AI Core Services

Release Notes 9.0.x

8/29/2022

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AI Core Services 9.0.x Release Note

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

> **Important**
> Up to release 9.0.009.01, AI Core Services was known as Journey Optimization Platform.

This Release Note applies to all 9.0.x releases of AI Core Services. Links in the Available Releases section enable you to access information regarding a specific release.

Available Releases

[+] Note about release order

Releases are listed by version number rather than in date order. For this reason, a recent release may be listed after earlier releases, if the version number is lower. Except when otherwise noted in the information for a specific release, each release includes all of the features and corrections that were introduced for the applicable operating system at earlier dates, regardless of the version numbering.

Release 9.0.0:

Release	Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
9.0.015.11	08/29/22	General	Under Shipping Control		X		
9.0.015.09	11/07/19	General	Under Shipping Control		X		
9.0.015.04	08/16/19	General	Under Shipping Control		X		
9.0.015.03	07/19/19	General	Under Shipping Control		X		
9.0.015.00	03/26/19	General	Under Shipping Control		X		

Release	Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
9.0.014.02	01/25/19	General	Under Shipping Control		X		
9.0.014.00	12/21/18	General	Under Shipping Control		X		
9.0.013.01	12/18/18	General	Under Shipping Control		X		
9.0.012.01	08/23/18	General	Under Shipping Control		X		
9.0.011.00	07/13/18	General	Under Shipping Control		X		
9.0.010.01	05/11/18	General	Under Shipping Control		X		
9.0.009.01	03/28/18	General	Under Shipping Control		X		
9.0.008.00	03/05/18	Restricted			X		
9.0.007.05	02/09/18	Restricted			X		
9.0.007.04	01/19/18	Update			X		
9.0.007.03	01/18/18	Update			X		
9.0.007.01	01/05/18	Update			X		
9.0.007.00	12/22/17	General	Under Shipping Control		X		
9.0.006.13	12/08/17	Hot Fix			X		
9.0.006.11	11/22/17	Hot Fix			X		
9.0.006.08	11/17/17	Hot Fix			X		
9.0.006.07	11/02/17	Hot Fix			X		
9.0.006.06	10/05/17	Hot Fix			X		
9.0.006.05	09/26/17	General	Under Shipping Control		X		

The operating systems available for use with each component release are listed in the table at a high level only. For more detailed information about the supported operating environments, including requirements, supported versions, and any conditions or limitations, see the Genesys Predictive Routing page in the *Genesys Supported Operating Environment Reference Guide*.

Discontinued Support

[+] Note about discontinued items

This section documents features that are no longer supported in this software. This cumulative list is in release-number order with the most recently discontinued features at the top of the list. For more information on discontinued support for operating environments and databases, see Discontinued Support in the *Genesys Supported Operating Environment Reference Guide*.

- TLS 1.1

Discontinued as of: 9.0.006.05

Known Issues

You can find a cumulative list of the Known Issues and Recommendations for all 9.0.x releases of AI Core Services, including the issues that are specific to Localized (International) releases, at the following links:

- Known Issues and Recommendations
- Internationalization Issues

Related Resources

For additional information about AI Core Services, see the following documentation:

- The documentation related to this software is available from the Genesys Predictive Routing page.
- The *Genesys Predictive Routing Deployment and Operations Guide* provides details about installing and configuring AI Core Services.
- The Genesys Predictive Routing page in the *Genesys Supported Operating Environment Reference Guide* provides detailed information about the supported operating environments, including requirements, supported versions, and any conditions or limitations for Predictive Routing components.

Release Notes for other Genesys components are available here.

Known Issues and Recommendations

AI Core Services

The Known Issues and Recommendations section is a cumulative list for all 9.0.x releases of AI Core Services. This section provides the latest information on known issues and recommendations associated with this product. It includes information on when individual items were found and, if applicable, corrected. The Resolved Issues section for each release describes the corrections and may list additional issues that were corrected without first being documented as Known Issues.

Models created and trained prior to AICS release 9.0.007.00 are obsolete cannot be upgraded. If you still have old Models in your environment, the upgrade script that installs release 9.0.013.01 and higher generates an error message referring to sklearn Models failing to upgrade. You can safely ignore this message.

Some of the roles that the Predictive Routing interface might offer for selection are not supported. The supported roles are Staff, Reviewer, and Admin.

If you upload Agent Profile or Customer Profile data from a very large CSV file (around 10,000 records), GPR generates the following error message even though it uploads the data correctly: `pymongo.errors.DocumentTooLarge: BSON document too large (50969283 bytes) - the connected server supports BSON document sizes up to 16793598 bytes`. This error message appears because the audit functionality cannot handle the quantity of data. You can safely disregard this error message.

ID: **PRR-5284**	Found In: **9.0.015.04**	Fixed In:

When you upload Datasets or the Agent or Customer Profile from a zipped .csv file, the total size of the zip archive plus all the extracted data should not be larger than 10 GB, which is the size of the **/tmp** folder that the dataset_upload worker uses to process files. If you upload files that are too large, you might experience issues with that and subsequent data uploads, such as having the dialog box that opens when you try to append data be inactive and unusable. If this happens, check the **/tmp** folder to see whether there is more than one .csv file in it. If so, a previous upload job failed because it took up too much space and now the dataset_uploads worker cannot process further uploads until you clean up the folder. To clean up the **/tmp** folder, restart the data_upload worker container.

ID: **PRR-5218**	Found In: **9.0.015.03**	Fixed In:

If you set the **use-action-filters** option to `false` and send a scoring request for an agent whose name contains an opening or closing parenthesis [‘(’ or ‘)’], GPR returns an error response similar to the following: `No valid operator found in node <node_name> from filter employeeId in`

`<employee_ID>. Valid operators are: ' in ', '>=', '<=', '=', '>', '<'.`

ID: **PRR-5168**	Found In: **9.0.015.03**	Fixed In:

The same dataset_upload_worker that handles Dataset imports also handles the Apply Sync and Accept Sync operations for Agent and Customer Profiles. As a result, you cannot create an Agent or Customer Profile schema and upload agents to the Profile at the same time as a Dataset import.

Workaround: Genesys recommends that you plan data uploads so as to initialize the Dataset before or after creating Agent or Customer Profile schemas and uploading agents.

ID: **PRR-5160**	Found In: **9.0.015.03**	Fixed In:

The introduction of a new `numeric` datatype for schemas that replaces both `floats` and `integers` represents a breaking change with earlier releases of AI Core Services and Agent State Connector (ASC). If you upgrade either component you MUST also upgrade the other. The following versions are compatible:

- AICS 9.0.015.03 and higher + ASC 9.0.015.04 and higher.
- AICS 9.0.015.00 and lower + ASC 9.0.015.01 and lower.

ID: **PRR-4834**	Found In: **9.0.015.03**	Fixed In:

When you use the GPR API Reference, if you copy and paste the cURL example code provided there into a Windows-based code editor, you must remove the \ characters at the ends of the lines. This is an known issue in Windows-based software. After upgrading to release 9.0.014.02, you might notice that old jobs (such as data uploads or analysis report creation) are in the Pending state, preventing new jobs from running. To clear out the old jobs, use the following workaround:

Workaround

1. Connect to the MongoDB database using the following command:

   ```
   $ docker exec -it mongo mongo --ssl --sslAllowInvalidCertificates localhost:27017/
    solariat_bottle
   ```

2. Drop the jobs collection using the following command:

   ```
   db.jobs.drop()
   ```

ID: **PRR-4221**	Found In: **9.0.014.02**	Fixed In:

Features with names that include Japanese characters do not appear in Feature Analysis report graphs if you generate the report using the GPR API. This issue does not occur if you create the report in the GPR web application.

ID: **PRR-4211**	Found In: **9.0.014.02**	Fixed In:

If you try to open an older report from the Recent Reports list (available when you click **Analysis** on

the **Datasets** or **Predictors** window) you receive a message saying `No report`. This issue affects reports created approximately in the previous month or earlier. Newer reports open correctly.

ID: **PRR-4191**	Found In: **9.0.014.02**	Fixed In:

Appending a single, too-large chunk of records to the Agent Profile or Customer Profile causes the append job to fail. Genesys recommends that you upload appended data in chunks containing no more than 100,000 records.

ID: **PRR-4179**	Found In: **9.0.014.02**	Fixed In:

When running the **start.sh** and **restart.sh** scripts to deploy an updated version of AI Core Services, you might receive a misleading error message instructing you to run the **install.sh** script first, even if you have already run it.

Workaround: This message actually indicates that you need to set the value of the S3_ENDPOINT environment variable, located in the **tango.env** file, to the public IP address used to access AI Core Services.

ID: **PRR-4124**	Found In: **9.0.012.01**	Fixed In: **9.0.015.00**

If an error occurs when syncing a Dataset with non-ASCII column names or column names with spaces, the error message displays the hash string used internally to manage the column name rather than the column name itself.

ID: **PRR-4031**	Found In: **9.0.014.00**	Fixed In: **9.0.014.02**

You cannot use the data filter to purge data from GPR if feature names contain non-ASCII characters or spaces. ASCII-character column names without spaces are purged correctly.

ID: **PRR-4026**	Found In: **9.0.014.00**	Fixed In: **9.0.015.00**

To add another simple predictor to an existing composite predictor, use this two-step process to avoid an error that occurs when compiling the expression for the composite predictor:

1. Add the new simple predictor to the existing composite predictor and save it.
2. Add the new simple predictor to the expression and save again.

ID: **PRR-4010**	Found In: **9.0.014.00**	Fixed In: **9.0.014.02**

When the GPR API receives malformed JSON in a request (for example, an extra quotation mark) or receives a request with non-UTF-8 encoding in the request header, it returns an Internal Server Error. When this happens, the logs for the AI Core Services application display a `BadJsonException` error.

ID: **PRR-3997**	Found In: **9.0.014.00**	Fixed In: **9.0.015.00**

In rare cases, a Dataset might have an `IN SYNC` status but its cardinalities are not computed. As a

result, GPR generates an unclear error message containing only the metric name when you try to generate Predictor data based on that Dataset. To resolve this issue, send an API request to compute cardinalities on the Dataset.

ID: **PRR-3951**	Found In: **9.0.014.00**	Fixed In:

In the GPR web application, Agent and Customer features with very long names can either extend beyond the margins of the text boxes allocated for them or have some of the feature name truncated where it extends past the allotted text area.

ID: **PRR-3943**	Found In: **9.0.014.00**	Fixed In: **9.0.014.02**

The parameter to limit the number of scored agents to be returned by a scoring request, which should be called `predictor_cutoff`, is misspelled as `predictor_cutoof`.

ID: **PRR-3882**	Found In: **9.0.006.08**	Fixed In:

If you upload a Dataset containing non-ASCII characters or spaces in the column name, GPR handles it in one of the following ways:

- When a column name contains a mix of ASCII and non-ASCII characters, or contains spaces, GPR removes the non-ASCII characters and spaces from the column name as though they had not been entered and correctly uploads all column values.
- When a column name contains *only* non-ASCII characters, the column name is entirely omitted. All the column values are preserved, but you cannot modify or save the schema. In this scenario, GPR generates the following error message: `An unhandled exception has occurred: KeyError('name')`.

ID: **PRR-3763**	Found In: **9.0.011.00**	Fixed In:

AI Core Services (AICS) does not support dots (periods) in Agent ID strings.

ID: **PRR-3750**	Found In: **9.0.012.01**	Fixed In: **9.0.015.03**

If you have uploaded and saved an Agent Profile schema but have not yet synced or accepted it, and you try to view an agent record from the **Agents** tab (located on the top navigation bar), a blank record window opens without any error message or explanation. To resolve this issue, sync and accept the Agent Profile schema, and then return to the **Agents** tab to view the agent record.

ID: **PRR-3622**	Found In: **9.0.013.01**	Fixed In:

Cardinalities are displayed differently for Datasets and Agent Profile/Customer Profile schemas. Dataset cardinalities show the exact number through 1001. If the cardinality is higher, the display continues to show 1001. Agent Profile/Customer Profile schema cardinalities display the exact number only up through 19; 20 and higher are displayed as 20+.

ID: **PRR-3597**	Found In: **9.0.013.01**	Fixed In:

You might notice that, if your dataset is extremely large (1,000,000 rows), it takes approximately one minute to open the window where you can create a new Predictor. This performance issue is not resolved by adding additional CPUs to your environment.

ID: **PRR-3510**	Found In: **9.0.012.01**	Fixed In:

When you are using the GPR web application to upload a very large Dataset (1 million rows), the user interface status messages might not update to show the actual status of Dataset processing. For example, after you click **Accept Schema**, you might continue to see status messages that relate to earlier points in the Dataset creation process. This does not indicate a problem or delay in the actual Dataset processing. It is simply caused by a delay in updating the web application to reflect the actual status of Dataset processing.

ID: **PRR-3453**	Found In: **9.0.013.01**	Fixed In:

When you are creating a Dataset using the GPR API, if you try to append data before you have saved and synchronized the dataset schema, no error message appears but data is not correctly appended. To avoid data issues, do not append data before syncing the Dataset.

ID: **PRR-3447**	Found In: **9.0.013.01**	Fixed In:

If you receive an `XGBRegressor has no attribute 'n_jobs'` error when you try to create a Lift Estimation report, it indicates that your model was trained on a version of GPR prior to 9.0.008.00. To resolve this issue, retrain your model, and then re-run the Lift Estimation report.

ID: **PRR-3421**	Found In: **9.0.013.01**	Fixed In:

If you run a Feature Analysis report on a dataset that uses a low cardinality field as the target metric, the report displays the sub-reports in alphabetical order. It should display them ordered by feature rank.

ID: **PRR-3356**	Found In: **9.0.012.01**	Fixed In: **9.0.013.01**

Non-ASCII characters are not properly displayed in the pop-up window that displays the actual cardinality values in Agent Profile and Customer Profile schemas if the feature type is "dictionary".

ID: **PRR-3334**	Found In: **9.0.012.01**	Fixed In: **9.0.013.01**

GPR supports only ASCII characters as Agent and Customer IDs.

ID: **PRR-3329**	Found In: **9.0.012.01**	Fixed In: **9.0.014.00**

If you run a Feature Analysis report using the GPR API and it fails for any reason, the spinning icon in the web application that indicates report generation is underway continues to spin indefinitely. To resolve this, remove the failed report manually from the Reports list in the web application.

ID: **PRR-3324**	Found In: **9.0.012.01**	Fixed In: **9.0.013.01**

When running a Lift Estimate report or a Feature Analysis report, either from the web application or the GPR API, the title field includes a timestamp showing when the report was run. This timestamp is the server time zone, which might differ from the user's time zone.

ID: **PRR-3303**	Found In: **9.0.012.01**	Fixed In:

The Feature Analysis report requires that numeric values for the target metric in your dataset be in the form of integers. It does not support float values for the target metric.

ID: **PRR-3268**	Found In: **9.0.011.00**	Fixed In: **9.0.012.01**

If disk space usage on your AICS servers is continually growing, you might need to perform a clean up process on a regular basis. See Clean Up Disk Space to view instructions for maintaining your AICS servers.

ID: **PRR-3249**	Found In: **9.0.008.00**	Fixed In: **9.0.013.01**

When you create a login message, which is done by setting the LOGIN_MESSAGE environment variable in your **tango.env** file, you might experience various usability issues:

- Special characters must be "escaped" (converted to HTML symbolic codes). For details, see Set Values for Environment Variables.
- The text is not centered and might overlap the page footer.
- You must reset this message each time you install a new version of AI Core Services, because the installation process overwrites the **tango.env** file.

ID: **PRR-2981**	Found In: **9.0.011.00**	Fixed In:

The endpoint enabling you to generate predictor data using the Predictive Routing API does not accept a time range parameter.

ID: **PRR-2962**	Found In: **9.0.011.00**	Fixed In: **9.0.012.01**

If your environment contains a number of predictors based on large datasets, you might encounter an out-of-memory error message when you try to open the Predictors Settings page. For example, having six predictors, each based on a dataset with 500 columns, triggered this error message.

ID: **PRR-2945**	Found In: **9.0.008.00**	Fixed In: **9.0.013.01**

You must perform a hard refresh of the browser page to see updates to the cardinalities and number of agents or customers on the Agent and Customer Profiles windows.

ID: **PRR-2799**	Found In: **9.0.011.00**	Fixed In:

The Read and Delete functionality implemented to enable users to comply with General Data

Protection Regulation (EU) (GDPR) requirements has the following known issues:

- The filter cannot search by integers saved as strings. All IDs are required to be saved as strings in the Agent Profile and Customer Profile schemas. As a result, you cannot use numeric IDs in filters. However, all other filter types, such as, name, email, and so on, do work for data retrieval and deletion.
- Users and accounts support only soft removal via the DELETE request.

ID: **PRR-2513**	Found In: **9.0.010.01**	Fixed In: **9.0.011.00**

Accounts cannot be converted from non-LDAP authentication to LDAP authentication. To make the change, delete the non-LDAP account and add the desired LDAP account.

ID: **PRR-2504**	Found In: **9.0.009.01**	Fixed In:

GPR generates an error stating that `Actions data collection is not indexed` when you use a composite predictor for scoring.

ID: **PRR-2461**	Found In: **9.0.010.01**	Fixed In: **9.0.013.01**

After you delete data from a dataset or from predictor data, a cached copy remains visible in the drop-down lists (facets) used to configure the Customer Details tab in the Predictive Routing application and in the Cardinality context menu that displays all of the unique values for a facet. This cache is updated every two hours, at which point the deleted data is entirely removed.

ID: **PRR-2440; PRR-2441**	Found In: **9.0.010.01**	Fixed In: **9.0.011.00**

AI Core Services does not support non-ASCII characters for use in passwords (when using a user name/password login) or External IDs (when using LDAP authentication).

ID: **PRR-2264; PRR-2260**	Found In: **9.0.009.01**	Fixed In:

The Agent Variance report generates an error and terminates processing if the target metric contains any non-numeric (NaN) or NULL values.

ID: **PRR-2261**	Found In: **9.0.008.00**	Fixed In:

Stress, performance, and load testing have not been done at full scale. The limited testing done showed that there was no degradation in response time when the override feature, configured with a simple expression, was used in a scoring request.

ID: **PRR-2149**	Found In: **9.0.008.00**	Fixed In: **9.0.012.01**

Existing models that you created and trained before installing release 9.0.008.00 might cause errors when running the Lift Estimation report.

Workaround: To resolve this issue, perform the following steps:

1. Run the following upgrade script:
   ```
   python jop/common/scripts/versioning/upgrade_38a_model_default_algo.py --mode=prod
   ```
2. Retrain the models. To retrain an activated (locked) model, make a copy of it and then retrain it, as explained in the "Editing Models" section of Configuring, Training, and Testing Models in the *Predictive Routing Help*.

ID: **PRR-2148**	Found In: **9.0.008.00**	Fixed In: **9.0.009.01**

Because of the large amount of data to be processed, the ROC curve, which indicates model quality, takes time to display. If progress appears stalled, close and then reopen the ROC display window.

ID: **PRR-2121**	Found In: **9.0.008.00**	Fixed In:

AICS does not support spaces in attribute label names and ignores fields containing spaces in label names and records the skipped field in the log. For example, if you create an Agent Profile field containing the expression `skill > 6`, and also use the expression as the field name, AICS disregards the field. To correct this issue, simply remove the spaces, so that the field name becomes `skill>6`.

ID: **PRR-2110**	Found In: **9.0.007.01**	Fixed In:

The format of reports changed in release 9.0.007.05 because of improvements made to improve memory usage. Reports generated in earlier releases, which use the old format, no longer display under the Reports tab, although their thumbnail previews are still visible in the Analysis panel. To resolve this misleading inconsistency, remove all invalid reports from the database by executing the following script:

```
solariat_bottle/jop/common/scripts/versioning/upgrade_36a_prr_remove_invalid_reports.py --
mode=prod
```

ID: **PRR-2007**	Found In: **9.0.007.05**	Fixed In:

All numeric data types are identified as "integers" in the AICS interface, including float values. Float values are handled correctly; only the label might appear misleading.

ID: **PRR-1777**	Found In: **9.0.007.01**	Fixed In: **9.0.008.00**

When a user whose credentials are used for an API request belongs to multiple accounts, AI Core Services (AICS) returns data for the account marked "current" for that user, regardless of the API key specified in the request. Genesys recommends that you create a separate user with the ADMIN role for making API requests, and *not* to make API calls with a user having the STAFF or SUPERUSER role.

ID: **PRR-1748**	Found In: **9.0.007.03**	Fixed In:

In the Feature Analysis report, data is filtered based on the feature index. The report algorithm ignores all feature columns with an index greater than `200`, irrespective of their importance. In addition, the top-N is hardcoded to 15.

ID: **PRR-1690**	Found In: **9.0.007.03**	Fixed In: **9.0.007.05**

The Export functionality in the Lift Estimation report produces only empty files.

ID: **PRR-1615**	Found In: **9.0.006.13**	Fixed In: **9.0.013.01**

The Predictive Routing Groups window is supposed to be used for sharing account objects between different user roles, but all roles that are currently supported, Staff, Reviewer, and Admin, have access to all account objects by default.

ID: **PRR-1106**	Found In: **9.0.006.05**	Fixed In:

When drilling down from Trends graphs or Distribution charts, the results in the Details fields might be incorrect because filter values are not always applied properly.

ID: **PRR-1091**	Found In: **9.0.006.05**	Fixed In:

In the Agent Variance report, you must select either numeric or boolean attributes for target metrics. The UI incorrectly allows you to select attributes of other types, which might result in an error or empty report results.

ID: **n/a**	Found In: **9.0.007.05**	Fixed In:

Internationalization Issues

Information in this section is included for international customers. Release numbers in the **Found In** and **Fixed In** fields refer to the English (US) release of AI Core Services unless otherwise noted in the issue description.

There are no internationalization issues for this product.

Release 9.0.0

Journey Optimization Platform Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

You can find links to Release Notes for particular 9.0 releases of Journey Optimization Platform, if available, in the tree menu on the left or in the list of Available Releases.

9.0.015.09

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

> **Important**
> Up to release 9.0.009.01, AI Core Services was known as Journey Optimization Platform.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
11/07/19	General	Under Shipping Control		X		

What's New

This release includes the following new features or enhancements:

- This release adds logging of the following keys to the score_log file:
  - requestContext
  - requestCustomerId
  - requestOrganizationId
  - gpmStatus
  - connId

  (PRR-5567)

Helpful Links

Releases Info

- List of 9.0.x Releases
- 9.0.x Known Issues

Product Documentation

- Genesys Predictive Routing

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Resolved Issues

This release contains the following resolved issues:

This release increases the performance of Customer and Agent Profile uploads by removing a redundant call to MongoDB that was previously made each time there was a Profile insert into MongoDB. (PRR-5756)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.015.09.

9.0.015.04

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

> **Important**
> Up to release 9.0.009.01, AI Core Services was known as Journey Optimization Platform.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
08/16/19	General	Under Shipping Control		X		

What's New

This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

You can now configure GPR to support HTTP connections.

Helpful Links

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- List of 9.0.x Releases
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> **Warning**
> HTTP connections are supported only in test environments. Genesys strongly recommends using the default HTTPS configuration in production environments and in lab environments that contain sensitive data. Genesys is not responsible for any potential damage and/or data loss if the solution is implemented without the recommended security practices and protocols.

(PRR-5260)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.015.04.

9.0.015.03

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

> **Important**
> Up to release 9.0.009.01, AI Core Services was known as Journey Optimization Platform.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
07/19/19	General	Under Shipping Control		X		

What's New

This release contains the following new features and enhancements:

- The NGINX container is no longer included in AICS. Previously, NGINX was provided as a convenience for use in internal and/or pre-production environments. (PRR-5089)
- This release enables you to log scoring details that you can then use to monitor and better understand the scoring process and outcomes. This release also includes scripts to clean up unneeded score logs from MongoDB. To how to turn on score logging, for information about what is logged, and for the cleanup script, see View the Scoring Logs. (PRR-5065; PRR-4957)
- New API endpoints have been added, enabling you to use the MinIO container to upload Agent Profile and Customer Profile data. Previously, only Dataset data used the MinIO container, which provides a performance improvement over the data_upload worker alone. For details about these new endpoints, see the *Predictive Routing API Reference* (Requires a password for access. Please contact your Genesys

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representative if you need to view this document.) (PRR-5010; PRR-4666)

- The GPR API now returns a `file_path` parameter in the response message when you request a presigned URL, which replaces the uploaded file name. You must now pass this `file_path` parameter in requests to create Datasets or the Agent Profile or Customer Profile instead of the uploaded file name, used in previous releases. For details, see the *Predictive Routing API Reference* (Requires a password for access. Please contact your Genesys representative if you need to view this document.) (PRR-4921)
- The GPR web application has enhanced security by logging out inactive users. This functionality works in the following way:
  - If you do not perform any action in the GPR browser window for fourteen minutes, an inactivity alert opens and displays a sixty-second countdown timer.
  - If you then perform any action, such as scrolling, moving or clicking your mouse, or entering keystrokes from your keyboard, the inactivity timer disappears and your session continues.
  - If you do nothing, your session ends after the sixty-second timer expires and you are then automatically logged out.

    > **Important**
    >
    > Data uploads are considered activity. GPR does not log you out while data is uploading, even if you are otherwise inactive for more than fifteen minutes.

  (PRR-4926)
- GPR now accepts only CSV and zipped CSV files for upload to Datasets, the Agent Profiles, and the Customer Profile. JSON file uploads are no longer supported. (PRR-4774)
- The `numeric` datatype now replaces both `float` and `integer` datatypes in Agent and Customer Profiles. This change resolves confusion about when to use `float` and `integer` datatypes.
  This is a breaking change from previous releases of AICS and Agent State Connector (ASC). If you upgrade either component you MUST also upgrade the other. The following versions are compatible:
  - AICS 9.0.015.03 and higher + ASC 9.0.015.04 and higher.
  - AICS 9.0.015.00 and lower + ASC 9.0.015.01 and lower.

  (PRR-4834)
- Improvement in the queries used to run the Feature Analysis Report improve the speed and reliability with which these reports are generated. (PRR-4382)
- The *Deployment and Operations Guide* now contains complete instructions for configuring HTTPS connections among all GPR components: Configure GPR to Use HTTPS

Resolved Issues

This release contains the following resolved issues:

AICS now accepts EmployeeID values that contain dots (periods), such as email addresses. (PRR-3750)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.015.03.

9.0.015.00

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

> **Important**
> Up to release 9.0.009.01, AI Core Services was known as Journey Optimization Platform.

AI Core Services Release Notes

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
03/26/19	General	Under Shipping Control		X		

What's New

This release contains the following new features and enhancements:

- This release includes an updated and improved version of the *Predictive Routing API Reference*. In particular, there are now cURL request examples for each endpoint.
  - This *Reference* requires a password for access. Please contact your Genesys representative if you need to view this document. (PRR-4144)
- AI Core Services now requires Docker version 18.09.2, which addresses important security issues.
  - The Docker release notes for release 18.09.2 recommend the following actions:
    - Update runc to address a critical vulnerability that allows specially crafted containers to gain administrative privileges on the host. CVE-2019-5736
    - Ubuntu 14.04 customers using a 3.13 kernel will need to upgrade to a supported Ubuntu 4.x kernel.

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  - The following Known Issue is noted in the Docker release notes for release 18.09.2:
    - There are important changes to the upgrade process that, if not correctly followed, can have impact on the availability of applications running on the Swarm during upgrades. These constraints impact any upgrades coming from any version before 18.09 to version 18.09 or greater.
  - For additional information, refer to the Docker blog post and the Docker release notes.
  - See the Upgrade Notes (below) for the procedure to use to stop and restart AICS when upgrading Docker. (PRR-4419)
- You can now convert a regular account into an LDAP account. A toggle with label **LDAP** has been added to the **Settings > Account** update window. To enable LDAP authentication, enter your LDAP credentials and save changes. After that, you must also convert the user accounts for those who should use LDAP authentication. User configuration is done in the **Settings > User Management** window. (PRR-4385)
- This release includes the following improvements to the user interfaces in the GPR web application:
  - A new navigation panel provides a tree view of all Datasets, Predictors, and Models configured for the current Tenant. This tree-view pane is available from the **Settings > Datasets** and **Settings > Predictors** windows. Each item in the tree view links to the specified object, enabling easy access to the entire hierarchy of Datasets, Predictors, and Models.
    NOTE: Composite Predictors, which can be built on data from multiple Datasets, are not shown in this tree-view pane. (PRR-4351)
  - For simplified navigation, breadcrumb links now appear at the top of windows in the GPR web application if you have drilled-down past a top-level window. (PRR-4350)

Resolved Issues

This release contains the following resolved issues:

You can now successfully upgrade an Account. Previously, this action generated an error message caused by an obsolete reference to a MongoDB collection that had previously been removed from AICS. (PRR-4445)

When you are preparing a Feature Analysis report for a high-cardinality target metric, you are no longer required to configure the **Target Metrics <*metric_name*> Range** field. Previously, it was mandatory to separate high-cardinality metric values into ranges. (PRR-4377)

Automatically-generated emails coming from the GPD web application or API now contain the correct link to update your password and have been rewritten to be more user-friendly (PRR-4264)

This release provides improved memory handling when you generate a Predictor. Previously, if your Predictor required extensive memory to generate the data it required for training, it might run out of memory and never finish the generation job. (PRR-4237)

If you start performing a search on a Predictor Details window, then switch to a different Predictor without clearing the Search text box, the new Predictor now displays correctly. Previously, the search term was applied to the new Predictor, which resulted in an empty data table. To display the data, you had to clear the search manually. (PRR-4173)

When you are creating a Model using the API, GPR now validates that the Customer features you specify are actually present in the specified Customer Profile schema and that you have specified at least one Customer feature. Previously, an incorrect Customer feature (one spelled incorrectly, for example), or no Customer features, resulted in an empty Model with no error message explaining the issue. (PRR-4134; PRR-2385)

When running the **start.sh** and **restart.sh** scripts to deploy an updated version of AI Core Services, you might now receive a correct message instructing you to specify the public IP address for AI Core Services in the S3_ENDPOINT environment variable, found in the **tango.env** file. Previously, the error message generated in this situation was incorrect, instructing you to run the **install.sh** script. (PRR-4124)

If you generate a Lift Estimation report via API and any column name contains spaces or non-ASCII characters, the report shown in the GPR web application now correctly displays the **Group By** parameter. Previously in this scenario, it displayed the hash value instead of the correct column name for those features that include spaces or non-ASCII characters in the feature name. (PRR-4102)

You can now purge data from GPR even if it contains spaces or non-ASCII characters. (PRR-4026)

If you send a request to the GPR API that contains malformed JSON (with an extra quote, for example) in the request body or non-UTF-8 encoding in the request headers, you now receive an understandable response message in return. (PRR-3997)

The Agent Profile schema now displays all rows correctly after appending data, even if the data you initially uploaded, with which GPR created the schema, included null values in some fields. (PRR-3643)

This release improves performance for displaying the AUC chart for a Model. Users with existing Models must run the **upgrade_44a_predictor_auc_chart.py** script, as explained in the Upgrade Notes (below) to have those Models display correctly. (PRR-3119)

You can now override a feature from a Dataset with a feature having the same name from the Agent Profile or Customer Profile.

In addition, scoring now functions correctly if you accidentally upload a Dataset and an Agent Profile or a Customer Profile that have features with the same name but with different data types. For example, if the Dataset has a feature with the `integer` data type and it is used in a Predictor, while an Agent Profile or a Customer Profile has a feature with the same name but with the string data type, scoring requests now succeed. The incompatible feature is ignored, scores are returned, and

the tango container logs print an error message describing the incompatibility. (PRR-2208)

Upgrade Notes

Use the following upgrade script to have existing models display correctly (as explained in the Resolved Issue entry for PRR-3119, above):

```
docker exec -it tango /bin/bash
cd src/gpr/common/scripts/versioning/
MODE=prod python3.6 upgrade_44a_predictor_auc_chart.py
```

Use the following special procedure if you need to upgrade Docker:

1. Stop AI Core Services (AICS):
   ```
   bash scripts/stop.sh
   ```
2. Back up the **tango.env** file.
3. Perform the Docker upgrade. See the Docker documentation for the upgrade procedure.
4. Start Docker:
   ```
   systemctl start docker
   ```
5. Enable Docker:
   ```
   systemctl enable docker
   ```
6. Re-install AICS:
   ```
   bash scripts/install.sh
   ```
7. Merge your backup version of the **tango.env** file with the one you just installed.
8. Start AICS:
   ```
   bash scripts/start.sh
   ```

For HA environments, perform the specified steps on each server running Docker.

9.0.014.02

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
01/25/19	General	Under Shipping Control		X		

What's New

This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

The table functionality on the **Details** tabs of the **Datasets**, **Agents**, **Customers**, and **Predictors** windows has been improved. Previously, rows not initially visible within the window appeared as you scrolled down. Any newly-added data appeared at the end of the table without the page refreshing, which sometimes led to slow page rendering and memory leaks. The scroll-based page display has now been replaced with page-by-page navigation, where each page displays only a limited number of records. (PRR-4170)

The line graph on the **Predictor Trend** tab has been replaced with a histogram chart. (PRR-4167)

Local Models are now correctly generated for all agents who have enough data (at least one record if

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you are using a numeric target metric or one record for each class of a Boolean metric) and whose records fall within the training portion of the dataset after it is split into the training and testing sections. Previously, for Datasets larger than one million records, only agent records occurring in the first million rows were used to build Local Models. (PRR-4130)

Requests to the Feature Analysis report API endpoint now correctly handle valid attributes. Previously, in some cases, a valid attribute was flagged as invalid. (PRR-4041)

If a synchronization error occurs on a Dataset containing non-ASCII column names or column names with spaces, the error message now displays the actual column name. Previously, the error message displayed the hash string used to represent the column name. (PRR-4031)

You can now add a simple predictor to a composite predictor and immediately add the simple predictor to the composite predictor expression. Previously, you had to re-save the composite predictor before adding the new simple predictor to the expression used for the composite predictor. (PRR-4010)

AICS now correctly connects to the new master MongoDB database when a master re-election occurs. Previously, AICS continued to try to connect to the former master database instance. (PRR-3952)

In the GPR web application, Agent and Customer features with very long names are now displayed correctly. Previously, these names might extend beyond the margins of the text boxes allocated for them or might be truncated where the feature name extends past the allotted text area. (PRR-3943)

You can now create a Model via the GPR API that does not include Agent features. Agent features are not required to create a Model, but previously, the API did not allow you to create a Model without them. (PRR-3829)

Upgrade Notes

After upgrading to release 9.0.014.02, you might notice that old jobs (such as data uploads or analysis report creation) are in the Pending state, preventing new jobs from running. To clear out the old jobs, use the following workaround:

Workaround

1. Connect to the MongoDB database using the following command:

```
$ docker exec -it mongo mongo --ssl --sslAllowInvalidCertificates localhost:27017/
 solariat_bottle
```

2. Drop the jobs collection using the following command:

```
db.jobs.drop()
```

9.0.014.00

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
12/21/18	General	Under Shipping Control		X		

What's New

This release includes the following new features and enhancements:

- You can now upload Dataset, Agent Profile, and Customer Profile data to Genesys Predictive Routing (GPR) from CSV files that use certain legacy encodings (listed below). By default, GPR always assumes the CSV files are encoded with UTF-8. This change applies to uploads using both the GPR web application and the GPR API. The following encodings are supported:
  - UTF-8
  - Shift JIS

    All data returned *from* GPR uses UTF-8 encoding.

    (PRR-3826; PRR-3809)
- GPR has optimized how cardinalities are stored. Cardinalities are now written into a dedicated database collection, so that the cardinalities for each field are stored in their own document. Previously, the cardinalities were stored along with the schema data. With high-cardinality features, this could lead to performance degradation due to additional conversions needed to extract the cardinality data. (PRR-3769)
- This release improves the performance of the **Create Predictor** functionality in the GPR web application. Previously, especially with Datasets containing a large number of high-cardinality features, it could take up to 15 seconds to display all the attributes that should appear in the **Agent ID** drop-down menu. (PRR-3745)
- The GPR API has improved how it handles certain requests involving Dataset start and end times. Specifically, this addresses the following issues:

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  - A GET request to the **include_data_distribution** endpoint now returns fields that specify the Dataset start (`from_dt`)and end (`to_dt`) dates.
  - The API sets the start and end dates for a Predictor Dataset to the actual Dataset boundaries if those dates were not passed explicitly in a request. Previously, if you did not specify the start and end dates, GPR took the dates from 1970. (PRR-3635)
- The schema management workflow for Agent and Customer Profiles has been simplified and streamlined. The **Discovered Fields** tab has been removed and cardinality counts have been added to the schema view. This change ensures GPR always presents up-to-date Profile information. The schema tab always presented updated information, if available, but the **Discovered Fields** tab display was generated only once and did not reflect changes to the Profile schema. (PRR-2886)
- AICS now supports deployment in an environment running on a Kubernetes cluster. For pre-requisites and deployment instructions, see (Optional) Installing AICS on a Kubernetes Cluster.

Resolved Issues

This release contains the following resolved issues:

You can now override the value set in the GPR web application for the **Actions Cutoff** parameter in the **Predictors** configuration window using the GPR API. Previously, if the **Actions Cutoff** parameter was less than the value sent via API, or if it wasn't set at all, you could not override it in a scoring request from the API. (PRR-3912)

If user does not have values set in the First Name and Last Name fields, the GPR web application now displays the user email address in the upper navigation bar. Previously in this scenario, the GPR web application displayed `None  None` in the top navigation bar. (PRR-3837)

The Inter-Agent Variance graph now displays correctly after you switch from report to report. Previously, when moving from one report to another several times, the graph sometimes rendered incorrectly or not at all. (PRR-3797)

The documentation explaining how to create and understand Agent Variance reports has been clarified and expanded. (PRR-3791)

If you create and generate a Predictor and then try to make an update to it, such as adding a new Agent or Customer feature, you now correctly receive an error message instructing you to purge the existing data before making the update. Previously in this scenario, the upload process stalled without generating an error message or allowing the user to continue. (PRR-3772)

The GPR web application now displays the name of the file last used to append data to a Dataset. Previously, GPR always displayed the name of the file used to create the Dataset. (PRR-3730)

When creating a Predictor from a Dataset with many high-cardinality features, GPR now returns only

data relevant to Predictor creation. Previously in this scenario, some parts of the display, such as the date-range histogram chart, were not correctly rendered in the GPR web application. (PRR-3721)

The GPR web application now consistently displays cardinalities for Agent and Customer Profiles and Datasets. In all cases, the exact cardinality now appears for all values through `1001`. Any fields with cardinalities larger than 1001 also display `1001`. (PRR-3597)

The API no longer allows users to append data to an out-of-sync Dataset (a Dataset for which the schema was not saved and accepted). Previously, this behavior could lead to a broken Dataset if the incoming data was not restricted by a schema. Now in this scenario, the GPR API returns the following error message: `{"error": "Cannot append data as dataset is OUT_OF_SYNC"}`. (PRR-3447)

The way the GPR API Agent and Customer Profile endpoints handle DELETE requests when nothing is deleted has been corrected so that they always return `{removed_count:0}` if no record was deleted. For example, an incorrect Agent ID might be passed in the request, so that no record is identified for deletion. Previously in such scenarios, the API would return a non-zero value for the `removed_count` parameter. (PRR-2730)

Both the GPR web application and the GPR API now accept data uploads that include Agent Groups and Skills with spaces in the names. (PRR-2110)

When you copy a Model, the new Model is created with the same train/test split as the original. Previously, the copy had the train/test split set to the default, which is 80/20. (PRR-1200)

Upgrade Notes

Use the following special procedure to upgrade to release 9.0.014.00.

To perform the upgrade, run the following commands:

```
docker exec -it tango /bin/bash
cd src/gpr/common/scripts/versioning/
MODE=prod python3.6 upgrade_42a_coll_based_cardinalities.py
exit
cd <IP>
bash scripts/restart.sh
```

If you need to roll back your upgrade and return to your previous version of AI Core Services, run the following commands:

```
docker exec -it tango /bin/bash
cd src/gpr/common/scripts/versioning/
MODE=prod python3.6 upgrade_42a_coll_based_cardinalities.py --down
exit
```

After running these commands, follow the instructions in the *Deployment and Operations Guide* to

install the desired older version.

9.0.013.01

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
12/18/18	General	Under Shipping Control		X		

What's New

This is a general release for this component. This version was first released as an Update on 10/25/2018. For availability of this release, contact your Genesys representative.

This release includes the following new features and enhancements:

- AI Core Services (AICS) now requires HTTPS communication by default. Note that this change also requires you to adjust your configuration for Agent State Connector and the URS instance implementing the URS Strategy Subroutines component. For instructions, contact your Genesys representative. (PRR-1940)
- Dataset handling has been made significantly faster by means of the following improvements:
  - For the initial data upload, this release introduces the Minio container. The Minio container is installed by default during the AICS deployment process and requires no user configuration. For more information, see The Minio Container in the AICS High-Level Architecture section of the *Genesys Predictive Routing Deployment and Operations Guide*. To take advantage of this improvement, you must also configure the new S3_ENDPOINT environment variable.
  - The Dataset import to MongoDB now uses a multithreaded process. A Dataset is now split into smaller chunks (minimum size, 50,000 rows), which MongoDB reads simultaneously.
    To speed up the Dataset import, Genesys recommends that you first create and initialize the schema by uploading a small sample Dataset (10-100 rows). Then append the rest of the data in chunks of up to 1 million rows. Appending data consisting of 100 features/1 million rows (708 MB) to the synced schema now requires no more than 40 minutes, including calculation of

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cardinalities.

- A new environment variable, HOST_DOMAIN, now enables you to specify the public IP address or the name of the host where GPR is deployed or, for HA environments, the IP address of the load balancer. This variable also affects how URLs are formed in the emails sent by the GPR application, in which the hostname part of the URL is taken from the HOST_DOMAIN value. For instructions on how to configure this variable, see Set Values for Environment Variables in the *Genesys Predictive Routing Deployment and Operations Guide*.
- The NGINX container has been removed from AICS. NGINX is an optional load balancer that had been provided for use only in test environments.
- The *Sizing Guide* for Genesys Predictive Routing (GPR) has been entirely reworked and expanded. It now provides a simplified, comprehensive set of sizing guidelines that generates hardware requirements for all GPR components. See Sizing for Premise Deployments for a link to the worksheet and instructions for its use.
- The explanation for how to use Composite Predictors has been revised and clarified. See Composite Predictors for more information.
- AICS now checks whether a Dataset is connected to a Predictor before deleting the Dataset. This change is to prevent accidental deletion of a Dataset that is used by a Predictor, in which case you cannot make updates to the Predictor in future.
- The GPR web application and GPR API now use the same process to create Agent and Customer Profile schemas. As a result, the workflow in the web application has changed slightly to correspond with the workflow used in the API. To create Agent and Customer Profile schemas, you now do the following:

  1. Upload a small dataset sample to establish the schema structure. This dataset is used only to discover the fields and infer their datatypes. No data is uploaded.
  2. Make any necessary changes to the schema, such as correcting datatypes and setting the ID field.
  3. Accept and sync the schema.
  4. Upload (or append) data. AICS loads the data to the schema and updates cardinalities.

     Previously, in the web application, AICS would discover the schema and upload the data in one step.

     For a detailed discussion of the procedure for creating the Agent Profile schema, see Configuring Agent Profiles in the *Genesys Predictive Routing Help*.

- The LOG_LEVEL environment variable has been added to the **tango.env** configuration file. By default, it is set to `INFO`, which is a minimal logging level, adequate for most circumstances. If you do need to increase the log level, set the LOG_LEVEL variable to `DEBUG` and then restart GPR. Note that setting LOG_LEVEL to `DEBUG` considerably increases log files sizes.
- This release upgrades AICS to Python 3.6 from Python 2.7. Python 2.7 will not be maintained later than 2020. See the Upgrade Notes section below for the procedure to upgrade your existing Models to be compatible with the new Python version.
- AICS now performs automatic cleanup processes which should maintain an adequate amount of free disk space. Releases prior to 9.0.013.01 require you to manually perform the clean-up procedures. For instructions, see Clean Up Disk Space.
- Memory handling for MongoDB was improved In this release. By default, MongoDB consumes all available RAM on a server, allocating half for its cache. GPR now restricts MongoDB to 8 GB RAM, of which 4 GB is used for the cache.
- The Lift Estimation report has been improved in the following ways:
  - You can now export analysis results as a CSV file.

  - You can toggle the report display between graph and tabular formats. Graph values can be seen in a table, if the results show a positive lift the corresponding values are highlighted.
  - The order in which the report sub-tabs appear has changed to show the Aggregated display first, followed by tabs to display the results for each feature.
- The display for the analysis reports has been improved in the following ways:
  - The name of the user who generated the report now appears on the report thumbnail and the report display.
  - Additional report metadata appears, such as the ID for the associated Dataset, the date range, and (when relevant) the name of the associated Predictor.
- The line chart on the **Dataset Trend** tab (accessed from the top navigation bar) has been replaced with a bar chart, which more accurately depicts the distribution of values per unit of time.
- The display on the **Dataset Schema** tab (accessed from the left-hand **Settings** navigation bar) has been improved in the following ways:
  - You can now choose to view only the fields you set to **Visible**.
  - Additional information about the Dataset appears, such as the filename of the file from which you imported the Dataset data and the Dataset ID.
  - The check box to the left of each Dataset row no longer appears after the Dataset is synchronized. They are not used after synchronization.
- The display on the window containing a table listing all Datasets (accessed from the left-hand **Settings** navigation bar) has been improved in the following ways:
  - The columns were rearranged for better usability.
  - A new column shows the status indicators for each Dataset.
  - A new column displays the filename of the CSV file used to create the Dataset.
- When you click the gear icon on the top navigation bar to open the **Settings** left-hand navigation bar, the display opens with the **Customer Profile** tab active.
- This release includes multiple improvements and additions to the GPR API, described in the following section:

  For complete information on accessing and using the GPR API, see the following reference: *Predictive Routing API Reference* (Requires a password for access. Please contact your Genesys representative if you need to view this document.)

  - The new `apply_sync` and `accept_sync` commands enable you to synchronize and accept a Dataset. These commands, together with the existing Dataset functionality, provide the ability to upload, sync, and accept a schema, as well as set the timestamp field and make sure the datatypes are correct. Use the following commands to create a Dataset using the GPR API:
    1. The following command synchronizes the schema: `apply_sync`
    2. The following commands enable you to choose the timestamp column and change datatypes: `name`, `schema`, `visible_fields`
    3. The following command accepts the schema: `accept_sync`
    4. The following commands enable you to check Dataset status, using the following fields to access specific information: `sync_status`, `sync_progress`, `accept_progress`
  - The API now enables you to check the status of various jobs, including Predictor creation and Model creation.

- The new `import_progress` command enables you to track the progress of a Dataset upload.
- You can now purge all data from a Dataset using the new `clear` command. This command retains any existing Predictors and Models, but clears out old Dataset data. You can then add new data, without having to create new Predictors.
- You can now use the GPR API to check the status of Generate and Purge Data jobs using the `check_status` command.
- GPR now supports nested queries in dictionaries during scoring using the `action_filters` parameter. For example, you could use the following query: `\{'action_filters': 'skills.skill1 > 123'}`.
  In addition, you can now change which character to use as a separator denoting nesting in dictionaries. This might be necessary if a separator character is part of a field name because it will interfere with nested queries. To change the nested query separator character, make a PUT request to the `predictors` endpoint with the following parameter: `\{'nested_query_char': '.'}`.

Resolved Issues

This release contains the following resolved issues:

In Model configuration, the Test/Train data split was improved to ensure that the percent of rows actually allocated for Train vs. Test are in sync with the percentages you configure. The web application also validates the percentages you specify for the split, and does not allow invalid percentages, such as specifying either 0% or 100% for the training section. In addition, the way the end-date for the data period used to generate a Predictor was calculated has been modified to ensure that all data from the specified Dataset is used. (PRR-3564, PRR-3444)

When you delete a Predictor, GPR now also deletes all associated data that was used to train that Predictor. This ensures that out-of-date Predictor training data is not retained after the Predictor is deleted. (PRR-3484)

When a new user account is opened, the email with instructions for activating the account and resetting the password to a secure value now arrives. To enable this correction, configure the new environment variable, HOST_DOMAIN, which enables you to specify the public IP address or host name of the host where GPR is deployed or, for HA environments, the IP address of the load balancer. For instructions on how to configure this variable, see Set Values for Environment Variables in the *Genesys Predictive Routing Deployment and Operations Guide*. (PRR-3445, PRR-1564)

You can now export a report that has non-ASCII characters in the report name. Previously, in this scenario GPR generated a `UnicodeEncodeError...` message. (PRR-3404)

If you run a Feature Analysis report on a dataset that uses a low-cardinality field as the target metric, the report now correctly displays the features ordered by rank. Previously, the sub-reports were displayed in alphabetical order. (PRR-3356)

Non-ASCII characters are now properly displayed in the pop-up window that displays the actual cardinality values in Agent Profile and Customer Profile schemas if the feature type is "dictionary". (PRR-3334)

If you run a Feature Analysis report using the GPR API and it fails for any reason, GPR now generates an error message and removes the failed job. Previously in this scenario, the spinning icon in the web application that indicates report generation is underway continued to spin indefinitely. (PRR-3324)

If your environment contains a number of predictors based on large datasets, you no longer encounter an out-of-memory error message when you try to open the Predictors Settings page. Previously, for example, having six predictors, each based on a dataset with 500 columns, triggered the following error message: `Sort operation used more than the maximum 33554432 bytes of RAM. Add an index, or specify a smaller limit.` (PRR-2945)

GPR now correctly scores agents when you use a Composite Predictor. Previously, no score results were returned when you used a Composite Predictor for scoring. (PRR-2924)

The **Agent Profile** window (accessible from the left-hand **Settings** navigation bar) no longer becomes unresponsive if the Agent Profile schema contains a significant number of high-cardinality fields. (PRR-2871)

Agent features now appear correctly on the **Agents** tab (accessed from the top navigation bar) of the GPR web application when you create the Agent Profile schema using the GPR API. (PRR-2748)

When you use the GPR API to set up a Predictor, you can specify a score expression, such as p_score*100, that manipulates the value to be returned for a scoring request. The scoring response includes min, max, median, and mean scores, which now correctly take into account the score expression you configured for the Predictor. (PRR-2468)

AICS now correctly handles score requests based on Composite Predictors. Previously, such scoring requests failed and generated the following error message: `Actions data collection is not indexed.` (PRR-2461)

Upgrade Notes

In release 9.0.013.01, GPR uses an updated version of Python. Use the following procedure to upgrade to release 9.0.013.01.

1. Deploy the IP for AI Core Services release 9.0.013.01, following the instructions in the *Genesys Predictive Routing Deployment and Operations Guide* for a Single-Server or high availability environment, as appropriate.
2. Open a terminal window and go to the **Tango** container using the following command:

```
docker exec -it tango /bin/bash
```

3. Switch to the **gpr** directory using the following command:

   ```
   cd src/gpr
   ```

4. Run the following upgrade script:

   ```
   MODE=prod python3.6 py3_upgrade_script.py
   ```

5. Restart GPR using the following commands:

   ```
   exit
   ```

   This command exits the Tango container.

   ```
   cd IP<version_number>
   ```

   ```
   bash scripts/restart.sh
   ```

6. After performing this upgrade, you must retrain all existing Models. Instructions for training Models are available in Configuring, Training, and Testing Models in the *Genesys Predictive Routing Help*.

Your AICS deployment should now be complete.

Downgrading from 9.0.013.01

If you experience problems that force you to change back to the older version of Python, use the following procedure to remove GPR release 9.0.013.01 and the updated version of Python.

> **Important**
> Use this procedure only if you are downgrading from release 9.0.013.01.

1. Open a terminal window and go to the **Tango** container using the following command:

   ```
   docker exec -it tango /bin/bash
   ```

2. Switch to the **gpr** directory using the following command:

   ```
   cd src/gpr
   ```

3. Run the following downgrade script:

   ```
   MODE=prod python3.6 py3_upgrade_script.py down
   ```

4. Re-install your previous release, following the instructions in the *Genesys Predictive Routing Deployment and Operations Guide* for a Single-Server or high availability environment, as appropriate.

9.0.012.01

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
08/23/18	General	Under Shipping Control		X		

What's New

This is a general release for this component. For availability of this release, contact your Genesys representative. This release includes the following new features and enhancements:

- The **Quality** column in the Models list table on the Model configuration window now includes a new metric, *Local models.* The metric displays the number of local models generated for agents in the dataset on which the predictor is built. Local models are built only for models that have the HYBRID or DISJOINT type. For GLOBAL models this metric is always `0`. If a model is a new (that is, inactive and untrained) the metric value is `-1` until the model is trained. Once trained, the metric shows the actual number of local models. (PRR-3120)
- AI Core Services (AICS) now supports Oracle Enterprise Linux 7.3. (PRR-3013)
- AICS has improved handling of UTF-8 characters. Data ingestion, model training, and analysis reports are all correctly processed for data containing non-ASCII UTF-8 characters.

> **Important**
> Names of predictors and features must still contain ASCII characters only.

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(PRR-3203)

- The GPR API now enables you to run Feature Analysis reports. The API returns a JSON response containing a list of features ordered by weight--that is, by the strength of the impact that feature has on the value of the target metric. The resulting report is also automatically available for view from the GPR web application. Your API request should include at least the dataset ID and the target metric (KPI) column name. You can also specify columns to exclude from the analysis, which enables you to have GPR omit columns that are not applicable for the analysis, such as Employee ID, Name, and so on. For more information, see the *Predictive Routing API Reference*. (This file requires a password to open it. Contact your Genesys representative if you need access.) (PRR-2560, PRR-2565)
- The GPR API now enables you to run Lift Estimation reports. The API returns a JSON response containing the Lift Estimation results. The resulting report is also automatically available for view from the GPR web application. The Lift Estimation results are presented as an actual metric versus a predicted (estimated) metric. A sample response is shown below:

```
...
"lift_results": [
          ["t_metric_actual", "availability_actual", "t_metric_predicted", "availability_predicted"],
          [1, 0.2, 2, 0.2],
          [2, 0.5, 2, 0.5],
          [3, 0.75, 4, 0.75]
        ]
...
```

  For more information, see the *Predictive Routing API Reference*. (This file requires a password to open it. Contact your Genesys representative if you need access.) (PRR-2557)

- The Lift Estimation report now uses the scoring expression configured for the predictor (if any) to decide whether the target metric should be minimized or maximized, enabling GPR to match an interaction with the agent having the optimal score. If you have not configured a scoring expression for your predictor, GPR assumes it is a maximization metric. See Understanding Score Expressions for a detailed discussion of this functionality and how the Lift Estimation graph presents metrics that should be minimized versus those that should be maximized. (PRR-2010)

Resolved Issues

This release contains the following resolved issues:

The Feature Analysis report now supports a target metric with float values in your dataset. Previously, if the target metric was of the float type, its value was automatically converted to the integer type, which could lead to analysis errors. (PRR-3268)

GPR now correctly handles UTF-8 dataset, agent profile, and customer profile files that contain a Byte Order Mark (BOM), which is automatically inserted by most Microsoft applications. Previously, such files were incorrectly processed and could not be used for analysis or building a predictor. (PRR-3211)

The time required to append data to a dataset has been improved by changing how cardinalities are computed. Cardinalities are now computed only on the appended data and the resulting cardinality values are added to those already stored in the database. If you need to have GPR recompute cardinalities for the entire dataset, use a PUT request to the GPR API `.../datasets/<dataset_id>/compute_cardinalities` endpoint. Genesys recommends that you recompute cardinalities after deleting or purging data from the dataset. For more information on the

API, see the *Predictive Routing API Reference*. (This file requires a password to open it. Contact your Genesys representative if you need access.) (PRR-3170)

The endpoint enabling you to generate predictor data using the Predictive Routing API now accepts a time range parameter. (PRR-2962)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.012.01.

9.0.011.00

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
07/13/18	General	Under Shipping Control		X		

What's New

This is a general release for this component. For availability of this release, contact your Genesys representative. This release includes the following new features and enhancements:

- You can now generate and purge predictor data using the Predictive Routing API. For details, see the *Predictive Routing API Reference*. (This file requires a password to open it. Contact your Genesys representative if you need access.)
- You can now configure parameters to control password-related behavior such as how often users must change them, blocking users after a specified number of login attempts, and adding a custom message when users are blocked. For a full description of how to configure password-related behavior, see Password policy configuration. This functionality requires you to run two upgrade scripts, **upgrade_40a_users.py** and **upgrade_41a_accounts.py**, as documented in the Upgrade Notes section in this Release Note.
- The audit trail functionality has been improved, to record additional actions and provide the ability to specify how long audit trail records are kept. All actions related to logins, object modification/creation/deletion, and so on, whether performed using the GPR application or the API, are logged. The records include the ID for the user who performed that action and the date and time. For details, see Audit trails.
- You can now create a new predictor by copying an existing one. To do so, sendi a POST request to the new **copy_predictor** endpoint. This functionality is available using the Predictive Routing API only. For details, see the *Predictive Routing API Reference*.

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- This release supports Mongo DB 3.6. The IP includes the scripts required to upgrade your MongoDB database, as well as the Predictive Routing application. For details, see the Upgrade Notes section in this Release Note.
- You can now use GET commands to retrieve dataset and predictor details using the Predictive Routing API. For details, see the **dataset** and **predictor** sections of the *Predictive Routing API Reference*.
- Predictive Routing now correctly recognizes columns with any combination of the following Boolean values: `y/n`, `Y/N`, `Yes/No`. Previously, only columns with `true/false` and `0/1` values were discovered as Booleans. The identification is case insensitive.
- The way Predictive Routing recomputes cardinalities when you append data to Agent or Customer Profiles via the Predictive Routing API has been changed.
  - Cardinalities are no longer recomputed automatically across the whole collection each time you append data. Full automatic computation happens only once, when an Agent or Customer Profile is uploaded the first time for schema discovery. When you append data to an Agent or Customer Profile via the API, cardinalities are computed only for the appended data portion and only when the number of agents or customers set in the **ADD_CARDINALITIES_EVERY_N_RECORDS** parameter is reached. The results of computation are added to the already-stored cardinality values. This new behavior significantly improves speed when loading new data by avoiding simultaneous recomputations on the full data collection when there are multiple frequent appends done in small batches.
  - The **ADD_CARDINALITIES_EVERY_N_RECORDS** parameter has been added to the **tango.env** file with the default value of `1000`. Each time the counter for appended agents/customers reaches this number, computation for the last appended 1000 records takes place. The default value can be changed in the **tango.env** file, which is located in the **IP_<*version*>/conf** directory. When you change the value, restart the application to have the new value take effect.
  - You can force recomputation of cardinalities on the full Agent or Customer Profiles collection using the new POST **compute_cardinalities** API endpoint. For details, see the *Predictive Routing API Reference*.

    NOTE: This functionality is available only when you use the Predictive Routing API. If you append using the Predictive Routing application interface, all cardinalities are recalculated, which is the same behavior as in previous releases.
- You can now upload data (agent, customer, and dataset) using zip-archived .csv files. Only one .csv file per archive is supported. This applies to uploads made via either the Predictive Routing application or the Predictive Routing API.
- The performance of the Predictors administration when you use the Predictive Routing application has been significantly improved.
- You can now retrieve information on the currently deployed platform using the new **version** endpoint, which has been added to the Predictive Routing API. For details, see the *Predictive Routing API Reference*.
- You can configure the Predictive Routing application to display custom messages on the login screen. To add a message, configure the LOGIN_MESSAGES environment variable, as explained in Set Values for Environment Variables.
  - **Notes:**
    - The text of the login message is not centered.
    - Non-ASCII characters must be escaped, using the equivalent HTML symbol code.
    - You must reconfigure the login message every time you install a new version of the AI Core Services component.

Resolved Issues

This release contains the following resolved issues:

Genesys Predictive Routing (GPR) now automatically sets the value of the **OMP_NUM_THREADS** environment variable to 1, which enables the operating system to properly distribute CPU threads among the various running processes. Previously, this variable had to be set manually. (PRR-2919)

The display for **Agent%** in predictor models has been corrected.

- `-1` is displayed if the agent profile is not synced.
- `0` is displayed if the agent profile is synced but no agent in the profile data has more than ten interactions.

The **Agent%** is displayed only for disjoint and hybrid models. (PRR-2761)

This release corrects the issue that sometimes caused a `Document Too Large` error when running a Feature Analysis using a continuous target metric. (PRR-2746)

When a scoring request is made, only the content of the request itself is now printed to the logs. Previously, a large quantity of unnecessary DEBUG-level messages were logged. (PRR-2638)

When you add agents to an existing Agent Profile by means of an API POST request, Predictive Routing now checks whether the agent IDs are already present in the database. If so, the existing record is updated. Previously, Predictive Routing created a duplicate record for the agent. (PRR-2567)

When you upload data, GPR now skips any record containing unsupported characters and continues processing the upload starting from the next record. Previously, the data upload failed if GPR encountered any unsupported characters. (PRR-2514)

Passing a numeric Agent or Customer ID in a request now successfully returns the corresponding record from the database. (PRR-2513)

When you train a predictor with a large number of features, it is normal for a scoring request to contain only a subset of the predictor features. To reduce scoring response time, the response message no longer includes a warning about the missing features. In addition, the warning `Missing keys set` is no longer printed in the tango logs. If you need to see which were the omitted features, add the following parameter to the scoring request: `"warnings":true`. (PRR-2214)

Upgrade Notes

Use the following special procedure to upgrade to release 9.0.011.00.

> **Important**
> These instructions assume that your current Mongo DB version is 3.2.

Single-Server Deployment

> **Important**
> It is possible to run 9.0.011.00 without upgrading the Mongo DB database. However, Genesys strongly recommends to upgrade to version 3.6. After you upgrade Mongo DB to version 3.6, you cannot install any version of Predictive Routing earlier than the 9.0.011.00 release.

1. Download the IP for release 9.0.011.00. For detailed instructions, see Deploying AICS on a Single Host
    1. In the new IP folder, run the following command: `bash scripts/install.sh`
    2. Then, also in the new IP folder, run the following command: `bash/scripts/upgrade_gpr_services.sh`

       At this point, release 9.0.011.00 is installed and your Mongo DB version remains at 3.2.
2. Run the following commands to update your data to the correct format for Mongo DB 3.6:
   ```
   docker exec -ti tango /bin/bash cd src/gpr

   MODE=prod python common/scripts/versioning/upgrade_40a_users.py

   MODE=prod python common/scripts/versioning/upgrade_41a_accounts.py
   ```
   The upgrade to version 9.0.011.00 is now completed.
3. To upgrade the database itself, now run the following scripts:
    1. In the new IP folder, run the following command ***two*** times (the first time it upgrades to version 3.4 and then to version 3.6): `bash scripts/upgrade_to_mongo36.sh`
    2. Then in the new IP folder, run the following script: `bash scripts/restart.sh`

HA Deployment

> **Important**

> It is possible to run 9.0.011.00 without upgrading the Mongo DB database. However, Genesys strongly recommends to upgrade to version 3.6. After you upgrade Mongo DB to version 3.6, you cannot install any version of Predictive Routing earlier than the 9.0.011.00 release.

1. Download the IP for release 9.0.011.00. For detailed instructions, see Deploying: High Availability
    1. On *each* node, in the new IP folder on that node, run the following command: `bash scripts/install.sh`
    2. Then, on the *primary* node, also in the new IP folder, run the following command: `bash/scripts/upgrade_gpr_services.sh`

       At this point, release 9.0.011.00 is installed and your Mongo DB version remains at 3.2.
2. Run the following commands to update your data to the correct format for Mongo DB 3.6:
   `[root@node-1 ha-scripts]# docker exec -ti <tango_container_id> /bin/bash` (insert the correct value for your tango container id)

   ```
   cd src/gpr

   MODE=prod python common/scripts/versioning/upgrade_40a_users.py

   MODE=prod python common/scripts/versioning/upgrade_41a_accounts.py
   ```

   The upgrade to version 9.0.011.00 is now completed.
3. To upgrade the database itself, now run the following scripts:
    1. In the new IP folder on the *primary* server, run the following command ***two*** times (the first time it upgrades the Mongo DB cluster to version 3.4 and then to version 3.6): `bash scripts/upgrade_to_mongo36.sh`
    2. Then in the new IP folder, run the following script: `bash scripts/restart.sh`

9.0.010.01

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
05/11/18	General	Under Shipping Control		X		

What's New

This release includes the following new features and enhancements:

- You can now generate a Lift Estimation report with a customized selection of up to 20 sub-groups to be included in the high cardinality **Group by** parameter.
- GPR supports GDPR requirements for locating, exporting, and removing personally identifiable information. For details, refer to the following documents:
  - Handling Personally Identifiable Information in Compliance with GDPR Requirements in the *Genesys Predictive Routing Deployment and Operations Guide*
  - *Predictive Routing API Reference* (access requires a password; contact your Genesys representative for assistance)

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Resolved Issues

This release contains the following resolved issues:

This fix ensures that Lift Estimation report uses only test data assigned for a model. (PRR-2181)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.010.01.

9.0.009.01

AI Core Services Release Notes

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
03/28/18	General	Under Shipping Control		X		

What's New

This release includes the following new features and enhancements:

- The name of the Journey Optimization Platform (JOP) component has been changed to *AI Core Services* (*AICS*).
- When generating the Lift Estimation report, Genesys Predictive Routing (GPR) now provides the option to produce a report for each unique value for a selected column (feature). Previously, any feature with a cardinality of more than 20 was excluded, which meant that GPR could not produce reports with a granularity higher than 20 unique features.

  In addition, you can now select high cardinality features as grouping parameters in the Lift Estimation report. The report automatically extracts the top 20 features by volume and generates a report for each group. (PRR-2171)
- The agent pool for lift estimation is now constructed on a per-day basis for the interactions in the dataset. Previously, you might have observed a negative lift for higher agent availability or an unexpectedly high lift for low agent availability due to overcorrection caused by a mismatch between the input sample size and the actual sizes encountered through daily simulation. (PRR-2096, PRR-2095)
- GPR now supports LDAP authentication for user logins. LDAP support includes the following points:
  - LDAPS support

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- Active Directory (AD) support
- Authentication only – does not read details of the directory
- Non-anonymous BIND only
- LDAP passwords not stored locally
- No auto enrollment
- Multiple GPR accounts associated with a single LDAP account

  (PRR-1281)

Resolved Issues

This release contains the following resolved issues:

On the **Overview** tab of the Feature Analysis report, you can now export feature ranking data as an Excel table. The table includes the following information: a list of the features, their ranks, and relative significance. (PRR-2038)

The Lift Estimation analysis report no longer produces an empty report when there is no data to analyze. (PRR-1994)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.009.01.

9.0.008.00

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
03/05/18	Restricted			X		

What's New

This is a restricted release for this component. For availability of this release, contact your Genesys representative. This release includes the following new features and enhancements:

- Predictive Routing now supports datasets of up to 250 columns for predictor data generation, model training, and analysis. (PRR-2077, PRR-1563)
- Model training speed has been considerably improved. (PRR-1221)
- Predictive Routing now provides progress indicators when loading predictor data and generating predictors. The progress indicators show the percent complete and the number of data rows already loaded. (PRR-2075, PRR-1747)
- You can now view an entire Agent or Customer Profile record from the **Agents** and **Customers Details** tabs or an entire record on the **Datasets Details** tab. Click a single record to open a new window containing a table with all the related key-value pairs. (PRR-2057, PRR-1966)
- The maximum supported cardinality for the **Group By** functionality in the Lift Estimation report has been increased to 20. All features with cardinalities between 1 and 20 are now available in the **Group By** selection menu. (PRR-2034)

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- You can now enter a maximum value of 500 simulations in the Lift Estimation analysis report settings. This prevents you from entering numbers too large to efficiently analyze and which can lead to an out-of-memory situation. The **Number of Simulations** field accepts any value larger than `0` and less than or equal to `500`. (PRR-1970)
- Memory handling when appending data to a dataset has been improved. Previously, appending data a few times in a row could lead to an out of memory state. (PRR-1964)
- Predictive Routing now provides a text search field for use when selecting attributes for analysis. (PRR-1834)
- When a dataset is loaded, the system checks the first 1000 rows of each column to determine data types automatically. Predictive Routing now assigns the boolean type to columns with 0 and 1 values. Previously, values in such columns were identified as numeric. (PRR-1791)
- You can now enable Predictive Routing to look up updated values for certain agent attributes based on customer or interaction attributes during a scoring request. For instance, you can look up agent performance by Virtual Queue, making it possible to evaluate the agent's previous performance handling interactions from that queue. This avoids comparing agent performance for a specific queue against other agents who handle interactions from a different mixture of Virtual Queues.
  The Agent Profile schema encodes such information as a dictionary. Currently only one-dimensional dictionaries are supported. They can have up to 200 key-value pairs, where the key is a string and the value is one of the following types: int, float or boolean. (PRR-1643)

Resolved Issues

This release contains the following resolved issues:

Scoring requests now correctly return scores for all valid agents even if some agents have errors. Previously, if any agent included in the scoring request had an error, the scoring request failed for all agents. (PRR-2100)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.008.00.

9.0.007.05

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
02/09/18	Restricted			X		

What's New

This is a restricted release for this component. For availability of this release, contact your Genesys representative. This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

Printing into Workers logs has been reduced, in order to reduce the size of the log file. Previously, excessive logging caused the log file to grow rapidly during long job executions, sometimes causing the container to run out of space. (PRR-2004)

The time required for the Lift Estimation Report to complete has been significantly reduced.

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Previously, because agent data was vectorized for each interaction, the number of vectorization calls equalled `(num_of_samples) x (num_of_agents) x (num_of_group_by)`. As a result, the time for the report to complete grew exponentially with growing numbers of features and samples. Starting with this release, agent vectorization is performed only once, and the agent vector is then reused for all subsequent sample runs. Since the number of agents grows at the same rate as the number of samples, reusing the agent vector reduces report completion time by an order of magnitude.

In addition, this release improves the core Lift Estimation algorithm as follows:

- Processing speed has been increased by reusing the random selection of agents from higher availability to lower availability pools.
- The algorithm now supports exclusion of agents for an interaction based on `NULL` scores.
- If no interaction was processed for a given agent availability fraction, the value of the estimate in the output is set to `NULL`.

(PRR-1993)

The following improvements have been made to the Feature Analysis reports displayed in the application interface:

- All the features you selected during report configuration and which have a relative weight greater than or equal to one percent (1%) now display. Previously, reports displayed no more than 15 features.
- All feature columns from feature scores are now considered, so the feature scores are more accurate.
- By default, tabs for feature sub-reports are visible only for features with a weight greater than 0.5. To access sub-reports for features weighted less than 0.5, click the corresponding bar in the bar chart.

(PRR-1872)

The following optimizations reduce the likelihood of encountering out-of-RAM database errors when viewing the status of jobs in the UI:

- An index has been added to the MongoDB database, to avoid in-memory sorting.
- The number of parameters passed to jobs has been reduced, to improve the memory footprint of the application.

Previously, database errors might have occurred when the default MongoDB limit of 32 MB of RAM was exceeded. (PRR-1850)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.007.05.

9.0.007.04

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
01/19/18	Update			X		

What's New

This release includes the following new features and enhancements:

- You can now redirect all logs for Gunicorn workers to the same location as the stdout/stderr logs for the main process (**start_stop_machine.py**).
  - The main process now spawns child processes for every executor. Logging from each child process goes to the main process stdout/stderr location.
  - The main process no longer exits immediately after starting the executors, but now holds all child processes and output logs, in the same way the **run_gunicorn.py** process did in previous releases.
  - The `–stop` parameter has been removed, and is disregarded if you use it.

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Resolved Issues

This release contains the following resolved issues:

All INFO-level log messages related to Lift Estimation analysis report activity have been changed to DEBUG-level to prevent the log file from growing unnecessarily quickly in a production environment. (PRR-1837)

The Lift Estimation analysis report is now generated correctly when you use a **Group By** parameter. Previously, the Lift Estimation analysis failed to generate a report when the **Group By** parameter produced a partial overlap between the agents in the Agent Profile and those in a dataset. (PRR-1833)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.007.04.

9.0.007.03

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
01/18/18	Update			X		

What's New

This release includes the following new features and enhancements:

- The Predictive Routing API has been extended to enable you to delete Agent Profile and Customer Profile schemas. The DELETE request should be made to the ***<base_url>*/api/v2.0/schemas** endpoint. The request body must include the API access token and a value for the **schema_type** parameter (`agents` or `customers`).
- How Predictive Routing handles dataset field visibility has been updated to improve performance on the **Datasets** tab. Now, when a dataset is initialized, fifteen low-cardinality fields are made visible by default and displayed on the **Datasets** tab. You can add or hide fields by changing the visibility settings on the **Settings: Datasets** window. Only visible feature appear as facets and columns on the Dataset **Details** tab. However, regardless of their visibility status, *all* dataset fields are available for analysis.

  This functionality requires you to run the upgrade script provided in the Upgrade Notes section of this Release Note (below).

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Resolved Issues

This release contains the following resolved issues:

The Agent Variance analysis report now uses Standard Error of the Mean, or SEM estimation, which measures how far the sample mean of the data is likely to be from the true population mean. The SEM is always smaller than the Standard Deviation. Previously, When the Agent Variance report was set to group by the same parameter as the Agent ID, the standard deviation sometimes could exceed the boundaries of the target metric. (PRR-1738)

The Lift Estimation analysis now correctly runs only on the test section of a dataset. Previously, it also incorporated data used to train the model it was evaluating, resulting in a flawed analysis. The train and test sections of the historical data are now split on the basis of time, rather than randomly, enabling Predictive Routing to identify the correct data to create the Lift Estimation analysis. (PRR-1694)

The Agent Variance analysis no longer fails when supplied with string data in place of numeric data. (PRR-1693)

The Lift Estimation analysis report requires that there is an overlap between agent profile data and the predictor's dataset. Those agents are being scored to estimate if there is a lift. This fix addresses the issue when there is no overlap between Agent Profile and predictor's data by trying to score the agents from predictor itself. (PRR-1691)

Predictive Routing now runs correctly on Internet Explorer v11. Previously, it experienced the following issues:

- All plots generated by analysis reports were distorted.
- The Help widget did not work.

(PRR-1683)

Numeric data is now stored as floats rather than integers. Previously, all float values were saved as integers, introducing inaccuracies into the analysis reports. This functionality requires you to run the upgrade script provided in the Upgrade Notes section of this Release Note (below). (PRR-1675)

Validation has been added to the **Number of Agents** field in the Agent Variance analysis report to prevent incorrect values from being passed to the report. In addition, the default value of `50` has been added to the same field. (PRR-1672)

The Agent Variance report now generates a correct analysis when the target metric is of the boolean type. (PRR-1668)

You can now select `None` as the **Group By** parameter in the Lift Estimation analysis report, which means that Predictive Routing selects random interactions to calculate the estimated lift for agents. (PRR-1661)

Inactive, locked models are now correctly available for analysis in the Lift Estimation report. (PRR-1614)

Validation have been added to the **Number of Samples** and **Number of Simulations** fields in the Lift Estimation analysis report to prevent wrong values being entered. Also, these fields are both supplied with the default value of `100`. (PRR-1612)

Upgrade Notes

Use the following scripts to upgrade JOP to release 9.0.007.03.

The following script activates the new dataset fields visibility feature. To install the upgrade, run the following script in the Tango container:

```
docker exec -it tango /bin/bash
cd solariat_bottle/src/solariat_bottle/jop/common/scripts/versioning
python upgrade_35a_prr_dataset_visible_fields.py --mode=prod
```

The following script activates the correction to how JOP handles float values. To install the upgrade, run the following script in the Tango container:

```
docker exec -it tango /bin/bash
cd solariat_bottle/src/solariat_bottle/jop/common/scripts/versioning
python upgrade_34a_prr_integer_vectorizer.py --mode=prod
```

> ### Important
>
> This script was formerly named `upgrade_34a_prr_integer_vectorizer.py`. The change in the number from *34a* to *34b* did not affect the contents of the script. Aside from the name, both versions are identical.

9.0.007.01

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
01/05/18	Update			X		

What's New

This release includes the following new features and enhancements:

- This release updates the product name in the user interface and the documentation. The product name has changed from Genesys Predictive Matching to Genesys Predictive Routing.

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> **Important**
> For now, the following Genesys Predictive Routing components retain "Predictive Matching" as a part of the component name: Predictive Matching - Agent State

> Connector, Predictive Matching - Composer Strategy Subroutines, and Predictive Matching - URS Strategy Subroutines.

Resolved Issues

This release contains no resolved issues.

Upgrade Notes

To upgrade to release 9.0.007.01, execute the following script:

```
docker exec -it tango /bin/bash
cd solariat_bottle/src/solariat_bottle/jop/common/scripts/versioning
python upgrade_33a_prr_rename.py --mode=prod
```

9.0.007.00

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
12/22/17	General	Under Shipping Control		X		

What's New

This release contains the following new features and enhancements:

- The product name has changed from Genesys Predictive Matching to Genesys Predictive Routing. This change is not yet reflected in the application interface or in the documentation.
- Genesys Predictive Routing now supports both single-site and multi-site HA architectures.
- Genesys Predictive Routing now supports historical reporting, provided by the Genesys Reporting solution. The following reports are available in Genesys Interactive Insights: Predictive Routing AB Testing Report, Predictive Routing Agent Occupancy Report, Predictive Routing Detail Report, Predictive Routing Operational Report, and Predictive Routing Queue Statistics Report. For details, including a list of the attached KVPs and the associated Info Mart tables, see Deploying: Integrating with Genesys Reporting in the *Genesys Predictive Matching Deployment and Operations Guide*.

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  - This functionality requires Genesys Info Mart 8.5.009.12 or higher, Reporting and Analytics Aggregates 8.5.002 or higher, and Genesys Interactive Insights 8.5.001 or higher.
  - Historical reporting is enabled in Predictive Routing by the following two new options: **send-user-event** and **vq-for-reporting**.
- Two new real-time reporting templates are available for use in Pulse dashboards: Agent Group KPIs by Predictive Model and Queue KPIs by Predictive Model.
- Two new analysis reports have been added to the Genesys Predictive Routing application: Agent Variance and Lift Estimation.
  - The Lift Estimation analysis report uses simulation to estimate the lift in agent performance that the predictive model might achieve. The evaluation method uses a technique called Doubly Robust Evaluation that accounts for possible errors when using a predicted value as compared to achieved results.
  - The Per Agent Variance analysis report identifies the presence of variance in agent performance for a target metric, which is important for successful deployment of Predictive Routing.
- The Model creation interface now includes additional model quality and agent coverage reporting. The new model quality report for classification models evaluates quality using the area under the curve (AUC) method. You can analyze model effectiveness using a Receiver Operating Characteristic (ROC) Curve.
- The Feature Analysis report, the model creation and training functionality, and the dataset import functionality have been improved to handle large datasets.
- You can now combine simple predictors to create composite predictors. You can use composite predictors for the following use cases:
  - Making routing decisions based on composite metrics rather than just one.
  - Using different simple predictors alternately depending on a context variable passed in a scoring request.

    For details, see About Composite Predictors.
- Health checks and monitoring have been improved for both Journey Optimization Platform (JOP) and Agent State Connector (ASC). Among the new functionality and improvements are the following:
  - ASC now enables you to set alarms if there are persistent connection issues with Configuration Server or Stat Server.
  - Improved logging for the JOP Tango container when you train a model. The relevant log message now includes the model ID and feature size.
- The behavior of the agent occupancy control feature was modified. This update includes a new configuration option, **agent-occupancy-factor** option. In addition, the descriptions of the **use-agent-occupancy** and **agent-occupancy-threshold** options have been updated to incorporate the new behavior.
- The behavior of the time-sliced A/B testing mode (the **prr-mode** option is set to `ab-test-time-sliced`) has been improved. Previously, the alternation of time periods when Predictive Routing interaction processing is on or off was restarted each midnight. Now the periods are counted from the midnight of January, 1, 1970, GMT (the epoch time). This change enables you to run Predictive Routing at different times during a day or to run a test over multiple days. In addition, the default value of the **ab-test-time-slice** option is now set to 1741 seconds, (approximately 29 minutes). Previously, the default value was `60` seconds, which is far shorter than the period recommended for use in a production environment.
- You can now set a timeout value that enables Genesys Predictive Routing to tell whether URS is

overloaded, at which point Predictive Routing turns itself off. This functionality is controlled by the new **overload-control-timeout** option.

- When you are training a model, new status indicators immediately inform you of the progress of model training, from "IN QUEUE", to a blinking "IN TRAINING" when the training job starts being processed, to "TRAINED" after job has been completed.
- Predictive Routing now enforces conversion of non-string ID values into strings in the Agent and Customer Profile schemas.
- The Predictive Routing strategy integration with URS now automatically deletes interaction scoring data stored in the URS global map once the interaction is routed or abandoned. As a result, the PrrIxnCleanup subroutine is no longer needed. This change in Predictive Routing subroutines is supported in URS version 8.1.400.37 or higher.
- Apache Kafka is no longer used for triggering the execution of model training or analysis jobs. This functionality has been taken over by MongoDB. As a result, the kafka container is no longer part of the JOP installation package.
- Labels in the Predictive Routing interface on the Predictor Settings tab, and the Predictors tab which enables you to view and run analysis of your predictors, have been changed to improve usability. The Action Features label is now *Agent Features*; Context Features is now *Customer Features*; Action Type is now *Agent Identifier*; Context Type is now *Customer Identifier*.

Resolved Issues

This release contains the following resolved issues:

Running feature analysis on large datasets has been improved, optimizing memory and CPU usage and changing the way Predictive Routing calculates feature importance. If you are upgrading to Predictive Routing 9.0.007 and need to work with large (100 columns) datasets, execute the following script in your python shell (python, ipython or "python --mode=prod" depending on needs) to recalculate cardinalities for your existing datasets:

```
{code:java}
from solariat_bottle import dbconnect
from solariat_bottle.jop.datasets.models import Dataset

dbconnect.setup()
[d.compute_cardinalities() for d in Dataset.objects.find()]{code}
```

(PRR-1517)

Agent and Customer Profile API GET requests now support batch sizes and start indexes. (PRR-1453)

Added support for updating, deleting, and reading the indexes on Agent and Customer Profile collections through the Predictive Routing API. Detailed documentation is available in the *Predictive Routing API Reference*. (PRR-1393)

Error handling for Predictive Routing jobs has been improved. These jobs include dataset analysis, predictor analysis, and model training. If these jobs fail for any reason, an informative error message is generated in the Predictive Routing application. (PRR-1306)

The scoring response functionality provides the following additional fields used for Genesys Reporting:

- median_score
- mean_score
- min_score
- max_score
- scores_count
- context_matched

More details are available in the *Predictive Routing API Reference*. (PRR-1232)

Predictive Routing user data is now correctly populated. (PRR-1181)

Versioning for models has been improved. When a new model is trained or retrained, the integer in the Versions column is increased. In addition, when an activated trained model is copied, it gets the same name as the original model and a suffix indicating it is a copy and a version number is attached to its name. (PRR-1041)

Upgrade Notes

In release 9.0.007.00, feature analysis on big datasets has been improved, optimizing memory and CPU usage. The new functionality changes how data is collected for the feature importance calculation. To use this new functionality on existing datasets, you must execute the following commands to recalculate your existing data cardinalities:

```
docker exec -it tango /bin/bash

MODE=prod python

from solariat_bottle import dbconnect
from solariat_bottle.jop.datasets.models import Dataset

dbconnect.setup()
[d.compute_cardinalities() for d in Dataset.objects.find()]
```

9.0.006.13

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
12/08/17	Hot Fix			X		

What's New

This release includes the following new features and enhancements:

- This release improves feature ranking analysis in the Feature Analysis report, which identifies the variables having the greatest impact on outcomes for a specified metric. To achieve this improvement, the sklearn DecisionTreeRegressor/Classifier was replaced with XGBoost library (an optimized distributed gradient boosting library). In conjunction with this improvement, the Decision Tree view was removed from the Feature Analysis report.

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Resolved Issues

This release contains the following resolved issues:

Model training no longer fails when the model contains high-cardinality numeric features. Previously,

the method for estimating the required feature space size for numeric features overestimated the necessary size. As a result, it under-sampled the training dataset such that no records were available for training. (PRR-1509)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.006.13.

9.0.006.11

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
11/22/17	Hot Fix			X		

What's New

This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

This release includes the following improvements to the Datasets API functionality.

Only special keywords are allowed for the sep (separator) parameter. Those keywords are COMMA and TAB, which correspond to ',' and '\t' respectively. All other characters are rejected. The body request to create a dataset should have a format similar to the following example:

```
{
  "token": "auth token",
```

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```
  "name": "DatasetName",
  "sep": "TAB",
  "csv_file": "file object"
}
```

(PRR-1438)

The Predictive Matching API has been extended to include a new end-point, which enables you to append new data to an existing dataset. The command should have a format similar to that shown in the following example:

```
PUT /datasets/<datasetId>/append
```

The `datasetId` can be found on the Datasets tab in the Settings section of the Predictive Matching application.

The mandatory parameters for the API request are the following:

- access token
- separator
- `csv_file` (the path to csv file) or `batch_data`

(PRR-1414)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.006.11.

9.0.006.08

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
11/17/17	Hot Fix			X		

What's New

This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

This release corrects issues with the initialization script provided in release 9.0.006.07 of the Predictive Routing Server (JOP). It changes the way data is preloaded for the first login to the Predictive Routing application. In the previous release, 9.0.006.07, the script that preloaded data into the database did not set all the required fields for account collection correctly and caused an error when you added Predictive Routing to the list of Configurable Apps. For details about this procedure, see Adding the Predictive Routing application to your default account.

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> **Important**
>
> This issue affected only new deployments. If you upgraded from an earlier release of JOP to 9.0.006.07, you should not encounter any issues and do not need to upgrade to 9.0.006.08.

For complete deployment instructions, see Deploying: Journey Optimization Platform. (PRR-1344)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.006.08.

9.0.006.07

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
11/02/17	Hot Fix			X		

What's New

This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

Predictive Routing now loads dataset data in chunks with timeouts between them. Previously, the process of loading very large datasets blocked Gunicorn workers from reporting that they were still running correctly within their configured timeout periods. This caused the workers to time out, which halted the data upload.

See Deploying: Journey Optimization Platform for specific prerequisites and configuration instructions for large (260 MB and greater) datasets. (PRR-1222)

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Upgrade Notes

No special procedure is required to upgrade to release 9.0.006.07.

9.0.006.06

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x **AI Core Services** is part of 9.x starting in 9.0.006.05.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
10/05/17	Hot Fix			X		

What's New

This release includes only resolved issues.

Resolved Issues

This release contains the following resolved issues:

This release corrects the following installation issues found in the previous JOP IP:

- The names of the Docker containers in the `start.sh` script and in the installation package are now the same. Previously, they were different and the `start.sh` script did not run properly.
- The script that loads users into the database now contains all the necessary parameters. Previously, a

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parameter was missing, which prevented users from being created and, as a result, it was impossible to log into JOP.

(PRR-1143)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.006.06.

9.0.006.05

Journey Optimization Platform Release Notes

> **Important**
> Journey Optimization Platform was renamed to AI Core Services in release 9.0.009.01.

9.x This is the first 9.x release of **AI Core Services**.

Release Date	Release Type	Restrictions	AIX	Linux	Solaris	Windows
09/26/17	General	Under Shipping Control		X		

What's New

For availability of this release, contact your Genesys representative. This release contains the following new features and enhancements:

- This release provides improved navigation around the web interface and includes the new Genesys branding:
  - To open the **Settings** menu, click the cog wheel icon in the top menu.
  - If your environment includes other Analytics applications in addition to Predictive Matching, you can switch between them by clicking the current application name in the top menu bar to open a drop-down menu with the available applications.
- This release includes context sensitive Help. To open the Help from the interface, click the **?** icon on the top menu bar.
- You can now update and retrain models that have not yet been activated. You can also make changes to activated models by cloning them, editing the parameters, then activating the new model in place of

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the old one.

- Predictive Routing now supports HTTPS.
- Predictive Routing now supports TLS 1.2 encryption. Support for TLS 1.1 has been discontinued.

The following new features were added in previous Restricted releases:

- Agent and Customer profile schemas now include an `is_indexed` flag. Mark a field as indexed to have Predictive Routing create indexes in the database for this field, which speeds up queries on this field.
- Predictive Routing now has more flexibility when building predictors based on incomplete data. Previously, if you tried to create a predictor using agent or/and customer profiles that were not yet configured, you could not save or update your predictor until you corrected the issue. Now, although Predictive Matching generates an error message to notify you about the issue, it completes the creation or updating of the predictor.
- Predictive Routing now offers a script that identifies misconfigurations, prints them out, and, when possible, fixes them. For example, it can identify and automatically build missing indexes in MongoDB collections. To run this script, open a command window and enter the following:

```
$ cd /opt/tango/solariat_bottle/src/solariat_bottle

$ python prr/configuration_checker.py --mode=prod
```

- Scoring requests and responses are now logged into the database for reporting purposes. For every interaction, Predictive Routing now records the actual interaction result and contrasts it with the predicted outcome. This helps demonstrate how well the prediction models are working.
  Note: To make use of this scoring request change, you must modify your strategy subroutines by adding a `true/false` field to the `log_request` content.
- The `predictor_models` API endpoint now returns the list of local models and scoring request results, with an indication logged for each agent showing whether the model used for scoring was local or global.
- Predictive Routing now provides full API access to all Predictive Routing-related functionality, including the following:
  - Creation, updating, deletion, and modification of datasets, predictors, and models.
  - Dataset and Predictor schema management.
  - Predictor data purging and generation.
  - Dataset synchronization.
  - Improved logging and reporting for the scoring API.
  - Creation, updating, and deletion of accounts.
  - Agent profile and customer profile updates.
- Predictive Routing now supports strategies created in Composer and processed by Orchestration Server (ORS). These strategies utilize common URS subroutines to store scores returned from the scoring server and to set callback functions in URS.
- Schema modification has been extended to enable manual creation of fields not included in an imported dataset. This extended functionality also enables discovery of additional fields by uploading further data and thereby extending the schema.
- Extended datasets functionality now includes built-in analysis capabilities to make data exploration and feature analysis more straightforward without requiring customers to first build a predictive model.
- Customer profile data can now be loaded to the platform by means of a REST-API and joined at run time

for scoring. This simplifies the integration requirements for deploying Predictive Routing, requiring less modification to existing routing strategies or run time CRM integrations.

- Predictive Routing now enables logging of routing decisions, required for accurate A/B testing, to JOP rather than Genesys Info Mart. This simplifies Predictive Routing deployment, by removing the need to make changes to Interaction Concentrator and Genesys Info Mart to support Predictive Matching.
- Improvements to the analytics and reporting functionality:
  - Reports can now indicate whether a predictive score was generated, enabling A/B testing.
  - The range of visualization on the Reporting Dashboard page has been improved.
  - Predictive Routing can now perform analysis and data discovery on factors driving the KPI that is being optimized.
- You can now upload data sets in CVS format, enabling you to have Predictive Routing analyze the data, define predictors based on it, and report on it. You can use these data sets for model training and testing, and you can calculate statistics for correlation and cardinality from them.
- Self-service predictor management and model creation. Note the following properties of predictors and models:
- You can have multiple models built from one related data set.
- You can only use a predictor to optimize a single metric (that is, a column in the data set); each model under the same predictor optimizes the same metric.
- You can use a subset of features from the data set to define a predictor.
- A predictor can be based on a subset of data (such as a time range, or a subset created by filtering data set column values).
- Once you define a predictor, you can append new data to its underlying data set.
- A predictor can use any source of data matching the source data set schema to retrain and update models.

Resolved Issues

This release contains the following resolved issues:

The Predictive Routing Settings menu now opens on the Datasets tab by default. It no longer displays the Channels tab, since Channels do not apply to Predictive Routing. (PRR-1003)

Parsing of CSV source files has been improved. If a file contains a corrupted row, this row is now skipped. Previously, the existence of a corrupted row caused a parsing error and the none of the file was uploaded. (PRR-987)

Upgrade Notes

No special procedure is required to upgrade to release 9.0.006.05.