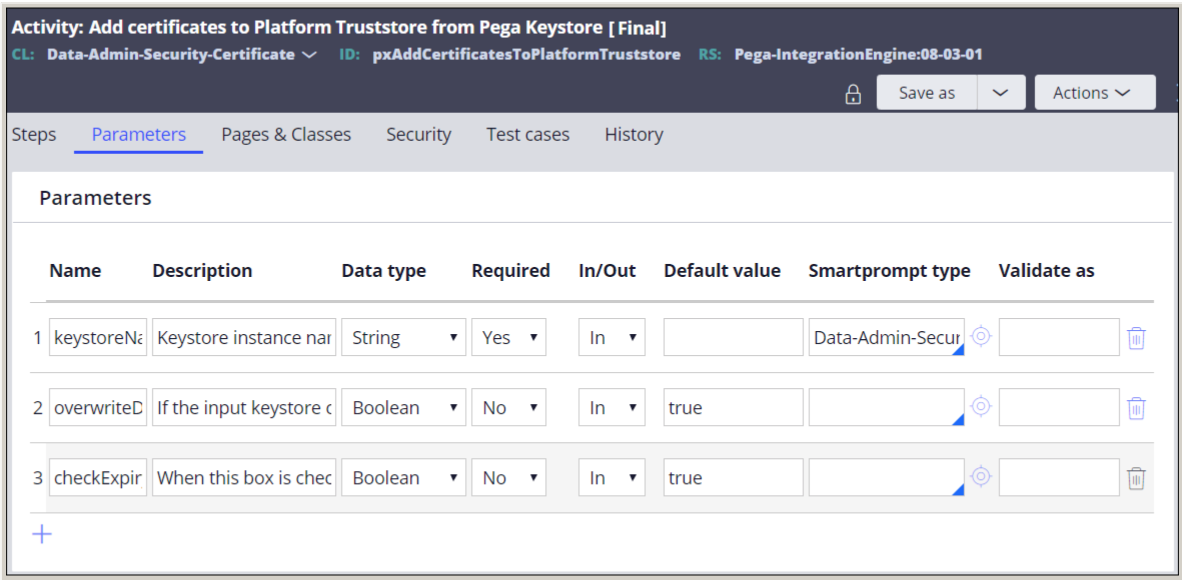
Example of token credentials authentication service

For more information, see Configuring a token credentials authentication service.

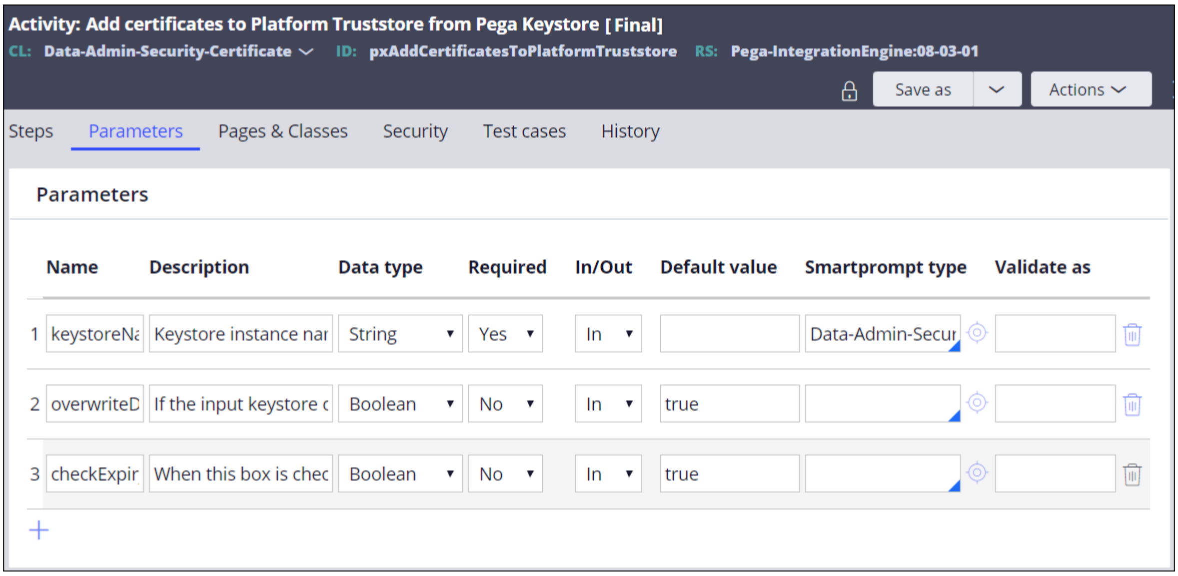
Import certificates without restarting the server (8.3)

You can now import X.509 certificates that are common across platform applications without having to restart your server. Pega Platform™ now includes a platform truststore, which supplements the application server-level truststore. When a certificate needs to be validated, Pega Platform looks for the certificate in the connector definition, the platform truststore, and finally the application server (JVM) truststore. You can add, update, and delete certificates in the platform truststore without having to restart the server, which is useful when TLS certificates are changed for reasons such as key rotation.

The following figure shows the activity for adding certificates to a keystore.



Activity for adding certificates to the platform truststore



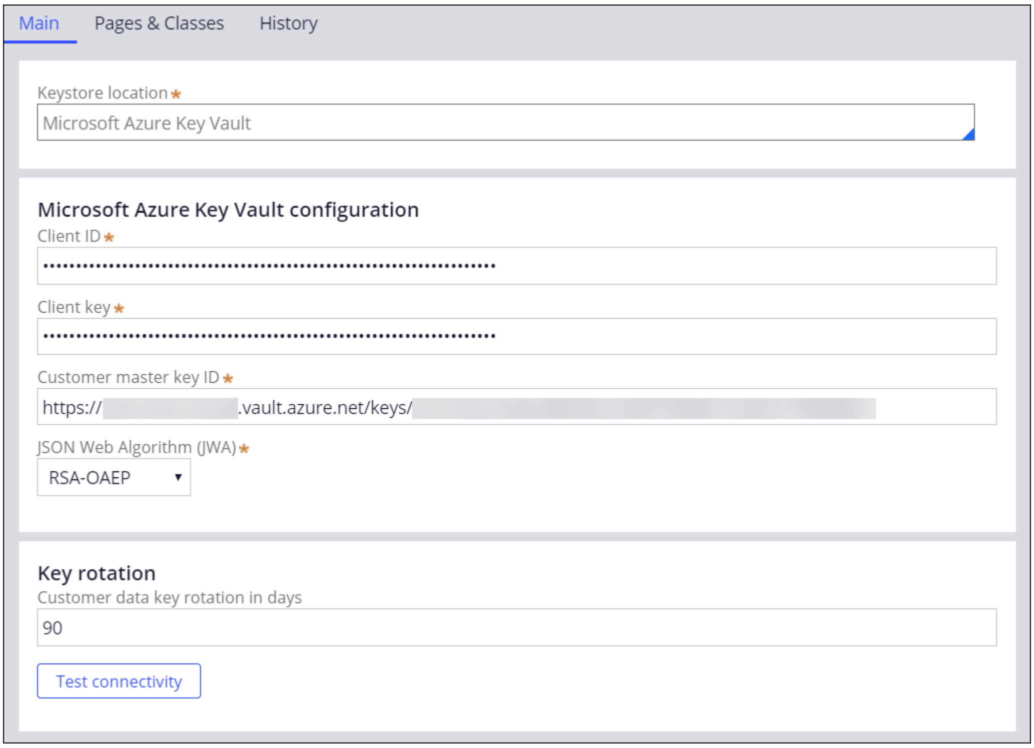
Activity for adding certificates to the platform truststore

For more information, see Importing an X.509 certificate.

Increase flexibility for key management services (8.3)

You can now create keystores that reference keys from key management services such as Microsoft Azure Key Vault, HashiCorp Vault, and Google Cloud KMS, in addition to Amazon KMS. You can also create a keystore that references keys other other key management services through the use of a data page. By supporting additional key management services, Pega Platform™ offers you increased flexibility when defining keys that are used for encryption of application and internal system data.

The image below shows an example of a keystore that is backed by Microsoft Azure Key Vault.



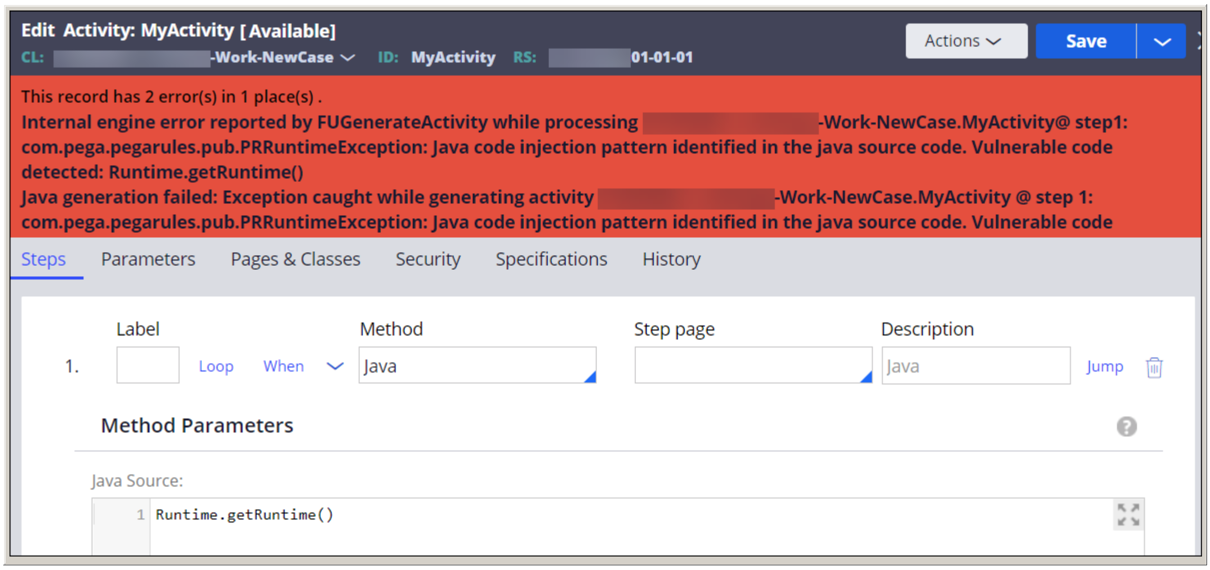
Example of keystore backed by Microsoft Azure Key Vault

For more information, see see Configuring a Microsoft Azure Key Vault keystore, Configuring a HashiCorp Vault keystore, and Configuring a Google Cloud KMS keystore.

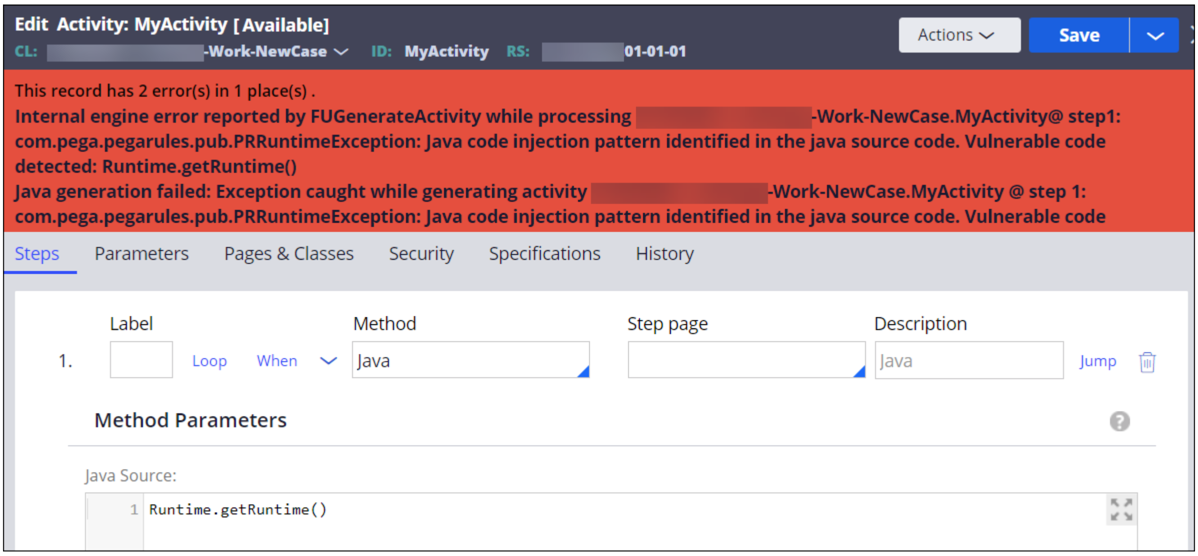
Check for Java injection vulnerabilities (8.3)

Pega Platform™ now notifies you of Java injection vulnerabilities in activities, functions, and stream rules at design time and at runtime. You can customize Pega Platform to check for vulnerabilities in addition to the defaults.

The following figure shows a design-time notification of a Java injection vulnerability.



Design-time notification of Java injection vulnerability



Design-time notification of Java injection vulnerability

For more information, see Configuring the Java injection check.

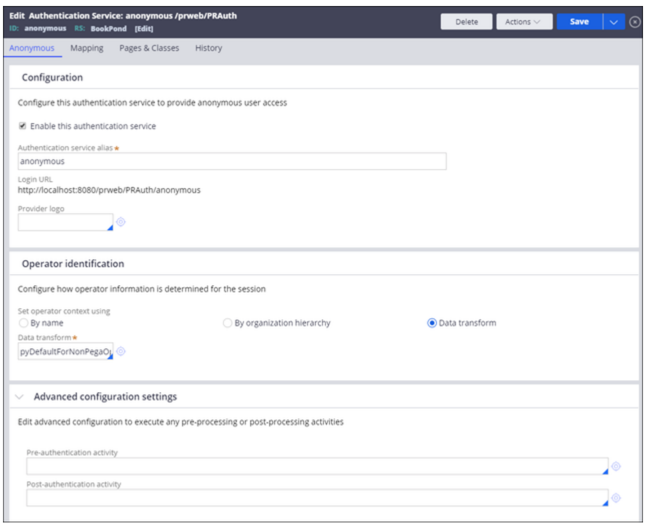
Transition sessions from unauthenticated to authenticated (8.2)

A new authentication service type allows a guest user to use an application without logging in, and to be prompted to authenticate later in the session. This enhancement supports a scenario such as an online shopping portal where a user can load a shopping cart as a guest and be prompted for credentials at checkout.

With this new anonymous authentication service type, you enable your application to do the following:

- Allow guest users to access your application
- Transition unauthenticated sessions seamlessly to authenticated
- Validate users with any other type of authentication service
- Provision users with any other type of authentication service

The following figure shows an example of an anonymous authentication service.



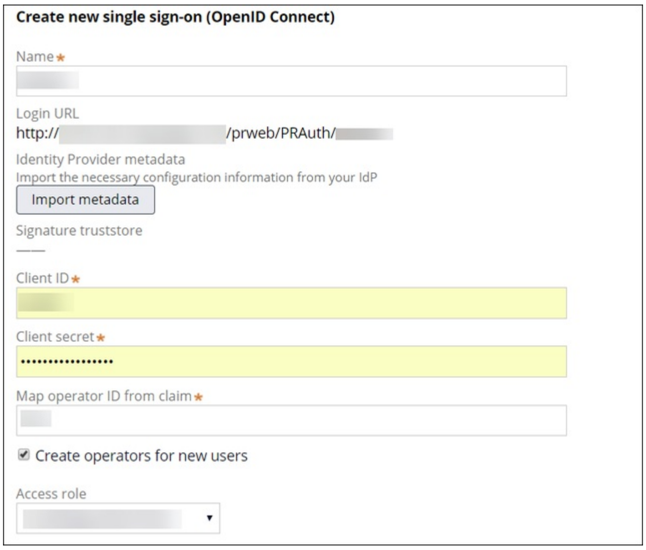
Anonymous authentication service

For more information, see Configuring an anonymous authentication service.

Create single sign-on authentication services from App Studio (8.2)

You can now create and enable single sign-on (SSO) authentication services from a new landing page in App Studio. On this landing page, you can also configure SAML and OpenID Connect (OIDC) authentication services to provision users.

The following figure shows the dialog box for creating an OIDC authentication service.



Creating an OIDC authentication service in App Studio

For more information, see Creating a SAML SSO authentication service and Creating an OIDC SSO authentication service.

Protect against insecure deserialization (8.2)

Deserialization is the process of rebuilding a data stream into a Java object. The Open Web Application Security Project (OWASP) has identified insecure deserialization as one of the top 10 security vulnerabilities for web applications. Pega Platform™ protects against this vulnerability by providing filters that prevent deserialization of suspect data streams. You can configure these filters from the Deserialization Blacklist landing page, as shown in the following figure.

Deserialization Blacklist landing page

For more information, see Configuring the deserialization filter.

Configure platform authentication with the basic credentials authentication service type (8.2)

The default authentication for Pega Platform™ uses a new type of authentication service. You can customize this service, as for any authentication service type.

All authentication services with the basic credentials type include mobile authentication with the OAuth 2.0 protocol and proof key for code exchange (PKCE). You no longer need to create a custom authentication service to support mobile applications.

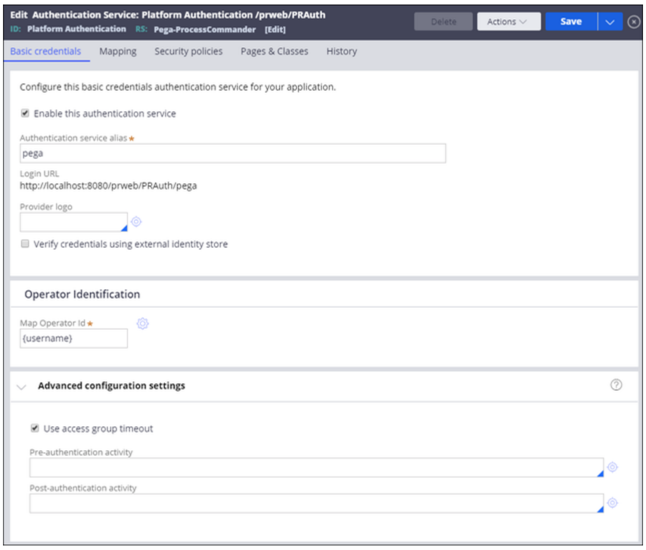
Operator credentials can be verified using a data page instead of through the Pega Platform database. For example, you can authenticate external customers against a master customer file.

All authentication services provide new options for provisioning operators using a data transform instead of a model operator, to avoid storing unneeded operators in the database.

Basic authentication services also support features that are available to other authentication service types, including:

- Provisioning new operators by using a model operator or data transform
- Preauthentication and postauthentication activities
- Custom property mapping
- Easily selectable security policies

The image below shows the default Platform Authentication service.



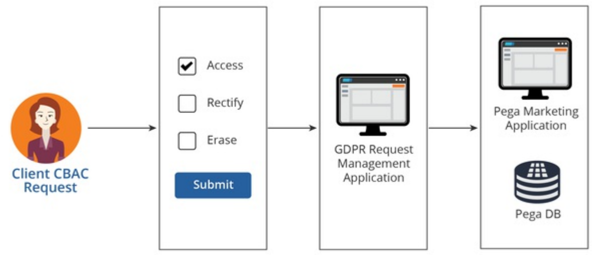
Default Platform Authentication service with the basic credentials type

For more information, see Configuring a basic authentication service.

Process personal client data securely with client-based access control

Client-based access control (CBAC) is a technique for securely processing requests to view, update, or remove personal client data. By implementing CBAC in your application, you can comply with the data privacy requirements of the European Union General Data Protection Regulation (GDPR) and similar regulations.

The following figure illustrates the process for client-based access control.



CBAC request example with Pega Marketing application

You can also enforce restrictions on the use of this data in application functions.

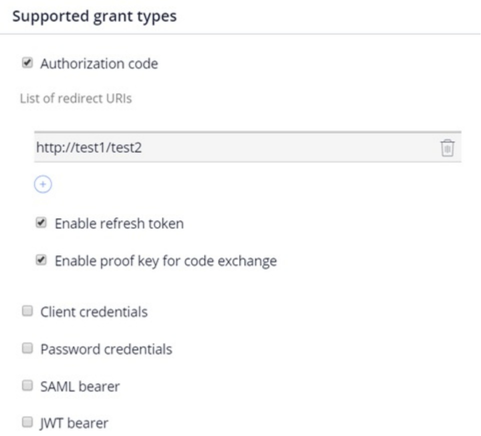
For more information about using client-based access control, see Supporting EU GDPR data privacy rights in Pega Infinity with client-based access control.

Authorize applications with the OAuth 2.0 authorization code grant type

Pega Platform™ now supports the OAuth 2.0 authorization code grant type, which allows Pega Platform to act as an OAuth 2.0 access token provider for native applications on mobile and other devices. By using the authorization code grant type for mobile clients, you no longer need to implement a variety of standards for various authentication providers.

The authorization code grant type also supports the Proof Key for Code Exchange standard (PKCE) for securing public clients.

The following figure shows an OAuth 2.0 client registration rule with an authorization code grant type.



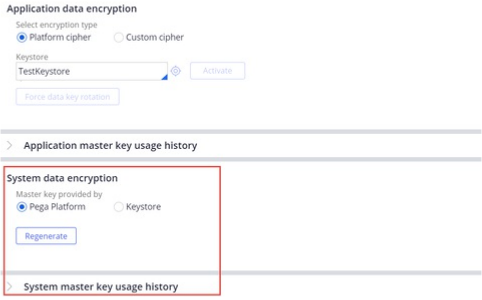
OAuth 2.0 client registration rule with authorization code grant type

For more information, see Creating and configuring an OAuth 2.0 client registration.

Improve your system security by regenerating the master key

A platform cipher or custom cipher supports the encryption of application data and internal system data. You can now manually regenerate the master key when needed to make your system more secure.

The following figure illustrates the option to regenerate a master key that is provided by Pega Platform™.



Example encryption settings

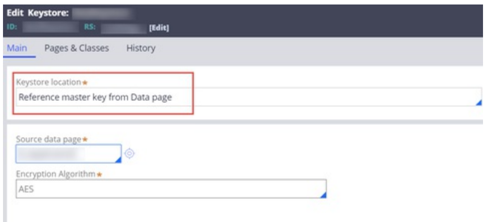
The keystore update history is retained for auditing purposes.

For more information, see Configuring the platform cipher and Configuring a custom cipher.

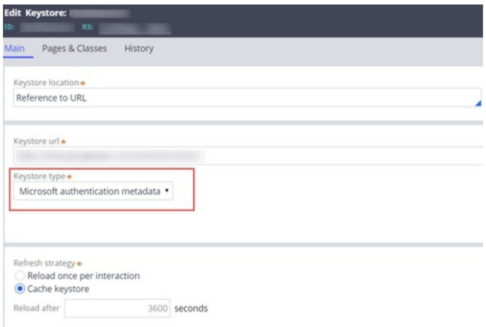
Enhance keystore maintenance by using dynamic data

You can now set the location of a keystore to a master key on a data page, and you can configure URL-referenced keystores to source certificates from Microsoft authentication metadata. By using dynamic data, you can save time and improve keystore maintenance.

The following figures show how you define these on the keystore rule form.



Keystore location for referencing a master key from a data page



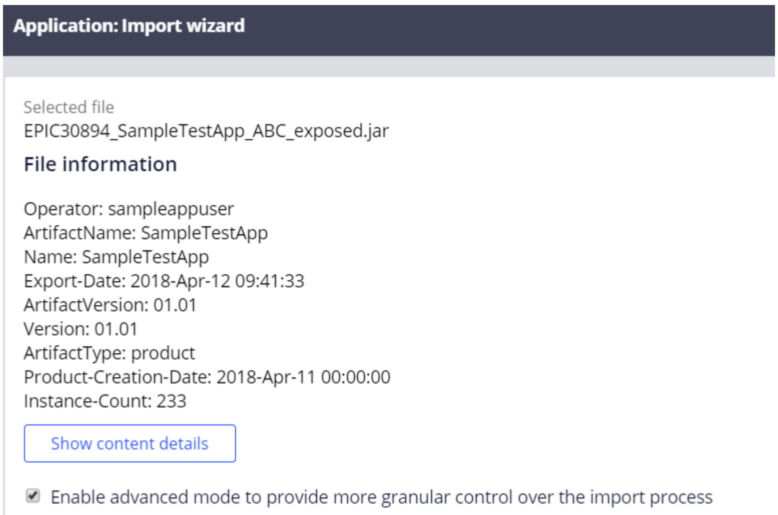
Microsoft authentication metadata keystore type for URL-referenced keystore

For more information, see Configuring a keystore for a master key from a custom source and Configuring a keystore by using a URL reference.

System Administration

New system administration features improve the import experience, add support for additional application server platforms, and add system administration APIs.

For example, you can now use the Application Import wizard advanced mode to eliminate some manual post-import tasks.



Application Import wizard

System Administration includes the following enhancements:

- [Expand your use of Admin Studio](#) (8.3)
- [Manage batch indexing easily](#) (8.3)
- [Include multiple mashups on a single page](#) (8.3)
- [Increase performance for work ID generation](#) (8.3)
- [Automate context management for background processes](#) (8.3)
- [Add CyberArk password vault support for your database for IBM WebSphere environments](#) (8.3)
- [Control the locking and retry mechanisms of background processes](#) (8.3)
- [Use reports database to obtain data automatically in reports](#) (8.3)
- [Use updated versions with expanded server platform support](#)
- [Eliminate manual tasks with the improved import experience](#)
- [Improve system administration and troubleshooting with Pega APIs](#)

To learn about all the new features in **System Administration**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our [Pega Community Video Library.](#)

Visit [www.pega.com](#) to learn more about Pega Infinity™.

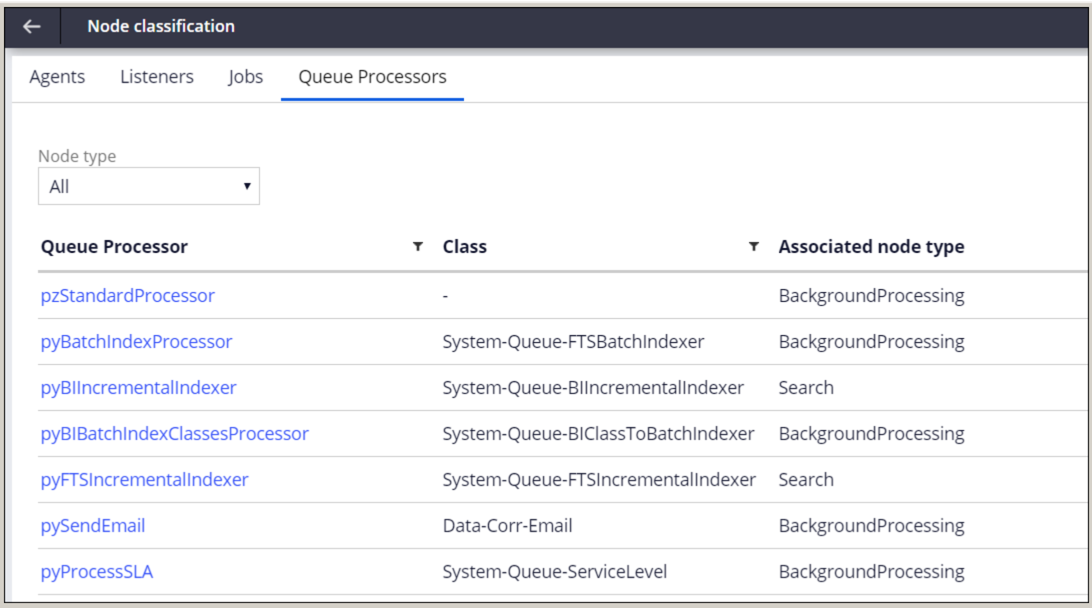
Visit [What's New in Pega Platform](#) to discover all the exciting new features in this release.

Expand your use of Admin Studio (8.4)

You can now take advantage of a variety of usability improvements in Admin Studio.

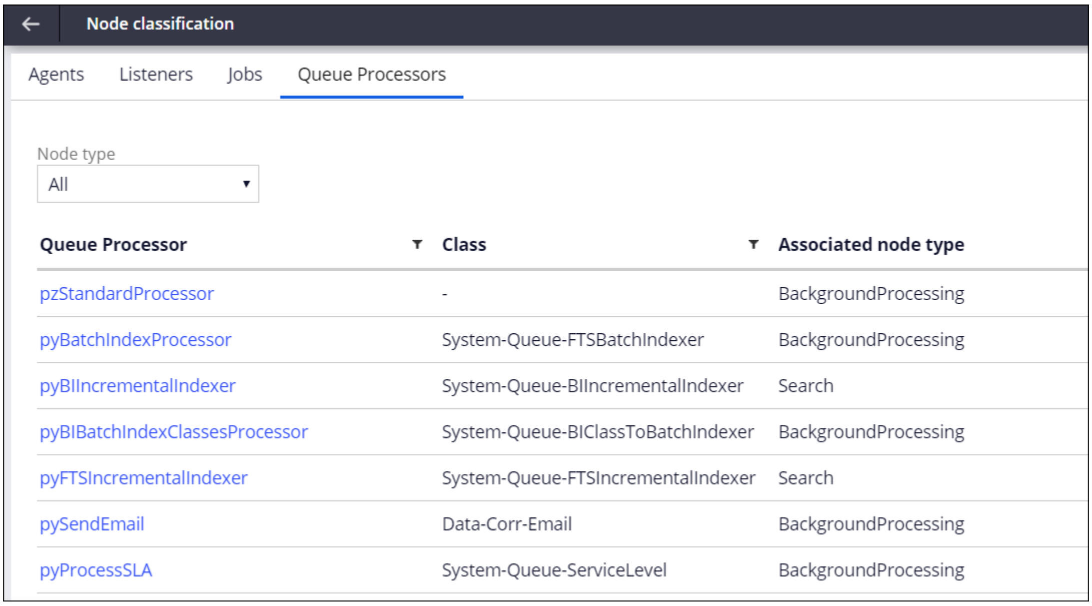
- Direct access to the Kibana log viewer from the Admin Studio overview page.
- A redesigned Agents landing page for improved diagnosis of agent failures/exceptions.
- Easier access to currently active requestors from the Requestors landing page.
- An Edit system settings icon on the System & nodes landing page for direct editing of system information. These settings were previously accessible from Dev Studio to Admin Studio.
- Get a warning when there are too many dedicated queue processors created in the system on the Queue Processors landing page.
- Enhanced usability of the Configurations landing page, which has also been renamed to System Settings.
- Enhanced usability in the Agents and Listeners tabs on the Node classification landing page; this page now features new Job and Queue Processor tabs.

The following figure shows the new Queue Processors tab on the Node classification landing page.



Queue Processor	Class	Associated node type
pzStandardProcessor	-	BackgroundProcessing
pyBatchIndexProcessor	System-Queue-FTSBatchIndexer	BackgroundProcessing
pyBIIncrementalIndexer	System-Queue-BIIncrementalIndexer	Search
pyBIBatchIndexClassesProcessor	System-Queue-BIClassToBatchIndexer	BackgroundProcessing
pyFTSIncrementalIndexer	System-Queue-FTSIncrementalIndexer	Search
pySendEmail	Data-Corr-Email	BackgroundProcessing
pyProcessSLA	System-Queue-ServiceLevel	BackgroundProcessing

You can now view the class and node type that is associated with each queue processor



Queue Processor	Class	Associated node type
pzStandardProcessor	-	BackgroundProcessing
pyBatchIndexProcessor	System-Queue-FTSBatchIndexer	BackgroundProcessing
pyBIIncrementalIndexer	System-Queue-BIIncrementalIndexer	Search
pyBIBatchIndexClassesProcessor	System-Queue-BIClassToBatchIndexer	BackgroundProcessing
pyFTSIncrementalIndexer	System-Queue-FTSIncrementalIndexer	Search
pySendEmail	Data-Corr-Email	BackgroundProcessing
pyProcessSLA	System-Queue-ServiceLevel	BackgroundProcessing

You can now view the class and node type that is associated with each queue processor

For more information, see:

- [Managing requestors](#)
- [Node management](#)

Roll back changes by application or user (8.4)

Restore points store the rule and data instance states at significant points in time, for example, before you import an application. With Pega Platform ™ 8.4, you can opt to roll back only those changes associated with a single user or an application. Use the prpcServiceUtils tool on a running instance of Pega Platform to roll back changes to a restore point.

Edit the prpcServiceUtils.properties file to configure the scope of your rollback:

```
############################## ROLLBACK ########################################

################################################################################

# NOTE: Rollback only supports JSON results

# Rolling back to a restore point restores the state of a deployed application, including applicable all rule and data instances.

# To roll back hotfixes, use the HOTFIX MANAGER settings.


# RESTORE POINT NAME

# Name of the restore point to roll back to

rollback.restorePointName=


# ACTION

# SystemRollback - Roll back every rule and data instance with a history record.

# UserRollback - Roll back rule and data instances modified by a specific user.

# ApplicationRollback - Roll back rule and data instances in a specific application version.

rollback.action=SystemRollback


# USER NAME

# The Operator ID to use when performing UserRollback.

rollback.userName=


# APPLICATION NAME

# The application name and version to use when performing ApplicationRollback.

rollback.applicationName=

rollback.applicationVersion=
```

For more information, see:

- Using restore points to enable error recovery
- Rolling back to a restore point

Importing an application automatically creates a restore point. You can also manually create restore points at other times. For more information, see Creating a restore point .

Add CyberArk Enterprise Password Vault support for your database in IBM WebSphere environments (8.3)

Integrate your CyberArk Enterprise Password Vault component with your system. Use this third-party application to independently maintain Pega database passwords from your Pega Platform configuration.

This support is only available for IBM WebSphere environments.

For configuration information, go to Deploy Pega Platform. Select the IBM Websphere Application server and the applicable database for your deployment and click the installation guide link.

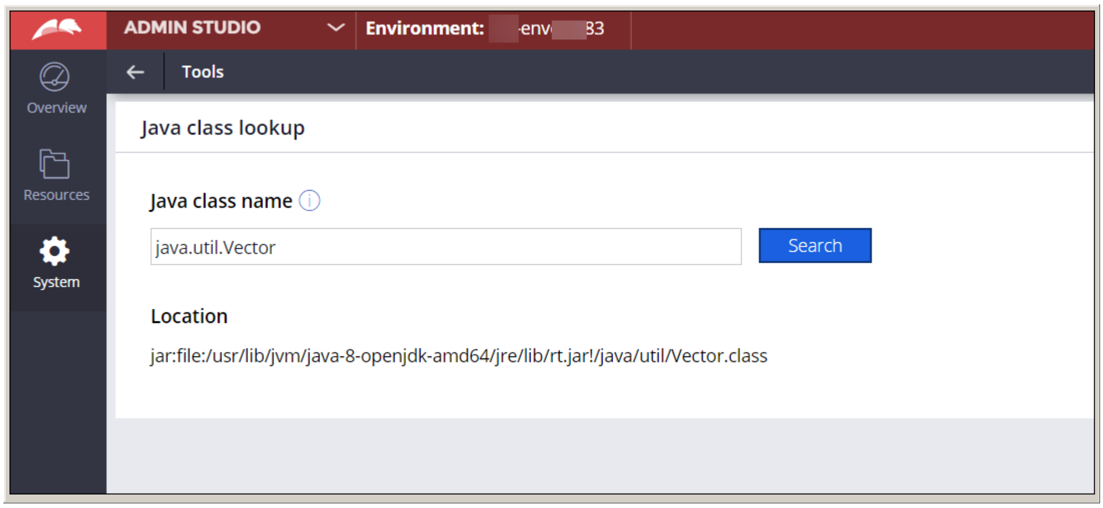
Expand your use of Admin Studio (8.3)

You can now take advantage of a variety of usability improvements in Admin Studio.

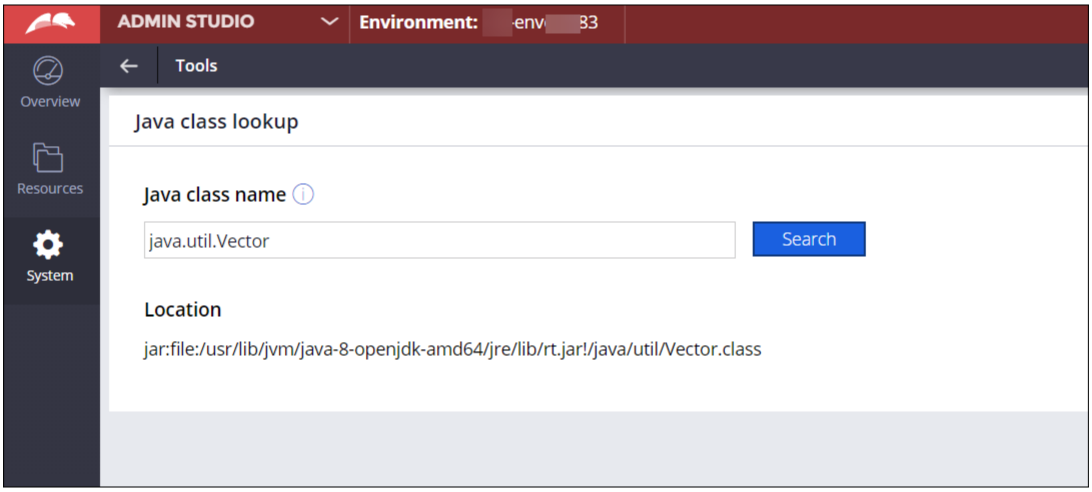
- You can configure operators to have read-only access to Admin Studio by using the new access group SysOpsObserver, and you can grant full access by using the new access group SysOpsAdministrator.
- You can find the Java archive from which a particular Java class was loaded by using a Java class lookup utility.
- You can view the list of requestors for the operator who is logged on to Admin Studio. For more information, see Managing requestors.
- You can display system node type in the logs. For more information, see Displaying node type in the log.

There is also a section on the Admin Studio overview page where, if your environment uses Predictive Diagnostic Cloud (PDC), a link to PDC is shown by default.

The image below shows the utility where you enter the name of a Java class to find the related Java archive file.



Java class lookup utility

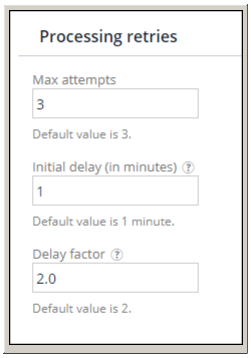


Java class lookup utility

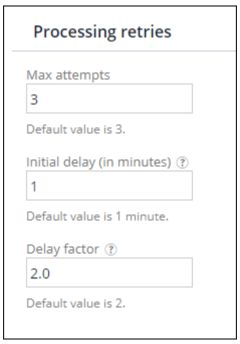
Control the locking and retry mechanisms of background processes (8.3)

You can easily manage locking and unlocking cases during queue processing by configuring new fields that have been added to queue processors and the Queue-For-Processing method. With these fields, you do not need to create or use complex activities when configuring background processes that require locking cases.

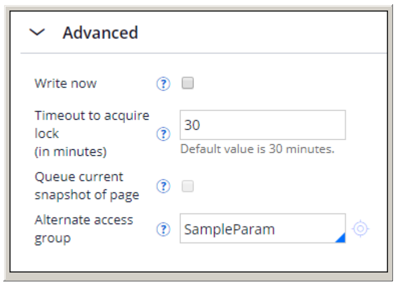
These fields include the Max attempts, Initial delay in minutes, Delay factor, and Timeout to acquire lock fields, as shown in the following images.



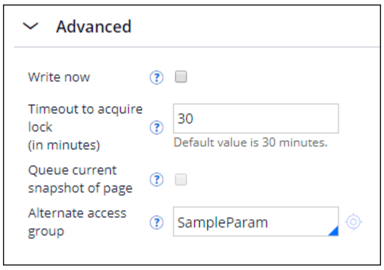
Processing retries section of a queue processor



Processing retries section of a queue processor



Advanced section of the Queue-For-Processing method



Advanced section of the Queue-For-Processing method

For more information, see [Creating a Queue Processor rule] and [Queue-For-Processing method].

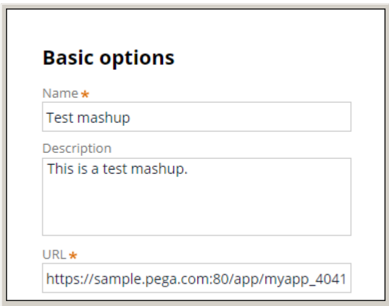
Include multiple mashups on a single page (8.3)

With mashups, you can embed a Pega Platform™ application as a gadget on your website. You can now add more than one mashup to an external website even if the mashups have different application and authentication requirements.

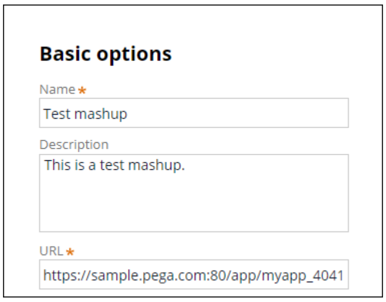
The following use cases are now available:

- Multiple mashups from the same Pega Platform applications
- Multiple mashups from different Pega Platform applications
- Multiple mashups with different authentication requirements, for example, one mashup is authenticated and one mashup is not authenticated

A new URL format prevents multiple mashups from sharing cookies, which allows these mashups to run on a single web page. The new URL format is `https://host/prweb/app/applicationname_sessionidentifier`, as shown in the following image.



URL format in Mashup channel interface



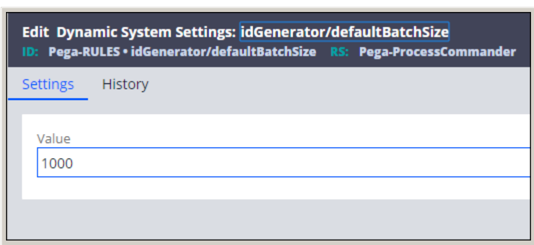
URL format in Mashup channel interface

For more information about configuring mashups, see [Configuring the Mashup channel].

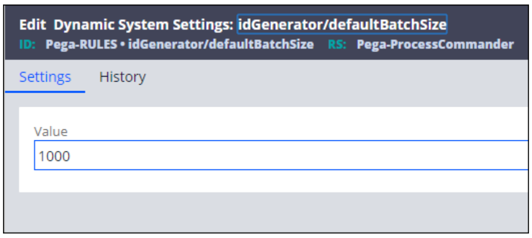
Increase performance for work ID generation (8.3)

In single tenant, PostgresSQL environment, the performance of work ID generation has greatly increased. Batch-based ID generation improves performance and scalability, which reduces the time that it takes to migrate data to a Pega Platform™ application. Performance improvements are most noticeable in large-scale data migrations. In these cases, work IDs generate 1500-2000 times faster than in previous versions of Pega Platform.

The default batch size for work ID generation is 1000, and is set in the *idGenerator/defaultBatchSize* dynamic system setting, as shown in the following image.



idGenerator/defaultBatchSize dynamic system setting



idGenerator/defaultBatchSize dynamic system setting

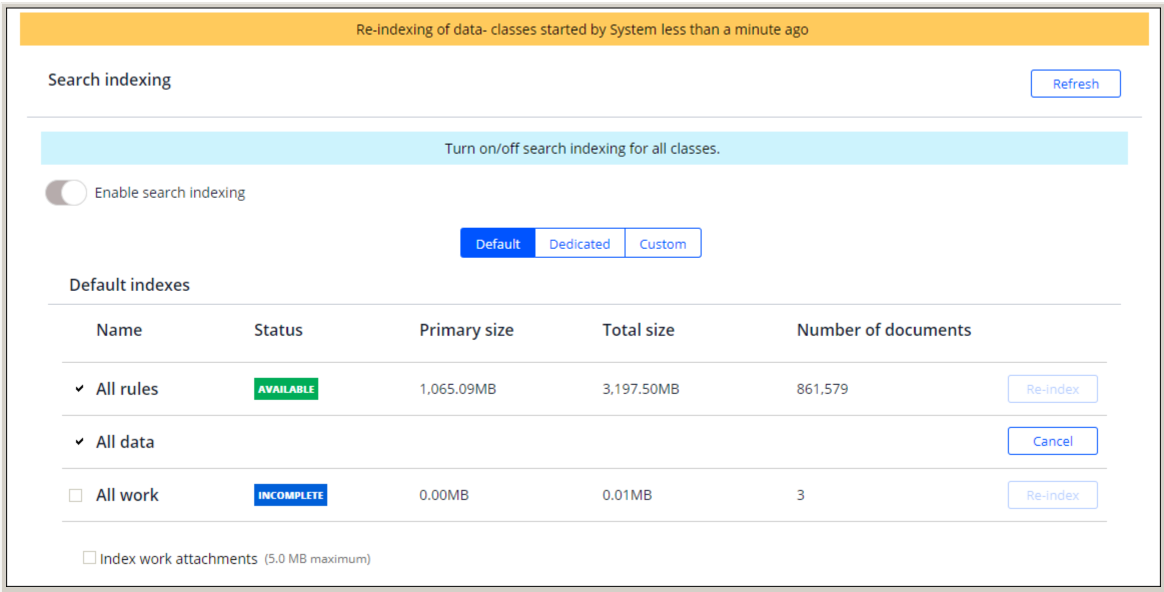
If you want to use a different batch size for a specific case type, you can override the *idGenerator/defaultBatchSize* dynamic system setting by using *idGenerator/<the case type's name followed by a hyphen>/batchSize*, for example, *idGenerator/WORK-/batchSize*.

For more information about the *idGenerator/defaultBatchSize* dynamic system setting, see [Default dynamic system settings data instances](#).

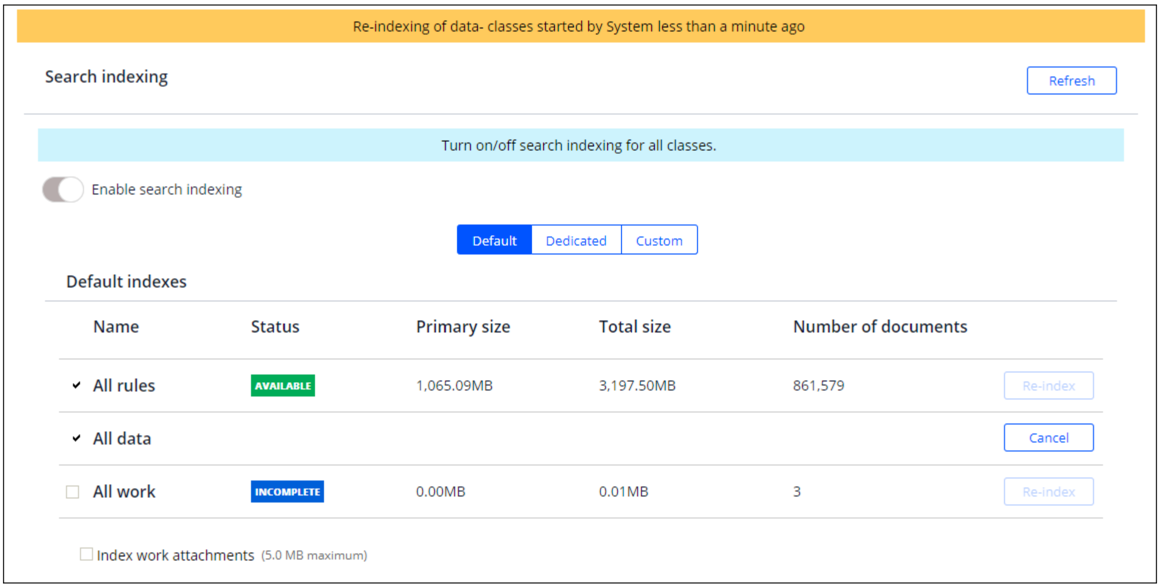
Manage batch indexing easily (8.3)

You can now cancel or check the status of a batch index process directly from the Search landing page in Dev Studio. This feature was removed in Pega Platform™ 8.2, but is reintroduced in version 8.3. You can cancel a batch index process to analyze and address any issues during a batch indexing process. The Search landing page refreshes automatically every 10 seconds so that you can easily see the most recent status of the batch index process.

The reindex operation is now 20% faster than in previous versions.



Canceling a batch index process



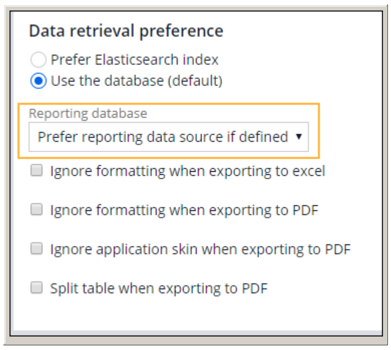
Canceling a batch index process

For more information, see [Rebuilding search indexes from the user interface](#).

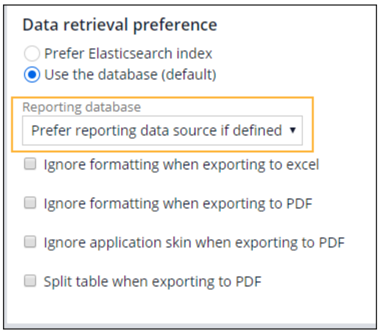
Use reports database to obtain data automatically in reports (8.3)

When configuring a report definition, the report now automatically queries the default reporting database unless you specify that it queries the standard database or a class-level reporting database. This provides support for reporting against Amazon Aurora read replicas.

You can change which database a report definition obtains data from in the Reporting database field in the Data access tab, as shown in the following image.



Reporting database field



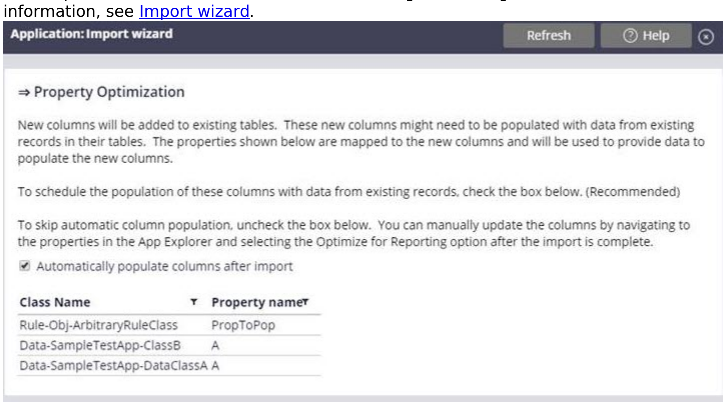
Reporting database field

For more information, see Report definition data access tab.

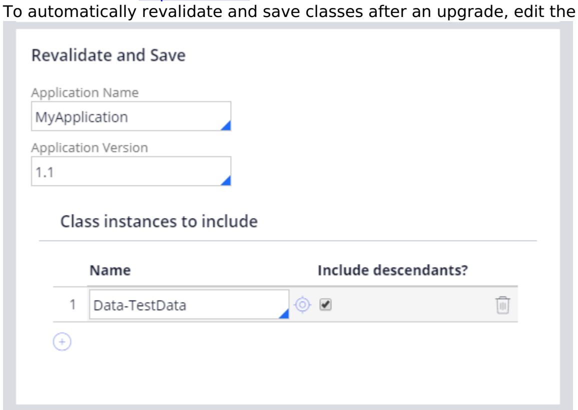
Eliminate manual tasks with the improved import experience

Pega Platform ™ 8.1 includes several changes to improve imports. Changes to the Import wizard and Product rule eliminate the need to manually run several post-upgrade and post-import activities.

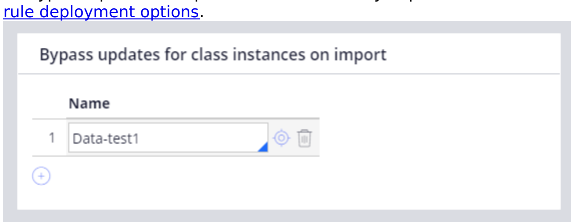
- If an imported archive file adds columns to existing tables, Pega Platform can automatically expose and populate the new columns during the import. For more information, see Import wizard.



- If an imported archive file includes new indexes, use the Import wizard advanced mode to schedule a post-import job to automatically add and populate the new indexes. For more information, see Import wizard.
- If an imported archive changes the class-to-table mapping for a class, existing instances are automatically migrated to the new table. For more information, see Import wizard.
- To automatically revalidate and save classes after an upgrade, edit the product rule definition. For more information, see Specifying product rule deployment options.



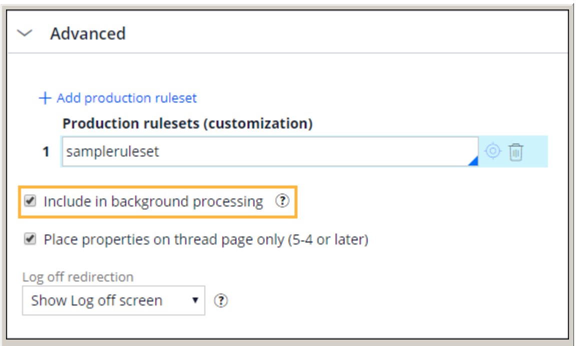
- To bypass updates for specific classes and only import new instances of those types, edit the product rule definition. For more information, see Specifying product rule deployment options.



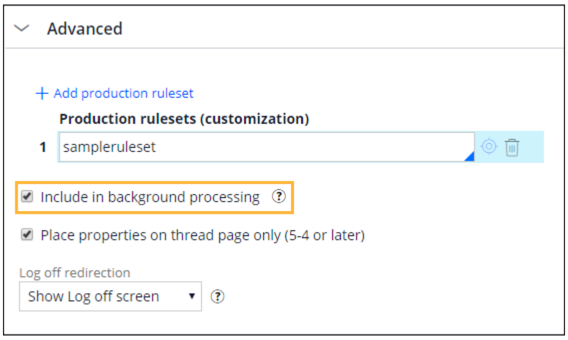
Automate context management for background processes (8.3)

You can now apply automatic management of the system run-time context without manually modifying the AsyncProcessor requestor type context. This functionality enables a queue processor or job scheduler after importing or upgrading an application. You can add an application that contains queue processors or job schedulers to the System Runtime Context, which automatically manages the resolution of these background processes.

The following image shows the Include in background processing check box, which you select to add an application to the System Runtime Context.



Include in background processing check box

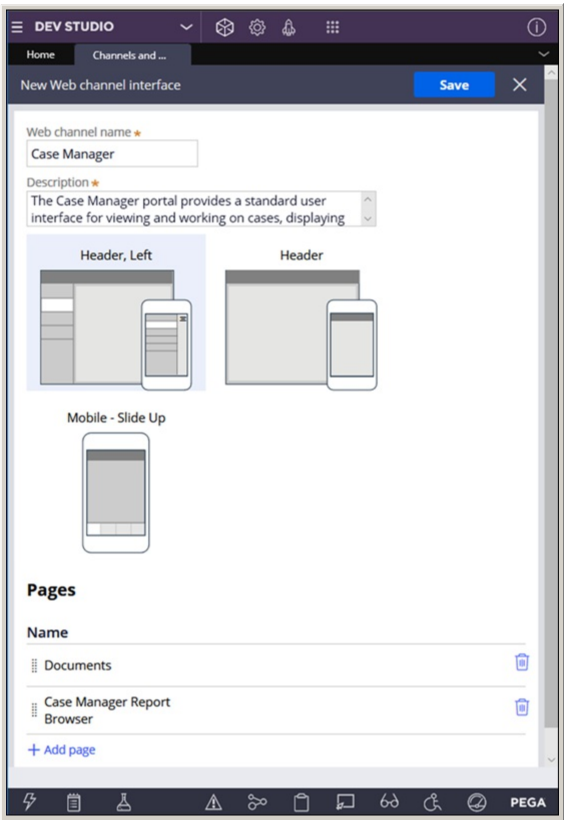


Include in background processing check box

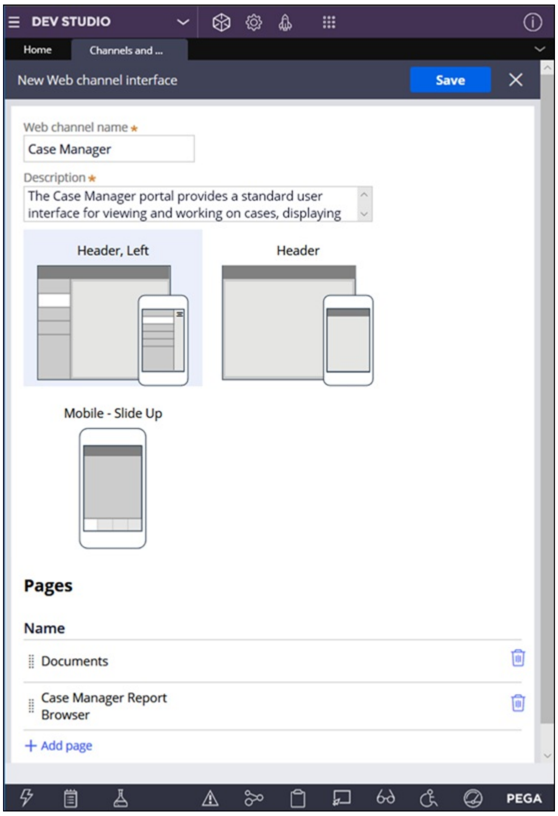
For more information, see System general landing page and Automating the runtime context management of background processes.

User Interface

Pega Infinity™ includes a new capability for designing and developing web interfaces, robust personalization of tables, improved performance through reduced markup, a ready-made UI Kit that delivers comprehensive and modern user experience in your applications, and more.



Web portal design



Web portal design

User Interface includes the following enhancements:

- Generate the primary navigation of a web interface (8.3)
- Improve interactions with data in tables with the table toolbar (8.3)
- Improve user experience and enable native search in mobile apps with UI-Kit 14 (8.3)
- Manage Test ID access with an access group role (8.2)
- Improve design consistency with UI-Kit 13 (8.2)
- Increase UI authoring capabilities in App Studio (8.2)
- Include region headers on forms (8.2)
- Application guardrails that require justification (8.2)
- Display work items and harnesses in the lightweight AJAX Container
- Increase control over data presentation by personalizing table views
- Create UI-based tests with automated scenario testing
- Find and fix issues by using the Accessibility Inspector
- New capabilities for front-end developers
- New capabilities for editing user interfaces in App Studio
- Improve design consistency with UI-Kit 12

To learn about all the new features in **User Interface**, watch the ***What's New*** video below.

Looking for What's New in 8.2 videos? View them in our Pega Community Video Library.

Visit www.pega.com to learn more about Pega Infinity™.

Visit What's New in Pega Platform to discover all the exciting new features in this release.

Customize Cosmos-themed applications in a no-code environment (8.4)

Broaden your experience with the redesigned user interface introduced with the Cosmos theme which offers a streamlined case workflow and a contextualized experience when navigating between cases and case elements. The new features support both desktop and mobile applications.

Learn about the new look

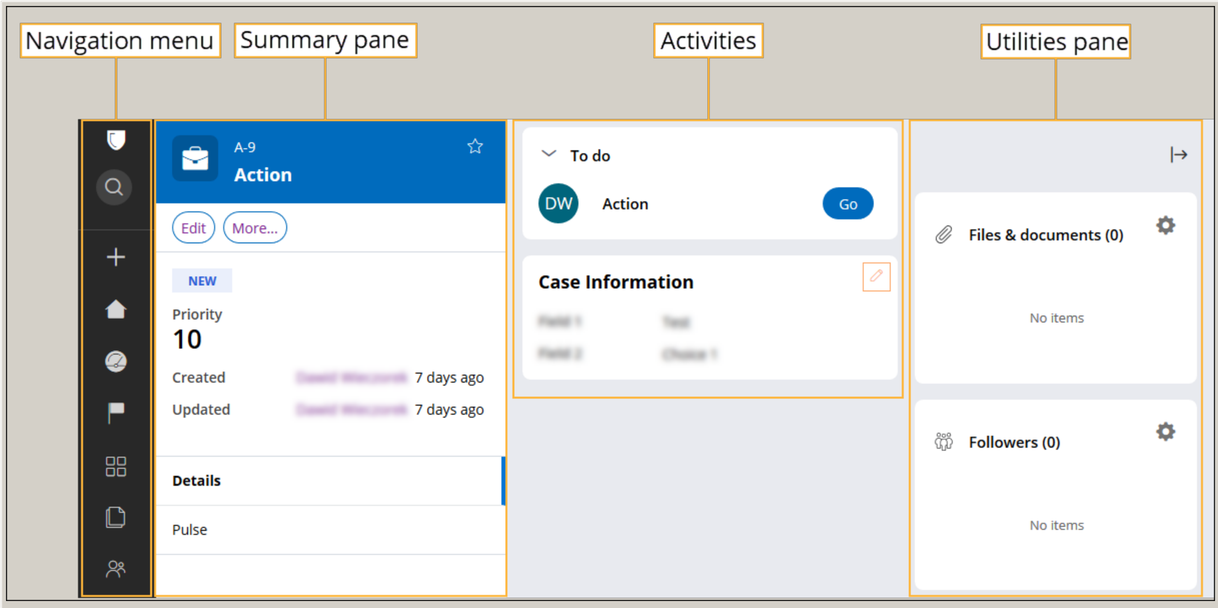
Use the preview pane to see the most important case information, collaborate by using Pulse, and interact with case widgets. You can preview cases and documents directly from their links, and open related cases in new browser tabs to keep the context of your current work. Conveniently switch between cases with your brower's back button and follow navigable breadcrumbs to trace relationship between related work.

If you need to return to a task later, you can now bookmark cases, new spaces, or important documents, and readily access them again in the Recents menu.

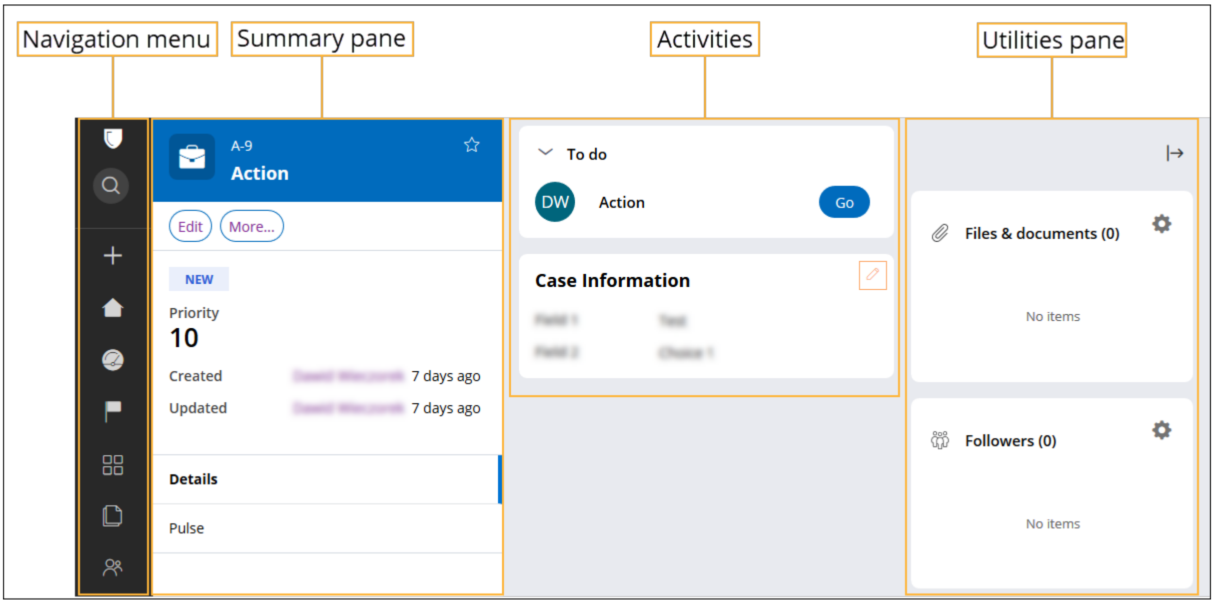
Spaces and Documents now have a new look that maximizes the work area. An expandable pane on the right side holds tabs for metadata details and utility widgets, and case information is presented in the following ways:

- The navigation menu on the left allows for easy access to the main pages.
- Casa data and related objects display in the Summary pane, which has a customizable interface.
- The work area features activity and life-cycle tasks, such as ad-hoc, suggested, or completed tasks. Any collaboration or message history captured in Pulse also appears in the work area.
- The expandable utilities pane displays widgets for participants, attachments, and tags.

The following figure shows the redesigned UI of a case:



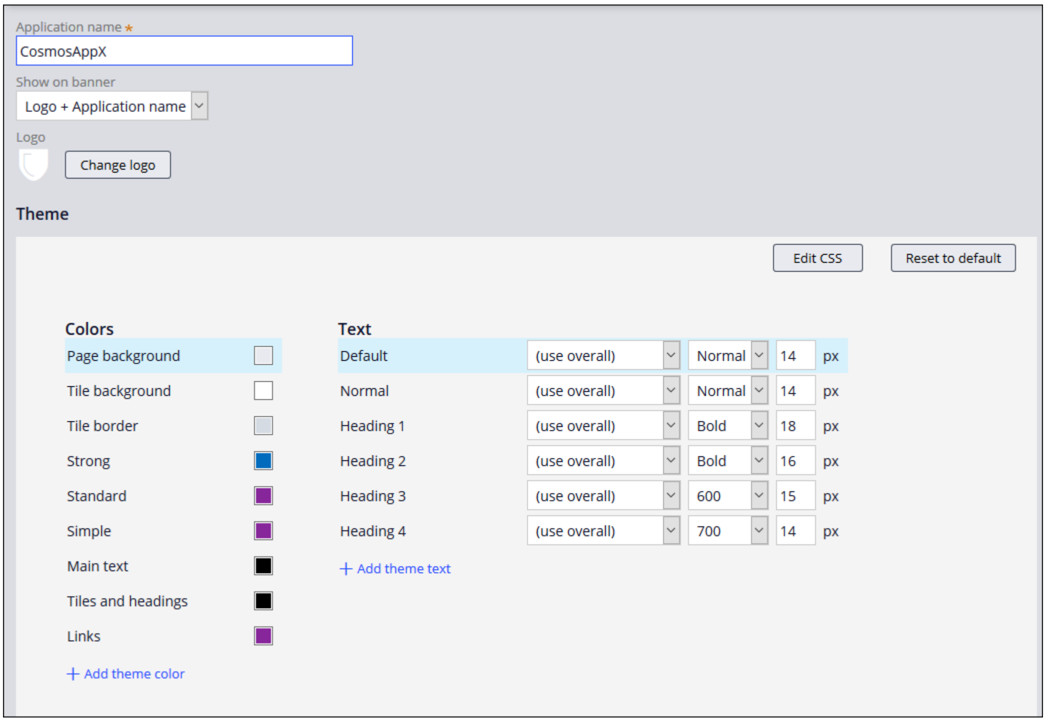
An example case created in a Cosmos-based application



An example case created in a Cosmos-based application

Personalize your Cosmos application

You can customize your Cosmos-based applications by restyling your application's Cosmos theme directly in App Studio. You can change the default colors, font styles or sizes, and more. The following figure shows the styling settings for the Cosmos theme:



Style settings for the Cosmos theme

By entering the Design mode, you can change the overall look of your application, including its Home page, or individual sections. You can add, modify or remove tabs in the tabbed interface for various elements, such as the preview or case summary panes. You can also add or remove whole pages, and add, remove, or rearrange fields for cases as you create them in the new modal window, by using design templates.

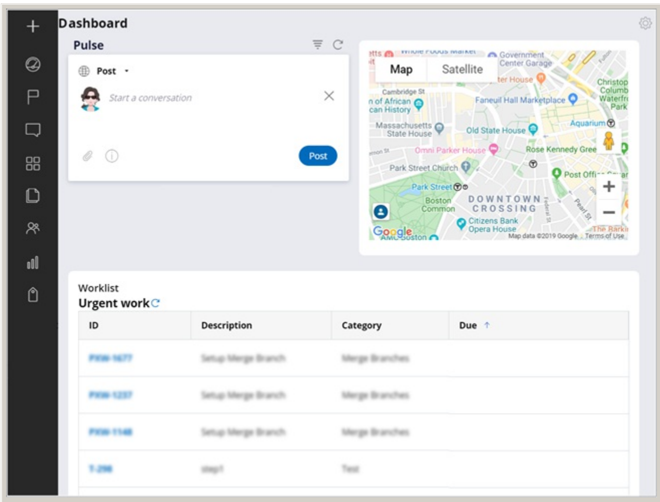
Experience Cosmos in a mobile environment

You can also benefit from many of the features of the Cosmos theme on your mobile app, such as pull to refresh, and using native search to better filter cases and action them by using the new tabbed interface. Cosmos comes with a pre-configured mobile channel, which supports the new enhancements. You can use the pre-configured channel to easily build your Cosmos-themed mobile app without the need for additional configuration.

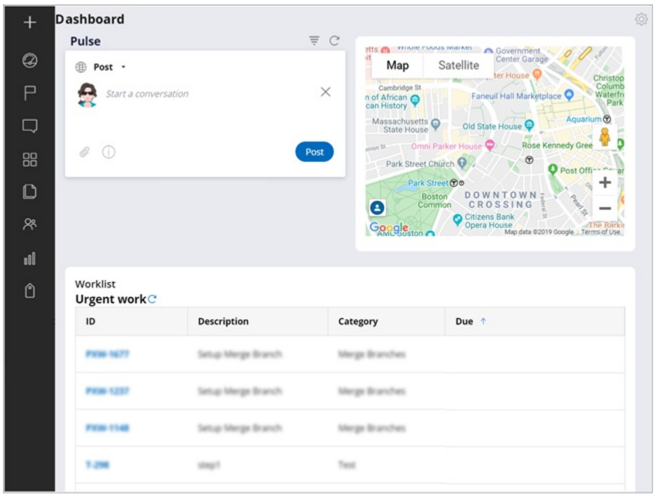
Explore the React UI runtime environment (8.4)

Preview the new Pega Platform™ user interface in a development-ready testing environment.

Pega is currently in the process of redeveloping its run-time environment for the React UI, which supports the latest open-source technologies and frameworks. Because the React UI performs exceptionally well with rapidly changing data sets, its use improves performance, interactivity, and response times, which creates a more fluid user experience.



Sample of the React UI dashboard



Sample of the React UI dashboard

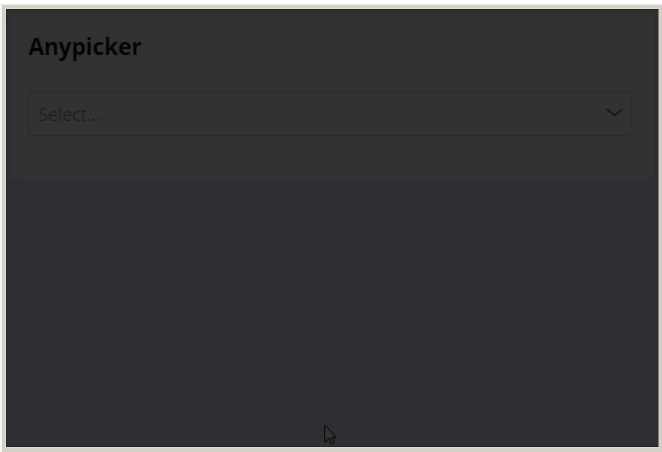
In the 8.4 release, you can opt in to the React UI in App Studio to explore the new development environment and experiment with building sample applications. If you use Pega Cloud Services or a client-managed cloud environment to host your Pega Platform, the React UI engine is already a part of your development environment, and you only need to enable it for your applications. If you run an on-premises environment, you can opt in by downloading the React UI Docker container from the Pega public repository and installing it manually.

For more information about enabling the React UI test environment, see React UI preview.

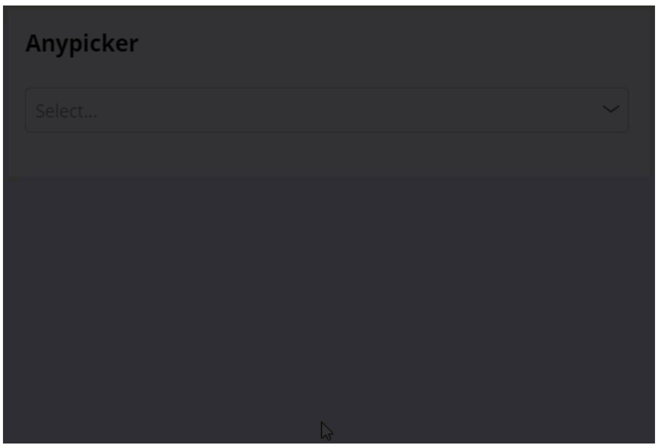
Improve navigation with the Anypicker control (8.4)

Reduce the time that users spend on navigating drop-down lists by grouping similar list items into expandable categories in the Anypicker control.

For example, if your business operates in several cities, you can use this control to group business locations by region and help users who fill out forms to quickly select the right location.

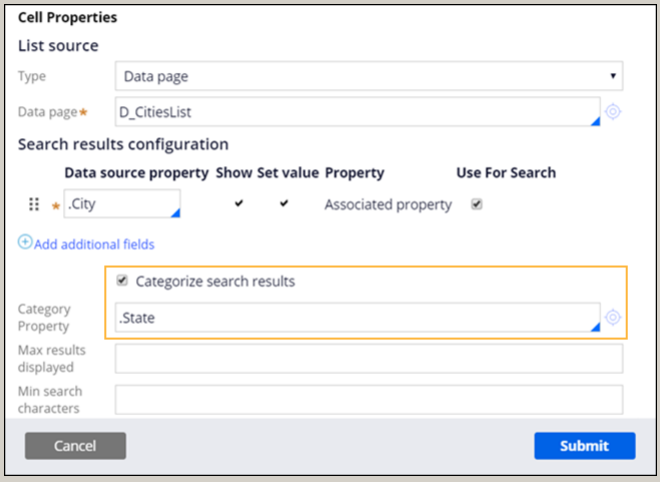


Sample Anypicker control

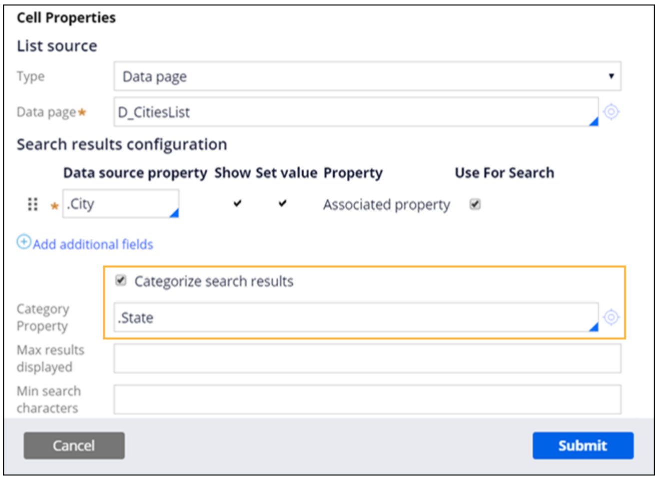


Sample Anypicker control

The Anypicker control works best with data types that have at least two fields, for example .City and .State. When you configure the Anypicker control, you define the fields on which you want to base your categories. If one of the records in the data type does not have an entry in a field that you define for grouping, the control displays that record below the list of categories as a stand-alone choice.



Categorizing list items



Categorizing list items

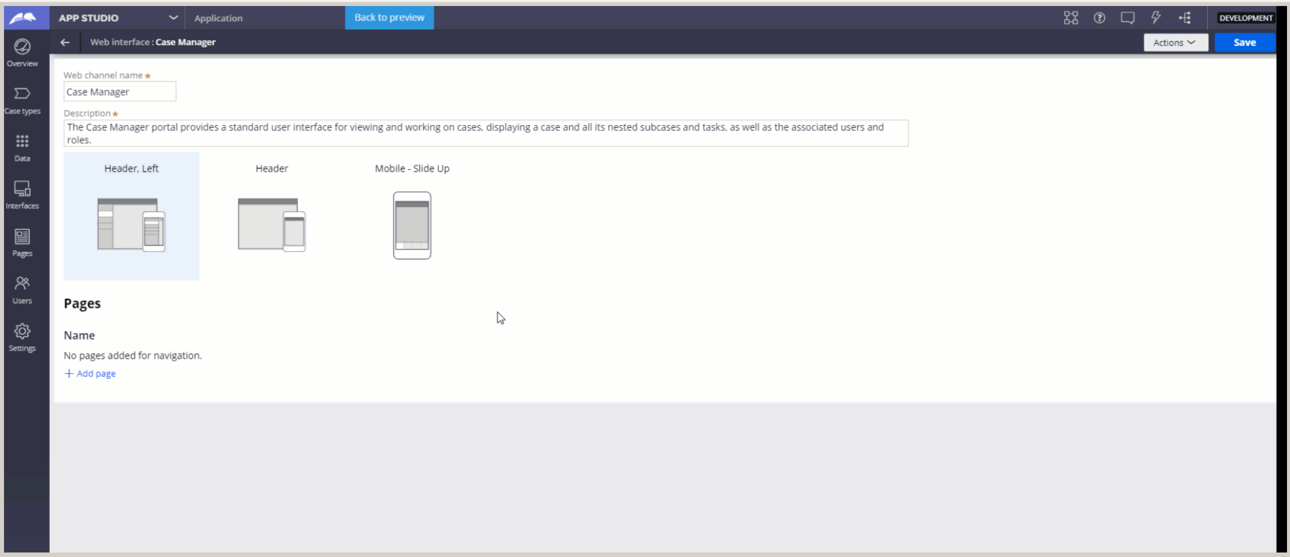
You can use the Anypicker control to set up the first level of categorization in a drop-down list. To create a complex drop-down list with several levels of embedded categories, you structure the source data for that purpose. For example, you can use embedded pages to establish hierarchy.

For more information, see Adding an Anypicker control.

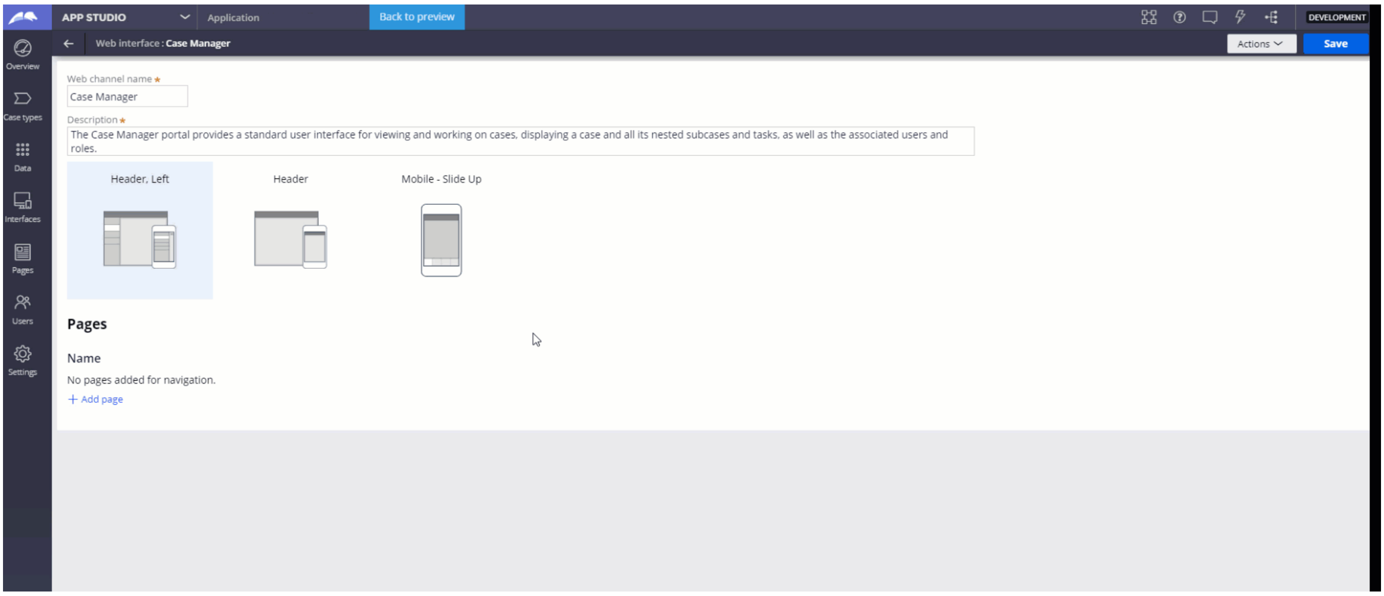
Generate the primary navigation of a web interface (8.3)

Generate a dynamic primary navigation of a web interface by managing the list of user interface pages that are relevant to your application.

If you configure the layout of a web interface to include a menu widget, you can add, remove, and reorder user interface pages that populate the primary navigation menu. When you manage the list of pages, you see an overview of the web interface. This way you can adjust the navigation before you generate a preview in App Studio or launch the interface in Dev Studio. The following demo shows how to add items to the navigation menu from App Studio.



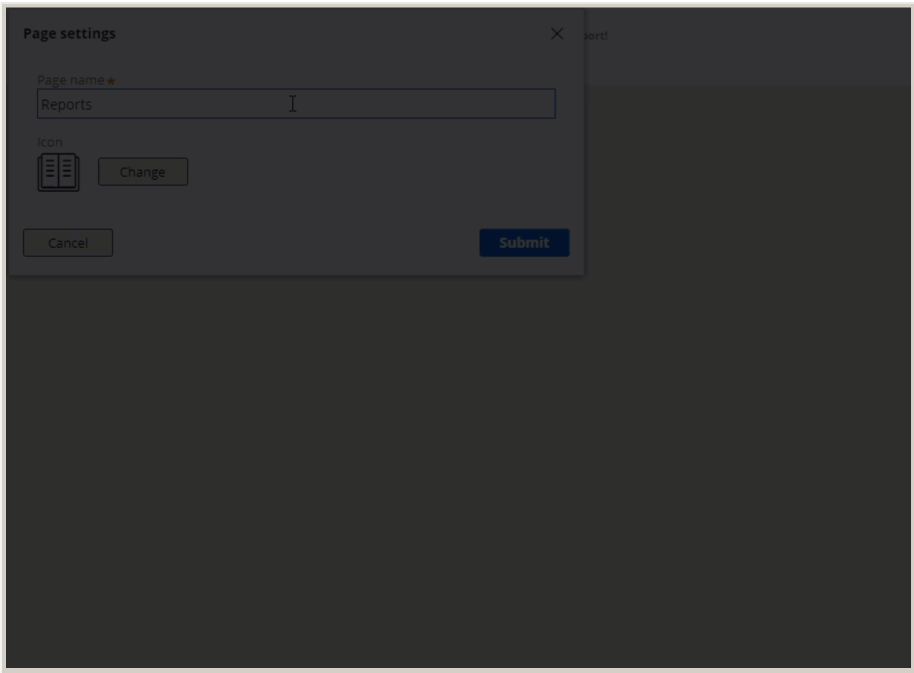
Adding items to the navigation menu



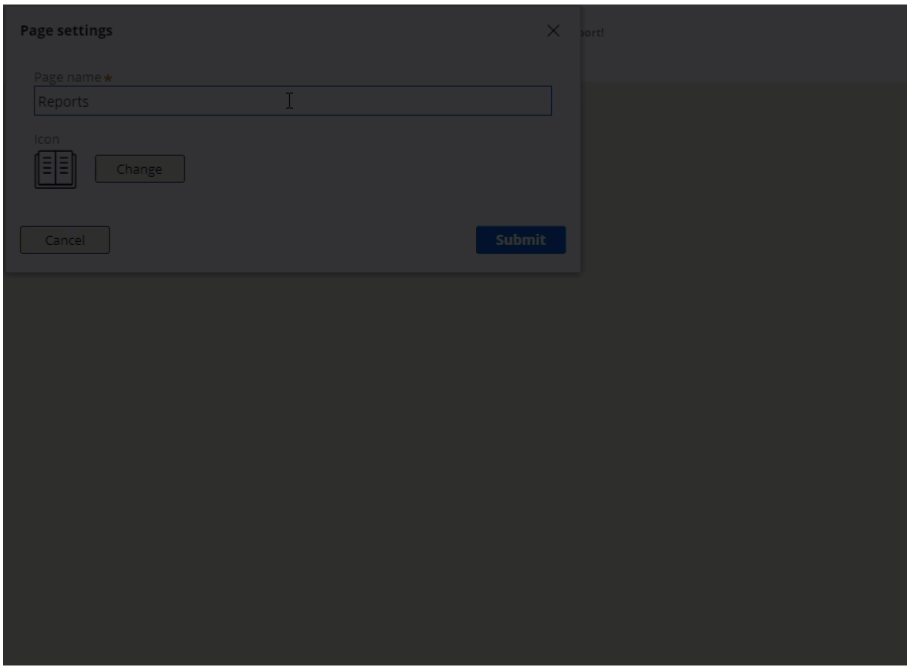
Adding items to the navigation menu

To ensure that the list of pages contains elements that are suited to your business process, you can add only the pages that are marked as relevant records for your application. For example, all pages that you create in App Studio are automatically marked as relevant records, and can be used to quickly build a navigation menu.

You can also customize user interface pages by editing their names and giving them unique icons in App Studio, as shown in the following demo.



Changing the name and icon of a page



Changing the name and icon of a page

For more information, see Configuring the navigation menu for a portal and Modifying the name and icon of a page.

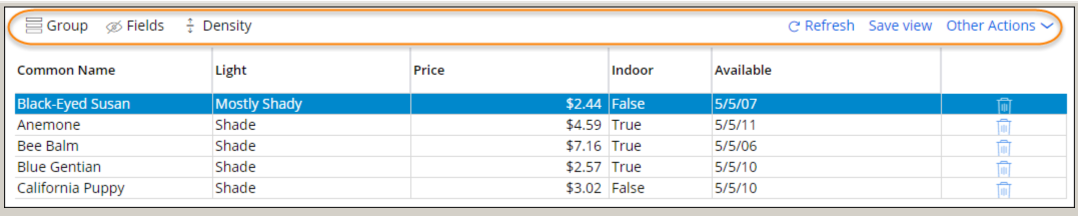
Improve interactions with data in tables (8.3)

Add personalization functions to table toolbars to provide a consistent design throughout the user interface and help users interact with data more efficiently.

Pega Platform™ generates the toolbar automatically for an optimized table whenever you enable any of the following features:

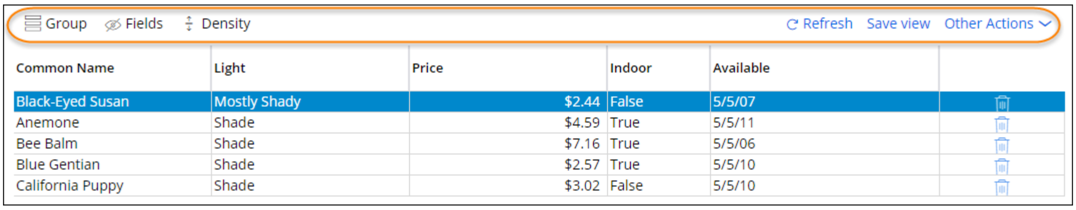
- Field-based grouping
- Column visibility toggle
- Row height adjustment
- View refresh

If you expose the toolbar, you can also include the Save view option and custom actions that the users need and use frequently.



Common Name	Light	Price	Indoor	Available	
Black-Eyed Susan	Mostly Shady	$2.44	False	5/5/07	
Anemone	Shade	$4.59	True	5/5/11	
Bee Balm	Shade	$7.16	True	5/5/06	
Blue Gentian	Shade	$2.57	True	5/5/10	
California Puppy	Shade	$3.02	False	5/5/10	

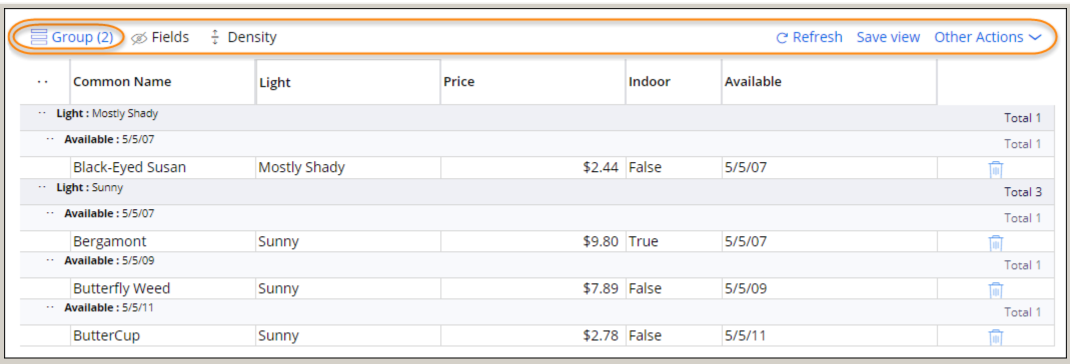
A table toolbar with personalization options and custom actions



Common Name	Light	Price	Indoor	Available	
Black-Eyed Susan	Mostly Shady	$2.44	False	5/5/07	
Anemone	Shade	$4.59	True	5/5/11	
Bee Balm	Shade	$7.16	True	5/5/06	
Blue Gentian	Shade	$2.57	True	5/5/10	
California Puppy	Shade	$3.02	False	5/5/10	

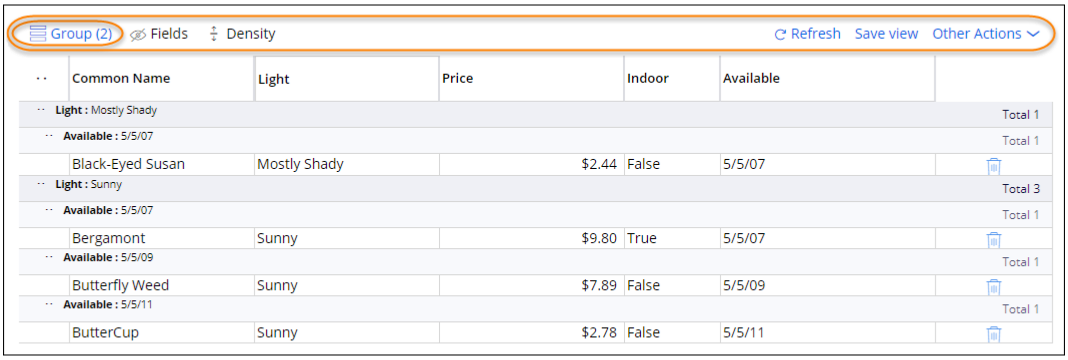
A table toolbar with personalization options and custom actions

By using the toolbar, users can adjust the display of data at run time and, as a result, improve the quality of their user experience. The toolbar also presents a summary of the operations, to help control the view of data. In the following example, the data is grouped by Light and Available, and the Group icon on the toolbar indicates that the two fields are in use.



Common Name	Light	Price	Indoor	Available	
Light : Mostly Shady					Total 1
Available : 5/5/07					Total 1
Black-Eyed Susan	Mostly Shady	$2.44	False	5/5/07	
Light : Sunny					Total 3
Available : 5/5/07					Total 1
Bergamont	Sunny	$9.80	True	5/5/07	
Available : 5/5/09					Total 1
Butterfly Weed	Sunny	$7.89	False	5/5/09	
Available : 5/5/11					Total 1
ButterCup	Sunny	$2.78	False	5/5/11	

A table toolbar with grouping by two fields



Common Name	Light	Price	Indoor	Available	
Light : Mostly Shady					Total 1
Available : 5/5/07					Total 1
Black-Eyed Susan	Mostly Shady	$2.44	False	5/5/07	
Light : Sunny					Total 3
Available : 5/5/07					Total 1
Bergamont	Sunny	$9.80	True	5/5/07	
Available : 5/5/09					Total 1
Butterfly Weed	Sunny	$7.89	False	5/5/09	
Available : 5/5/11					Total 1
ButterCup	Sunny	$2.78	False	5/5/11	

A table toolbar with grouping by two fields

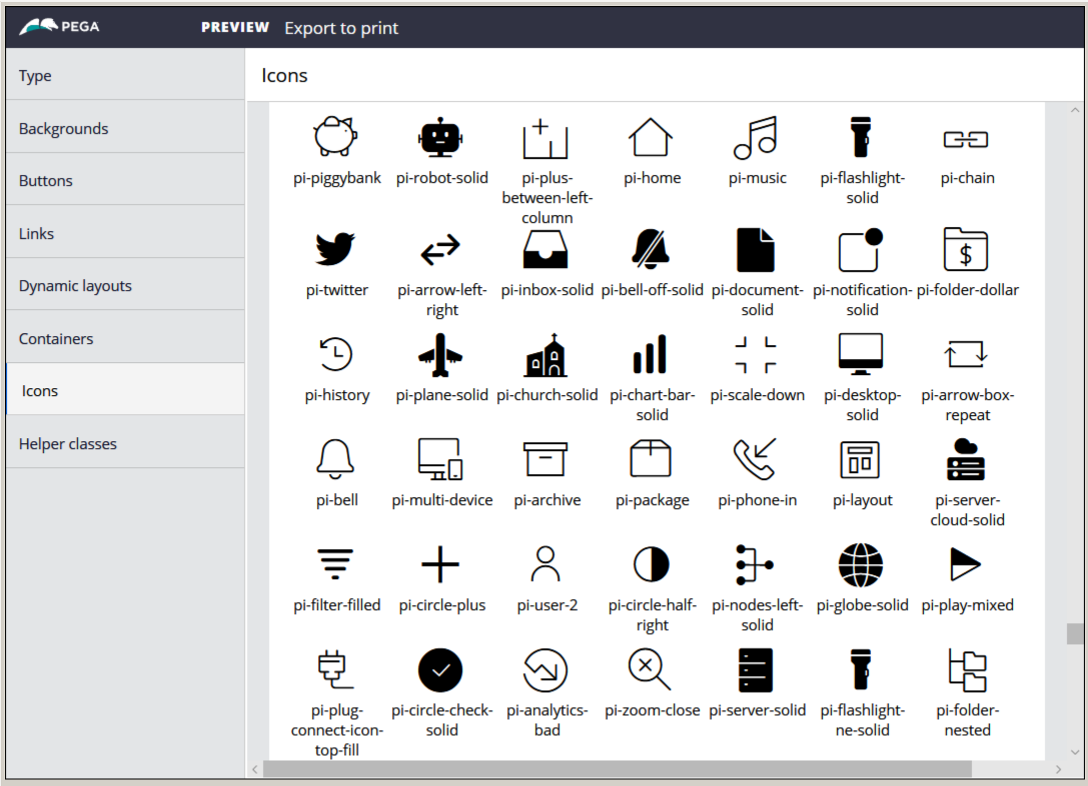
For more information, see Configuring the table toolbar.

Improve user experience and enable native search in mobile apps with UI-Kit 14 (8.3)

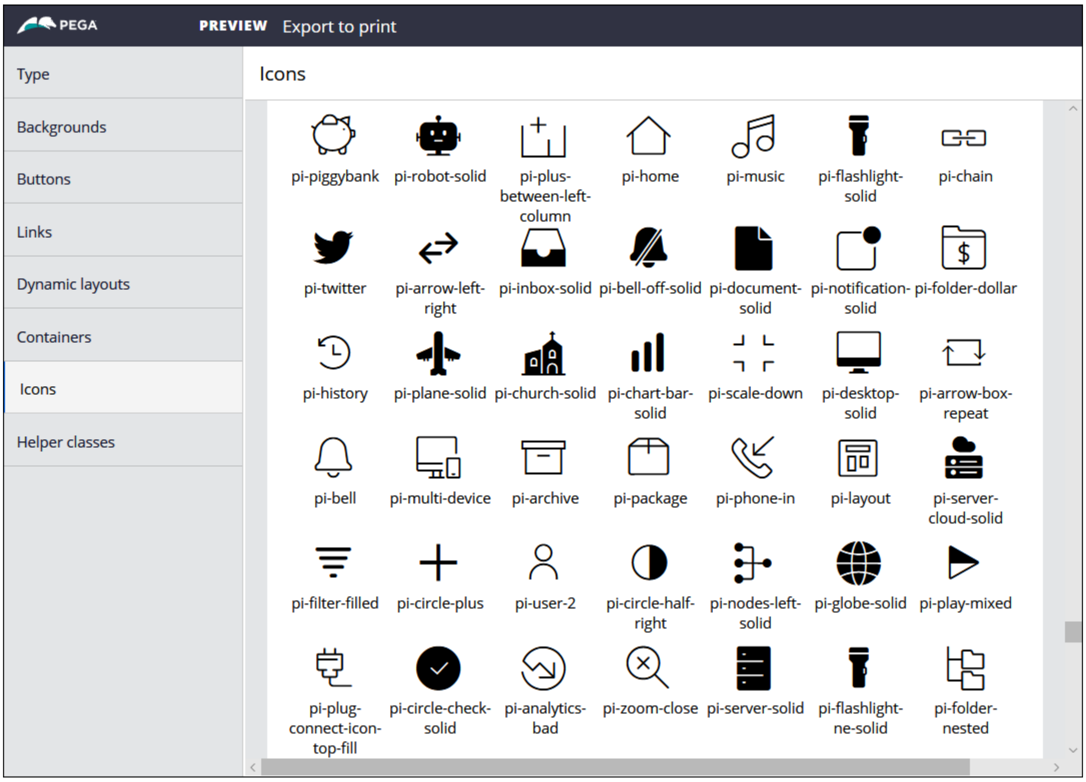
Pursue the latest trends in user interface design and take advantage of Pega's sample UI components to provide comprehensive and consistent end-user experience in your applications.

UI-Kit 14 enhances the style and functionality of applications that you build with this updated and improved ruleset in the following ways:

- The collection of font icons has been expanded for a more intuitive and user-friendly experience.

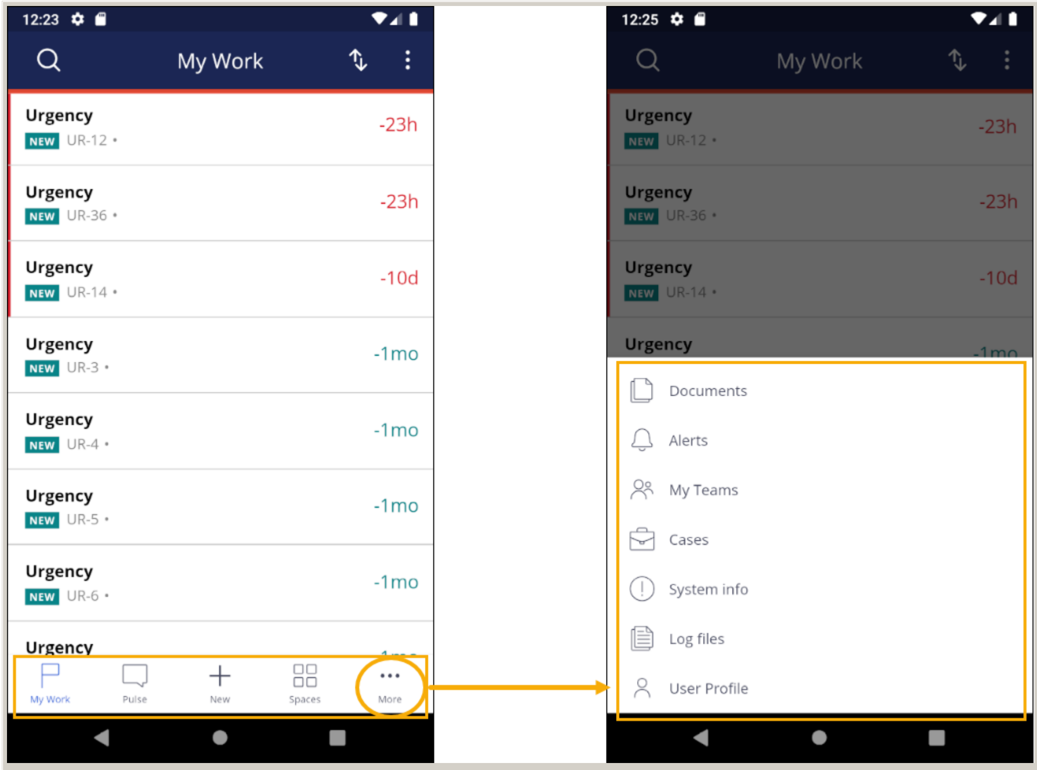


Font icons

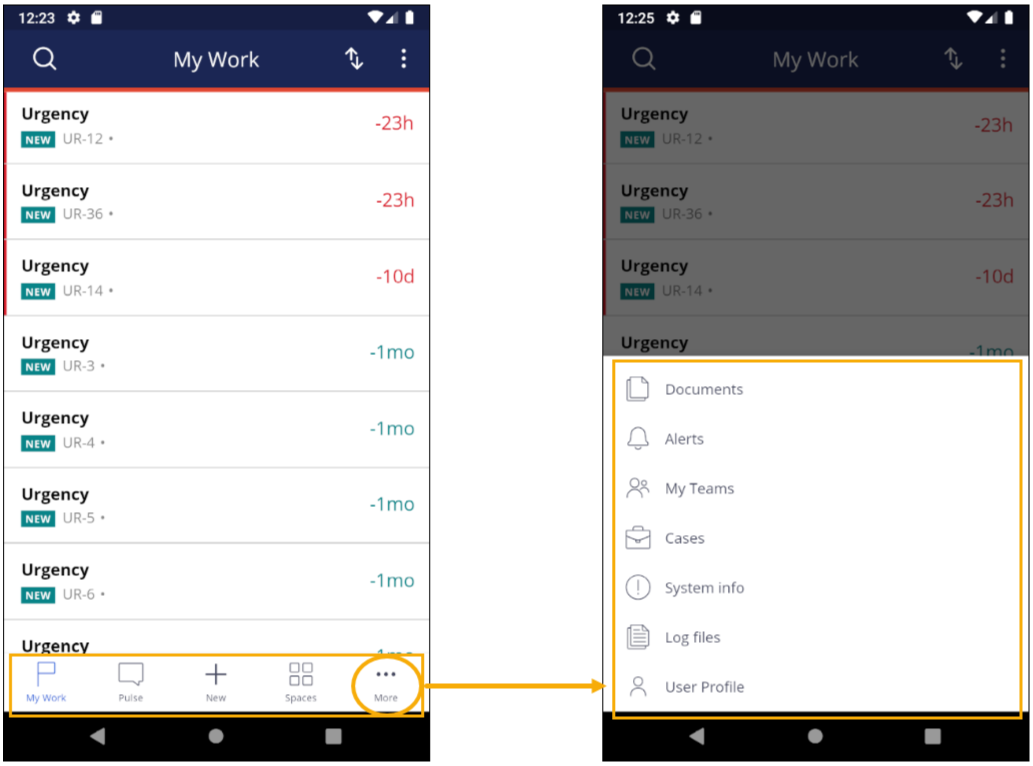


Font icons

- Mobile apps that are based on UI-Kit 14 adopt the latest mobile features. The new functionality includes the improved native bottom bar and native menus, such as the expandable More menu on the bottom bar and the Actions menu in cases.

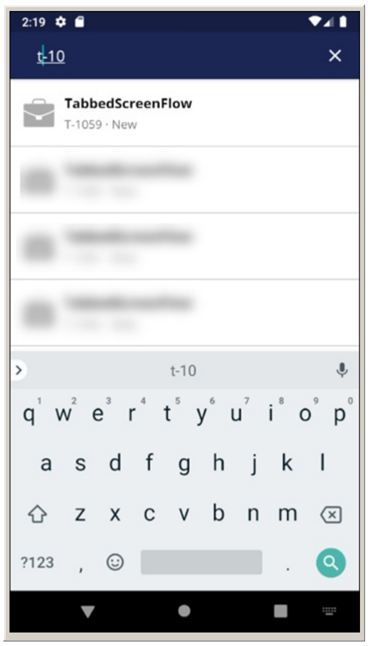


Native bottom bar and More menu

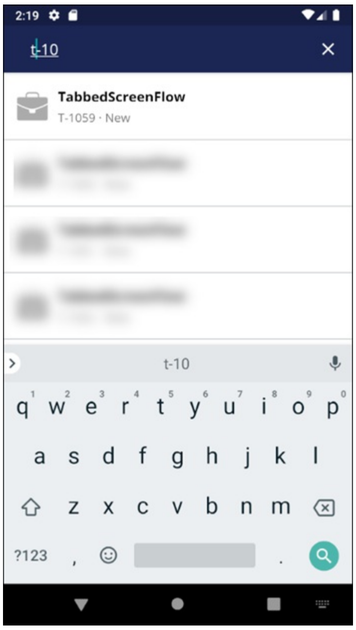


Native bottom bar and More menu

- Mobile apps based on UI-Kit 14 have also been enhanced with a default native search configuration that speeds up finding case data.



Results of search for case data



Results of search for case data

For more information about native menus, see Advanced layout options.

In addition, the UI-Kit 14 introduces the following changes:

- The red triangle icon has been removed from error messages.
- The color of the calendar icon is now consistent with other icons.
- All caret down icons for auto-complete and multi-select lists use the caret-down.svg file.
- Checkbox alignment has been improved with the reduction of the left margin by 1px.
- The border-radius value has been reduced to 4px.
- The background and box shadow for rich text editor have been removed.
- The bottom margin for radio buttons has been removed.
- The header height of the None container format has been changed to 50px.
- The label font size has been changed to 14px.
- The label and border color have been slightly darkened.

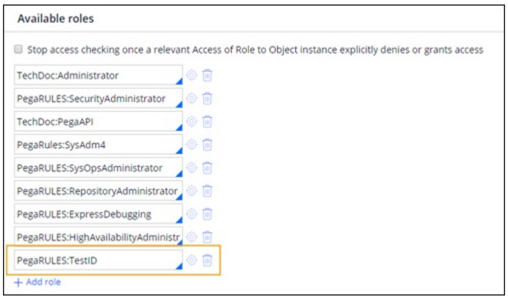
Manage Test ID access with an access group role (8.2)

Test IDs allow Pega application developers to create a unique identifier for each user interface component. Test IDs are unique numerical strings that appear in the markup of an application. An automated test can use the test ID to identify a user interface element and run a test against it.

Access to the test ID functionality is controlled by a role within an access group. Not all Pega Platform™ users require access to the test ID functionality. Only developers who create or run tests against the UI need access to the test ID functionality. Limiting access prevents accidental alteration of the test IDs. At run time, without the test IDs included in the code, the client downloads less code, improving performance.

Access to test ID functionality is controlled by the PegaRULES:TestID role. By default, access groups do not include the PegaRULES:TestID role. You can grant access to the test ID functionality by adding this role to an access group.

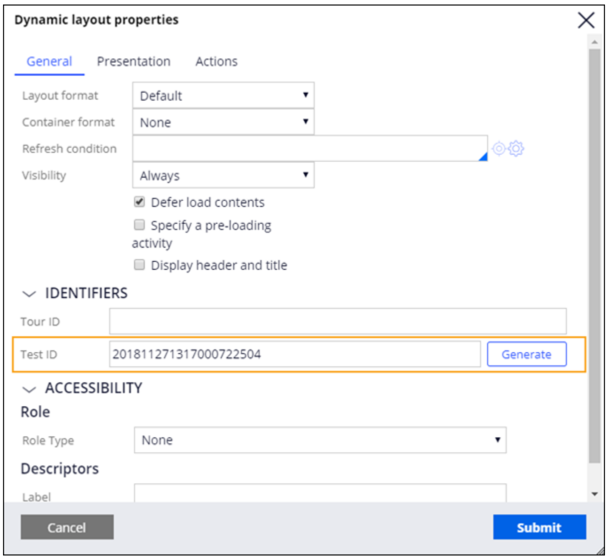
1. In Dev Studio, create a new access group or open an existing access group that you want to grant access to the test ID functionality by clicking Records > Security > Access group. Select the access group from the list.
2. On the Definition tab in the Available roles section, click Add Role.
3. In the blank text area added to the end of the Available roles list, enter PegaRULES:TestID.



The Access group with the PegaRULES:TestID access role.

4. Save the access group.

Members of the access group now have access to the test ID functionality. To add a test ID to a user interface element, open the General tab of the properties panel in and click the Generate ID button. For more information on user interface elements that support the test ID functionality, see [Test ID and Tour ID for unique identification of UI elements](#).



The General tab of the Properties panel showing the Test ID

Improve design consistency with UI-Kit 13 (8.2)

Build applications with greater consistency with UI-Kit 13, which provides common UI elements and styling that help you avoid duplicating work across multiple applications. The latest Pega design standards are reflected in UI-Kit 13 so that all applications built on UI-Kit 13 are aligned with current designs. The design changes introduced in UI-Kit 13 are intended to promote more consumer-oriented software experiences in Pega applications. For more information, see [Pega Cosmos Design System](#).

This version of the UI-Kit includes enhancements to font icons, a new design template, a new location for the Pulse panel, and changes to the Recents panel.

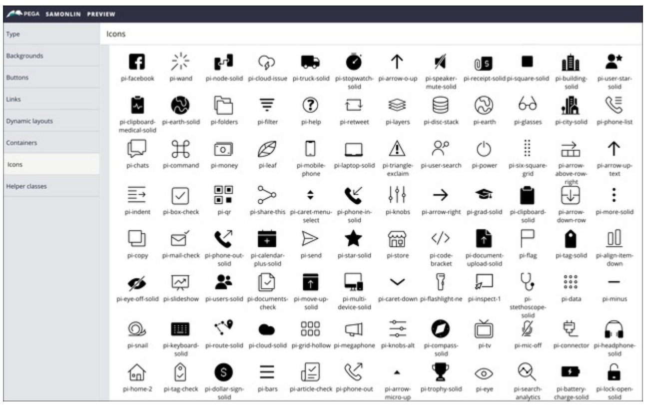
- Font icons
- Design template
- Pulse panel
- Recents panel

Font icons

UI-Kit 13 introduces new font icons to streamline application design, heavier line weights for improved legibility on core UI icons, and enhanced artwork on existing icons. In addition, duplicate icons have been merged to improve consistency.

To view all available icons, complete the following steps:

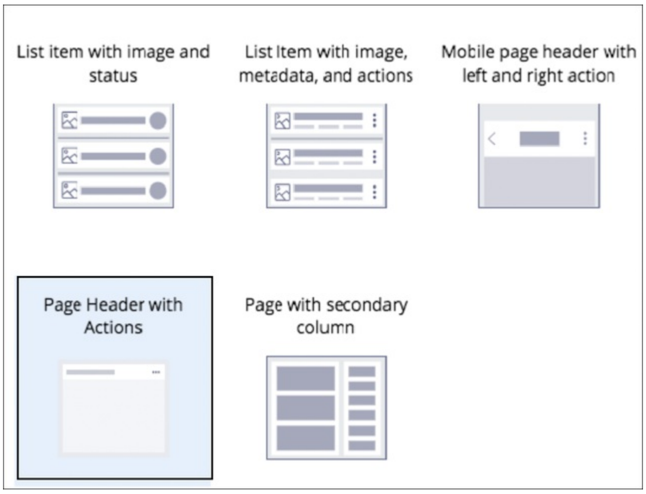
1. In Dev Studio, click Configure > User Interface > Skins, interfaces, & templates.
2. On the Skins tab, open your skin.
3. Click Actions > Launch > Skin Preview.
4. In the navigation panel, click Icons.



Pega Icons

Design template

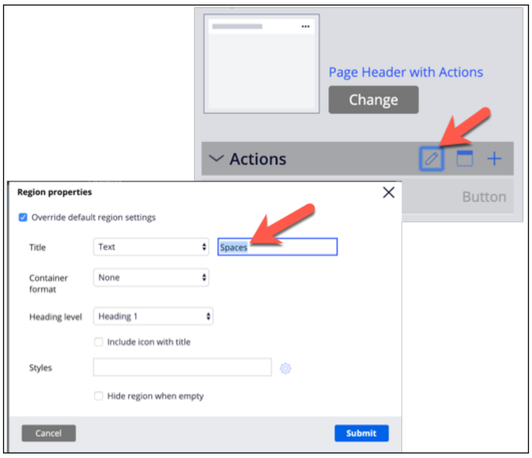
A design template is a special type of section that contains predefined layouts and regions. In UI-Kit 13, a new Page Header with Actions template has been added. Use the Page Header with Actions template to create a page header title that meets accessibility standards. Optionally, the header can contain actions.



Page Header with Actions template

To set a header title by using the Page Header with Actions template, complete the following steps:

1. In the Section rule that uses the Page Header with Actions template, place your cursor over the Actions region and click the Pencil icon.
2. On the Region properties dialog box, select the Override default regions setting check box and enter a title.
3. Click Submit.



Page Header with Actions - Region properties dialog box

To see sample uses of this template and other templates in the Case Worker and Case Manager portals in UI-Kit 13, complete the following steps.

1. In Dev Studio, click Configure > User Interface > Skins, Interfaces, and Templates.
2. Click the Templates tab.

Pulse panel

Previously, the Pulse panel was located in a slide-out panel on the upper right of the screen. To improve the visibility and usability of Pulse for team collaboration on work objects, the Pulse panel has been moved into the main case work area.

Recents panel

For increased flexibility when you customize the user interface and for a more efficient Document Object Model (DOM), the Recents panel in the left navigation pane is now generated by using a repeating dynamic layout instead of a table.

Increase UI authoring capabilities in App Studio (8.2)

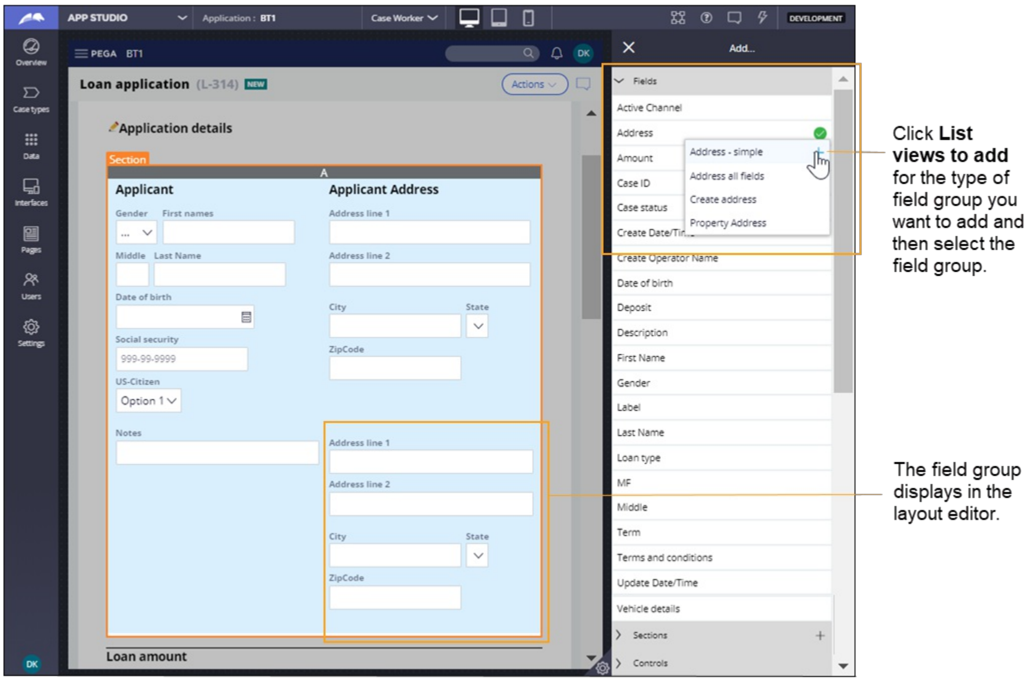
You can add complex elements elements, choose additional controls, and change parameter values when configuring sections in App Studio. If you have access to Dev Studio, you also have access to the complete property panel for controls in App Studio. The more robust set of options enables you to quickly modify the user experience at run time without having to switch to Dev Studio to modify sections.

- Add complex elements to sections
- Choose more controls
- Access the full property panel for controls
- Change parameter values

Add complex elements to sections

You can add complex elements, such as sections, field groups, and data references to sections at run time.

For example, to capture a loan applicant's work address on an application form at run time, you add the Address-simple field group to the section that collects the applicant's home address.



Adding a field group to a section

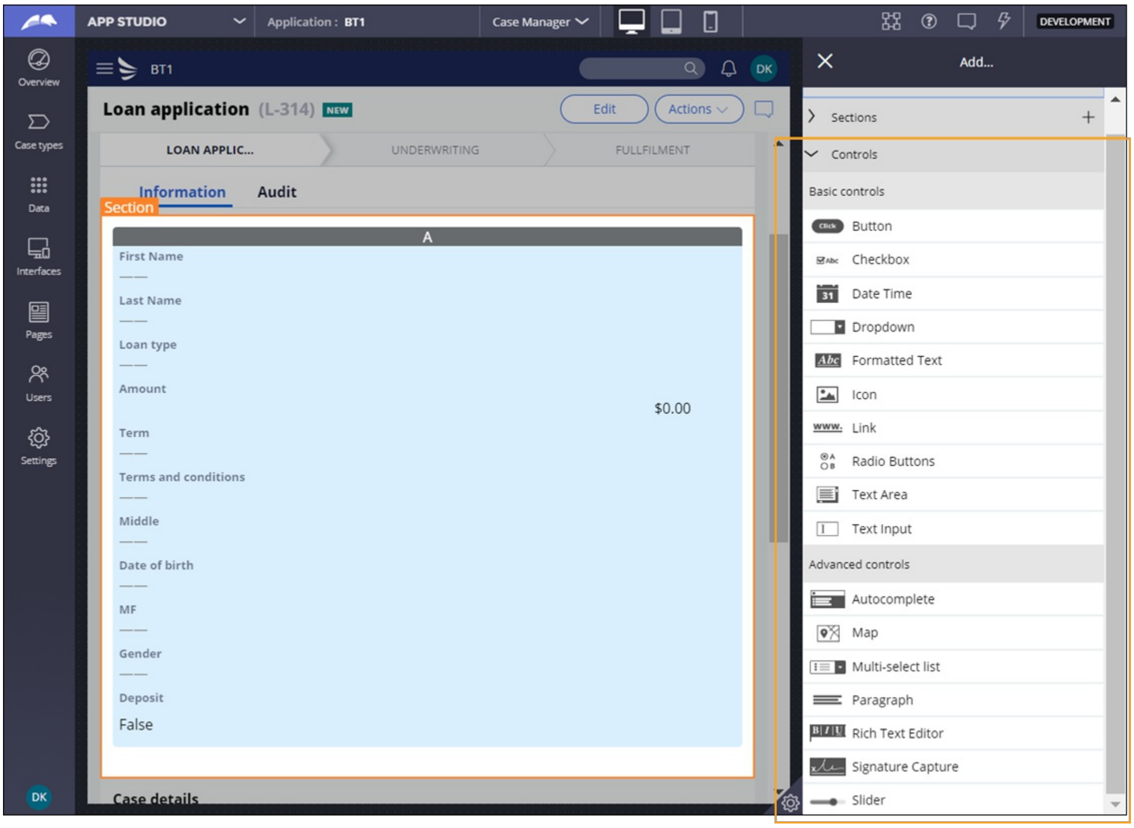
Choose more controls

More controls are available for you to include in sections when you modify forms in App Studio.

The additional controls that you can add to a section include:

- Autocomplete – Use the autocomplete control when users need to select a value from a large set of searched text values, based on a partial string match.
- Map – Add the map control when users need to view and interact with location points in Google Maps from within the desktop or mobile app.
- Multi-select list – Use the multiselect list control when users need to select multiple items for a single field.
- Signature Capture – Use the signature capture control when users need to provide a signature, either through mouse input or through a touch interaction on a mobile device.
- Slider – Add the slider control when users need to select a value from a scale, such as a value from 1 to 10.

The following figure illustrates the controls that you can add to sections in App Studio.



Choices for section controls in App Studio

Access the full property panel for controls

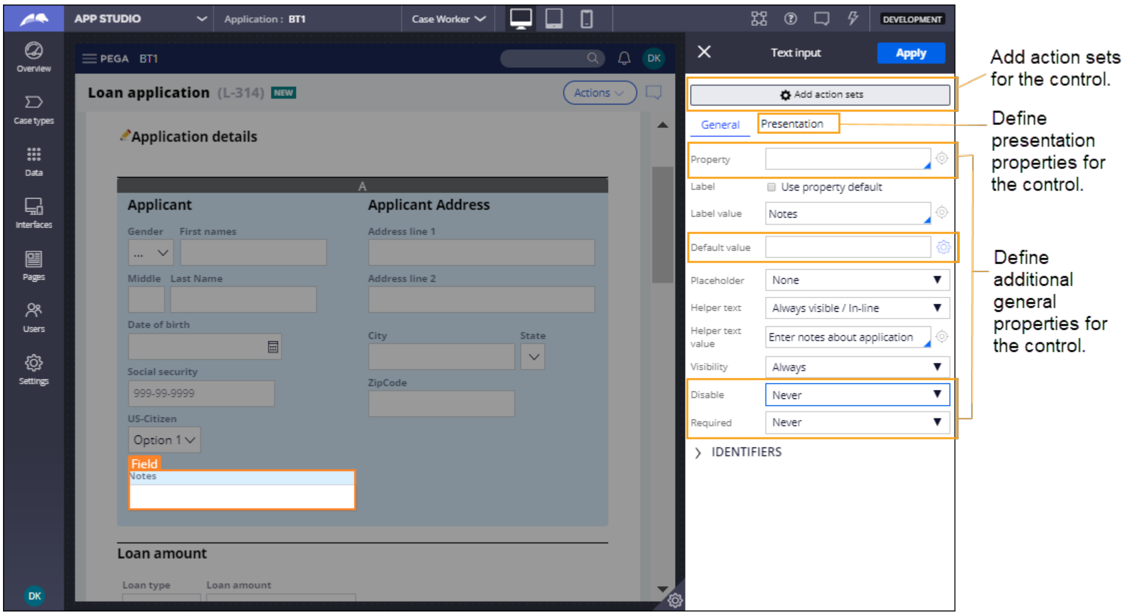
If you have access to both App Studio and Dev Studio, you can also access the full set of properties for controls in App Studio.

From the full property panel, you can:

- Define additional general properties – Set additional general options for a control. For example, you can select a property reference that identifies a single value for a text input control.
- Define presentation properties – Set advanced presentation options for a control. For example, you can define the minimum and maximum characters allowed for text input control.

- Add action sets – Pair events with actions to determine the behavior of a control. For example, you can specify that clicking a button refreshes a section.

The following figure illustrates the full property panel for a text input control in App Studio.

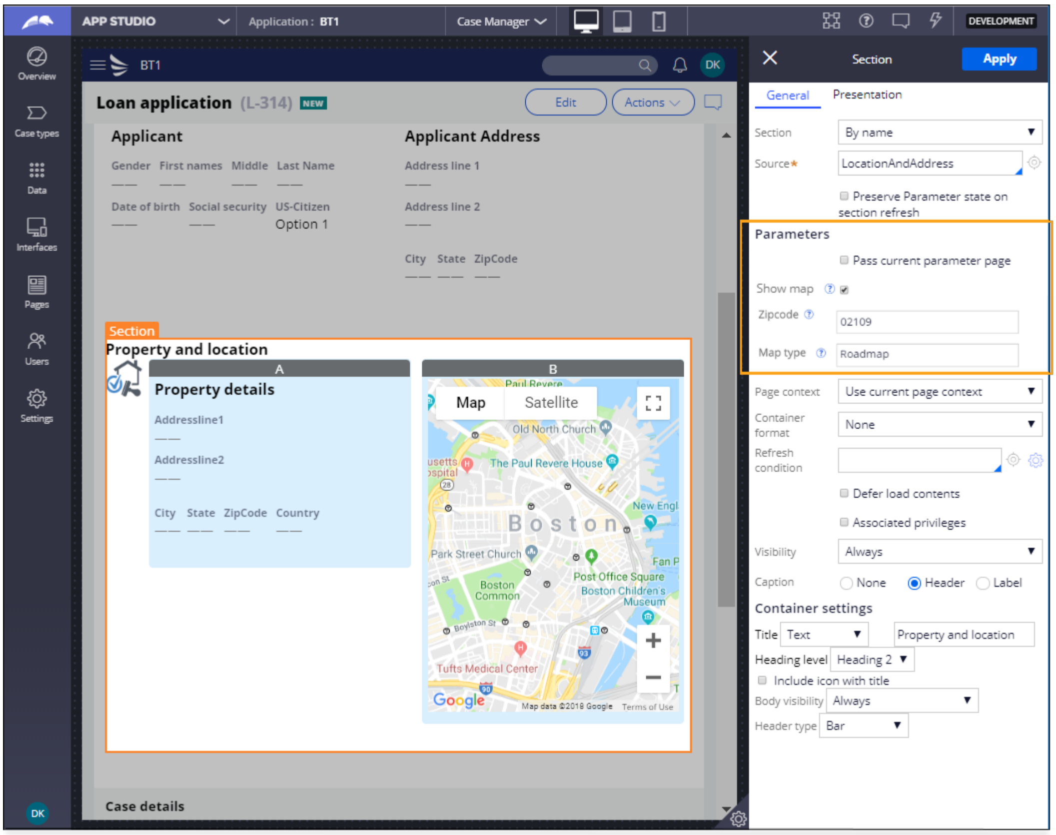


Full property panel for controls in App Studio

Change parameter values at run time

You can change parameter values at run time in App Studio. For example, you create parameters for a section that displays a terrain map based on a customer's home ZIP code. For one customer, however, you change the parameters at run time to display a roadmap based on their work ZIP code.

The following figure illustrates changing parameter values for a map.



Changing parameter values at run time

For more information about modifying sections at run time, see Configuring a form at run time.

For more information about including controls in sections, see Controls.

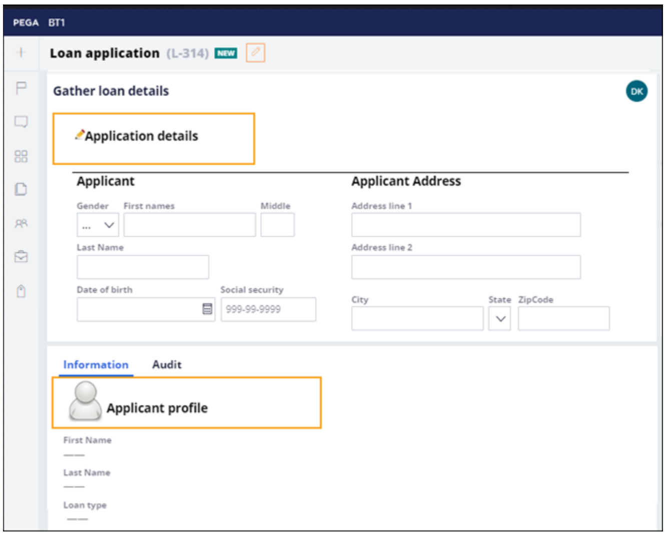
For more information about action sets, see Adding actions to a control.

Include region headers on forms (8.2)

When creating or modifying forms at run time, you can include region headers for sections that are based on design templates. These headers improve the readability of forms that contain multiple regions.

For example, you have a loan form that contains one region for collecting application details and another region that provides summary information about the applicant. You add a header titled Application details for the first region and a header titled Applicant profile for the second region.

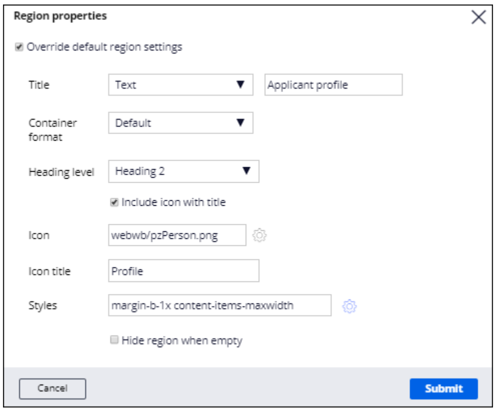
The following figure illustrates headers on a form.



Region headers on a form

When you add a header to a region, you define a title for the header, select a container format for the header, add icons, and select styles for the header.

The following figure shows header properties.



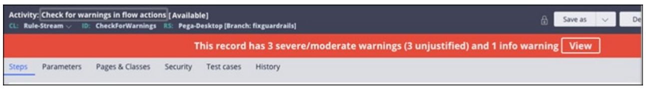
Properties for the region header

For more information about creating sections based on a design template, see [Creating a section based on a design template](#).

For more information about configuring a region at run time, see [Configuring a region at run time](#).

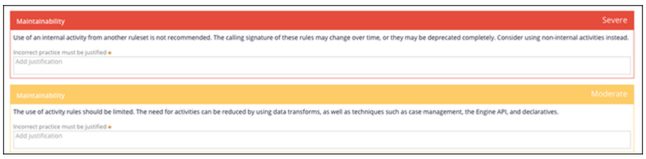
Application guardrails that require justification (8.2)

Pega Platform™ provides a set of guardrails that promote best practices for application design and implementation. Guardrails guide development to optimize reuse, maintainability, and system performance. Severe and moderate warnings are now more visible in the rule. If you attempt to save a rule that has one or more severe or moderate warnings, the rule header displays the warnings.



Guardrail warning in the header of a rule

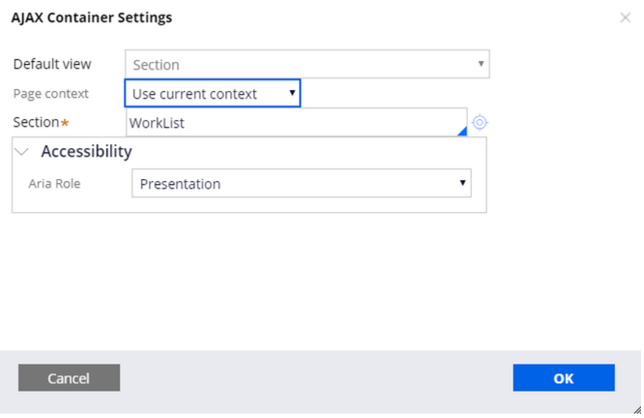
You must justify moderate and severe warnings when you check in a rule. If you attempt to check in a rule with moderate or severe warnings, the justification field is marked as required. Even if the warning is justified, the header displays the error header to indicate that this rule still has technical debt.



Severe and moderate warnings that require justification

Display work items and harnesses in the lightweight AJAX container

The AJAX container is a new type of dynamic container for documents such as work items, cases, and harnesses. The AJAX container has the same purpose as a dynamic container, except that the AJAX container is not tied to any one panel of a screen layout. You can add an AJAX container directly into a section or into a cell in a dynamic layout by selecting it from the Layout menu on the section form.



The AJAX container properties panel

The AJAX container can be a child or a sibling of a dynamic container. This flexibility in positioning allows you to display work items in areas of the screen independently of the layout. To improve page load performance, AJAX containers refresh only the content in the container. When an AJAX container is refreshed, it opens the last open document. When you submit the outer document form, a message indicates that the content in the container has been updated.

You can select the content to display in an AJAX container by using a property reference. The AJAX container can display one or more documents.

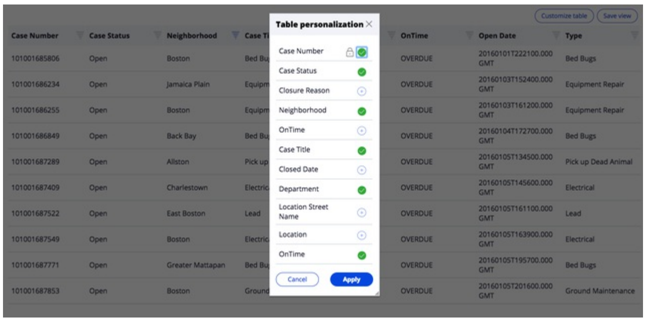
Increase control over data presentation by personalizing table views

You can now configure tables so that users can personalize table views at run time. Users can specify which columns to display, resize and reorder columns, and set an initial sort order and initial column filter.

After users save their personal settings for a table, the table displays their saved settings each time they access it. Users can discard these settings at any time and revert to the default table settings or to their last saved personal settings.

Personalizing table views can help users work more efficiently by providing greater control over what data they see and how it is presented.

The following figure shows the table personalization settings.



Run-time table personalization

For more information, see [Configuring a table for personalization](#).

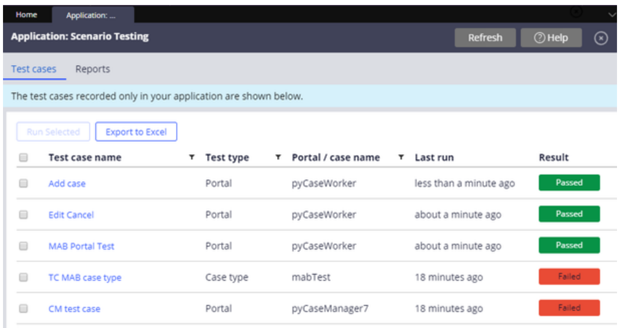
Create UI-based tests with automated scenario testing

Scenario tests are run against a user interface to verify that the end-to-end scenarios are functioning correctly. The UI-based scenario testing tool allows developers to focus on creating functional and useful tests, rather than writing complex code, for single page applications (SPAs).

You can test either a specific case type or an entire portal by clicking Scenario Testing in the run-time toolbar to open the test recorder. When you use the test recorder and hover over a testable element, an orange highlight indicates that the element can be tested. Interactions are recorded in a visual series of steps and the execution of a test step can include a delay.

Provide data to your test cases with a predefined data page. This data page can provide unique values for each execution of the test case. You can populate the data page by using any source, including activities or data transforms.

Tests are saved in a test rule set. After they are saved, tests are available on the Application: Scenario Testing landing page. From the landing page you can run a test or view the results of a previous test run.

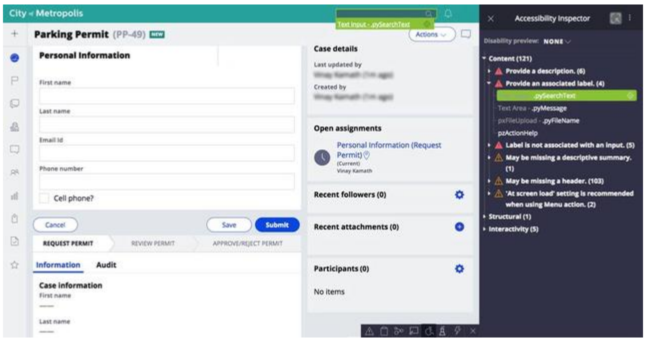


Application: Scenario Testing landing page

The Reports tab displays the test types, total number of tests, and the number of tests passed, failed, or not run. From theReports tab, you can also export the test results to an Excel spreadsheet.

Find and fix issues by using the Accessibility Inspector

An accessible application is one that all users, including those with disabilities, can use to efficiently complete the task at hand. You can find potential accessibility issues in your application and quickly fix them by using the new Accessibility Inspector. At run time, click the Accessibility icon in the toolbar to open the Accessibility Inspector. It is displayed on the right side of the page and highlights content, structure, compatibility, and interaction issues.



The Accessibility Inspector indicates accessibility issues in an application.

The Accessibility Inspector lists errors and warnings, and provides a description for each. You can click through to open an element in Dev Studio and fix the issue. The Accessibility Inspector also provides settings to only display errors, and hide warnings. You can also highlight errors in the user interface by adding an outline around objects.

The Accessibility Inspector color-blind mode provides filters that you can apply to experience what your application looks like to users of varying visual ability. These filters: absence of color, red/green confusion, and yellow/blue confusion, help you to identify potential contrast issues caused by your application user interface styling. So while your application might look great to a user with no color blindness, it might be unusable for a user with color blindness. Color-blind mode works only on the Chrome, Firefox, and Safari browsers.

New capabilities for editing user interfaces in App Studio

App Studio provides access the core features of Pega Platform. Business users, data engineers, and front-end developers, can design cases, manage data, and define the user experience for your application.

Save development time by editing tables at run time

You can now edit tables at run time. Editing tables at run time provides you with the flexibility to update table layouts as you process cases.

For tables that have been configured to allow editing in App Studio, you can perform the following editing functions:

- Specify a visual style for the table, for example, spreadsheet or list report
- Change the table title
- Set the table pagination
- Add and remove columns
- Modify column header titles
- Resize and reorder columns
- Specify minimum and maximum column widths

By editing tables in App Studio, rather than switching to Dev Studio, you also save development time.

The following figure illustrates the editing options available from the Table properties panel.

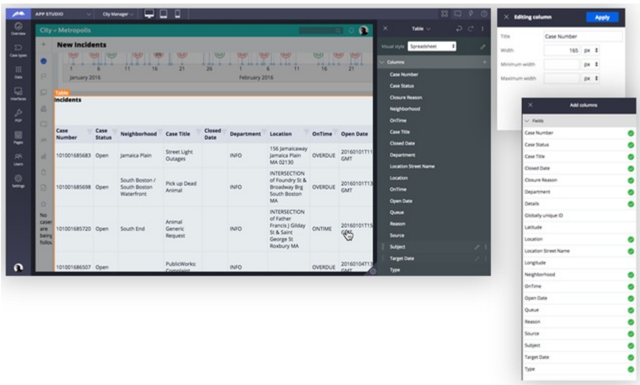


Table editing options at run time

For more information, see [Configuring a table at run time](#).

Style your applications consistently with new themes in App Studio

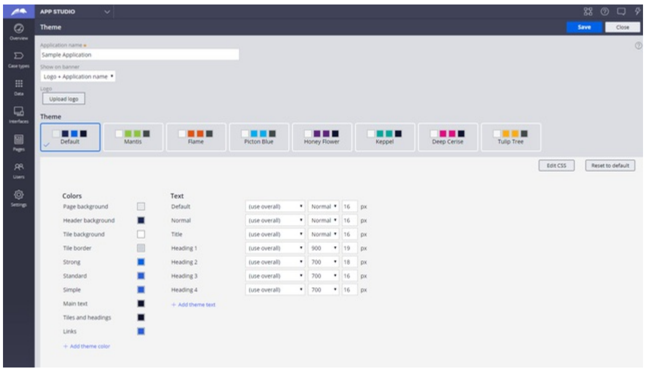
Several new themes have been added to App Studio. The themes determine the default colors for elements in your user interface, such as buttons and links, as well as your typography.

You can see the colors and typographic elements associated with each theme by clicking a theme name on the Theme page in App Studio Settings.

By selecting a theme in App Studio, you can quickly apply a consistent style to your application and save development time by not having to edit the application skin in Dev Studio.

The Zen and Nimble themes have been removed. If your application was using one of these themes, update the inherited skin in your application skin to pyEndUser_ExpressDefault.

The following figure illustrates the theme settings in App Studio.



New themes in App Studio

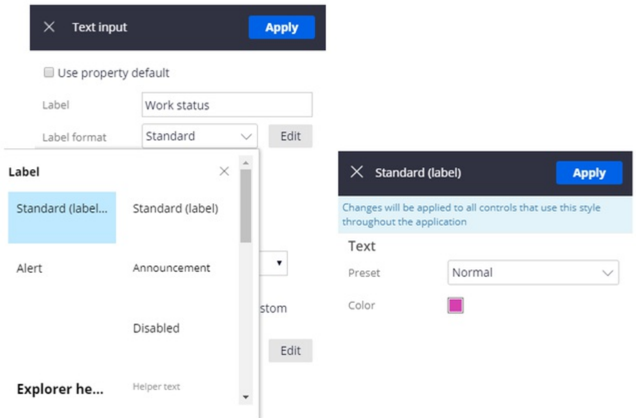
For more information, see [Changing your theme](#).

Update control label formats flexibly at run time

In App Studio, when you edit a control in real time, you can now select a new label format for the control or edit the currently selected label format. This option provides flexibility to update control labels in real time as you process cases.

- When you select a new label format for a control, your changes are applied only to the control on the form that you are editing.
- When you edit a label format for a control, your changes are applied to all controls that use the style throughout the application.

The following figures illustrate the label formatting options on the properties panel for a Text input control.



Run-time editing options for label formats

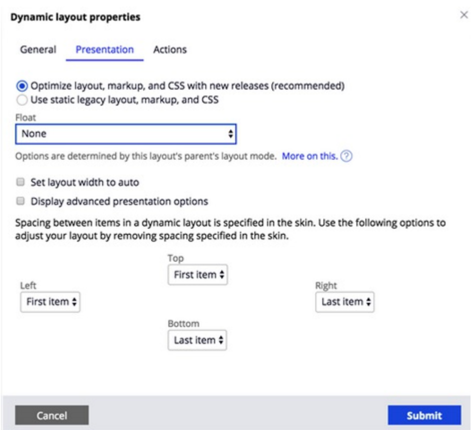
For more information, see [Styling controls at run time](#).

New capabilities for front-end developers

Dev Studio provides access the advanced features of Pega Platform. In this workspace for full-stack developers, database administrators, and security administrators, you can create new functionality or extend the work done by business analysts and your front-end team.

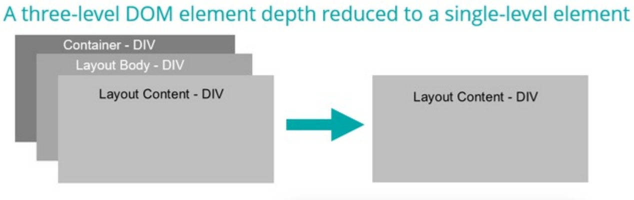
Keep your markup current with improvements to dynamic layouts

You can set dynamic layouts to use the new optimized layout mode. Selecting this option enables automatic updates for new markup with each release, which allows you to stay current with improvements to dynamic layout markup.

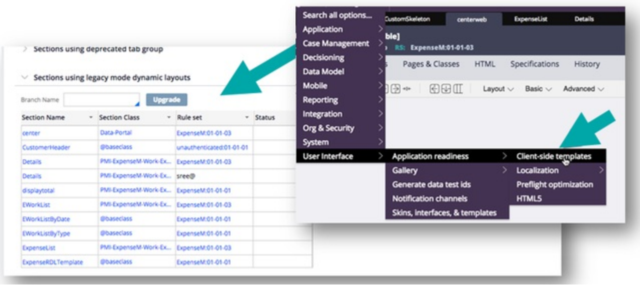


Optimize layout option

When optimized, dynamic layouts that do not include a container format or a header no longer generate extra container and body DIVs. The depth of the Document Object Model (DOM) is reduced, which makes the layouts easier to maintain.



Your existing layouts are not affected, but you can upgrade sections that use legacy dynamic layouts to use the new optimized dynamic layout.



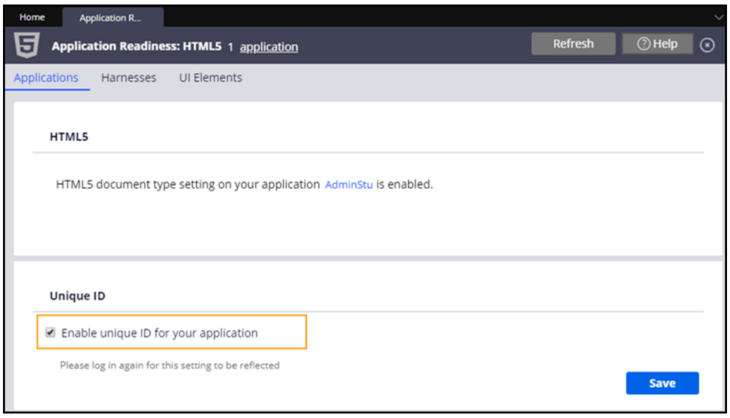
Upgrade tool for converting legacy dynamic layouts

For more information, see [Upgrading legacy dynamic layouts to use the optimized dynamic layout](#).

Unique IDs in autogenerated controls

User interface elements created in Pega Platform™ 8.1 and later have unique IDs by default. Unique IDs ensure that a DOM (Document Object Model) is HTML5-compliant. Accessibility standards also require that each UI element have a unique identifier. The unique identifier on autogenerated controls is a hash that ensures that each control has a unique ID, even if the same section is used multiple times in the same harness in different page contexts.

You can control the creation of unique IDs on the HTML5 Application Readiness page. In Dev Studio, click Configure > User Interface > Application Readiness > HTML5. Select the Enable unique ID for your application check box. This option is available for current applications and enabled by default. New applications will include unique IDs by default. For pxCheckbox and pxRadioButton controls, the unique ID is generated regardless of whether unique IDs are enabled or disabled.

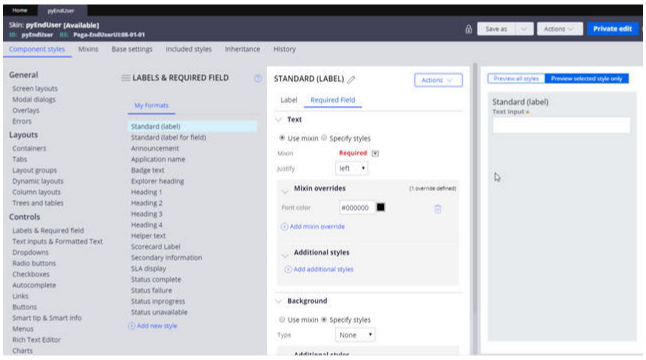


The Unique ID setting on the HTML5 Readiness page

Custom controls do not have a unique ID by default. You can add a unique ID to a custom control by opening the control's properties and selecting the Generate unique ID check box.

Enhancements to required fields

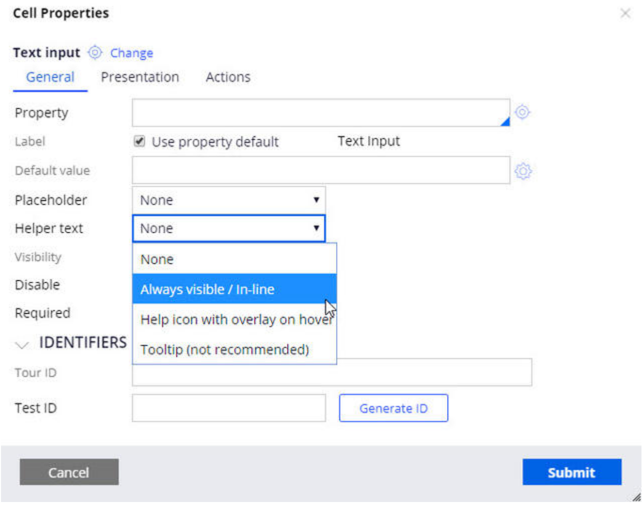
Indicating a required field is no longer limited to a simple asterisk. You can customize the text that indicates a required field using the skin. The required field also supports localization of the custom required field text. In the Controls section of the skin, the Labels & Required Field options control the text and styling. The required field text can be configured by modifying the pyCaption Required field value.



The skin with the label and required field options displayed.

Support for inline helper text for editable form fields

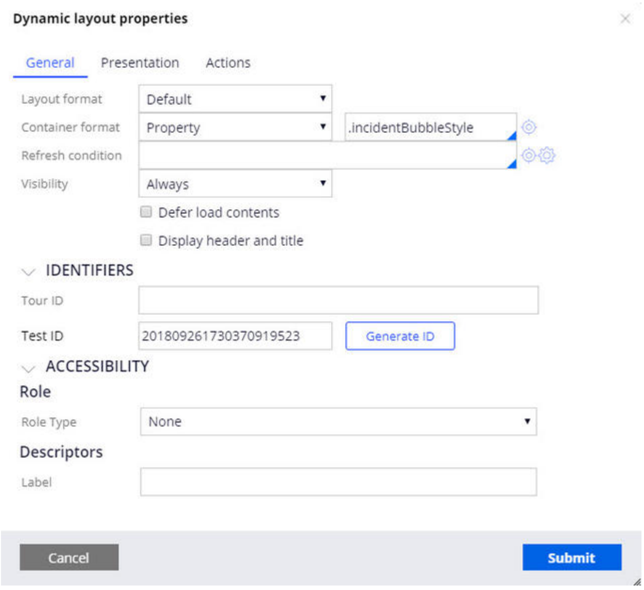
You can now configure inline helper text for editable form fields. The helper text is always visible on the form, and you can style the text to override the helper-text CSS class in the Override CSS file in the skin. Providing helper text in editable form fields helps users complete forms more quickly and efficiently.



The cell properties of a text input showing the helper text options

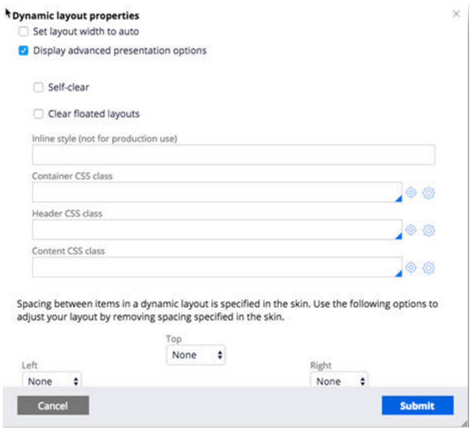
CSS improvements

Several enhancements change the way CSS is used can improve styling and reduce the number of dynamic layouts used in a UI. Rather than use multiple layouts with visible when conditions, you can use dynamic CSS and style referencing to reduce the number of layouts placed on top of one another. Dynamic CSS referencing in a dynamic layout uses a property value to return a format on containers, buttons, links, and icons.



A dynamic layout with the container format set with a property

Dynamic layouts have more granular targeting of CSS to provide the ability to configure separate CSS classes at the container, header and content level separately. A dynamic layout with no header or container will have only the content CSS class setting.



Container, header, content CSS classes in the dynamic layout properties

Improve design consistency with UI-Kit 12

UI-Kit 12 provides the tools that you need to build applications with greater consistency through the use of common UI elements and styling that helps you to avoid the duplication of work across multiple applications.

This version of the UI-Kit includes significant styling changes, mobility enhancements, more usage of design templates, and the ability to easily configure your application name and logo in App Studio. Also, to reduce application complexity and generated CSS size, deprecated skin formats have been removed from the default UI-Kit skin. Finally, to reduce redundancy, the Case Default portal has been removed.

- Updated styles
- Mobility enhancements
- Design templates

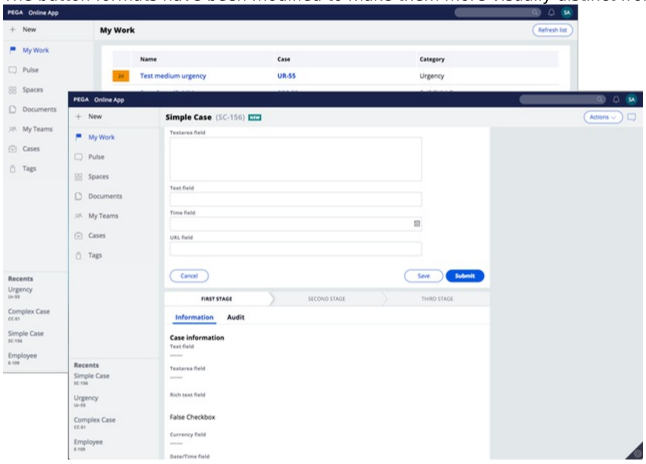
- [Portal updates]
- [Deprecated skin formats]

Updated styles

The latest Pega design standards are reflected in UI-Kit 12 so that all applications built on UI-Kit 12 are aligned with current designs. The design changes introduced in UI-Kit 12 are intended to promote more consumer-oriented software experiences in Pega applications.

UI-Kit 12 introduces the following major style changes:

- The default application font size has been increased to 16px to improve the readability of page content.
- The font style and size for headings has been changed to improve the scannability of page content.
- The button formats have been modified to make them more visually distinct from other user interface elements.



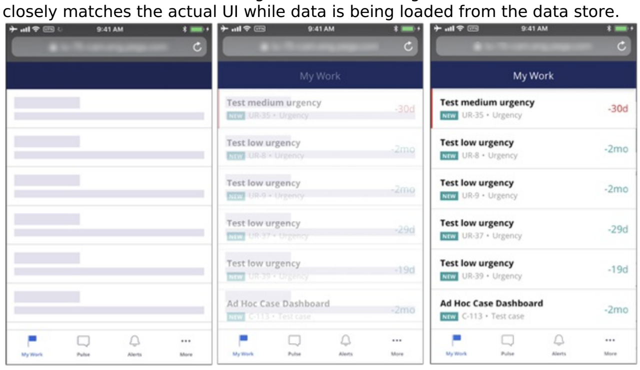
Sample screens showing updated styles

For more information, see Pega Design System.

Mobility enhancements

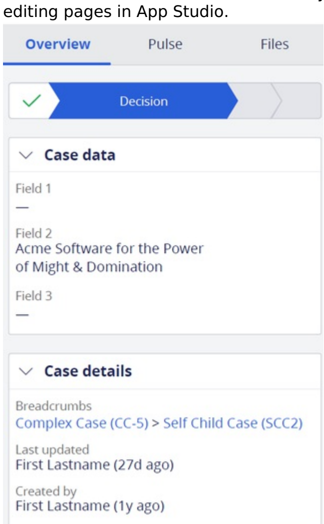
UI-Kit 12 includes several enhancements that make it easier for you to design and build consistent and user-friendly mobile experiences.

- All mobile header sections have been changed to use the Mobile page header with a left and right actions design template. For more information, see Design templates.
- Mobile harnesses are now configured with custom-generated skeletons. Skeletons are used during page transitions and render a temporary placeholder UI that closely matches the actual UI while data is being loaded from the data store.



Sample skeleton transition

- The mobile review harness now uses the Mobile page with a content and layout group design template. This tab-based layout optimizes the user experience on mobile devices so users can more easily view and manage case details, Pulse activity, and case attachments. The tab-based layout also provides more flexibility when editing pages in App Studio.

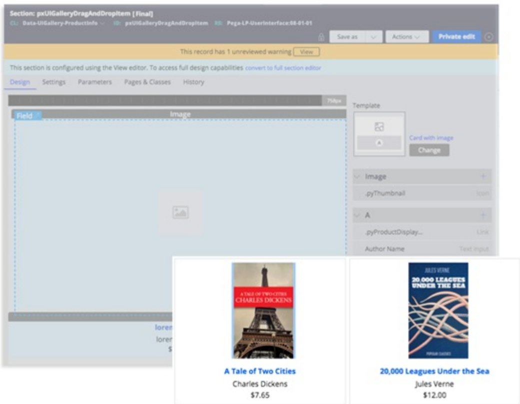


Mobile app with tab-based layout

Design templates

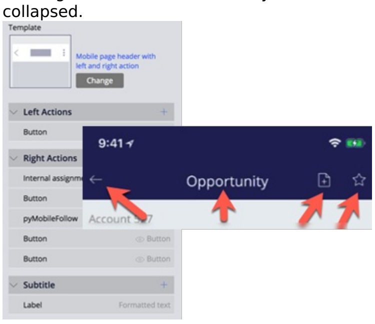
A design template is a special type of section that contains predefined layouts and regions. UI-Kit 12 includes the following new and updated templates:

- Card with image – Use this new template to display a section with two regions in which one region contains an image and one region contains a stacked layout. To see a sample implementation of this template, open the UI Gallery in Dev Studio by clicking Configure > User Interface > Gallery > UI Elements, and then open the Drag & drop sample.



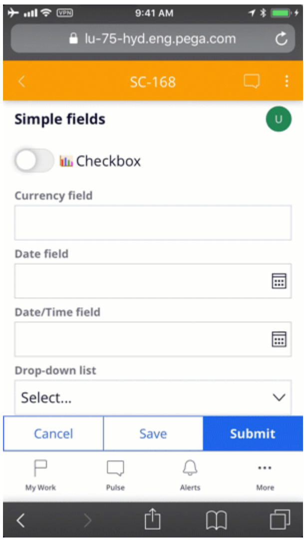
Card with image template sample implementation

- Mobile page header with left and right action – Introduced in Pega Platform 7.4, this template captures the standard mobile pattern in which the header contains a left action, such as a back button; a title; and right actions, such as icons for the screen’s primary actions. In Pega Platform 8.1, to minimize distraction and provide more mobile screen real estate to the work area, you can use the new subtitle section on this template to define a subtitle in a mobile page header that replaces the existing header and its icons as you scroll down the page. The original header is restored when you scroll back up the page or click the subtitle while the header is collapsed.



New subtitle section in the Mobile page header with left and right action template

The following figure demonstrates how the collapsing header provides more space in the work area as you scroll down the page in a mobile app.



Collapsing header in a mobile app

You can select a design template on the Design tab of the Section form. For more information, see [Apply design templates for sections](#).

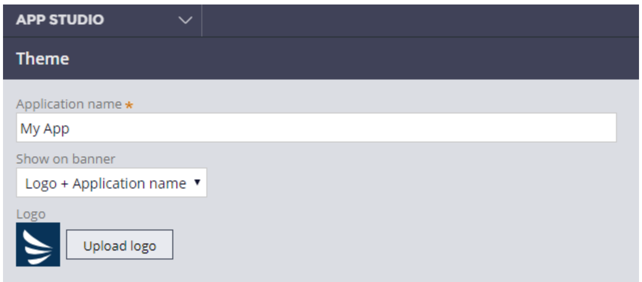
Portal updates

To eliminate redundancy, the Case Default portal has been removed. The Case Worker and Case Manager portals are the only portals that are now supported.

You can now update your logo and application name in App Studio so they display in the portal header, instead of the Case Worker or Case Manager labels.

You can configure your application banner by selecting one of the following Show on banner options:

- Logo + Application name
- Application name only
- Logo only
- None



Application name and logo options

Deprecated skin formats

Deprecated formats have been removed from the pyEndUser skin. This change significantly reduces the generated CSS size and skin complexity, making it easier to maintain your application skin and styles. For more information, see UI-Kit deprecated and removed skin formats.