TIBCO® Fulfillment Provisioning

Release Notes

Version 3.10.0 | August 2025

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Contents

New Features

This section lists the features of this product.

Release 3.10

The following are the new features in this release:

- **Red Hat Enterprise Linux Server Version 9.4**

  TIBCO® Fulfillment Provisioning now supports Red Hat Enterprise Linux Server version 9.4 64-bit on x86-64.

- **OpenSSL Version 3**

  TIBCO® Fulfillment Provisioning now supports OpenSSL version 3.

- **Apache-HTTP Server Version 2.4.65**

  TIBCO® Fulfillment Provisioning now supports Apache-HTTP Server version 2.4.65.

- **PHP Version 8.4.10**

  TIBCO® Fulfillment Provisioning now supports PHP version 8.4.10.

- **TLS Version 1.3**

  TIBCO® Fulfillment Provisioning now supports TLS version 1.3.

- **Oracle Database Server Version 12 and 19c**

  TIBCO® Fulfillment Provisioning supports Oracle database server version 12 and version 19c.

- **PostgreSQL Version 17.2**

  TIBCO® Fulfillment Provisioning now supports PostgreSQL version 17.2. Session Layer for ODBC now supports PostgreSQL database version 17.2.

- **Stored procedures for MySQL and PostgreSQL**

  Enhanced ODBC API now supports stored procedures for MySQL version 8 and

PostgreSQL version 17.

- **JDK Version 21**

    TIBCO Fulfillment Provisioning now supports JDK version 21.

Release 3.9

The following are the features in this release:

- **PostgreSQL 9.4.14 Support**

    TIBCO FPOMS now supports PostgreSQL 9.4.14.

- **JDK Upgrade**

    TIBCO Fulfillment Provisioning now uses JDK 1.8.

Release 3.8.1

There are no new features in this release.

Release 3.8

The following are the features in this release:

- **Product Name Change**

    With the release of 3.8.0, the name of the product has been changed. TIBCO Fulfillment Provisioning is the new name for Kabira Provisioning and Service Activation.

- **Network Element Maintenance Management** A new maintenance state has been added to manage cartridge instances entering and existing maintenance condition. When a cartridge instance enters maintenance condition, asynchronous responses to its in-processing work orders continue to be processed normally, new or replaying work orders for that cartridge instance are set in "network error" state without cartridge instance interaction, and recurring attempts to check corresponding network element availability by the Message Store and Forward (MSF) is stopped. When a cartridge instance exits maintenance condition, work orders for that cartridge instance are processed normally again and the MSF initiates corresponding network element availability check with associated work order reinjection if availability confirmed. Operators set cartridge instance to enter or exit maintenance state using

`provadmin` command (startMaintenance/stopMaintenance) or using FP-OMS interface. Events are generating when a cartridge instance enters (Event_startMaintenance) and exits (Event_stopMaintenance) maintenance state.

- **`OSS/J Order Management Client Adapter`** A new client adapter is provided to support standard TMF OSS/J Order Management API (JSR-264) for XML/JMS and WSDL profiles. All mandatory operations and event are supported as well as many optional ones. See the *OSS/J Order Management Client Adapter* section in the *TIBCO Fulfillment Provisioning User's Guide* for more details.

- **Order Parenting**

  This feature allows you to define a parent service order as the originator of the affiliated service order. The Fulfillment Provisioning Order Management System displays the list of affiliated service orders for a parent service order. This list is displayed in the service order detail view. You can access an affiliated service order root page from the parent service order detail view by clicking on a service order identifier in the list of affiliated service orders.

- **Local Variables Support in Scripting Language**

  This feature allows you to define local variables in scripting language (CommandEval), which includes capability and language elements to define and set a local variable.

- **FC integration** Fulfillment Catalog (FC) queries Fulfillment Provisioning catalog product entities for catalogs synchronization using new OSS/J Order Management client adapter.

- **Parameter Setting in Process Model**

  This feature allows you to perform parameter updates in a process model configuration file. You can define the assignment of dataset (NVSet) parameters directly in the process model at the process activity (Work Order in a POF) level.

- **Iterative Fulfillment** A new feature is provided to model multiple iterations of same processes (aka Product Order Flows) attached to an order line (aka Product Order) by instantiating dynamically decomposed Technical Product Orders multiple times. The number of instances and the parameters for each instance is provided in a tabular structure passed in the service order. These iterative technical Product Order instances can be executed in sequence or in parallel by catalog configuration.

- **Improved Rules Editor** A new capability has been added to simplify the process of

adding new rules to a Technical Product Order from the catalog GUI. A new " Rules" folder has been added in the Technical Product Order page which allows creation and automatic association of new rules to that Technical Product Order. Rules editor has been also enhanced with auto-completion capability.

- **FPOMS Dataload Parallelization for Performance** The database injection mechanism has been improved for better parallelization performance.

- **Replace Execution Time in Cartmodule** Fulfillment Provisioning adds work order processing time in cartmodule::ED_success and cartmodule::ED_woError events. This processing time can be expressed in milliseconds or nanoseconds.

Release 3.7

The following are the new features in this release:

- **Integrated End to End Order Fulfillment** A new adapter is provided for listening and responding to service orders produced by TIBCO ActiveFulfillment and delivering collaboratively an integrated end to end order fulfillment suite. Using TIBCO EMS as a transport protocol, the client adapter for TIBCO ActiveFulfillment supports both service orders routed directly from OMS component or service orders resulting from higher-level customer order decomposition occurring in BE Orchestrator. A client adapter for TIBCO EMS is also provided but limited to capabilities required by TIBCO ActiveFulfillment integration.

- **Extended Dashboard** New capabilities have been added to define and visualize more complex Key Performance Indicators in OAM dashboard including;

  - Filtering using relative date criteria such as today, yesterday or last week.

  - Filtering using service order, order line or work order concept such as number of service orders, order lines and work orders created today and grouped by status.

  - Collecting min, max and average values such as execution latency of service order, order lines and work orders.

  - Grouping result per two dimensions such as min, max, average latency grouped by work order type and equipment instance.

  - Direct link to list of service orders view filtered via indicator criteria for fast investigation.

- **TIBCO Standard Product Installation** The product installation process has been

improved using standard TIBCO Universal Installer.

- **Selectable Order Data for OAM** A new feature is provided to define by configuration at OAM GUI what user defined parameters in dataset for each order level are persisted in OAM database and then accessible by OAM GUI capabilities. It is also permitted to select all or none of them. Additionally, service order can be configured to dynamically override global OAM configuration on per service order basis by setting "OAM::dumpDataSet" parameter to "all", "none" or "filter" at SOD, POD or WOD level. It must be noted that persisting all parameters can be valuable during testing but may impact performance.

- **Rollback Process Tracked in OAM** Previously capturing only nominal provisioning process, OAM has been enhanced to now visualize also rollback provisioning process when applicable.

- **Improved OAM Usability for Audit Trail** New features have been added to OAM GUI Log Views to enhance usability. Log View displays logs by default in descending creation date order to seamlessly visualize most recent traces with capability to automatically refresh view content each 5 seconds. Additionally, logs can be sorted per table column.

- **OAM database Purge Tool** A new administrative command is provided to purge OAM database with service order history, logs and alarms older than a specified age: provadmin purge oam age=<in days> go=true. Omitting "go=true" permits to view amount of instances that are candidates to removal.

- **Process Visualization Focus per Order Line** A new feature is provided to graphically highlight provisioning process activities resulting of the decomposition of an order line to better perceive impacts and implications. Available at service order level view by selecting an order line; all unrelated activities are greyed.

- **Scripted behavior Hot Change** A new feature is provided for changing scripted behavior inside KPSA at runtime by loading new script file for CES module using command line: provadmin load cesprocessor filename=<script filename>, runtimename=<name of ces module>

- **Extended XSLTXF mapping** New service order attributes "timereceived" and "onPOPError" have been added to XSD schema to permit automatic time stamping and service order execution strategy user setting through XSLTXF processing.

- **Unified and Improved XSLT Processing Module** A new module is provided for simpler implementation and faster processing of XML data as well as capability to

define KPSA logic in XSLT. "xsltxf::FramerModule" and "xsltxf::ParserModule" can still be used to manage bulk of orders requiring multiple transactions. New module "xsltxf::Module" provides following advantages over previous implementation including:

- usability in both PMF and KPSA flows,

- complete Message/SO/SOD/POD hierarchy filtered XML export/import and validation,

- mapping or serialization alternate mode setting for module input and output,

- input/output XML validation using XSD and,

- better error handling with service order deletion and failure processing branching.

- **Parameter Export to XSLT Processor** A new capability has been added to modules "xsltxf::Module", "xsltxf::FramerModule" and XLSTXF DataProcessor to export selected NVSet parameters as XSL variables accessible to XSLT processors. This function is engaged by setting new xslExportedStringParams attribute with list of NVSet parameter names.

- **Better XML payload coding/decoding in Cartridges** New capabilities have been added to Cartridge XSLTXF DataProcessor to format command request and parse command response with XML payload in a symetric way. New capabilities include 1) mapping or serialization alternate mode setting for DataProcessor input and output, 2) input/output XML validation using XSD, 3) no-stylesheet processing support.

- **Received Data Type Filtering in NETMAN Client Adapter** A new PMF module is provided "NETMANCAUTIL::RecvFilter" to determine if received message is of type data or control (such as end of file or peer connection closed) and then route to appropriate flow branch.

- **Simplified deletion of child SOs in Client Adapter** A new capability has been added to "KPSACA::endpoint" module to automatically delete child SOs attached to PMF message.

- **API documentation in HTML** KPSA API description has been built in HTML form for easier access and reading. Documentation can be copied at installation, if selected, and then accessed from a web browser using URL "$SW_ HOME/distrib/kabira/idlos/index.htm".

Release 3.6

The following are the new features in this release:

- **Order Tracking** A new feature is provided to monitor and administer in-flight service orders and, consult the ones which are processed using a web client. Order tracking permits to filter service orders through simple or complex search criteria and select service orders for consultation, suspension/resume, abort and repair. The dynamically assembled service order process and underlying sub-processes are displayed graphically, showing clearly activity execution statuses & detailed information and permitting intuitive top-down navigation by clicking on activity.

  Information updates on service order execution progress are polled from KPSA instances and persisted regularly in database (PostGreSQL is shipped and used by default) to minimize performance impact. The order tracking mechanism is transparent to KPSA application design and does not require any modification in project–level configuration & customization to be activated or deactivated. The order tracking is a new engine that needs to be deployed and configured to run.

- **Catalog Configuration Versioning** A new feature is provided to control the versioning of KPSA catalog (aka KOP) and allow customers to configure and deploy new versions incrementally without downtime. When a new version is loaded and activated, in-flight service orders continue processing using configuration version that was applied when entering KPSA while new orders start with new deployed version. Service Orders can be parameterized to use a specific version and if not, default version is selected. Many versions can be active concurrently but only one is set as default.

- **Service Order Suspend, Resume, Abort & Cancel** New administrative commands have been added to suspend, resume, abort and cancel service orders. While aborting a service order interrupts any new process activities to be executed, cancelling a service order gracefully waits after all in-progress processes complete.

- **Service Order Time Out** A new API is provided to arm timers on service orders and get notified upon timeout to trigger pre-defined behaviors such as abort and cancel or custom behaviors such as recurring intermediary status notification to managing application.

  Additionally, timers recover from application fail down upon restart. All timers that should have fired during application downtime are processed right after application startup.

- **Controlling Service Order Execution Slice Size** A new feature has been added to limit the number of TPOs per execution slice for better control over realization of service orders with large extent of multi-instantiated TPO. Reducing slice size permits to better distribute processing (threads) and resources (sessions) among in-flight service orders resulting in better system stability and fluidity. This feature is engaged by setting "##MAX_TPO_PER_SLICE" parameter in service order dataset with a positive number. When this feature is engaged, service order is executed using "slicing" execution type irrespectively of KPSA POP configuration.

- **Slice Level Check Pointing** A new feature has been added to improve recoverability by check pointing service orders whenever an execution slice completes. This feature is engaged per service order by setting "POP:DoCheckpoint" parameter in service order dataset to "AfterSlice".

- **Service Order Level Execution Policy** A new option is provided to adjust execution policy at service order granularity. This option is engaged per service order when "POP:ExecutionPolicy" parameter in service order dataset is set to either "Slicing" or "DependencyTree".

- **Cartridge Performance Framework** A new component package "cartperf" is provided to conduct and automate performance benchmark for cartridges, session layers and data processors with main objective to assist customers during development, test and maintenance cycles.

- **Partial Internationalization Support for GUI** Some texts and labels in KPSA GUI web-pages can be modified and internationalized using trad-en.ini file located in i18n directory.

- **XPath Support in Scripting Language** New operations have been added to manipulate XML data using XPath expressions within a CES script through CALL CODE invocation. See CESXML package idlos documentation for more detailed information.

Changes in Functionality

Release 3.10

The following are the changes in functionality in this release:

- **ODBC Driver Support**

  TIBCO® Fulfillment Provisioning no longer includes DataDirect ODBC drivers. You must use the `iODBC.org` driver manager instead. Download and install the vendor-specific native ODBC drivers and connectors directly from their website.

- **Cumulative Installer Support**

  A cumulative installer is provided that includes all supported Client Adapters, Session Layers, and Adapter Factories. Separate installers are no longer available.

- **SW_HOME Environment Variable Import**

  Starting with version 3.10.0, makefiles that use the `SW_HOME` environment variable must explicitly import it. The updated version of `dmake` no longer auto-imports this variable as in previous releases.

  For example, add the following line to your makefile:

  ```
  .IMPORT: SW_HOME
  ```

Release 3.9

There are no changes in functionality in this release.

Release 3.8.1

The following are the changes in functionality in this release:

- **Profile Mechanism**

A new mode for profile file substitution has been added to the application' plugin 'deploy' command. It is "useawk" and must be set to true to be effective. It is faster and can handle URL parameter substitution. However, some character escaping behaviors are different. Most notably, spaces do not require escape ('\') anymore. For more information, use the provadmin help application command to display the full application plugin help.

- **Unlock Administrative Catalog Command via UI**

  The GUI did not support unlock administrative catalog command. You can now unlock a catalog version via the UI.

- **Wild Card for XMLFilePath**

  The XMLFilePath cartridge type configuration now supports Unix wildcards. (*.xml). Results are sorted alphabetically. It uses the C method ::glob() internally. For more information, see manpages.

- **Performance Monitoring**

  Module statistics, such as displaying the number of messages processing (taking flow controller tokens) in a module is now possible. The following is the procedure to monitor module statistics:

  ```
  provadmin setfilter eventdictionary nodename=$nodename
  name=streamsstat filter=ForceDebug
  ```

  ```
  provadmin load fpstats nodename=$nodename
  file=$SW_
  HOME/distrib/FulfillmentProvisioning/kpsa/samples/prov/mo
  dulestat/kpsastats-modulestat.ini
  ```

  Enabling the streamsstat dictionary degrades performances because it adds a lot of logs. Enabling the modulestat kpsastats counters degrades it further; so these files and events should be considered as a diagnosis tool, not a viable production environment setting. Also, performance measurement should not be done with these statistics on, as they guarantee degraded performance.

  Due to race conditions at first message detections, the counters can show offsets,

such as not displaying message processing when all messages are processed.

- **User Roles**

  Roles can be assigned to user to grant some access to the FPOMS UI. The following are the default roles:

  Reader: The reader can consult logs, FP node status (flow, view Cart, and Client Adapter status), browse and filter orders, and customize the dashboard.

  Operator: In addition to reader's privileges, the operator can modify order, such as repair, cancel, abort, modify comment, datasets, and so on.

  Administrator: In addition to the operator's privileges, the administrator can manage FP node (update, create), change Client Adapter and Cartridge status (stop/resume, maintenance, and so on), and manage users and their roles.

- **Config files Support Encrypted Passwords**

  INI files can now contain a "DecryptToken:" directive followed by a prefix indicating that each attribute value beginning by this prefix has to be decrypted.

  For more information, see fwxservices::Config IDLOSDoc.

- **MSF Error Message**

  The WOD error message is set if a probe fails or the message is flushed out because of a maintenance timeout. The MSF now also supports a configurable parameter to trigger backward mapping in these cases.

- **Flag to Indicate Status of the Last Logout WO**

  Some network elements allocate resources during loginWO that are not freed upon disconnection without proper logoutWO being executed, which could happen due to network disconnections. A flag is now set in the login WO dataset to indicate the status of the last logout WO. This allows users to perform cleanups if needed.

  For more information, see the "cartplugin" IDLOSDoc.

Release 3.8

The following are the changes in functionality in this release:

- **Installation Enhancements**

   The installer has been enhanced and repackaged with the following:

   Protocol Adapters

   P.TCP-3.8.0

   P.TELNET-3.7.0

   P.UDP-3.7.0

   P.SSL-3.7.0

   P.MQ-5.7.0

   P.HTTP-3.9.0

   P.SMTP-3.7.0

   P.NETEMS-3.8.0

   Client Adapters

   P.EMSCA-3.8.0

   P.FOMCA-3.8.0

   P.OSSJCA-3.8.0

   FPOMS

   P.FPOMS-1.2.0

- **New Flow Design Format**

   Fulfillment Provisioning flows now use the BPMN format to design flows.

Release 3.7

The following are the changes in functionality in this release:

- **Cleaner Order Tracking** GUI The OAM Order Tracking GUI has been remodeled to present the different sections per order level view in specific tabs for more visibility. OAM authorized operators can look now at the section they want without interference from other sections. Additionally, the default date format has changed to display date and time and not elapsed time. Clicking a date switch to an alternate format.

- **Order Repair Reshaped** The OAM order repair GUI has been redesigned to permit repairing multiple work orders within a service order in a single action. All repair

actions have moved to service order level. They allow 1) saving all changes made to parameters and statuses (only for work orders) by an authorized operator into runtime node and 2) executing the repair by re-submitting modified service order or 3) canceling the repair by directing the service order to cancel branch. Other administrative actions such as suspension, resume and cancel is unavailable during repair. Authorized operators can modify a service order in repair several times before exercising the actual repair.

- **Custom Admin Plugins Placeholder** The administrative command line has been enhanced to better delineate product and project materials and ease custom development maintainability. Custom admin plugin files can now be located in custom directories complying with the following pattern ($SW_HOME/distrib/*/*/adminplugins).

- **Uniform Process Transition Painting** The graphical rendering of transitions for processes in OAM GUI has been modified for adopting uniform black color painting. Previous color style was ambiguous as using several colors but with none of them reflecting the status of execution.

- **Received Data Size Available in NETMAN Client Adapter** A new attribute "NETMANCA::BytesReceived" has been added to report size in bytes of the buffer received by NETMANCA. This information was previously obtained after a CPU consuming a string copy of the entire buffer.

- **Better Date and Time Support** New attributes lastStartTime and lastEndTime attributes have been added to basesodata::ServiceOrderData, basesodata::ProductOrderData and basesodata::WorkOrderData interfaces to provide better date & time support such as higher precision to nanoseconds, more appropriate type (long long) for manipulation and comparison and smaller memory footprint than current stringified representation.

- **Configurable KPSA Service Catalog GUI Port** A new option "catalogadminport" has been added to the administrative command "provadmin start kpsa" to set KPSA service catalog (KOP) GUI port. The default port remains unchanged to 18080.

- **More Flexible Execution of Samples** Two administrative commands "provadmin start sample" and "provadmin stop sample" have been added to control when KPSA sample application is stopped and removed, enabling users to play & interact with the running application. These new commands are an alternate to "provadmin run sample" that removes automatically KPSA sample application when complete.

Release 3.6

The following are the changes in functionality in this release:

- **Extended Service Order Duplicate Detection** The range of Service Order key identifiers used for duplicate detection has been extended to Service Orders already processed and retired to a configurable extent using the "prov::DupeDetectionConfig" interface. See the PROV package idlos documentation for more detailed information.

- **Higher Flow Controller Scalability** The transaction lock on the flow controller has been removed to provide a higher scaling factor across threads in the processing of service orders.

- **TIBCO Compliant GUI** All KPSA GUI web pages have been redesigned to adhere to the TIBCO graphical chart

- **Improved Execution of Service Orders Sequencing Large Numbers of Multi-Instantiated TPOs** If no PO mapper exists for the TPOs to sequence in a service order, all instances of a multi- instantiated TPO are now sequenced as a group to improve performance.

- **Dataset Deep Copy Used When PO mapper Does Not Exist** PO and TPO that are configured to use PO mapper are now processed as configured with "noMerge" option if PO mapper cannot be found to improve performance. A warning message is produced at audit-time for orphan PO mappers.

- **Faster Checkpoint Loading** The performance of loading checkpoints has been greatly improved through better parallelism and optimized I/O & CPU utilization. Level of parallelism can be controlled by configuration ("checkpoint::Config:nbParallelBlocks" parameter set by default to 8). It must be noted that memory (OSSM) consumption during recovery can increase as more checkpoints ("nbParallelBlocks" x "blockSize") can be read in memory at one time.

- **Faster Checkpoint Coding/Decoding** The mechanism to form and parse checkpoint content has been optimized for better performance.

- **Numerical Comparison Operator for Condition Statements Available from GUI** The comparison operators for numeric types lt, le, gt, ge, eq, and ne used for defining condition statements (aka guardeval) in the catalog could be used only by editing the catalog file manually, it has been made available at the GUI level.

- **One-Stop Conditional Associations Evaluation** A new option permits to stop evaluating conditions to associate two catalog entities after the first valid condition

to optimize processing when only one association shall be used. This option "use first valid association" can be selected from the GUI when defining conditional associations. For backward compatibility, "use all valid associations" option is the default choice.

- **TPO Decomposition/Sequencing-Level Mapping Strategies** A new option permits to define a specific mapping strategy at 1) TPO creation time and 2) at TPO sequencing time (aka exercising rules Prepend, Append, or Substitution). This new capability allows disengaging mapping during sequencing when all mapping has been done at TPO creation time, increasing performance. This new option can be set at domain and TPO level.

- **Deadlock Resilience Testing** A new option has been added to execute PROVTEST in abort test mode and analyze robustness to deadlock situations. This option can be set to enableAbortTestMode or disableAbortTestMode in the PROVTEST configuration.

Deprecated and Removed Features

This section describes deprecated features (if any), and lists features, if relevant, that may be useful alternatives to the deprecated features. Any use of a deprecated feature should be discontinued as it may be removed in a future release. You should avoid becoming dependent on deprecated features and become familiar with the suggested alternative features.

This section also lists features that are removed (if any).

Release 3.10

The following features are removed in this release:

- DataDirect library is no longer supported. The DataDirect ODBC Driver Manager is replaced with iODBC.org Driver Manager.

- Session Layer for PAD is no longer supported.

- Adapter Factory for SNMP is no longer supported.

The following features are deprecated in this release:

- Radius Session Layer

- SMPP Session Layer

Release 3.9

The Solaris operating system is no longer supported.

Release 3.8.1

No features are deprecated in this release.

Release 3.8

Deprecated Features

BPrime tool is replaced with TIBCO Fulfillment Studio to design flows.

Release 3.7

No features are deprecated in this release.

Release 3.6

The following features are deprecated in this release.

- basesodata::listOfWoid type is removed swbuiltin::StringList must be used instead.
- basesodata::listOfNames type is removed swbuiltin::StringList must be used instead.

Migration and Compatibility

This section explains how to migrate from a previous release to this release.

Release 3.10

Migration is not needed for TIBCO Fulfillment Provisioning 3.10.0.

Release 3.9

Migration is not needed for TIBCO Fulfillment Provisioning 3.9.

Release 3.8.1

Migration is not needed for TIBCO Fulfillment Provisioning 3.8.1.

Release 3.8

- FPOMS database schema has changed.

  For migration details, refer to the FPOMSui/lib/migration/README file.

- Fulfillment Order Management Client Adapter has been renamed from P.AFFCA to P.FOMCA following product rebranding. This also includes:
  - package renaming (from affca to fomca)
  - component renaming (from affca to fomca)
  - deployment specification renaming (from affca.kes to fomca.kes)
  - NVSet parameters renaming (from AFFCA:* to FOMCA:*)

    If you have deployed P.AFFCA in KPSA 3.7, you must update the deployment and configuration accordingly.

- For flow migration, existing bprime files must be migrated. For details, refer to the *Migration from KPSA* section of the *TIBCO Fulfillment Studio User's Guide*.

Release 3.7

New attributes lastStartTime and lastEndTime attributes are a good replacement for lastExecutionStart and lastExecutionEnd attributes which are kept only for backward compatibility reason. A new method getReadableDate() has been added to generate backward compatible date and time string format representation and encourage customers to migrate to new attributes.

OAM database schema has changed to accommodate optimizations and enhancements. Data stored on previous schema can be migrated to new one.

XSLTXF schemas have been modified to support all new capabilities offered in this release. And while compatibility is maintained, developers are encouraged to retouch their XML to take advantage of new style possibilities which includes but not restricted to:

- single param element can contain multiple indexed values

- param/name elements and orderId are attributes.

Release 3.6

KPSA 3.6 for Linux x86_64 platform has been built on top of Red Hat 5.4 which becomes recommended version.

The stop / restart of engines (from ossm without checkpoint recovery) should now be done after all flow controllers have been stopped. Otherwise, the water level may not be accurate upon restart leading to possible flow controller failure. It is recommended to always perform a restart from checkpoints.

Checkpoints from previous release must be migrated before starting KPSA 3.6 using administrative command: provadmin migrate checkpoint. Execute provadmin help checkpoints command for more detailed information.

New catalog versioning feature introduces new configuration files using following format: „kop-<version>.def' where <version> identifies uniquely a catalog configuration version. Examples are „1.0.0', „4.2.7" or „alpha". These files contain links to versions of cpr.def and cps.def files. KPSA will create automatically, at startup-time, a new configuration file „./conf/kop-1.0.0.def", if none exist, that contains links to pre-existing cpr.def cps.def. Upon new version of catalog, version specific cpr (./conf/kop/cpr-<version>.def) and cps (./conf/kop/cps-<version>.def) files are created, both being referenced in new catalog configuration file (./conf/kop-<version>.def).

PROVTEST Developer Guide has been included in KPSA Developer Guide, shipped in KPSADOCS.

Closed Issues

The table in this section list issues that were closed in the named releases.

Closed in Release	Key	Summary
3.10.0	AP-1307	The Oracle cartridge does not release Oracle connections when a `Select statement reached maximum number of retrieved rows` error occurs.
3.10.0	AP-1301	The MDRES string is not correctly formatted in the UN segment for BSCS responses.
3.10.0	AP-1187	Oracle 19c database server support is added.
3.10.0	AP-1186	MySQL 8 support is added to the persistent adapter factory.
3.10.0	AP-1177	A circular dependency error is generated when using the Java and javax packages in Java Adapter Factory.
3.10.0	AP-1176	PHP 8.4.10 support is added.
3.10.0	AP-1165	JDK 21 support is added.
3.10.0	AP-1158	SQL_C_WCHAR support is added.
3.10.0	AP-1130	REHL version 9.4 support is added.
3.10.0	AP-1128	Open SSL version 3.3.2 support is added.
3.9.0	AP-1067	The fpoms provadmin plugin now checks that the database is reachable before running any command that requires database access. After the database cannot be reached, the next `provadmin fpoms` call tries to reconnect and succeed if the database is back online.

Closed in Release	Key	Summary
3.9.0	AP-1065	The "provadmin fpoms start" process triggered an endless "provadmin datalod fpoms" script that sometimes consumed a lot of CPU. To avoid this, you can set the `load` parameter to `false` to avoid "provadmin dataload fpoms" being triggered at bootstrap. If `load=false`, it is up to the user to manually run the "provadmin dataload fpoms otype=[alarm|ot|sod]" script.
3.9.0	AP-990	After creating a new incompatibility TP rule, the create box in the left pane displayed the TPO rule types.
3.8.1	AP-981	The XMLFilePath cartridge type configuration now supports unix wildcards. (*.xml). Results are sorted alphabetically. It uses the C method ::glob() internally. For more information, see manpages.
3.8.1	AP-977	FPOMS would get stuck when there was a big volume of data to load. The mechanism has been improved to speed up the loading of data in the database.
3.8.1	AP-975	Module statistics, such as displaying the number of messages processing (taking flow controller tokens) in a module is now possible.
3.8.1	AP-965	When starting Fulfillment Provisioning, the application fails when using debugfilter=forcedebug in installation command. To prevent setting a wrong value for debugfilter at the Fulfillment Provisioning installation, provadmin script checks that value is a bitmask, such as 0x00200400.
3.8.1	AP-934	When a query in the dashboard implies too many service orders, an oracle error 'ORA-01795: maximum number of expressions in a list is 1000' appears. This has been fixed.
3.8.1	AP-933	The SFROOT directory was not removed when FPOMS was stopped.
3.8.1	AP-932	When a TP was configured with more than 500 patterns, KOP was not able to display all of them. To improve loading time of object with

Closed in Release	Key	Summary
		lots of links, such as TechProduct with a lot of patterns, a pagination mechanism has been added.
3.8.1	AP-928	When adding a StringParameter from the UI, it showed an error regarding unexpected format. This has been fixed.
3.8.1	AP-922	FPOMS did not insert all the service orders of a connected node into the database when FPOMS was stopped and then started.
3.8.1	AP-842	A flag is now set in the login WO dataset to indicate the status of the last logout WO. This allows users to perform cleanups if needed. For more information, see the "cartplugin" IDLOSDoc.
3.8.1	AP-894	Engine log timestamp is in a microseconds format, as seconds, minutes and hours were 0-padded when value was less than 10. Micro seconds in log files are now padded on 6 digits, for example, 2013-07-18 12:51:08.007630.
3.8.1	AP-889	When FPOMS had to connect to FP node on a remote machine and ssh access to this machine had a banner, FPOMS was not able to properly clean the banner. This is now fixed.
3.8.1	AP-885	A new mode for profile file substitution has been added to the application' plugin 'deploy' command. It is "useawk" and must be set to true to be effective. It is faster and can handle URL parameter substitution. However, some character escaping behaviors are different. Most notably, spaces do not require escape ('\') anymore. For more information, use the provadmin help application command to display the full application plugin help.
3.8.1	AP-884	The database schema did not authorize to have unlimited size for values attached to a dataset. The database schema now authorizes to keep a maximum of 3980 characters per dataset. 3980 includes the size of all values attached to this dataset. If sum of sizes exceeds 3980, each value will be cut at the same ratio. This is because the database attribute is limited to 4000 characters. If the length of the

Closed in Release	Key	Summary
		stringified array is less than 4000, there will not be any loss. Keep 80% of each value of the array to be sure it enters in the 4000 characters.
3.8.1	AP-879	When substituting a parameter's value with a profile variable's value, the substitution would fail during application deployment. A new mode for profile file substitution has been added to the 'application' plugin 'deploy' command. It is "useawk" and must be set to true to be effective. It is faster and can handle URL parameter substitution. However, some character escaping behaviors are different. Most notably, spaces do not require escape ('\') anymore. For more information, use the provadmin help application command to display the full application plugin help.
3.8.1	AP-862	A warning message occured when using MigrateCheckPoint component. The warning was due to a dealock retry.
3.8.0	AP-799	password field is not required to "add a node" (ssh key is required). To connect a remote FP node, user must set right ssh keys between FP node and FPOMS host. Consequently, password field is not needed when using "provadmin connect fpoms".
3.8.0	AP-776	POP: Async response throttling caused KPSA freeze.
3.8.0	AP-717	XSLTXF: Status and error message in incoming message were not set.
3.8.0	AP-713	NETMANCA: Modules did not set status and error message in pm.
3.8.0	AP-712	NETMANCA: Invalid handling of partial sends was done in netmancautil::Sender.
3.8.0	AP-705	NETMANCA: Can hang after checkpoint recovery.
3.8.0	AP-666	Old snapshots were not all properly removed from the database.
3.8.0	AP-609	OAM did not start if the mime.type file is not present in the /etc

Closed in Release	Key	Summary
		directory.
3.8.0	AP-608	FPOMS: Unable to specify node when enabling FPOMS in a sample.
3.8.0	AP-604	Fulfillment Provisioning Catalog UI: Did not get an error message on adding parameter (not existing in catalog) in the pattern parameter list.
3.8.0	AP-590	PROV: Properly handle invalid characters in orderId.
3.8.0	AP-589	FPOMS UI: Add Comment: The Comment textbox should not allow only *space*.
3.8.0	AP-569	FPOMS UI: Add Comment: The Comment textbox should not allow the blank comment.
3.8.0	AP-546	Fulfillment Provisioning Catalog UI: No error message was displayed while creating ServiceOrderData with the same name.
3.8.0	AP-544	Fulfillment Provisioning Catalog UI: No error message was displayed while creating products with the same name.
3.8.0	AP-538	Fulfillment Provisioning Catalog UI: After logout page displayed should be login page.
3.8.0	AP-492	Fulfillment Provisioning Catalog UI: Version is taking wrong version value while creating SOD.
3.8.0	AP-473	Fulfillment Provisioning Catalog UI: Freezed with input buffer overflow in error log.
3.8.0	AP-472	SODATA: Sequential Sequencing may provoke assertion in the DEV mode.
3.8.0	AP-462	FPOMS: provadmin enable fpoms help command documentation was not not clear.

Closed in Release	Key	Summary
3.8.0	AP-461	FPOMS: Change error message when fpoms is not enabled for a runtime node.
3.8.0	AP-458	FPOMS UI: Unable to display alarms.
3.8.0	AP-457	AFFCA: The status mapping was not fixed.
3.8.0	AP-453	AFFC: The reconnection issues were not fixed.
3.8.0	AP-452	XSLTXF: Module should handle supplied user error message.
3.8.0	AP-448	AFFCA: Add domain, customerId support, fix productName handling.
3.8.0	AP-446	KABLETCA: Add support for asynchronous driver.
3.8.0	AP-443	FPOMS: Issue connecting to a remote node.
3.8.0	AP-439	The PROVTEST trace details have been improved.
3.8.0	AP-419	XSLTXF: Race condition leading to ExceptionObjectNotUnique.
3.8.0	AP-383	FPOMS was not permitting to visualize the process of decomposed TPO per PO (identified as order line in FPOMS).
3.8.0	AP-340	OAM import feature may not work on Solaris 10. This issue has been fixed.
3.8.0	AP-326	XSLTXF: Broken support for outputXmlSchema in Module.
3.8.0	AP-281	There was no `provadmin` command to retrieve KOP URL The `provadmin display catalog` command now provides the Fulfillment Provisioning Catalog URL.
3.8.0	AP-278	FPOMS: Orders with very long orderId have no attached logs.

Closed in Release	Key	Summary
3.8.0	AP-226	XSLTXF: ProductOrderData is not correctly instantiated.
3.8.0	AP-225	The 'NOT' operator was not working on FPOMS UI.
3.8.0	AP-220	Invalid handle on NVSet in CommitPoint after swap out.
3.8.0	AP-150	It was taking a long time to process when setObjectDef API was called.
3.8.0	AP-143	HTTP: httputil & zero length buffer.
3.8.0	AP-87	KPSAMSF: camsf prevents engine from stopping.
3.8.0	AP-21	FWXTOOLS: Undefined pthread symbol makes docsys crash.
3.8.0	AP-17	HTTP: The handler may return incomplete response body.
3.8.0	AP-13	HTTP: httputil::HTTPHandler is intolerant to null characters.
3.8.0	AP-11	Design Center doc broken in KPSA-3.7.
3.8.0	AP-10	PROV: No log in case of asynchronous response.
3.7.0	KPSA-2498	Some specific configuration parameter settings for CARTFC DataProcessor could cause KPSA to crash.
3.7.0	KPSA-2923	Ordering of event names in list produced by operation eventdictionary::Manager::getDictionaryNames was unpredictable.
3.7.0	KPSA-2915	OAM was synchronizing state of service order after POP only if service order was queued afterwards. Terminator module has been enhanced to update state of service order before deletion and resolve current issue.
3.7.0	KPSA-2909	File writer during rollover could cause a deadlock condition noticeable in logs with trace similar to following one:

Closed in Release	Key	Summary
		Transaction 102:326061 is blocked waiting for a read lock on eventdictionary::ManagerImpl: It must be noted that this resolution does not remove all possibilities for other deadlocks to occur and therefore for safe processing, developers shall make sure that custom code is resilient to deadlock condition.
3.7.0	KPSA-2898	Changing trace level or page size in OAM log views was resetting log view filter so not appropriate logs were displayed.
3.7.0	KPSA-2893	netmanca.kes file should contain dependent component panetutil.
3.7.0	KPSA-2886	kpsasample admin plugin was generating unnecessary traces.
3.7.0	KPSA-2880	OAM was not reporting start and end date for order lines and nested sub-orders.
3.7.0	KPSA-2878	Simple query function for service orders in OAM GUI was not functioning.
3.7.0	KPSA-2876	OAM was failing to sort service orders per dataset parameter.
3.7.0	KPSA-2872	OAM was displaying erroneously "in flight" as value for queuename when service order was queued in sequencer.
3.7.0	KPSA-2870	Current page size and page number, in OAM Log view, were erroneously reset to default value after refresh. Additionally log filtering was not working.
3.7.0	KPSA-2868	OAM was not properly handling starting GUI without any database connectivity.

Closed in Release	Key	Summary
3.7.0	KPSA-2804	EventControllerNameNull event could be published even if controllerName was correctly set for provca::OrderQueueFactory elements in config.ini file.
3.7.0	KPSA-2724	NETMANCA was not handling automatic session re-enabling when PMF used.
3.6.0	KPSA-2836	NETMANCA was not setting sortToken attribute in Service Orders.
3.6.0	KPSA-2819	Source code for complete self-contained Client Adapter and sample that demonstrates the Service Context feature were missing. They are now shipped in pmfsrc & sc directories under distrib/kabira/kpsa/samples/ca path.
3.6.0	KPSA-2812	Source code for router sample was not shipped.
3.6.0	KPSA-2811	Example documenting how to use XSLTXF with HTTPSL and HTTCA was missing in KPSASAMPLE. It is shipped now as example ex25.
3.6.0	KPSA-2808 KPSA-2785	Detection of Service Order duplicate in PROVCA and XSLTXF was not properly documented in log file. A specific warning event has been added provca::EventDuplicateKey to better identify occurrences of duplicate key in PROVCA & XSLTXF. Additionally, debug event provca::EventFrameParsed formatting has been corrected to display clearly parsed data upon occurrence of duplicate key.
3.6.0	KPSA-2803	Processing time to resolve conditional associations was too long.
3.6.0	KPSA-2800	XSLTXF could fail due to libxml/libxslt defect raising signal 6 or 11 when applying a stylesheet.
3.6.0	KPSA-2791	Conf DataMapper with undefined FWD section could leak instances of TemplateConfigImpl object.

Closed in Release	Key	Summary
3.6.0	KPSA-2786	The error message generated when loading a well-formed but invalid XSLT stylesheet was not documenting detailed reason that caused the error.
3.6.0	KPSA-2776	Deadlock risk when SO in SlowQueue receives an asynchronous response.
3.6.0	KPSA-2755	Multiple rules on many TPOs could cause sequencing unnecessarily two TPOs that are already sequenced impacting performance.
3.6.0	KPSA-2754	Enabling a TPO that is already enabled was wrongly producing an ED_PodEnabled event.
3.6.0	KPSA-2750	An asynchronous response received for service order swapped out in a queue, with the exception of the POP waiting queue, was erroneously deleted.
3.6.0	KPSA-2748	Some KPSA scripts had hard coded path './bin' to access swregistry file causing access failure in DEBUG deployment.
3.6.0	KPSA-2741	Any sequence or structure creation that requires NVSet resizing was corrupted and would throw an exception when accessing or setting data.
3.6.0	KPSA-2737	Loading more than one TRN file for cartridge type having StopSessionAllowed parameter set to true was impossible and caused the configuration of the cartridge type to fail. An error message similar to the following one was generated: Manager creation failed <Error while parsing './conf/oamcart.trn' : PROC: (FormatterFactory, 1) Procedure 'StopSession' already defined in domain 'cmf::FormatterMgr-Pre-91648: 5265616:72509707833000:1'.
3.6.0	KPSA-2572	KPSA was not preserving NVSet complex types when reloading checkpoints.

Known Issues

The table in this section lists known issues in this release.

Key	Summary/Workaround
AP-1380	**Summary** The SSL Protocol Adapter provides the `passl::TLSV1_3` enum value to specify that the connection uses TLS version 1.3. However, it does not enforce its use and the TLS version is negotiated to the latest version supported by both endpoints. **Workaround** None.
AP-1376	**Summary** Examples ex29 and ex30 don't work. **Workaround** None.
AP-1364	**Summary** TFTP file transfers fails at the service layer. **Workaround** None.
AP-1353	**Summary** The TFTP protocol adapter does not support IPv6. **Workaround** None.
AP-993	**Summary**

Key	Summary/Workaround
	After the login phase, the user is sometimes not redirected to dashboard page but to previous open page. **Workaround** To display Dashboard, the user has to click on the Dashboard link from the Administration menu.
AP-913	**Summary** The log file can display an error regarding a hard coded path to look for oci8.so : `Unable to load dynamic library '/opt/kabira/3rdparty/sol/php/5.3.21_64/lib/php/extensions/no-debug-non-zts-20090626/oci8.so' - ld.so.1: php: fatal: /opt/kabira/3rdparty/sol/php/5.3.21_64/lib/php/extensions/no-debug-non-zts-20090626/oci8.so: open failed:` When installing FPOMS, the `/opt/kabira/3rdparty` directory is not created which leads to have this error message. **Workaround** 1. Create the `/opt/kabira/3rdparty` file path. 2. Create a link where the php 3rd party has been installed.
AP-814	**Summary** When order is submitted through FOM by planItemExecute request, the order status is complete in Fulfillment Provisioning OMS. However, it enters into the error3 queue due to the CustomSortToken not found error. **Workaround** None.
AP-784	**Summary** FPOMS UI: Cannot sort by columns except for the Status column in Order Tracking Order Line and Resource Order level views. **Workaround**

Key	Summary/Workaround
	None.
AP-762	**Summary** The msf_sample script is not storing log files under the saved directory. **Workaround** None.
AP-761	**Summary** provadmin deploy application is displaying warnings. **Workaround** None. These warnings are harmless and can be ignored.
AP-760	**Summary** Datamapper file included in the studio project does not reflect on the Fulfillment Provisioning Catalog Data Mapping screen. **Workaround** None.
AP-759	**Summary** The Start Iteration confirm dialog box does not show an appropriate title. **Workaround** None. This has no impact on iteration processing.
AP-754	**Summary** Fulfillment Provisioning Catalog: User is not able to delete newly created product **Workaround** None.
AP-725	**Summary**

Key	Summary/Workaround
	Fulfillment Provisioning Catalog: Tools->ServiceOrderData->Reset button is not working properly. **Workaround** None.
AP-693	**Summary** Parameters of parent pattern are not removed when removing parent pattern from newly created pattern. **Workaround** None.
AP-660	**Summary** The script is referring to incorrect location while starting FPOMS with ORACLE. **Workaround** Create a symbolic link between $SW_HOME/3rdparty, /opt/kabira/3rdparty bash-3.2$ mkdir -p /opt/kabira bash-3.2$ ln -s $SW_HOME/3rdparty /opt/kabira/
AP-607	**Summary** In Fulfillment Provisioning Catalog, accessing Tools > About Page shows scripting error. **Workaround** None.
AP-601	**Summary** FPOMS: Search box on Order Tracking->Order-> logs does not work. **Workaround** None.

Key	Summary/Workaround
AP-552	**Summary** FPOMS: Administration -> Node Management->Node-> FP Flow gives error. **Workaround** None.
AP-543	**Summary** New Order Query for Orders in the processing status was not showing correct result on Dashboard. **Workaround** Create a query for status value other than 'processing', then edit that query for status=processing.
AP-479	**Summary** A Technical Product Order cannot be associated to itself. **Workaround** None.
KPSA-2921	**Summary** KOP GUI does not support Pattern"s parameter value containing „&" character. An error message similar to the following one is displayed: Error while updating Technical Products 'Serv2' : ERR0442: TechProduct 'Serv2' wrapping error: 3 values for NEW_SDA_VALUE_FROM_BRAND_OCCF MSD (1 required) **Workaround** None.
KPSA-2847	**Summary** De-installing all cartridges using provadmin remove cart command removes all files with .xml extension in KPSA configuration directory including application POF files. While documented, this issue never caused customer problems as it is

Key	Summary/Workaround
	not much used and effect becomes unimportant when used during complete KPSA de-installation. **Workaround** None.
KPSA-2840	**Summary** There is no validation for OrderId attribute wellformness during creation of Service Order. Unvalid OrderId is silently set and could cause various types of errors. **Workaround** OrderId shall be less than 255 characters long and shall be formed using following ASCII character set: [ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxy0123456789-_]
KPSA-2809	**Summary** All objects referenced or created in Provtest test file are forced to deletion upon clean action or end of test file processing causing problems for objects that shall not be deleted and used across multiple tests. **Workaround** A new persistent parameter has been added to control per object what Provtest shall do during automatic forced deletion upon clean action or end of test file processing. Provtest will not delete objects that have been created or referenced using create, select, invoke or checkobject actions with persistent parameter set to true. These objects can still be deleted using explicit delete action. Examples are : \<select object="1" type="mypkg::MyInterface" persistent="true"/\> \<create object="1" type="mypkg::MyInterface" persistent="true"/\> \<checkObject object="1"\> \<attr name="object" object="attrObj1" persis-tent="true"/\> \</checkObject\>

Key	Summary/Workaround

	`<invoke object="h" operation="createReadOnly">`
	
	`<out name="o_object" object="1" persistent="true"/>`
	
	`<return object="2" persistent="true"/>`
	
	`</invoke>`

KPSA-2747	**Summary** Service Orders created and still being parsed in Client Adapter when KPSA crash occurs are hold in Client Adapter queue forever upon restart. **Workaround** Client Adapters shall be manually flushed using command provadmin flush queue to release outstanding Service Orders blocked in Client Adapter.
KPSA-2738	**Summary** Status of in-flight Service Orders is updated when one of its under-lying Product Order changes its status defining most current intermediate state but omitting to mention that execution is still progressing and status may change until completion. Status of Product Orders has similar behavior. **Workaround** In-flight Service Orders status shall be considered as „in-progress" with an indication on intermediate execution state until completion is reached.
KPSA-2685	**Summary** Log files stored on none default directory cannot be visualized through GUI. **Workaround** None, with the exception of setting log file configuration parameter cfg_outputDir to default directory („./").
KPSA-2537	**Summary** Properties defined and undefined in scripting language do not work for attributes of type sequence or structure.

Key	Summary/Workaround
KPSA-1015	**Summary** In-flight Work Orders that did not complete execution of their WOF when KPSA crash occurs are re-executed from the beginning upon KPSA restart. **Workaround** None, with the exception of WOF that have been designed to be re-entrant and that can be re-executed multiple times without impact. KPSA-423
KPSA-423	**Summary** Modifying the orderId attribute of a Service Order introduces inconsistencies as administrative counterpart ServiceOrderProxy is not updated and still set with initial value. **Workaround** None, the orderId is the primary key of the Service Order and shall not be modified.
KPSA-146	**Summary** Re-configuring KOP using provadmin update catalog command removes all current product order flow instances and replace them with new instances corrupting possibly in-flight orders. **Workaround** This administrative command was used to synchronize KPSA with a new version of the catalog that was built by editing directly cpr and cps files and not though normal GUI operations. New command provadmin load version introduced in 3.6.0 correct this misbehavior and shall be used instead.

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