
Excel Interface (XLI) For Micro Focus

PPMetrics – Installation and Administration

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1. Introduction

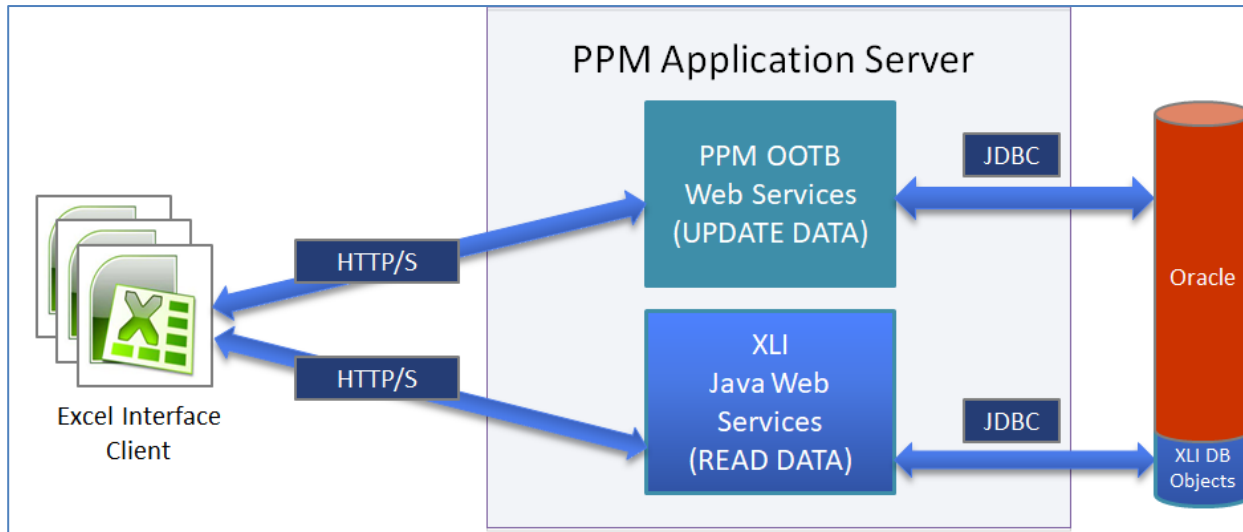
► In this document, for brevity, the term “XLI” is used to refer to the Excel Interface Add-on.

This document provides information about installation and administration of the XLI. It was written for:

- System and PPM instance administrators
- PPM technical support personnel

2. Solution Architecture

The high-level architecture diagram below depicts the main components of the XLI solution and their communication methods with other components. This architecture ensures that no elements of the XLI solution involve customizations to the core PPM product or perform any application updates through methods unsupported by Micro Focus.



Below is a brief description of the solution's components:

- *The XLI Client* is a macro-enabled Excel spreadsheet, containing all the client-side code and functionality of the solution. There are no other software components or any other set up requirements on end-user machines. All the communication between the XLI Client and the server components is performed over HTTP/HTTPS protocol using Visual Basic for Applications code.
- *The XLI web services* are small Java classes that read information from the PPM database over JDBC protocol and send it back to clients. These web services are hosted by a light-weight web server, which is part of the standard JDK and shipped with the XLI product. The web server and web services are made available for consumption through a separate XLI process running on the operating system, and fully resides on the same application server hosting the core PPM system.
In clustered PPM environments, it is feasible and recommended to install the XLI Web Services on more than one application server open to user traffic and configure the hardware/software load balancer to route XLI requests based on servers' load and capacity.
- *The PPM Web Services*, an API shipped with the core Micro Focus product, are invoked by the XLI Client and perform all updates to the PPM database.
- *The XLI database objects* supplement the PPM database objects and are used by the XLI Web Services to read information from the PPM database.

3. Pre-Installation Tasks

This section outlines all of the pre-requisite execution steps and information that should be gathered prior to beginning the installation and configuration of the XLI.

Task	Details
Verify System Compatibility	Please refer to the section "System Requirements and Compatibility Matrix" below for details
Enable PPM Web Services	The XLI relies on standard PPM web services to update PPM data. Therefore, ensure that PPM web services have been enabled for your instance, by verifying that the PPM server.conf file contains the following parameter: <code>com.kintana.core.server.ENABLE_WEB_SERVICES=TRUE</code>

Download the PPM Web Services Toolkit	<p>Download the PPM web services toolkit to the PPM application server. If your PPM implementation is clustered and you would like to support application server level failover for the XLI, repeat this step for every application server. The toolkit may be downloaded from the following URL:</p> <p><i><Host>:<Port>/itg/download/webservice/webservice_toolkit.zip</i></p> <p>Note the directory(ies) where the files are installed.</p>
Download the C3P0 Connection Pooling Classes	<p>The XLI uses an industry leading 3rd party component for database connection pooling. Download it from the following link: https://www.ppmetrics.com/c3p0-0.9.5.2.bin.zip</p>
Obtain PPM JDBC Connection String	<p>The JDBC connection string used by PPM to connect to its database schema, (i.e. jdbc:oracle:thin:@localhost:1522:orcl)</p>
Obtain PPM Database Schema Name	<p>The name of the Oracle schema containing the PPM data and configurations (i.e., ppm_data)</p>
Obtain PPM Database Schema Password	<p>The password of the Oracle schema containing the PPM data and configurations</p>
Determine the PPM HTTP Port	<p>The port which the core PPM product uses to transfer HTTP traffic (HTTP_PORT parameter in the [PPM_HOME]\server.conf file)</p>
Determine Available Port	<p>The XLI uses a dedicated port to exchange data between end user machines and the XLI web services. Please ensure that there is open communication on the network between client computers and the server on this port</p>
Obtain XLI License Key	<p>Contact support@ppmetrics.com to obtain the XLI license key for your implementation. When you contact PPMetrics, please have the IP address(es) of the PPM application server(s) ready.</p>

4. Installation

In order to install the XLI, a technical resource with access to the PPM application server(s), database schema, and admin-level PPM application access needs to execute the following steps:

1. Copy and extract the PPM Web Services toolkit zip file to [PPM_HOME] and rename its root directory to “xli” (case sensitive). Delete the MicrosoftDotNet directory.
2. Copy the three jar files from the lib directory of the C3P0 bundle to [PPM_HOME]/xli/java/lib/ppm
3. Copy the file ojdbc8.jar from the installation bundle (files directory) to [PPM_HOME]/xli/java/lib/ppm as well.
4. On UNIX platforms only, override the file [PPM_HOME]/xli/java/bin/run_client.sh with the file by the same name included in the XLI installation bundle (files/shell_scripts/unix directory).
5. Go to the directory [PPM_HOME]/xli/java/client/src
6. Create a new directory called “xli” in that location (case sensitive)
7. Copy all the Java source files included in the XLI installation bundle (java directory) into the newly created directory
8. Encrypt the database password by following these steps:
 - Generate a Java self-signed certificate. Sample command line:
keytool -genkey -alias xli -keystore C:\\xli.jks
 - Compile the XLI source files by running the PPM provided script “compile_client” (Windows or UNIX versions) located in the directory [WS_TOOLKIT_HOME]/bin. The compilation process will create the directory structure com/ppmetrics/service under the directory [PPM_HOME]/xli/java/client/classes.
 - Generate a random key by running the following from [WS_TOOLKIT_HOME]/bin:
run_client.sh com.ppmetrics.service.Security genkey
 - To encrypt the database password, run the following from the same directory:
run_client.sh com.ppmetrics.service.Security [password]
9. Open the file “DBCredentials.java” using a text editor and update the following parameters:

Parameter	Description	Example
JDBC_URL	JDBC connection string to the PPM database schema	jdbc:oracle:thin:@localhost:1521:ppm
USERNAME	Name of the PPM database schema (use upper case)	PPM
PASSWORD	Password of the PPM database schema	The encrypted database password
MAX_DB_POOL_SIZE	Number of database connections to be used by the XLI	60
DB_TIMEOUT_SECS	The timeout for database queries sent to the XLI	60
KEYSTORE_PASSWORD	Keystore password used earlier	changeit

KEYSTORE_ENTRY_PASSWORD	Password of the entry within the keystore (do not update)	XLIXLI
KEYSTORE_LOCATION	The location of the keystore generated earlier	C:\xli.jks
ENABLE_XLI_AUTH	Determines whether the XLI server components should perform user authentication. Note: if enabled, the corresponding XLI workbook parameter must be enabled as well	false
SESSION_TIMEOUT_MINS	If XLI authentication is enabled, determines the number of minutes to keep user sessions alive	120
KEYSTORE_PASSWORD	If HTTPS is enabled for the XLI, this parameter stores the password of the certificate's keystore	welcome
CERT_LOCATION	If HTTPS is enabled for the XLI, this parameter stores the location of the certificate	C:\xli5.jks

10. Recompile the source files by running the script "compile_client" once again. **Note:** whenever any of the parameters in the file DBCredentials.java changes, you must re-execute the compilation script (and potentially the password encryption steps) for the change(s) to take effect. For security reasons, you may want move the original DBCredentials.java file to a safe location
11. On Windows platforms, copy the file kRunCacheManager.sh included in the installation bundle (files/shell_scripts/windows directory) to [PPM_HOME]/xli/java/client/classes. On non-Windows platforms, copy this file to [PPM_HOME]/xli/java/bin and edit the file path on its first line based on the location of PPM.
12. Connect to the PPM database schema from a SQL development environment (e.g. "SQL Developer", "TOAD") and install your license by running the SQL script file "XLI_License_XXX.SQL". **Note:** XLI licenses are always tied to the IP address of the PPM application server. Therefore, if the database schema is refreshed from another server the license will get invalidated and would need to be re-created.
13. From the SQL development environment, run the SQL script file (db directory) "DDL_RUN_TWICE.sql" **twice** to create the other XLI database objects. **Note:** error messages will be displayed when this script is executed due to dependency issues. Please ignore them.
14. From the SQL development environment, run the SQL script file (db directory) "DML.sql" to create the other XLI database objects
15. Run the following queries to validate the successful installation of the database objects:
 - **Query 1:** *SELECT * FROM user_objects WHERE object_name LIKE 'XL_%' AND object_name NOT LIKE 'XLCUST%' AND status = 'INVALID'*
 - **Expected Results:** No results. Otherwise, try to manually compile the invalid objects.
 - **Query 2:** *SELECT xl_utils.check_license FROM dual*
 - **Expected Results:** "Y". Otherwise, contact PPMetrics support.
 - **Query 3:** Run the query "Compare number of DB objects to gold source" in the attached utils.txt file. Compare counts against the numbers listed below it.
16. Open the table XL_VERSION in editing mode. This table stores various versioning related information and contains a record for each Excel version supported by the XLI and used by your XLI users. By default, this table contains a single record but additional ones may be created as needed. Columns to review/update:

Parameter	Description	Example
OFFICE_VERSION	The Excel version of your XLI users. Use "14.0" for Excel 2010, "15.0" for Excel 2013, "16.0" for Excel 2016	14.0
DOWNLOAD_URL	Organization internal link from which users will be able to download new versions of the XLI workbook	http://acme.sharepoint.com/ppm/xli
FILE_NAME	The name of the current XLI workbook as it appears in the DOWNLOAD_URL	PPMetrics_XLI_MF_PPM_V7_0_P1.xlsm
INTERNAL_PACKAGE_NUM	Organization internal version number of the XLI workbook. For first-time installations, keep the default value of "1"	1

Note that multiple records may exist in this table for different supported Office versions or internal package numbers.

17. Open the Workbench environment of PPM and create a security group "XL - XLI Users" (actual name must exactly match). Add to the newly created security group all the PPM users who should be authorized to use XLI.
18. From the Workbench environment, create an additional security group "XL - Report Builders". Add to the newly created security group the PPM users who should be allowed to build XLI reports.
19. From the Workbench environment, create an additional security group "XL - Resource Management" (actual name must exactly match), and add the following access grants to it, without adding any users:
 - Resource Management: "Edit All Resource Pools"
 - Resource Management: "Edit All Resources"
 - Resource Management: "Edit All Staffing Profiles"
 - Financial Management: "Edit All Financial Benefits"
 - Financial Management: "Edit Actuals on All Financial Summaries"
 - Financial Management: "Edit Forecasts on All Financial Summaries"
 - Demand Management: "Edit All Requests"
 - Project Management: "Edit All Projects"
 - System: "Override Key Fields Segmentation"

5. Starting and Stopping the XLI Process

Once the server components have been successfully installed, the XLI process may be started and stopped

UNIX platforms:

1. Go to the directory [WS_TOOLKIT_HOME]/java/bin
2. If the XLI server has **not been configured** to accept HTTPS requests, run the script sh run_client.sh com.ppmetrics.service.Server [APP_SERVER_NAME] [XLI PORT]
3. If the XLI server **has been configured** to accept HTTPS requests, run the script sh run_client.sh com.ppmetrics.service.ServerHTTPS [APP_SERVER_NAME] [XLI PORT]
4. If XLI is successfully started you will see the message "XLI service is ready! Version X.X" in the nohup.out file.
5. To stop the XLI, find the process's PID and kill it

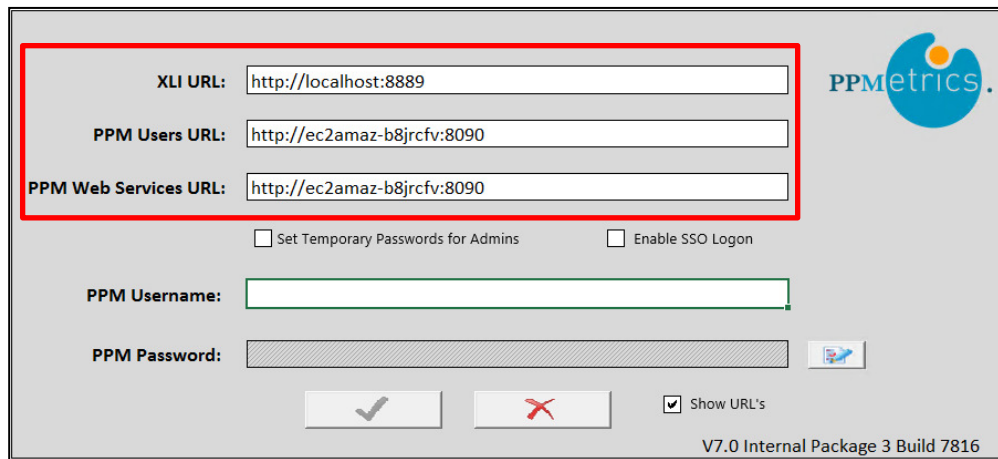
Starting the XLI on Windows platforms:

1. Download and install a Java Service Wrapper on the application server, such as the free open source tool YJASW (<http://yajsw.sourceforge.net/>)
2. Place it in the [PPM_HOME]\xli directory and extract it.
3. Place the attached file in [WRAPPER_HOME]\conf
6. Open the file and modify the parameter wrapper.working.dir and the parameters in the last section to match your environment. For example:
 - wrapper.working.dir=c:\\ws\\java\\client\\classes\\ wrapper.java.app.mainclass=com.ppmetrics.service.Server
 - wrapper.console.title=com.ppmetrics.service.Server
 - wrapper.ntservice.name=XLI PPM
 - wrapper.ntservice.displayname=XLI for PPM
 - wrapper.ntservice.description=Excel Interface for PPM
 - wrapper.app.parameter.1 = localhost
 - wrapper.app.parameter.2 = 9898
4. Open the windows command prompt and navigate to [WRAPPER_HOME]\bat and run installService.bat
5. Go to windows services and look for the "XLI for PPM" service and start it. Then, check the log in [WRAPPER_HOME]\log\wrapper.log
6. If it won't start and you need to change parameters, run uninstallService.bat and then installService.bat

6. Validating the Installation and Deploying the XLI to End Users

Prior to distributing the XLI to end users, several parameters need to be set and XLI installation verified:

1. Open the XLI workbook and fill out the following fields in the logon worksheet:
 - XLI URL: `http://[APP_SERVER_NAME]:[XLI_PORT]`
 - PPM Users URL: The base PPM URL as used by the end users
 - PPM Web Services URL: `http://[APP_SERVER_NAME]:[PPM_HTTP_PORT]` or the base PPM URL as used by the end users. You may test this setting by opening the browser and entering:
`http://[URL]/itg/rest/requestTypes?username=admin&password=[PPM_ADMIN_USER_PWD]`



The screenshot shows a configuration form for the XLI logon worksheet. The form is titled "PPMetrics" and contains several input fields and checkboxes. A red box highlights the "XLI URL", "PPM Users URL", and "PPM Web Services URL" fields, which are currently set to `http://localhost:8889`, `http://ec2amaz-b8jrcfv:8090`, and `http://ec2amaz-b8jrcfv:8090` respectively. Below these fields are two checkboxes: "Set Temporary Passwords for Admins" and "Enable SSO Logon", both of which are unchecked. Further down are fields for "PPM Username" and "PPM Password". At the bottom, there are two buttons: a green checkmark button and a red X button, along with a "Show URL's" checkbox which is checked. The version information "V7.0 Internal Package 3 Build 7816" is displayed at the bottom right.

Note: Do not check the box "Enabled SSO Logon" without contacting PPMetrics support, as this setup requires one-time vendor involvement

2. Logon to the XLI by filling out the username and password of the PPM admin user and clicking on the logon button
3. Set the values of different settings affecting the product behavior. The "source of truth" for most of these settings may either be a server-side table `XL_SETTINGS`, in which case their values get loaded to the XLI workbook upon user logon, or be managed locally using the "USER_SETTINGS" tab. Managing these settings at the server level eliminates the need to redistribute the XLI workbook to users whenever the settings change, but does require database level access. Records should never be added or deleted from the `XL_SETTINGS` table, unless instructed to do so by PPMetrics, and the only column that should be updated is `SETTING_VALUE`.
 - 3.1. **Internal Package Number** – Used to specify the organization's internal XLI version. Upon logon to the XLI, it compares the value of this settings to the value of the column `INTERNAL_PACKAGE_NUM` in the table `XL_VERSION` and if they do not match users are warned for

not using the current version. Please refer to the section “XLI Internal Version Management” below for additional information. This setting may only be managed locally.

- 3.2. **Download Settings from Server Upon Logon** – Determines whether setting values should be downloaded from the server (table XL_SETTINGS) when users log-on, or be maintained locally. This setting may only be managed locally.
- 3.3. **Display Sheets** – Set the XLI sheets that should be visible to users by entering “Y” or “N” next to each sheet name. Note that the sheet USER_CALCULATION1 must be visible. This setting may only be managed locally.
- 3.4. **Number of Empty Rows** – Used to define the number of empty rows available for users to use when different entities are retrieved by the XLI.
- 3.5. **First Day of Week** – Used to define the first day of the week and must match PPM’s definition. Affects the “STAFFING_PROFILE” tab only.
- 3.6. **Number of X Rows to Retrieve** – Used to limit the number of rows retrieved by the various screens
- 3.7. **Concurrent Updates Warning Threshold in Minutes** – Used to specify the maximum number of minutes that should elapse for a user to receive a warning message when he tries pulling a record updated by another user.
- 3.8. **Server Date Format** – Used to specify the date format in the server’s time zone
- 3.9. **UTC Time/Day Offset** – Used to perform necessary client-side offsetting of effective dates in the “RESOURCE_POOL_PARTICIPATION” tab
- 3.10. **Download Hidden Request Type Fields** – Applies to the “REQUEST” tab only. Used to determine whether hidden PPM fields should be downloaded by the XLI by default.
- 3.11. **Disable Updates to Existing Resource Pool Participations** – Applies to the “RESOURCE_POOL_PARTICIPATION” tab only. Determines whether users should or should not be allowed to make updates to existing resource pool participations (only add effective dates).
- 3.12. **Store User Credentials Locally and Auto-Retrieve** – Determines whether to allow the XLI to store the user credentials used and automatically retrieve them upon file load if the active Windows user remains the same.
- 3.13. **Make 'Resource Type' Field Required on Staffing Profile Positions** – Applies to the “STAFFING_PROFILE” tab only. Determines whether the OOTB PPM field ‘Resource Type’ should be made a required field to end users.
- 3.14. **Security Group Name for Full Resource Pool Participation Rights** – Applies to the “RESOURCE_POOL_PARTICIPATION” tab only. Members of this PPM security group, which may be any existing/new enabled PPM security group, are given the ability to update resource pool participations through the XLI irrespective of their PPM access grants. Note that from XLI’s stand point, this security group does not need to have any access grants.
- 3.15. **Security Group Name for Access to USER_SETTINGS tab (Set to " to be Controlled by PPM Licenses)** – If set to a name of an enabled PPM security group, only members of this group are allowed to access the USER_SETTINGS tab (otherwise, only users with the PPM Configuration or User Administration are allowed).
- 3.16. **Enable Response Time Logger** – If enabled, the XLI times the execution of various key operations and displays a response time message box at the end of their execution. Do not enable on production systems used by end users.
- 3.17. **Perform XLI Server Authentication** – Determines whether to enable the authentication mechanism of the XLI server components. Must be enabled if the corresponding parameter on the server side is enabled.
- 3.18. **Enable Promised Staffing Profile Allocations** – Used by the “STAFFING_PROFILE” tab only. Determines whether the XLI should allow making “Promised Allocations”. Must match the value of the corresponding PPM parameter.

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- 3.19. **Enable Client Side Logging** – If enabled, multiple user operations are logged and visible through the VBA “Immediate Window”.
 - 3.20. **Maximum Number of Resource Pool Memberships** – Used by the “RESOURCE_POOL_PARTICIPATION” tab only. Determines the number of resource pools a given user may be added to for each effective date. Note that the XLI will not allow downloading of resources who are members of more security groups than specified in this setting.
 - 3.21. **Number of Empty Resource Pool Effective Date Groups** – Used by the “RESOURCE_POOL_PARTICIPATION” tab only. Determines the number of new effective dates (participation groups) users can be added to at once.
 - 3.22. **Multiple Records Update Warning in Minutes** – Used to determine the threshold used by the XLI to determine whether to warn the user before trying to update number of rows equal or greater than this setting’s value all at once.
 - 3.23. **Use Custom Fiscal Calendar as Defined in PPM (If Enabled, the XLI Will Ignore all Other Fiscal Period Settings)** – Determines whether the XLI will automatically inherit custom fiscal period settings from PPM (e.g. 4-5-5 calendar). Affects the “STAFFING_PROFILE” and “FINANCIAL_SUMMARY” tabs.
 - 3.24. **Financial Summary Fiscal Year Month Offset** – Used to determine the starting month of the organization’s fiscal year. Affects the “FINANCIAL_SUMMARY” tab only.
 - 3.25. **Staffing Profile Fiscal Year Month Offset** – Used to determine the starting month of the organization’s fiscal year and affects weekly/monthly fiscal data downloads (quarterly/yearly downloads depend on the next setting’s value). Affects the “STAFFING_PROFILE” tab only.
 - 3.26. **Use Fiscal Calendar when Pulling Quarterly/Yearly Staffing Profile Data** – Affects the “STAFFING_PROFILE” tab only. When enabled, fiscal months offsetting as defined in the previous setting is applied when pulling quarterly or yearly data using the fiscal calendar option. Additionally, if enabled, fiscal months offsetting is applied when pulling yearly data using the Gregorian calendar. If the PPM fiscal periods have been modified, this setting must be enabled and the fiscal months offsetting must match PPM’s.
 - 3.27. **Request Text Vertical Alignment** – Used to determine the vertical alignment of text in the “REQUEST” tab.
 - 3.28. **Enable Auto Staffing Profile Assignments Based on Resources Requested** – Used by the “STAFFING_PROFILE” tab only. If enabled, allows the user to instruct the XLI to automatically assign specific resources requested to positions if they are valid for assignment.
 - 3.29. **Default Staffing Profile Assignment Status** – Used by the “STAFFING_PROFILE” tab to determine the default assignment status of resources (“Soft Booked” or “Committed”).
 - 3.30. **Disable Screen Updating During Macro Execution** – When disabled, the XLI prevents the screen from being updated during data downloads and Excel’s status bar is the only indicator of transaction progress. It is generally strongly recommended to disable screen updating as it significantly boosts performance.
 - 3.31. **Default Expense Type for Staffing Profile Positions** – Used by the “STAFFING_PROFILE” tab to determine the default expense type value (“Capex” or “Opex”) of new positions.
 - 3.32. **Default Expense Type for Financial Summary Lines** – Used by the “FINANCIAL_SUMMARY” tab to determine the default Expense Type value (“Capex” or “Opex”) of new lines.
 - 3.33. **Financial Summary Non-Actuals Label** – Used by the “FINANCIAL_SUMMARY” tab to determine whether non-actual figure labels should say “Plan” or “Forecast”. Note that choosing “Forecast” increases the data table’s width by about 30%.
 - 3.34. **Include Specific Resources Requested in Staffing Profile Search Results** – Affects the “STAFFING_PROFILE” tab only. When enabled, “Specific Resources Requested” are included in the search results, to the left of position assignees. Note that enabling this option may slow down Staffing Profile searches.

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- 3.35. **Allow Saving of Workbook** – When disabled, the workbook may not be saved using the standard Excel “Save” option and users are not prompted to save changes when it is closed. Note that changing this setting to “N” can only be done through the server and requires that the setting “Download Settings from Server Upon Logon” is set to “Y”.
 - 3.36. **Default Resource Pool Participation %** – Used by the “RESOURCE_POOL_PARTICIPATION” tab only. When resources are added in bulk to a new effective date, their default participation percentage is determined based on the value of this setting.
 - 3.37. **Display Cost Slicer on Staffing Profile tab** – When enabled, the slicer “Display Cost” is made visible on the “STAFFING_PROFILE” tab, allowing authorized users to view cost information associated with the positions downloaded.
 - 3.38. **Level 1/2: Use Resource Type Cost Factor in Staffing Profile Cost Calculations** – When the slicer “Display Cost” is enabled for use on the “STAFFING_PROFILE” tab, the XLI will use positions’ resource type to arrive at the cost. Should match PPM’s cost factors and cost rules setup. The XLI always tries finding matching “Level 1” rules and if not found looks for “Level 2”.
 - 3.39. **Level 1/2: Use Region Cost Factor in Staffing Profile Cost Calculations** – Same as above but for the region field.
 - 3.40. **Level 1/2: Use Role Cost Factor in Staffing Profile Cost Calculations** – Same as above but for the role field.
 - 3.41. **Level 1/2: Use Department Cost Factor in Staffing Profile Cost Calculations (Applies to Assignment Row Only)** – Same as above but for the role field.
 - 3.42. **Base Currency Code** – When the cost slicer is enabled on the “STAFFING_PROFILE” tab, enter the 3 characters code of your PPM instance’s base currency.
 - 3.43. **Audit all Staffing Profile Updates** – Due to a gap with core PPM product, not all staffing profile operations are audited when made through the API used by the XLI. When this setting is enabled, the XLI ensures that all these missing transactions are audited.
 - 3.44. **Display Financial Summary Figures in Thousands** – Used by the “FINANCIAL_SUMMARY” tab to determine whether to display financial figures in thousands or whole amounts. The value of this setting should match the corresponding PPM setting in order to prevent confusion.
 - 3.45. **Enable Editing of Staffing Profile Notes Even if Forecast Line is Locked for User** – Used by the “STAFFING_PROFILE” tab to determine whether to allow users to update position notes, even if they are not authorized to update forecast lines. This setting essentially allows demand creators and resource pool managers to communicate using this field.
 - 3.46. **Start/Finish Month of Allowed Financial Summary Forecast/Actual Cost Line Editing (MM-YYYY)** – These four settings are used by the “FINANCIAL_SUMMARY” tab to lock down desired cost metrics of a desired time frame. Locked periods, based on these settings, are non-editable for all Financial Summaries in the system by all users.
 - 3.47. **Locked Down Financial Summaries (FINANCIAL_SUMMARY_ID1, FINANCIAL_SUMMARY_ID2)** – Used by the “FINANCIAL_SUMMARY” tab to determine which Financial Summary(ies) should be locked down for all users, irrespective of any other factor.
 - 3.48. **Overwrite Financial Summary Cost Security** – Used by the “FINANCIAL_SUMMARY” tab. If enabled, all system users with a Demand Management license will be able to update any Financial Summary in the system. Note: Enable this setting only for testing purposes, or in situations where there are other means of protecting this data.
 - 3.49. **Interval for Retrying to Update Locked Requests in Seconds (0 = No Retry Attempt)** – Used by the “REQUEST” tab to determine the amount of time which the XLI should wait before trying to re-update locked requests. The XLI only makes a single additional attempt per locked request. Set the value of this setting to the minimum necessary to complete updates of locked requests in your environment.

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- 3.50. **Default Labor Type for Financial Summary Lines** – Used by the “FINANCIAL_SUMMARY” tab to determine the default Labor Type value of new cost lines.
 - 3.51. **Clear Staffing Profile Assignments Upon Removal from Resource Pools** – Used by the “RESOURCE_POOL_PARTICIPATION” tab to determine whether once resources are removed from pools their active future staffing profile assignments should be automatically cleared.
 - 3.52. **Number of Past Days or Date (MM-DD-YYYY) to Include in Time Sheet Search** – Used by the “TIME_SHEET” tab to determine the time threshold to use when searching for time sheets.
 - 3.53. **Number of Future Days or Date (MM-DD-YYYY) to Include in Time Sheet Search** – Used by the “TIME_SHEET” tab to determine the time threshold to use when searching for time sheets.
 - 3.54. **Time Management Period Type and Unit** – Used by the “TIME_SHEET” tab to determine the period type and time entry unit to use when pulling and displaying time data.
 - 3.55. **Time Submission Enabled** – Used by the “TIME_SHEET” tab to determine whether the XLI should support time approvals only or full time editing. Please reach out to PPMetrics if you would like to enable full time editing.
 - 3.56. **Number of Empty Lines Between Time Sheets** – Used by the “TIME_SHEET” tab to determine how many empty lines to include between downloaded time sheets, when the XLI is used in full time editing mode.
 - 3.57. **Create Work Plans Upon Creation of Projects** – Used by the “REQUEST” tab to determine whether blank or template-based work plans should be created upon project creation.
 - 3.58. **Create Staffing Profiles Upon Creation of Projects** – Used by the “REQUEST” tab to determine whether blank staffing profiles should be created upon project creation.
 - 3.59. **Enable Fixing of Staffing Profile Over-Allocations** – Used by the “STAFFING_PROFILE” tab to determine whether to enable the ability to automatically fix over-allocations of resources upon data download.
 - 3.60. **Send Emails for Over-Allocation Adjustments** – Used by the “STAFFING_PROFILE” tab to determine whether to email resource pool managers in situations where the allocations of resources in their pools have been adjusted using the XLI.
 - 3.61. **Resource Management Role Lookup** – Used by the “STAFFING_PROFILE” tab to generate the lookup (validation) of the Role field. Any subset of enabled PPM roles may be configured.
 - 3.62. **Resource Management Role Lookup** – Used by the “STAFFING_PROFILE” and “RESOURCE_POOL_PARTICIPATION” tabs to generate the lookup (validation) of the Resource Pool field. Any subset of enabled PPM pools may be configured.
 - 3.63. **Number of Past/Future Slicer Years (0-10)** – Used by the “FINANCIAL_SUMMARY” and “STAFFING_PROFILE” tabs to control the number of past and future slicer years available for selection upon data download. Up to 10 past and future years are supported, although each download is limited to a range of 9. Be sure that PPM has fiscal periods matching the slicer settings, or otherwise updates will fail. Additionally, for financial summaries, ensure the settings match the corresponding PPM settings.
4. If your organization uses Staffing Profile or Financial Summary user data fields, the same configuration must be added to the XLI or otherwise values in those fields may get deleted upon updates through XLI. The XLI user data configuration is performed by updating the table XL_USER_DATA. Upon logon to the XLI, it reads the configuration data from this table and displays it in the USER_SETTINGS tab.

Database Column Name	Label in USER_SETTINGS tab	Description
ENT_TYPE		FS or SP
SUB_ENT_TYPE		BEN/CST for FS, always POS for SP
LOCATION_SEQ		Determines the order of the field in XLI
PPM_FIELD_NUMBER	Field	The database column used to store the values of the user data field. If you are not sure what it is, review the user data configuration through the workbench. Example: "2".
CAPTION	Caption	The label of each field (use the same label as in PPM)
VALIDATION_TYPE	Validation Type	Use "TXT" for text fields, "DD" for drop downs with a small number of values, and "LST" for lists with a large number of values
VALIDATION_SQL	Validation SQL- for "List"/"Pop-Up" Validation Types Only	For "List" fields, SQL sentence which retrieves the values available for selection. The SELECT clause of the SQL must follow the following structure: SELECT [HIDDEN_VALUE] '#@#' [VISIBLE_VALUE] FROM.... Note that for Staffing Profile user data fields only, the same is required for pop-up fields containing a different value in their hidden and visible columns
EDITABLE_FLAG	Editable	Determines whether the field should be editable to end users
REQUIRED_FLAG	Required	Determines whether the field should be mandatory to end users. If so, prefix it with "** "
LST_DATA_SOURCE_SQL	Pop-Up Form Data Source SQL	For pop-up fields only, the content of this field is the SQL sentence that serves as the data source of the form displayed to users. Example: <i>SELECT flds FROM (SELECT resource_pool_name flds FROM rsc_resource_pools rp WHERE rp.enabled_flag = 'Y' AND UPPER(rp.resource_pool_name) LIKE UPPER('%#?#%') ORDER BY rp.resource_pool_name) WHERE ROWNUM < [MAX_MULT_ROWS]</i>
	Pop-Up/List Data Source Range (do NOT update)	System field, do not update
	Pop-Up/List Last Update (do NOT update)	System field, do not update

TXT_DATA_VAL_FORM	Data Validation Formula (Text only)	Used to create an Excel data validation for the column. Enter an Excel formula, starting with a single quote, that should evaluate to true for the data validation to pass. The formula should reference the first cell of the custom field on the FINANCIAL_SUMMARY sheet. Example '=LEN(H16) <= 50
TXT_DATA_VAL_ERR_MSG	Data Validation Error Message (Text only)	The error message which should be displayed to the user when the data validation fails. If left blank, Excel's default error messages are used
DEFAULT_VALUE	Default (Start Formulas With '=)	The default value of new records. Other than constant values, you may use Excel formulas as the default and enter them starting with the characters '='.
COL_WIDTH	Column Width	The desired width of the column. If left blank, the XLI uses 20 as the default value.
ROW_UPDATE_VAL	On Row Update Value (Start Formulas with '=)	The default value of updated records. Other than constant values, you may use Excel formulas as the default and enter them starting with the characters '='.
NUMBER_FORMAT	Number Format (Must Match VBA numberFormat Property) (Financial Summary Benefits Only)	Allows formatting of the data retrieved/updated back to PPM as needed, in situations where the default formatting doesn't match PPM. For example, in order to add a EUR symbol to a number, use '[\$EUR]#,##0.00
AUTO_FILTER_DEFAULT_VAL	Auto Filter Default Value (Financial Summary Only)	The default filtering of records post-download using standard Excel filtering. Example: <i>RANGE("FULL_NAME")</i>
LIMIT_EDIT_AUTO_FLTR_DEF_FLAG	Restrict Editing to Auto Filter Default Value (No More Than One Field) (Financial Summary Only)	If enabled, the XLI will prevent users from updating rows not included in the filter applied by the above setting.
LINE_FILTER_SQL	Line Filter SQL (Financial Summary Only)	SQL condition which is applied upon downloading of Financial Summary cost lines. Lines which do not meet the criteria are not downloaded at all, which may significantly expedite the download process, but slow down the update process. Note that this filtering does not apply to administrators (holding either the Configuration or User Administration licenses). Example: <i>AND EXISTS (SELECT 'Y' FROM fm_user_data ud WHERE fal.user_data_id = ud.user_data_id AND ud.datum5_code =</i>

		<i>RANGE(&QUOT;PPM_USER_ID&QUOT;;))</i>
MULTI_SELECT_FLAG	Multiselect (Pop-ups Only)	For pop-up fields, determines whether multiple selection should be supported. Must align with the corresponding PPM configuration.
ENABLED_FLAG		If set to 'N', the XLI will ignore the field

5. Perform a sanity check of the different XLI end user capabilities.
6. Save and exit the XLI workbook.
7. The XLI workbook is approximately 5MB in size and may be easily emailed to end users. Alternatively, you may modify the PPM system menu to include a link to download the XLI through PPM itself. Please refer to the PPM guide “Customizing the Standard Interface” for instructions.

7. XLI Internal Versioning Management

The XLI contains a mechanism that ensures all the end users use the latest version of the workbook supported by your organization, yet without a need for admin involvement in the distribution process. This mechanism operates as follows:

- The table XL_VERSION stores the current internal XLI version used in your organization (INTERNAL_PACKAGE_NUM column).
- The XLI workbook stores the corresponding information in the parameter “Internal Package Number”.
- Upon logging on to the XLI, the client-side version number is compared against the server-side version number and if they do not match an appropriate warning message is displayed to the user and he is automatically taken to the web location from which he can download the latest version (this web location is captured in the column XL_VERSION.DOWNLOAD_URL). If using an old version, the XLI will prevent the user from being able to perform certain key operations such as updating PPM.

Therefore, if a new XLI workbook version is distributed to you by PPMetrics, or you have made any changes to the workbook’s parameter, follow these steps to ensure your users have access to it:

- Increment the “Internal Package Number” client-side parameter.
- Increment the database column XL_VERSION.INTERNAL_PACKAGE_NUM to the same value.
- Rename the workbook file and upload it to the web location captured in the column XL_VERSION.DOWNLOAD_URL

8. Configuring Custom Filters

The XLI allows configurators to add custom filters to the FINANCIAL_SUMMARY, STAFFING_PROFILE, USER, WORK_PLAN, TIME_SHEET and REQUEST tabs, using the database table XL_CUSTOM_FIELDS. Other than for the REQUEST tab, do not add or remove records from this table but only update the existing records based on your business requirements.

Field Name	Description	Data Type and Valid Values	Required	Example
ENT_TYPE	An abbreviation of the entity for which the filters should apply. For request types, always use "REQ".	Text (3)	Y	REQ for request types
SUB_ENT_TYPE	For request type filters, this column serves as a foreign key to the column XL_SUPP_REQ_TYPES.SUPP_REQ_TYPE_ID	Text (15)	Y	1
FILTER_PROMPT 1...10	Prompt of a custom request type filter visible to users when search is performed	Text (200)	N	
CONTROL_TYPE 1...10	The type of control used by the filter field: TXT = text box DD = drop down LST = multi-select pop-up form	Text (10) TXT;DD;LST	N	DD
CONTROL_SOURCE_SQL 1...10	The SQL statement that serves as the control's data source. Only applies to drop downs and pop-up forms. Drop downs must return a single concatenated field representing a hidden and a visible value, beginning and then separated by #@#. Pop-up forms should return a single field whereas the user's search string is represented by a #?#. In order to limit the number of rows returned based on the value of the parameter "Maximum	Text (4000)	N	Drop down Example: <i>SELECT '@#' lookup_code '@#' lookup_meaning FROM knta_lookups WHERE lookup_type = 'XYZ'</i> Pop-up example: <i>SELECT project_name FROM (SELECT pfm.prj_project_name '(' req.request_id ')' project_name FROM kcrf_fg_pfm_project pfm, kcrf_requests req</i>

	Number of Records to Retrieve in Configurable Pop-up Forms” in USER_SETTINGS, add the condition “WHERE ROWNUM < [MAX_MULT_ROWS]”			<i>WHERE pfm.request_id = req.request_id AND req.status_code = 'IN_PROGRESS' AND UPPER(pfm.prj_project_name) LIKE UPPER('%#?#%') ORDER BY pfm.prj_project_name) WHERE ROWNUM < [MAX_MULT_ROWS]</i>
CONTROL_SOURCE_VALUES 1...10	Available values for selection. Applies to drop downs only. If the field CONTROL_SOURCE_SQL is populated, this field is ignored	Text (4000)	N	Low;Medium;High
FILTER_SQL1 1...10	The WHERE clause condition that should be added to the search operation, when the filter field is populated. The chosen value should be represented by #?# and the condition should always begin with the word AND. Please see list of aliases you may use for the different entities below.	Text (4000)	N	AND rhd.parameter26 = '#?#'

The following table aliases may be used in your filter queries:

Staffing Profile:

- rsc_staffing_profiles sp
- fm_forecast_actuals fa (lifecycle entities only)
- fm_financial_summary fs (lifecycle entities only)
- pm_projects proj (lifecycle entities only)
- kcrf_fg_pfm_proposal ent (lifecycle entities only. varies based on entity type, although the alias remains the same)

Financial Summary:

- kcrf_requests req
- fm_forecast_actuals fa
- fm_financial_summary fs
- kcrf_request_edit_v kre
- kcrf_fg_pfm_proposal pfm (varies based on entity type, although the alias remains the same. Does not apply to financial data tables)

User:

- knta_users usr

- rsc_resources rsc

Request:

- kcrtr_requests req
- kcrtr_req_header_details rhd
- kcrtr_request_details rd (batch_number = 1)

Work Plan:

- pm_projects prj
- kcrtr_requests req
- pm_work_plans wp

Time Sheet:

- tm_time_sheets ts
- knta_users usr
- ktmg_periods prd

9. Using Tokens in Custom Queries

Similar to the concept of tokens in the core PPM system, custom queries in various XLI locations may access other field values or general variables. The table below lists common tokens you may utilize in your configuration:

Token Type	Supported XLI Locations	Format	Example
Field tokens (reference by token name)	Request type fields Entity fields Request type rules Entity rules	Token names must match their value in xl_req_type_fields or xl_ent_fields tables and be enclosed by brackets. Used the same way for fields and rules.	SELECT meaning FROM knta_lookups WHERE lookup_type = 'STA - Investment Sub-Class' AND visible_user_data1 = '[REQ.VP.STA_INVESTMENT_CLASS]' AND enabled_flag = 'Y' AND UPPER(meaning) LIKE UPPER('%#?#%') ORDER BY seq
Field tokens (reference)	Request type fields Entity fields	Fields may be referenced relative to the position of the active field. In the example to the right, the value located three	SELECT '#@#' description '#@#' status_code FROM dual

by position)	Request type rules Entity rules User data fields	columns to the left of the active field is referenced.	WHERE request_id = TRIM(SUBSTR('RANGE("- 3")',1,6))
System tokens	Request type fields Entity fields Request type rules Entity rules User data fields	<ol style="list-style-type: none"> Reference to the setting "Maximum Number of Records to Retrieve in Configurable Pop-up Forms (>1)" [MAX_MULT_ROWS] Reference to the active user's local date format: 'RANGE(&QUOT;USER_DATE_FORMAT_LCL&QUOT;)' Reference to the active user's PPM ID: 'RANGE(&QUOT;PPM_USER_ID&QUOT;)' Reference to the active user's PPM ID: 'RANGE(&QUOT;PPM_USERNAME&QUOT;)' 	<pre> SELECT DISTINCT sg.security_group_name FROM krsc_org_units ou, knta_security_groups sg, knta_users usr WHERE ou.org_unit_id = sg.org_unit_id AND ou.enabled_flag = 'Y' AND sg.enabled_flag = 'Y' AND (ou.manager_id = RANGE(&QUOT;PPM_USER_ID&QUOT;) OR EXISTS(SELECT 'Y' FROM krsc_org_unit_members oum WHERE oum.org_unit_id = ou.org_unit_id AND oum.user_id = RANGE(&QUOT;PPM_USER_ID&QUOT;))) ORDER BY sg.security_group_name SELECT flds FROM (SELECT usr.full_name flds FROM knta_users usr WHERE (usr.end_date IS NULL OR usr.end_date > SYSDATE) AND UPPER(usr.full_name) LIKE UPPER('%#?#%') ORDER BY 1) WHERE ROWNUM < ([MAX_MULT_ROWS] + 1) </pre>

10. Upgrading XLI and PPM

Every major XLI upgrade is accompanied by a technical manual produced by PPMetrics. Please follow the instructions in the PPMetrics upgrade manual when you are ready to perform the upgrade.

Prior to a PPM major upgrade, check whether your XLI version is compatible with the new PPM version by referring to the “System Requirements and Compatibility Matrix” section below. If it is incompatible, please contact PPMetrics to obtain a compatible version, if one is required.

11. Uninstalling the XLI

In order to uninstall the XLI, perform the following tasks:

1. Stop the XLI process.
2. Delete the XLI directory on the application server(s).
3. On Windows only, delete the wrapper’s Windows service.
4. Run the following query to generate a database script to delete all the XLI database objects. Once generated, execute it:

```
SELECT 'DROP TABLE ' || table_name || ';' FROM user_tables WHERE table_name LIKE 'XL_%' UNION
SELECT 'DROP VIEW ' || view_name || ';' FROM user_views WHERE view_name LIKE 'XL_%' UNION
SELECT 'DROP PACKAGE ' || object_name || ';' FROM user_objects WHERE object_type = 'PACKAGE' AND object_name LIKE 'XL_%'
UNION
SELECT 'DROP SEQUENCE ' || sequence_name || ';' FROM user_sequences WHERE sequence_name LIKE 'XL_%'
UNION
SELECT 'DROP FUNCTION ' || object_name || ';' FROM user_objects WHERE object_type = 'FUNCTION' AND object_name LIKE 'XL_%'
```

12. Ongoing Maintenance

Generally speaking, the XLI is an add-on that requires very little ongoing maintenance. Nevertheless, please keep in mind the following:

1. The XLI process must be up and running for end users to be able to use it. Since various IT events such as database/OS upgrades may involve a need to bring down the XLI process, you may need to manually restart it at times.
2. The XLI log file may grow large over time and it may be valuable to periodically delete its contents. On UNIX platforms, the log file is located in the same directory of the XLI “.class” files. If you are on a Windows platform and using the YJASW wrapper then the log file “wrapper.txt” is located under the “log” directory of the YJASW home directory. Note that the XLI process must be brought down in order to be able to clear the log files.
3. The security group “XL – XLI Users” controls which users are allowed to use the XLI, and may need to be updated as users are added and disabled.

13. System Requirements and Compatibility Matrix

Software listed below has been tested by PPMetrics to ensure compatibility with this version of the XLI.

Environment	Component Type	Details	Notes
Application server	Available RAM, Disk space	500MB, 250MB	All Operating Systems supported by Micro Focus PPM
Application server	Micro Focus PPM	<ul style="list-style-type: none"> • PPM v9.4x • PPM v9.5x • PPM v9.6x 	
Application server	Java SE JDK for PPM v9.1x	<ul style="list-style-type: none"> • JDK 1.6.0_26 or later 	
Application server	Java SE JDK for PPM v9.2x, v9.3x, v9.4x, v9.5x, v9.6x	<ul style="list-style-type: none"> • JDK 1.7.0_X or later 	
End user PC	Microsoft Excel	<ul style="list-style-type: none"> • Excel 2010 • Excel 2013 • Excel 2016 • Excel 365 	<ul style="list-style-type: none"> • Both Excel 32 bit and 64 bit versions are supported • Must be able to run macros (.xlsm files), whether it is with a first-time notification or not.
Database	Database Version and JDBC driver (file ojdbcX.jar in [XLI_HOME]\java\lib\ppm)		<ul style="list-style-type: none"> • Same Oracle versions are supported as by Micro Focus PPM • Compatibility matrix between the database version, JDK version, and JDBC driver are listed on Oracle's site. Note that if the ojdbcX.jar is replaced and you are using a service wrapper, the wrapper's config file would need to be updated accordingly.
Database	Optional Packages		<ul style="list-style-type: none"> • In order for the XLI to send email notifications, the Oracle package UTL_SMTP must be available for use by the PPM database schema. Additionally, the database must be able to send emails using the same SMTP parameters of the core application.