

# Magic xpa 4.9 Release Notes



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We are delighted to present 4.9 update with new features and enhancements.

## New Middleware (In-memory)

Magic xpa introduced a new In-memory Middleware (IMM), which is an underlying messaging layer of Magic xpa implemented on In-memory Data Store. The middleware supports:

- **Scalability** - Processing power can be scaled up easily by spawning new XPA engines with the help of IMM controllers and agents
- **Robustness** - Under the stress of heavy load of xpa requests the middleware system performs efficiently and ensures good response time for every request
- **High Availability** - High availability can be achieved with Kubernetes cluster orchestration.

Please refer to the help section [Home > Reference Guide > Distributed Application Architecture > Middleware Gateways > In-Memory Middleware](#).

### Note:

- The projectsStartup.json file describes various projects that are about to start. You need to mention the machine name and not the machine IP inside the Servers tag.
- Magic xpa discontinues the support of GigaSpaces middleware.

## Studio Enhancements

The following feature is added with respect to Magic xpa Studio enhancement.

### Web Client Application Deployment

Magic xpa Studio provides a menu option named **Prepare for Deployment** under the menu Web. This option enables you to generate cache files and/or create cabinet files.

### Support to Allow Changing Z-order of Edit and Label Controls

If the flag [SpecialRenderEditAndTextAsControls](#) is set to 'Yes' then the Form Designer menu **Format > Options > Bring to Front, Send to Back, Move Forward, and Move Backward** works for Edit and Label controls, just like it works for real controls.

## Runtime Enhancements

The following features are added with respect to Magic xpa Runtime enhancement.

### New Flag: SpecialTruncateValueViaParameter

A new flag named **SpecialTruncateValueViaParameter** is introduced, which lets you choose whether to avail the existing behavior of truncating variable values when passed by parameters as it is, or to enforce rounding-up of variable values. When set to 'Y', the old behavior of truncating values is retained.



Valid values: Y, N

Default value: N

## New Flag: SpecialRenderEditAndTextAsControls

A new flag named **SpecialRenderEditAndTextAsControls** is introduced, which in case of the combination of Label and Edit controls, and container controls, if set to 'N', then only the parked Edit control is rendered as real. On setting this flag to 'Y', all Label and Text controls are rendered as real controls.

Valid values: Y, N

Default value: N

## Web Client Enhancements

The following features are enhanced with respect to Web Client.

### Cache Files Created for Deployment in Magic xpa Studio

Magic xpa now provides a way in the Studio to create cache files for Deployment. When you select the menu **Web > Prepare for Deployment**, Magic xpa offers a dialog box in which when you select **Create Web Client cache** option, the cache files are created from Studio into **src\assets\cache** folder of your Web Client application. For more information, please go through the concept paper in Magic xpa help at: Home > Concept Papers > Deploying Web Client Applications > **Generating Cache Files in Magic xpa Studio**.

### Support of Alpha Masking

Alpha masking is supported in Web Client programs using ngx-mask package. Please refer the default special masking characters list at: <https://www.npmjs.com/package/ngx-mask>.

## JSON Support

The following features are enhanced with respect to JSON support.

### Conversion of Private JSON Data Source to Shared

In Magic xpa Studio a new menu option named **Share Private JSON Data Source** is provided, which upon clicking converts a Private JSON data source to a Shared JSON data source and makes it available in Data Repository.

### Export/Import Entire JSON Structure

Magic xpa now supports exporting the entire JSON tree structure with all its Shared and Private tables from an application automatically. You can then smoothly import them in another application.

**Note:** Exporting a Data Source Repository with JSON data sources from version 4.9 into an earlier version (say 4.8 or 4.8.1) will have unpredictable results, therefore it is not the recommended action. Export/Import of the entire application will work well.

## Database Enhancements

The following features are enhanced with respect to Databases.

### Support of Level-2 APIs with Btrieve Gateway

Magic xpa update now provides Btrieve Gateway with Level-2 APIs. With this new API, Magic xpa supports Btrieve file with:

- AES 192 Encryption for Zen version 13
- AES 256 Encryption for Zen version 14 and 15
- Enhanced size up to 64TB
- 32bytes owner name

**Note:** The existing Btrieve Gateway Level-1 API will remain unchanged. We will still provide it for compatibility purpose, but we will not maintain it.

### Support of MSSQL DB through ODBC

A new gateway is introduced for MSSQL Server Databases using ODBC with which Magic xpa supports MSSQL DB connectivity based on ODBC through a separate gateway dll named **SQLServerODBC.DLL**. This gateway enables you to deploy your applications on Linux platform and connect to SQL Server. The applications will use the same ODBC gateway on Windows and Linux.

### Dataview result set limit Property Supported for PostgreSQL and MSSQL

The recently introduced property **Dataview result set limit** is now supported also for PostgreSQL and MSSQL.

## Security-related Enhancements

The following features are enhanced with respect to security.

### Provision of Resident Security File

Magic xpa provides a new setting named Resident Security File, which on setting to 'Yes' keeps the security file contents resident in memory always and on setting the same to 'No' makes each update to the file (read/write) by accessing the contents of the physical file present on the disk.

For detailed information, please visit Magic xpa Help topic Home > Reference Guide > Settings > Environment Settings > Preferences Tab > **Resident Security File**.

**Available values:** Yes, No

**Default:** No



**Change effective:** After restart

**Magic.ini and Command Line name:** ResidentSecurityFile

## Support to Access External Vault Secrets

You can access external vault secrets from Azure Key Vault. A function named **ExternalVaultReload()** is introduced to reload the modified values of vault's secret names into Logical Names table. For detailed information on connectivity and accessing the Azure Vault secrets, please visit Magic xpa Help topic Home > Mastering Magic xpa > Security > **How Do I Access Azure Key Vault Secrets?**

## CI/CD Enhancement

The following feature is enhanced with respect to CI/CD.

### Provision of 'Cache' Operation Command

A new operation command named 'Cache' is provided to be able to create Web Client cache files. The cache files are created into the application's folder `\src\assets\cache`.

## Mobile Enhancement

The following features are provided with respect to mobile.

### Android 12 Support

Magic xpa was tested and is compatible to work with Android 12.

#### Android-specific Functionality

Update the project target SDK and compatibility libraries to API 31: You need to upgrade Android SDK compatibility libraries to API 31 so that your custom applications developed for higher versions will work smoothly on your Android 12 devices.

### iOS 16 Support

- Rich Internet Applications can now be executed on iOS 16.
- Magic xpa was tested and is compatible to work with Xcode 14.x.

## Migration Enhancement

The following feature is enhanced with respect to migration of applications from old versions to new ones.

### Combo box and List box Control's BG Color Migrates Correctly

On migrating a uniPaaS application to Magic xpa, it was observed that when the Combo Box control's and the List box control's Style properties were 3D Sunken & 3D Raised in uniPaaS, and when the controls' default BG color was inherited, then the controls' default BG color did not appear correctly in Magic xpa. This behavior is fixed now.

## General Enhancements

The following features are enhanced in general.

### Windows 11 Support

Magic xpa was tested and is compatible to work on Windows 11. This support was given since version 4.8.1.

### Expand/Collapse Information Documented

The performance issue addressed for bug [MXPA-28760](#) regarding large-sized options file reducing the speed of loading projects is described in help elaborately in the help topic Home > Reference Guide > **Logic Editor**.

## Known Issues

The following are the known issues in this version.

### Values After Decimal Point Become Zero

In Web Client tasks, if the picture size of a numeric variable is 16.2, and in Magic xpa if a value is entered for it as 1234567890123456.12, then the value after the decimal point is displayed as 1234567890123456.00 in Angular. This turning of values after decimal point to zero takes place due to the limitation of picture size 14.2 digits in Angular.

### Mention of Machine Name in projectsStartup.json

The projectsStartup.json file describes various projects that are about to start. You need to mention the machine name and not the machine IP inside the Servers tag.

### Web Service Provider

Magic xpa does not support providing Web Services out of the box at present.



## Fixed Issues

#	Description
MXPA-20643	In Online and RIA, when trying to scroll using the context menu of the scroll bar (Top/Bottom) it only scrolled ~30 records and not actually to the Top/Bottom of the table records.
MXPA-25224	While executing xpa Runtime, an ECF took long time to load the component when 'Load immediate' component property option was unchecked (No Load immediate) in CRR, and the component had some .NET Assemblies in its own CRR.
MXPA-25273	While executing a RIA, it was observed that records were not getting displayed in a DataGrid .Net control when Operations Flow and Client activity properties were set to 'Y' while Activity Monitor was running.
MXPA-26032	While upgrading a RIA from uniPaaS to Magic xpa, if the Startup position property of the application form was set to 'Centered to Desktop', then the application window appeared slightly below than the expected position in Magic xpa, unlike it appeared at the correct position in uniPaaS.
MXPA-27236	The package '@magic-xpa/cli' should have been defined only in devDependencies but erroneously it also appeared in production dependencies. Due to this duplicate definition, Angular issued the following warning during installation: 'input\\nodejs.lognpm WARN The package @magic-xpa/cli is included as both a dev and production dependency.' The bug is fixed by keeping the definition in devDependencies only.
MXPA-27595	In a specific scenario, Magic xpa Runtime crashed when random buttons were clicked multiple times and when the Selection table property of the task was set to 'Yes', and when GetParam() function was attached as an expression to Window Type property of the form.
MXPA-27689	In a specific scenario, when the Program Name was longer than 76 characters and when Find Reference was performed on program objects, then Magic xpa Studio crashed.
MXPA-27728	While working with MSSQL, when a context was terminated abnormally, the transactions created by it were left open along with the record locking resources. The same are now being released by canceling the active commands in such a situation.

#	Description
MXPA-27764	In a particular scenario, Magic iOS Client crashed with exception EXC_BAD_ACCESS (SIGSEGV) when clicking on an Edit control and waiting for a while. It was observed that the crash happened only on iOS version 15 onwards.
MXPA-27784	When MailFramework=J, then the function MailMsgHeader() with any specific header-key did not return the value of corresponding header segment.
MXPA-27816	When the Environment Variable COR_ENABLE_PROFILING=1 was added, then the RIA desktop client crashed with the Event Viewer displaying the error: 'The application requested process termination through System.Environment.FailFast(string message).'
MXPA-27920	The function VecSet() raised in component application to update a host vector variable did not work if the vector variable was passed as a reference to the component.
MXPA-27953	The Date-type variables were not getting updated when a Date-type virtual variable's Null default property was set to 'Yes' and when the function DNRef() was used to retrieve the reference to the .Net variable.
MXPA-27955	In case of JSON Data Source although the Foreign Keys and Relationships tabs are unavailable, it was found that on pressing Ctrl+Tab keys it was possible to switch to the 'Foreign Keys' and 'Relationships' tabs.
MXPA-27986	The Unicode characters in the Mail functions MailMsgFrom(), MailMsgTo(), MailMsgCC(), and MailMsgReplyTO() were getting displayed as garbage.
MXPA-27994	When an ECF of an Online application having Invoke UDP was executed from the Tools menu, then the Subform in the application was not getting refreshed as expected.
MXPA-28012	The error-code mentioned in Magic xpa Help topic for MailError() function needed explicit mention of error-codes returned from either MailLastRC() function or any Mail function.
MXPA-28017	If an Android device had two profiles then while working within one profile it was not possible to upload an image from another profile.

#	Description
MXPA-28036	If a node in a Tree control was selected and dragged quickly, and another nearby node was hovered over, then the hovered-over node was getting dragged.
MXPA-28055	When router links were clicked multiple times, the program output was not getting displayed in Router outlet.
MXPA-28064	The details about Link Joins in case of Evaluate Link set to either Task or Records were required to mention in Magic xpa Help, which are mentioned now.
MXPA-28082	Magic xpa Studio crashed when APG was performed on any simple Direct SQL command such as 'Select *...!' when Direct SQL is selected manually from the drop-down in Dataview.
MXPA-28097	When MailCharset was set to UTF-16 (or anything other than UTF-8) in Magic.ini before sending a mail, then it was found that the received mail used UTF-8 and not the originally set Charset.
MXPA-28098	In a Web Client task, a Checker warning was expected to appear regarding the records of Real datatype fields before Locate not displayed when Web styles were set to either Repeatable Items or HTML Table.
MXPA-28107	While executing a Web Client application, a runtime error occurred sporadically: 'Unexpected error on transaction commit: Please contact to your system Administrator', on repeating certain scrambled xml request containing '<' as its first character, which is considered as illegal.
MXPA-28117	While executing a Web Client task, compilation errors were found in console if .Net events were defined in the Main program.
MXPA-28118	The mention of Oracle 18 XE and Oracle 19 XE only supported in a limited manner was missing in Magic xpa documentation, which is fixed now.
MXPA-28119	While executing a Batch task with the property Keep created context set to 'Y', it was found that on terminating the context from Broker Monitor, the context was still displayed under the Context List.
MXPA-28136	The details about unique ID (UID) were required to mention in Magic xpa help topic MailMsgld, which are mentioned now.

#	Description
MXPA-28137	While working with Oracle DB and using DSQL, when DSQL_STRING_BIND_VARCHAR flag was set to 'Y', it was found that a Hebrew string parameter appeared gibberish when it was sent to procedure by binding (~) and as an expression.
MXPA-28145	While executing an Online task with Pervasive Actian Zen 14 DB, when a Date field (that is part of a Datetime pair) followed by an Integer field were defined with Range on both the fields, the following error occurred: 'DB Error - \[Zen]\[ODBC Client Interface]\[LNA]\[Zen]\[SQL Engine]Restricted data type attribute violation.'
MXPA-28179	In a RIA, Control Verification handler was erroneously getting executed when Exit event was raised on a Button from a Subform, when the Subform was placed immediately after the control although the control's value was unchanged.
MXPA-28201	In a specific scenario, Magic xpa Studio crashed sporadically when Debugger was active, and the program being debugged had Form Input operation and called another program.
MXPA-28203	It was found that when Destination property was not set and Outlet name was specified, Routing did not work (correct behavior) but it worked erroneously when Destination property was set and Outlet name was skipped.
MXPA-28207	In a setup where an external numeric keypad is attached to a laptop, if SpecialKeyboardBuffering was set to 'E' or 'X', Num Lock of the external keypad was ON, then on typing the keys of an external keypad speedily, it was found that the main keyboard's Num Lock was getting turned ON some times.
MXPA-28212	It was found that the Spinner did not appear when a long Batch task was called from an Online or a Rich Client program.
MXPA-28225	If a program in its Subform or via Routing called a Web Client program that had a Table containing data with decimal values, then the following error occurred: 'Cannot read properties of null (reading 'getForm')...'

#	Description
MXPA-28226	In a Web Client task when a numeric variable was defined with its Null allowed and Null default properties set to 'Yes', then it was found that the variable held and stored the default value instead of Null.
MXPA-28275	When a cookie from any external website or application already existed, and if at that point a Web Client application was executed that added a cookie, then it was found that the function DeleteCookie() did not work to delete the newly created cookie.
MXPA-28295	In a RIA, the called program's window unduly went behind the Main Program with Window Type SDI, if Force Exit User event was raised, a program was called in Block Else, which in turn called a Modal program into a Subform control.
MXPA-28310	When the system locale was set to Hebrew, and the Edit control's Format property was set to '1H' (no Hebrew), then the Hebrew keyboard was being allowed first time on execution of Runtime.
MXPA-28319	In a specific scenario, Magic xpa RIA Server was found to crash.
MXPA-28402	Calling a parallel program, closing the same, and then clicking on the background of the MDI form threw an unhandled exception with the following error: 'Unhandled exception has occurred in your application...!'
MXPA-28405	When two different users were checking-out the same program in Magic xpa, the following unexpected message was shown: 'object is checked out to some other users. Only one user can have an object checked out. Application will be closed.'. Also, undoing the Check-out was not possible.
MXPA-28411	In a Web Client application, when an Edit control had a numeric variable attached to it, then it was found that the value 0 (zero) was getting stored if the variable's Null allowed and Null default properties were set to 'Yes' and when the variable's value was deleted at the client side.
MXPA-28419	In a Web Client task, when SetCookie() function was executed with numeric value, the following error occurred in console: 'TypeError: cookie_value.trim is not a function...!'
MXPA-28442	In a specific scenario, Magic xpa Studio was found to crash sporadically while debugging the project.

#	Description
MXPA-28447	When DataTypeCompatibility=Y was used in MSSQL DB information and the property SQL Type=DATETIME was set for the Date column, then the DB issued the following error: 'DB Error-Invalid input parameter values. Check the status values for detail.'
MXPA-28453	In Online & RIA, the Font property of Label control was not getting inherited according to its Model. The property was broken when a variable was dragged and dropped on the Form and when the Form was generated.
MXPA-28462	On zooming into the Event list from Form Editor/Push Button event, the control was not parked on the expected entry if a component was available in CRR.
MXPA-28483	Browser Control was not getting displayed while trying to open a particular website with a login dialog inside it.
MXPA-28552	In Web Client tasks, the Angular function mg.CheckIsReadOnly always returned an incorrect value 'True' for choice controls, irrespective of the control's Modifiable property in Magic xpa.
MXPA-28596	In a Web Client task, the Table control's Control Name was getting changed to default on adding or deleting any variable to it.
MXPA-28598	The function MnuToJson() did not create .JSON file when it was evaluated in a standalone Batch task.
MXPA-28613	Opening the Form Designer created duplicate .Net controls and on right-clicking on them threw an exception, 'System.NullReferenceException: Object reference not set to an instance of an object...!'
MXPA-28639	The function mg.getMustInput() returned False when the Edit control's Required property was set to True and the function returned True when the same property was set to True using an expression.
MXPA-28646	When the Parallel execution and Copy global parameters options were selected and the Subtask's End task condition option was selected, then while creating a new record in the Parent, the Subtask kept displaying one previous record before the newly created record of the Parent task.
MXPA-28657	In a specific scenario, Magic xpa Runtime was found to crash when the fields of type Blob or Rich Text were edited in the called RIA task.

#	Description
MXPA-28754	If a Form containing a large number of controls was duplicated then overwriting the original Form with the duplicate one lead to attaching incorrect expression to a Combo Box or losing its Field Ranges.
MXPA-28760	It was found that large-sized .OPT files took a long time to open thereby slowing down opening the projects from Studio.
MXPA-28772	If a Web Client application contained a Subform with its Connect to property set to 'No', then the program which was called in the Subform was not getting displayed if the call was made immediately after setting the Subform's Visible property to TRUE.
MXPA-28792	In a specific scenario, RIA Server crashed.
MXPA-28823	Magic xpa Runtime crashed sporadically while switching to Runtime if an expression for Width and Height both were set to the Main Program form.
MXPA-28824	In a specific scenario, Magic xpa did not display any error about prohibiting creation of multiple records and crashed while creating second record in a JSON DB.
MXPA-28827	Multiple links about Magic xpa Application with Angular are merged into one single link named 'How Do I Upgrade Web Client Applications using Latest Angular Version?'.
MXPA-28839	In a Web client task, it was not possible to implement the Date Picker with a non-default language at the project level.
MXPA-28857	When multiple programs were executed recursively, then with Window Type=SDI and Open task window=No, the called program's window erroneously appeared behind the caller program's window.
MXPA-28862	In a Web Client program, if a field in a specific row of the Table had an expression attached to its Format property, then that expression was getting evaluated and applied to all the rows of the table.
MXPA-28863	While using Btrieve DB, if BLOB variables in multiple records were updated using Link Write operation, then the columns not selected in the Dataview were getting updated with the values from the first Record.
MXPA-28875	When only one column of type JSON was defined, then the following checker error occurred: 'Table may not contain only blobs'.

#	Description
MXPA-28880	For a JSON DB Table, when the number of characters in the Table name are more than the number of characters in the Data Source name, then the Root element's name in the .JSON file was found to be trimmed.
MXPA-28918	The mg.CheckIsReadOnly function returned 'True' in case the control's Modifiable property was set to 'True', thus behaving opposite to its name.
MXPA-28920	In a Web Client task, when an invalid number (out of the predefined format limit) was entered and when the currencyMask was removed from the input tag in .HTML file, then it was not possible to move out of the numeric field.
MXPA-28931	The function JSONInsert() failed if tried to insert a non-array type JSON object into a JSON Data source while passing the key value as a parameter.
MXPA-28936	It was observed that the DBMS properties were not getting updated in Magic.ini on changing the values of DBMS Properties from Magic xpa Studio menu Options > Settings > DBMS > <Press Alt+Enter on a DBMS name from the list > DBMS Properties.
MXPA-28946	In a RIA, if a record was modified and then deleted, the Record Suffix executed in Modify mode and then executed in Delete mode. But on cancelling the Delete operation, it was observed that RS was again executed in Modify mode erroneously.
MXPA-28953	The error 'Duplicate Index' didn't occur while editing a duplicate value in the Unicode field of JSON DB; it erroneously occurred on re-performing the APG (Ctrl+G) on the Data Source.
MXPA-28970	The Runtime Form Designer froze when a Browser Control was used on the form.
MXPA-29017	JSON Data was not getting displayed in the order of the 1st index under multiple scenarios such as on executing APG after opening the project, executing the project in Runtime, and executing APG after modifying the Table index.
MXPA-29175	In a specific scenario Magic xpa Runtime was found to crash due to accessing invalid memory.
MXPA-29211	In Web Client tasks, it was not possible to call an Interactive program from the Record Suffix of a non-interactive program.

#	Description
MXPA-29221	In a specific scenario, Magic xpa Runtime crashed when the parameter passed to the SetParam() function had the string 'environment' in it.
MXPA-29260	When DBMS Logging was set for PostgreSQL gateway (any level) but the ExternalLogFileName parameter was set to blank, even then the log file MgPostgres was getting created in the project folder.
MXPA-29330	In a specific scenario, Magic xpa Runtime engine crashed and suspended its execution in Linux environment.
MXPA-29334	The return value from the Child task was getting displayed in the first row of the Table in the Parent task when a non-Interactive task with a .Net parameter was called before updating the record.
MXPA-29588	In a specific scenario, Magic xpa Studio crashed on zooming from the Main Table or a Link Table's Column if the Table was from a component and the host project had many tables.
MXPA-29655	The function JSONGet() returned incorrect values for numeric data containing 9 or more digits.

# Past Release Notes

# Magic xpa 4.8.1

We are delighted to present 4.8.1 update with new enhancements.

## Studio Enhancements

The following feature is added with respect to Magic xpa Studio enhancement.

### New Special Flag: SpecialInitialExpandAll

A special flag named **SpecialInitialExpandAll** is introduced, which enables you to define the initial expanded/collapsed mode for all the headers. On setting this flag to 'Y', Magic xpa Studio expands all headers (Blocks/Links/Event handlers, etc.) for the first time you open the program in studio.

Valid values: Y, N

Default value: N

## Web Client Enhancements

The following features are enhanced with respect to Web Client.

### Angular 13 Support

Magic xpa Web Client was tested and is compatible to work with Angular 13.

**Note:** In Angular 13, the folder name inside the dist folder is of 'kebab-case' (hyphenated).

### New Angular Function: mg.getColor()

An Angular function named **mg.getColor()** is introduced in Magic xpa, which enables you to retrieve either foreground or background color from Magic xpa's color file by providing its color number.

**Important note:** This function is only usable if the Angular Client has Magic color numbers available and the function needs to set colors according to these numbers, which is not usually the case. You need to deploy the color file into the Assets folder for this function to work.

## JSON Support

The following features are provided with respect to JSON support.

### New Menu Option: Show JSON View

Magic xpa provides a new menu option named Show JSON View, which upon clicking displays the JSON structure of the JSON table on which the control is parked. The JSON structure is shown in a tree format.

## Support to Drill-down into JSON Table Structure

If JSON Definition property of JSON field:

- **contains index of the shared database:** then zooming on that field displays only that particular DB entry.
- **Is empty:** then on zooming on that field Magic xpa creates an inner table of type JSON and parks on the newly created JSON DB. The inner table inherits its name from the field name. This is the entry which is referred to as a 'Private' table.

**Note:** Private tables are invisible from the Data Repository. The zoomed JSON DB entry is read-only and you can only edit its allied fields.

## Zoom Button to View Private Tables

A zoom button is provided on the **Data Source List** dialog for JSON Data source. It enables you to view all the Private tables defined under a Shared table.

**Note:** Zoom button is disabled for Component JSON tables, and if multiple data sources are selected from Data Source Pick List.

## Conversion of Private Tables to Shared Table

On zooming on the JSON Definition property of a JSON table in the Data Repository, Magic xpa enables you to pick up a Private table, which you can convert into a Shared table after you save the changes done in the table structure. The resulting Shared table becomes visible in Data Repository.

**Important note:** In general, if you already have defined a JSON Data Source, then you need to Export/Import it into 4.8.1 to be able to execute your application(s).

## New Functions to Enable you Work with JSON Documents

Magic xpa introduces the following functions as a part of JSON support:

- **JSONCnt():** Returns the number of occurrences of a JSON object of type array from the JSON source variable.
- **JSONDelete():**Deletes a JSON object/array from the JSON source variable.
- **JSONExist():** Checks if a JSON object/array is present in the JSON source variable.
- **JSONFind():** Finds the JSON object/array from the JSON source variable.
- **JSONGet():** Returns the value of a JSON object/array from the JSON source variable according to its path.
- **JSONInsert():** Inserts a JSON object/array into a JSON source.
- **JSONModify():** Lets you modify the value of a JSON object/array.

Please refer to Magic xpa help for details of the functions.

## Git Connectivity and Support Enhancements

The following features are provided with respect to Git connectivity enhancement.

### Support to Compare Current Branch with Local Branch

Magic xpa provides you a new menu option named **Compare branch with...** to compare the current branch with any local branch of your choice. The result of comparison is displayed in terms of object names and the name of the person who committed the changes most recently in the current branch.

**Note:** Only the objects pertaining to an open project are displayed under Object name list.

## Middleware Enhancements

The following features are provided with respect to GigaSpaces enhancements.

### Support to Restart Project Gracefully from CLI

The existing option Restart Project Gracefully is now provided to be used from the CLI.

### Support of Java SE 11 with GigaSpaces

Perform the following steps to execute Java 11 with GigaSpaces:

1. On installing jdk 11, set the path of jdk11 for java\_home in the setenv.bat.
2. Set the path of jdk11 for java\_home in the settings.xml of monitor as well as in the scripts.
3. Download the following jar files which are needed to deploy magic application.
  - jaxb-impl-2.1.jar - <https://mvnrepository.com/artifact/javax.xml/jaxb-impl/2.1>
  - jaxb-runtime-2.3.0.jar - <https://mvnrepository.com/artifact/org.glassfish.jaxb/jaxb-runtime/2.3.0>
  - activation-1.0.2.jar - <https://mvnrepository.com/artifact>
  - jaxb-api-2.3.0.jar - <https://mvnrepository.com/artifact/javax.xml.bind/jaxb-api/2.3.0>

**Note:** You will need these files only if you are using GigaSpaces.

4. Copy these jar files into ..GigaSpaces-xpa\lib\xpa\ folder.
5. Remove the following options under EXT\_JAVA\_OPTIONS from setenv.bat file:
  - "-XX:+UseParNewGC" - Remove the mention as a replacement is not available.
  - "-XX:+UseConcMarkSweepGC" - Remove the mention as a replacement is not available.

## Migration Enhancements

The following migration enhancements are added in Magic xpa.



## Edit Control's BG Color Migrates Correctly

On migrating a uniPaaS application to Magic xpa, it was observed that when the Edit control's Style property was Windows-3D in uniPaaS and when the control's default BG color was inherited, then the control's default BG color did not appear correctly in Magic xpa. This behavior is fixed now.

## General Enhancements

The following general enhancements are added in Magic xpa.

### Java SE 11 Support

Magic xpa was tested and is compatible to work with Java SE 11.

## Fixed Issues

#	Description
MXPA-25386	When DefError was set to HTML file with 'Unicode' or 'UTF-16 LE' encoding charset, then MGrqispi.dll was found to crash with the mention of w3wp.exe in the Event Viewer log.
MXPA-25654	The value of array sizes displayed for DSQL tasks with MSSQL DB and Oracle DB in the gateway log were not same due to the way each DB calculated the number of records. The mention of the rows fetched is now removed from the log.
MXPA-25829	While working in Form Designer by following the menu Tools > Customize > Keyboard..., when a command was chosen to see its associated shortcut keys, and when the 'Shortcuts for selected command' were removed and reset again to default, Magic xpa didn't restore the removed shortcuts.
MXPA-25882	If a record is created above nth line (Create Line Above, Shift+F4) then on cancelling the recent record creation (Ctrl+F2) didn't cancel the intended action but moved the newly appearing record at the n+1 line.
MXPA-26020	In a particular scenario of a Web Client program where an Edit control was updated with some text followed by canceling the operation, then the Confirm Cancel operation dialog was not shown although the Confirm Cancel property was set to Yes in Task Properties.
MXPA-26060	When MSSQL Alpha datatype was stored as 'String Memo', then it was found that the data created in uniPaaS and the one created in Magic xpa were different. Also, while attempting to modify the existing data created in

#	Description
	uniPaaS, Magic xpa issued an error: 'Operation failed, record has been changed by other user'.
MXPA-26197	A Table control column's color was not getting displayed in the printed .pdf file on setting 64BitEngineForStudio to 'Y'.
MXPA-26203	The following information was required in Magic xpa documentation: If a Table control contains more than 150 columns, then columns beyond 150 are not displayed correctly. This behavior occurs due to limitation of Windows operating system. The help topic is updated now.
MXPA-26229	While executing a Batch task it was found that the timer event was erroneously getting executed for additional number of times before the occurrence of the next timer event.
MXPA-26237	In a specific scenario, when CHECK_KEY was set to 'Y' in Database Information (SQL tab) of Database Property, Magic xpa crashed.
MXPA-26286	In a specific scenario Magic xpa crashed sporadically due to an unhandled exception. This bug was fixed in 4.8.
MXPA-26314	When multiple programs were executed parallely and a couple of their windows were minimized, then on minimizing and restoring the main application window, the screen flashed. Also, the Edit controls in the minimized runtime windows were found to be changing if an Edit control in the maximized runtime window was modified.
MXPA-26430	In a RIA task during Runtime, the Right-side border of the Check Box controls turned invisible when the Check Box width was lesser than or equal to 2.250 Dialog units.
MXPA-26432	At Runtime, some delay was observed while displaying data when static controls were attached to a Table control and Form units were set to one of the three options: Centimeters, Pixels, or Inches.
MXPA-26455	In a RIA task, the 'Width' property of a Form when set to a value less than 3.17cm was automatically getting changed to 3.17cm.
MXPA-26470	Magic xpa installation threw the error: "Current name of your computer is: 'STRACE_W10SC_DB' This name includes the character '_' which is a forbidden character for license server name. Please replace your computer

#	Description
	name in order to install license server.", and expected to change the computer name. The bug is fixed by removing the dialog box.
MXPA-26485	While executing a program having a Form with its Startup Position property set to 'Centered to Desktop' in dual-monitor environment, it was found that although the program window was moved on 2nd monitor, the program continued to display on the primary monitor.
MXPA-26528	In Online and Rich Client tasks when the Allow Scaling property was set to 'False', the scaling value (100%) was unnecessarily visible in a disabled form on the Status Bar.
MXPA-26556	In a specific scenario, Magic xpa crashed while closing Expression Editor when invoked from I/O repository and when the I/O device belonged to the parent task.
MXPA-26562	The Stored Procedure CRR created by xpa contained an extra space character when specifying argument placeholders like ' :1' instead of ':1', resulting in losing one character from the end when data was passed using this argument passing format.
MXPA-26665	Unlike the correct behavior in uniPaaS, in Magic xpa when the Checkbox of the next record was clicked, it was found to be changing erroneously along with the error message that was handled in Record Suffix.
MXPA-26803	While executing a RIA with MSSQL DB, the changes were not reflected in the table after modifying a record, when it was attempted to delete before modification.
MXPA-26857	When a number of records in Task window were multi-marked and Print Preview window was invoked, then upon pressing the pg up key on the Print Preview window performed the same action repeatedly on the multi-marked records.
MXPA-26981	When the SpecialKeyboardBuffering flag was set to 'E' and two programs were executed parallelly while one of them containing a lengthy Batch task, it was impossible to enter any keystrokes for the other program.
MXPA-27006	At runtime, when an open Form was minimized, and attempted to open from the Window menu, the Window menu did not restore the Form back to open state.

#	Description
MXPA-27058	When ColorSet() and FontSet() functions were used in a Batch task, Magic xpa crashed and logged the following error in to mgerror.log: '\[Error ] - \[MgGui.dll] Exception while evaluating : 660 →Object reference not set to an instance of an object.'
MXPA-27083	The text assigned to a Label control that was placed on a Tab's title area was not visible when Tab Width was set to 'Fixed In Line' and when a Title color was assigned to the Tab control.
MXPA-27089	While navigating the tabs in a Tab control using keyboard, the Control Hit event was observed to be getting raised in Rich Client tasks but not in Online tasks.
MXPA-27091	On assigning a logical name to Image List File Name property of a Tree control and then on expanding/collapsing the tree nodes, Magic xpa Studio issued an error: 'Width of the image strip must be a positive multiple of ImageSize.Width. Parameter name: value'.
MXPA-27114	While migrating an application from uniPaaS to Magic xpa, the IMP.log file and the Upgrade Manager were observed to contain an incorrect mention for the event 'View by Key' as being unsupported, when it is actually supported in Magic xpa.
MXPA-27236	The package '@magic-xpa/cli' should have been defined only in devDependencies but erroneously it also appeared in production dependencies. Due to this duplicate definition, Angular issued the following warning during installation: 'input\...\nodejs.lognpm WARN The package @magic-xpa/cli is included as both a dev and production dependency.' The bug is fixed by keeping the definition in devDependencies only.
MXPA-27280	DSQL Binding with negative numeric parameters was found to be not working with Oracle DB.
MXPA-27318	Record was not getting fetched correctly when Transaction mode was 'Within active trans' and Transaction begin was 'Before task prefix'. It was required to add an extra Update operation under Record Suffix/Group Suffix to fetch the record correctly.
MXPA-27323	If a number of Edit controls with Zoom button were placed in a container control, then while opening Runtime Form Designer, the following error was displayed for each such control: 'try to use control that didn't created'.

#	Description
MXPA-27332	It was observed that when a control was double-clicked, the Control Hit handler was erroneously getting executed twice in Magic xpa instead of getting executed only once as in uniPaaS.
MXPA-27343	Batch programs were found to execute too slow in xpa as compared to xpa 3.3 in a particular customer's application, which occurred due to re-compilation of the .Net snippet code during each call to the task.
MXPA-27349	The Unicode characters in Items List were not getting displayed according to the Autocomplete Mode property of the Edit control.
MXPA-27351	While executing a RIA, if SpecialKeyboardBuffering flag was set to 'E' and mouse was hovered over Edit control, the cursor was observed to flicker in an unusual manner.
MXPA-27364	Unable to change the Task type from Online to Rich Client, when a model from a component was attached to a variable and that variable was assigned to a control placed on the Form.
MXPA-27401	The numeric values containing decimal point (float) and negative integers are observed to be getting stored in JSON file incorrectly.
MXPA-27446	In a Web Client application, a Custom Validator error message was being issued for an invalid date value in a record and also for all valid date values from other records.
MXPA-27481	When the Automatic Tab Order property was set to 'False', it was not possible to enter a higher tab order number than the existing highest one for a control, manually. Magic xpa allowed a tab order number only as high as the number of controls on the form.
MXPA-27488	When a Web Client program contained multiple Route hyperlinks and when those links were clicked rapidly multiple times, the output of the program was not displayed in the browser.
MXPA-27526	When an Online program, containing a Class 0 form and two Class 1 forms with the default form having at least one control on it, was attempted to convert to a Web Client program, then the conversion did not take place.
MXPA-27529	In an RC task, when AllowEmptyDataview property was set to 'Yes' and when attempting to locate a record from the linked table, the EmptyDataview

#	Description
	was getting set resulting in the cursor not being able to move out of the parked Edit Control.
MXPA-27535	Multiple erroneous behavior was spotted when an application was migrated from uniPaaS to Magic xpa. In Magic xpa, the cursor was not moving when clicked anywhere between the numbers in an Edit control unlike in uniPaaS. It was not possible to select the entire number from the Edit control and the Context Menu was not available on right-clicking the mouse.
MXPA-27559	When System Logon was set to 'None' and when the user was logged-in as a 'Supervisor', then the function UserRightGet() displayed garbage characters.
MXPA-27569	In a specific scenario, memory leak occurred while executing a DSQL task having Oracle table.
MXPA-27575	In a specific scenario having SystemLogon set to either None or ActiveDirectory, and a Magic xpa component was loaded having its Rights exposed, then evaluating the UserRightGet() function resulted in Magic xpa Runtime to crash.
MXPA-27579	A Label control in uniPaaS with Static type set to 'Rect', Border style set to 'No Border', and Style property set to '2-D' when migrated to Magic xpa showed no border instead of 2-D border as in uniPaaS.
MXPA-27582	It was observed that on performing Checker operation on an Online task containing DNCast() function, Magic xpa issued an error: 'EP0319: Invalid casting from value to .NET Type: Task Prefix\\...'.
MXPA-27583	In an RC task with Initial mode as 'Create', it was observed that Link was not getting recomputed after a Verify error operation when Force Exit event was raised with either of the following values: 'Control', 'Pre Record Update', and 'Post Record Update'.
MXPA-27623	In a specific scenario, when a context was terminated from Broker Monitor while a Batch task with a delay in its Task Prefix was executing, the RIA server crashed.
MXPA-27638	When a Delete statement was used in a Stored Procedure with CURSOR=Y flag set, MSSQL DB issued an error: "A server cursor cannot be opened on the given statement or statements. Use a default result set or client cursor.".

#	Description
	The erroneous behavior occurred when there was a space missing before the flag CURSOR=Y.
MXPA-27658	In a specific scenario of Japanese OS by following certain steps, it was observed that the cursor was getting parked on an Edit control although its Allow Parking property was set to 'No'.
MXPA-27676	In case of a Rich Client task, the contents of a Browser control were not displayed at Runtime when the Browser control was attached to a Tab control.
MXPA-27687	When checker was invoked from Studio by F8, the errors were not displayed in the Checker result pane whereas by creating a Background Checker, the Checker results were created in the Checker output file.
MXPA-27726	In a specific scenario, while executing a Batch task having Link Query on PSQL DB, Magic xpa crashed sporadically.
MXPA-27728	While working with MSSQL, when a context was terminated abnormally, the transactions created by it were left open along with the record locking resources. The same are now being released by canceling the active commands in such a situation.
MXPA-27739	In Web Client tasks, if the default Control Name for a control was changed and Fit Control Size icon was clicked, then the changed Control Name was erroneously getting restored to the default name.
MXPA-27763	In a specific scenario, Magic xpa RIA Server was found to crash.
MXPA-27798	In a specific scenario, when a Link operation was added in the Dataview, Magic xpa Studio terminated unexpectedly.
MXPA-27853	Zooming by double-clicking on an Edit control closed the called task immediately when the special flag SpecialDoubleClickIdentify was set to 'Y'.
MXPA-27860	When a .NET control with ActiveX wrapper was placed on a Form, the ActiveX window was displayed blank on the .NET control.
MXPA-27878	On Hebrew OS, while working with Oracle DB it was observed that when a Hebrew string was passed as a parameter to a stored procedure either using binding (~) or as an expression, DSQL returned garbage.

#	Description
MXPA-27879	As Android SDK is deprecated as a standalone offering and clubbed with Android Studio, the documentation related to it was required to update, which is updated now.
MXPA-27937	It was observed that the .opt file was not get updated while performing Expand/Collapse operation in the Logic unit of a Module's Task when the Module was added to the project.

# Magic xpa 4.8

We are delighted to present Magic xpa 4.8 with new features and enhancements.

## Studio Enhancements

The following features are provided with respect to Magic xpa Studio.

### Ease of Variable Identification

Magic xpa provides you variable ID(s) in the Data View and Logic View tabs so that you don't need to switch between the tabs and the Expression Editor while working with variable(s).

### No XML Source Updating on Expand/Collapse

The **Expanded** tag for Data View and Logic Unit is removed from XML source files and the information related to the tag is stored in the .OPT file so that the XML source files are not modified after Expanding or Collapsing. For all the upgraded programs the presence of the tag in the XML source files maintains backward compatibility.

### Description of User-defined Functions

The details of a user-defined function with comments are displayed in the following manner. If the function is defined

- **in a Component:**  
<component\_name>.Main Program: <comment>
- **in the Main Program:**  
Main Program: <comment>
- **in Parent task/Subtask:**  
<Parent\_Task\_Name>/<Subtask\_name>: <comment>

By providing the details as such, Magic xpa enables you to know the context of the user-defined function definitions.

## Import uniPaaS/xpa xml File into xpa Project using Command Line Upgrade

Magic xpa now enables you to import an xml file of uniPaaS OR xpa older version into an existing xpa project (.edp) without having to open the Studio. You can accomplish it using the following command:

**MgxpaStudio.exe /UpExport = <Export filename>, <EDP filename>**

Where:



- the first argument <Export filename> is the existing xml of uniPaaS/xpa created in the specified folder
- the second argument <EDP filename> is the existing edp filename into which the export file of old version (the first argument) is imported

## A Warning Message in RIA is an Error Message in Web Client

The Checker message '**Server side functions cannot be directly assigned to a property of a control**', is a warning in case of RIA whereas the same is an error in case of Web Client applications.

## UI Enhancements

The following features are provided with respect to UI.

### New Property: Wrap Text

A new property named **Wrap Text** is added for Group control, which on setting to 'Yes' makes the text in the Group control fit within the allocated width of the control.

### Browser Control Inherited from CefSharp

The browser control in Magic xpa is implemented using CefSharp Browser Control. You can raise an external event with the Browser control implemented using CefSharp Browser control by replacing the line 'window.MGExternalEvent(msg);' with the line 'CefSharp.PostMessage(msg);' in the html file.

### Default Font for Edit Control's Zoom Button

Magic xpa enables you to select a font you prefer and set it as default for Zoom Button. The change of font is effective immediately and it applies throughout the application.

## Web Client Enhancements

The following features are provided with respect to Web Client.

### New Function: MnuToJson()

A function named **MnuToJson()** is introduced to provide a JSON file that describes all the visible menu entries corresponding to the menu structure at Runtime.

### Storing Cookies in Browser

Magic xpa provides the following three functions to enable you to use cookies in your browser:

1. **SetCookie** - Sets a cookie in the browser
2. **GetCookie** - Retrieves the value of a particular cookie
3. **DeleteCookie** - Deletes a cookie

## Control Naming during Task Type Conversion

When Online/RC tasks are converted to Web Client tasks, Magic xpa converts control names from Online/RC tasks in such a way that you can uniquely identify the control names in Web Client tasks.

- If variable is of type Virtual/Parameter/Column and if the control doesn't have a name, then the control name is prefixed with **V\_** or **P\_** or **tablename\_** respectively.
- If APG is performed on Tables and Web Client program is generated, then the Form controls are generated as **tablename\_variablename**.
- In case of duplicate controls such as a Table and a Variable with the same name, the converted control name becomes **tablename\_variablename\_001**, **tablename\_variablename\_002**, etc.

## Zoom Button for Edit Control

You can add a **Zoom** button [...] next to the Edit control, which on clicking raises a Zoom event. You can also customize the Zoom button's look. If an Edit control of an Online/RC task had a Zoom Button handler then on converting the task to Web Client, the **Show Zoom Button** property is set to 'True'.

## Recommendation to Convert Non-interactive Task to Batch

In case of a non-Interactive Web Client task while parking on the Task type, Magic xpa recommends you to convert the non-Interactive Web Client task to a Batch task if the task:

- contains no Call operations
- contains Call operations to Batch tasks only

## Provision of Modify in Query Property

Magic xpa provides **Modify in Query** property in Screen Mode for the controls that are placed outside a Table control. The property is disabled in Line Mode.

## Provision of Expression for Edit Control's Format Property

Magic xpa enables you to attach an **Expression** to the **Format** property of an Edit control.

## Provision of Select Program Property

Magic xpa provides **Select Program** property for Edit controls.

## Built-in Support of ngxCurrency

Magic xpa Studio now supports **ngx-Currency** third party package. With this built-in offering, the following are available:

- Numeric picture directives
  - Negative
  - Commas
  - Left Justify
  - Zero Fill
  - Negative sign and
  - Positive sign
- Support for dynamic change in **DecimalSeparator** and **ThousandSeparator** INI entries

## Autocomplete for Edit Control

The property **Autocomplete Mode** is supported in Web Client tasks with the options 'True' and 'False' as follows:

- On setting it to 'True' the Item List is available in `mg.getItemListValues()` of the Edit control
- On setting it to 'False', the Item List becomes unavailable

Autocomplete feature comes with filtering. When you enter a character or a string in the Edit control, Magic xpa returns the list of only those options from the Item List, which contain the character/string you entered.

## New Menu Property: Outlet

Magic xpa provides a new Menu property named **Outlet**, which indicates a place where the desired Web Client program is executed. This property enables you to create a JSON from the menu structure to be used in Angular.

## Special Characters Filtered in Web Client Task Names

While converting Online/RC Tasks to Web Client Tasks, if the prior types of Tasks had special characters in their Task names then you will find the latter's Task name without any special characters. Means, if an Online/RIA Task name is 'MyApp1@' then after converting the task to Web Client Task type, you will see the Task name as 'MyApp1'.

**Note:** The special characters '\_' and '\$' are valid in Web Client Task Names.

## New Function: RouteGet()

A function named **RouteGet()** is introduced to retrieve the last route path excluding host server name which was sent to Magic xpa engine along with the route parameters.

## New Keyword: ClientContextInactivityTimeout

You can use the keyword named **ClientContextInactivityTimeout** to set the Client context timeout in Magic.ini or from CLI.

## Context Handling

Magic xpa introduces an **Environment** setting named **Client Context Inactivity Timeout**.

You can set the value of Client Context Inactivity Timeout (measured in 10<sup>th</sup> of a second), on completing which the context will be terminated.

You can raise the **Context Remove** event using Raise Event in the Task Suffix to indicate the timeout count-down.

## Default Window Type is Overlay for Non-interactive Tasks

For non-interactive Web Client tasks, Magic xpa changes the Window Type property of the form to **Overlay** if:

- the Web Client task is changed to non-interactive from interactive
- the Web Client task is created by converting from a Batch or RC non-interactive task

**Note:** For any existing non-interactive Web Client tasks that already had Window Type set as Default, the Window Type remains the same.

## Enhanced Lazy Loading

The programs present in the **Load on demand** folder can now be used as Subforms or Overlay window, if they are called from outside the folder.

## Update and Block Operations in Route Event Handler

Magic xpa now supports **Block** (with If, Else, and End) and **Update** operations in Route Event Handler.

## Material Design Grid for ISAM Data Source

The Web Style property option **Material Design Grid** is supported for ISAM Data source for the tasks having **Preload view** Task property set to 'Yes'.

## Web Client Third Party Prerequisites

While installing the latest node.js version on a new machine you can avoid any issues that might arise by opting one of the following two options:

1. Install the latest node.js version (16 currently) and use the command: 'npm config set legacy-peer-deps true'.
2. Install a node.js version which is at the most 14 (minimum 12.0 recommended).

**Note:** We recommend the second option.

## JSON Support

The following features are provided with respect to JSON support.

Magic xpa provides a means of defining structures for JSON using the data source repository.

### New Attribute Type: JSON

A new attribute of type JSON is added for the following fields: virtual, parameter, and column. The attribute specifies the embedded JSON structure within a Data Source definition. A JSON column is provided with the following attributes:

- **JSON Definition** - Enables you to choose a JSON Data Source from the Data Source Repository and JSON Data Sources from the Components
- **Instance** - Specifies whether the JSON has a Single instance or multiple instances.

**Note:** The JSON attribute is invisible for SQL, ISAM, and XML database columns.

### Support JSON Data Source

Default entry for JSON is provided in Database Repository, which on zooming into displays JSON data source list.

Once defining the structure of your JSON file, a program accessing the JSON data source should have a JSON source variable defined, so that the JSON data will be accessed from it.

### New Property: JSON source variable

The JSON source variable column is available only for JSON sources. In this property you can specify a BLOB variable, through which you can transfer JSON data to and from a JSON file. The task reads and/or writes JSON data from/to this variable.

## Runtime Enhancements

The following features are provided with respect to Magic xpa Runtime.

### Logging Information about Tasks in Execution

Magic xpa introduces two functions:

1. **LogTaskExecutionStart(string, Sync):** On successful execution of this function, the Runtime engine starts logging the executing tasks-related information into desired log file given as filename. If the second argument Sync is 'True' then the data is flushed constantly and if it is 'False', the data is flushed once after the logging stops.
2. **LogTaskExecutionStop():** This function stops logging the information by closing the log file. The functions are intended to create a clear Runtime Task execution tree which can help when you need to migrate only a part of application.

For your convenience to know the errors logged into the recently created log file, Magic xpa notifies the external log filename in mgerror.log.

## Logging Information about Deferred Transactions

For all types of deferred transactions, the external log file includes the following information:

- Start and Stop details of the task
- Transaction Cache Type
- Transaction Cache ID
- DMLs entering the Transaction Cache
- DMLs leaving the Transaction Cache
- Error for Transaction Cache while sending the DML to a database

The external log file provides information on all database types.

## Provision to Define External Log File Size

Magic xpa provides an option named **External Log File Size**, which you can set to divide the entire log file into smaller, manageable files of the desired size specified in Megabytes.

Means, if you set the option External Log File Size to 2, then logging will continue into a file until the file size reaches 2MB. After the file size has reached 2MB, logging will continue into another file created with a different pid\_date\_time stamp.

The log file will be created in the format **<filename>\_pid\_yymmdd\_hhmmssmil.log**, as in CustomerAction\_11448\_210916\_125610827.log. The option can be passed as a parameter from **Logging()** function.

## Database Enhancements

The following features are provided with respect to databases.

### Native PostgreSQL Database Gateway

PostgreSQL database gateway is supported natively, which is compatible with PostgreSQL 13.0.

### New Keyword: PostgreSQLDefaultOid

A keyword named **PostgreSQLDefaultOid** is introduced for compatibility to PostgreSQL <= 12 Server version.

- For PostgreSQL server version >= 13: There is no need to add this flag. It uses shortest unique key for Default position.
- For PostgreSQL server version <= 12:
  - if PostgreSQLDefaultOid = Y then it uses Oid for Default position

- if PostgreSQLDefaultOid = N or if the flag is not defined then it uses shortest unique key for Default position

## New Property: Dataview result set limit

A property named **Dataview result set limit** is introduced for Batch tasks in the Behavior Tab of the Task Properties dialog, to which an expression can be assigned.

The expression is evaluated to a number that can be set per Batch task when there is a Main Data Source.

If the Batch task is in Modify mode, the locking strategy is Immediate, and if there is a Task-level transaction, then the Dataview result set limit expression is disregarded so that the SQL statement does not include the 'fetch first X rows only' clause.

**Note:** This property is supported only for Oracle Data Source.

## Middleware Enhancements

The following features are provided with respect to middleware.

### Distinct License Count Display for RIA and Web Client Applications

Magic xpa now displays the counts for RIA user-based license and Web Client user-based license separately under Current, Peak, and Max columns in the Broker Monitor. These counts are available when the applications are deployed through Magic xpa Studio.

## Mobile Enhancements

The following features are provided with respect to mobile.

### Android

#### Storage Enhancement

For Magic xpa Mobile applications executing on Android 11, Scoped Storage is mandatory. For more information, please visit the help topic: Home > Concept Papers > Developing Mobile Applications > Storage Enhancement in Android.

#### Android 11 Support

Magic xpa was tested and is compatible to work with Android 11.

#### Android-specific Functionality

Update the project target SDK and compatibility libraries to API 30: You need to upgrade Android SDK compatibility libraries to API 30 so that your custom applications developed for higher versions will work smoothly on your Android 11 devices.

#### AAB File Format Support

Magic xpa now supports building Android App Bundles (AAB).



# Log4j Vulnerability Handling

Log4j version 2.5 was upgraded to log4j version 2.16 due to vulnerability [CVE-2021-44228](#) (also referred as Log4Shell vulnerability) and [CVE-2021-45046](#).

Log4j version 1.x was removed from the Axis2 installation due to vulnerability CVE-2021-4104 (see <https://nvd.nist.gov/vuln/detail/CVE-2021-4104>).

## Browser Client Deprecation

In continuance to our previous notification regarding the deprecation of Browser Client (see Magic xpa 4.6 release notes), we are gradually withdrawing the support to it.

- **Support on Windows 11:** Browser Client does not work on Windows 11 at all.
- **Support on Other Windows OS:** Browser Client can run on other Windows OSs using MS Edge browser with or without the IE compatibility mode.

## Fixed Issues

#	Description
MXPA-21621	When a Web Client task was created, its 'Open task window' property was disabled with default value 'Yes' but when the task was converted to Batch and again back to Web Client, the same property was found enabled.
MXPA-22921	While loading an XML Data source, if a Logical name was used in the Schema URL as a path, it was found that it immediately got translated, thereby losing the advantage of using a Logical name.
MXPA-24475	On launching Magic xpa Studio, the CPU utilization was observed to be very high.
MXPA-24509	The CPU percentage was found to be around 25% on launching Magic xpa Studio. The percentage was found to decrease on opening the Expression Editor or the Form Editor of any program or executing it.
MXPA-24597	When SpecialFirstRangeOnEmptyField flag was set to 'N' and a space character was given as a value in Range, then the space was not being recognized as a valid range in Magic xpa, unlike it was recognized in uniPaaS.
MXPA-24960	The SQL Where clause was not getting deleted on removing the Main Data Source.
MXPA-25413	If an Escape character was present in the Range condition (as in '1234 \ * 67890') then it used up one-char length from the Range condition, resulting in retrieving a wrong record '1234*6789' instead of '1234*67890'.

#	Description
MXPA-25439	Chinese characters were found to be translated incorrectly while translating the contents of a Delete confirmation message box.
MXPA-25497	The information regarding calculation of array size in DSQL Online tasks in xpa help documentation was not in accordance with the behavior.
MXPA-25512	If Paste operation was performed inside an edit control, it trimmed the space character next to it.
MXPA-25568	It was found that the Logging() function did not work in Runtime mode.
MXPA-25630	When a .Net Component was defined in CRR, and if Magic xpa Studio was restarted, then due to an attempt to load the same .Net assembly that was already loaded, the following error occurred: 'Error loading component: System.Windows.Forms'.
MXPA-25652	When using 'Rich Client Deployment' Interface Builder, if the Application Name was changed in 'Published Application Alias', then the same was not getting reflected in the deployment links.
MXPA-25743	On navigating a non-frozen column, the label on the hidden column's header was partially getting displayed on the next adjacent column's header, making the latter's label appear distorted.
MXPA-25768	In a uniPaaS 1.9 application, when the GUI display Style property set to '2-D' was broken and changed to 'Windows 3-D' in the control property, an Edit control was displayed with a Border but on migrating the application to Magic xpa 4.6 or above, the Edit control's Border property was found to be changed to 'False', thereby turning the border invisible.
MXPA-25788	In a particular scenario, Magic xpa Studio was found to crash when a parent program had a Subtask, both of them had their respective Data Sources, and when APG was performed on the Data View of the parent program.
MXPA-25916	When the Form Size exceeded beyond the screen limits, the vertical Scroll Bar was displayed on the Form in uniPaaS but it didn't display in Magic xpa. On aligning the fix with .Net behavior, now if the Form's Height and Width; both go beyond the screen limits, then both those parameters are restricted to the screen limits and both the scrollbars appear.
MXPA-25940	On pressing either pgup or pgdn key, an incorrect value was getting selected in the Combo Box.

#	Description
MXPA-25947	While executing a task having MSSQL Table and Initial Mode as Query, an error, 'Failed to open... Invalid input parameter values' occurred while searching the records using Incremental Locate, and the task terminated.
MXPA-25961	When Magic xpa Runtime was started with the command 'Mgxp/Runtime.exe /ini=ini.heb /user' and Hebrew System locale was used, the following error occurred. 'Unable to connect to the app. Please make sure the username and password are correct'.
MXPA-25969	It was possible to breach the MgUsrDmp.exe utility using an external utility thereby gaining access to the security file by eluding the Supervisor password.
MXPA-25971	When the characters in an Edit control were selected by Shift+Right/Left keys, and when the Shift key was released and some characters were typed, the characters appeared as though they were typed along with the 'Shift' key. This erroneous behavior was observed when SpecialKeyboardBuffering was set to 'E'.
MXPA-25988	Though Magic xpa discontinued supporting DDE functions for 64-bit Runtime since version 4.5, it was found that on using the functions in later version(s) it did not generate error log in mgerror.log file.
MXPA-25994	The licenses were being shown 'in use' while no users/contexts were being active. Manual restart of the GS was required to release the licenses.
MXPA-26016	The function MailFileSave() when used with file-index parameter=0, was found to save one attachment less than the total number of attachments required to be saved.
MXPA-26031	In uniPaaS 1.8 when a program was executed with Verify Error operation, the program name appeared in mgerror.log but when the same program was migrated to execute on uniPaaS 1.9 and Magic xpa 4.7.2, the program name did not appear.
MXPA-26034	Memory leak occurred with the error, 'ERR THREAD ABORTED (-139)' on executing a program with Rich Text controls, which were not disposed while terminating the tasks. This erroneous behavior was observed when the End task condition was set to maximum value and the number of User Objects that Mgxp/Runtime.exe processed had reached 10K.
MXPA-26036	In a specific scenario of expanding the Block-If operation present inside the RM Compatible handler, Magic xpa Studio crashed.

#	Description
MXPA-26061	In a particular scenario, when a Form was opened and the Properties window was moved around, Magic xpa Studio was found to crash.
MXPA-26066	If a Block Else statement was disabled in RIA, then on executing the program the following error was issued: 'Index was out of range. Must be non-negative and less than the size of the collection. Parameter name: index'.
MXPA-26069	In an Online task with two Subforms, if the first Subform's Automatic Refresh property was set to 'True' then due to enforcement of the Subform Refresh event, the task went into recursion infinitely.
MXPA-26070	In RIA and Online applications, while executing incremental search on a DSQL query with ORDER BY clause, performing View Refresh, and again executing incremental search, ran into Runtime engine crash.
MXPA-26081	During Runtime while raising a 'Create Line' event, a 'Verify...' error message placed in Record Suffix unit was getting displayed continuously when the error message was actually tried to display on a particular condition.
MXPA-26109	In a Parent-Child resident tasks scenario where the Child task had multiple Link Joins and Evaluate Link conditions, and the Parent task had all the Tables used by the Child task open, Magic xpa Runtime engine crashed.
MXPA-26122	In cases of dll error's returned from User Procedures, the .dll name, and its method name were not displayed on the Status bar as well as in the mgerror.log file.
MXPA-26170	In a particular scenario, Magic xpa Studio crashed when Switches (which are optional) were not used in AutoProcessSequence file for Check Operation, and when AutomaticProcessingLogFile was not provided.
MXPA-26171	Active contexts were found to close automatically when MicrosoftSQLServer was restarted due to the network hiccups.
MXPA-26179	The Check operation of the Automatic Processing tool did not generate Recommendations related to the execution side of RIA programs into the given Checker output .JSON file.
MXPA-26208	When Subform Refresh event and CtrlGoto() function were defined in a handler in that order, then CtrlGoto() did not work due to CtrlGoTo() function getting executed before Subform Refresh event during runtime resulting in finding no parkable control to park on.

#	Description
MXPA-26230	In a particular scenario of Online tasks, adding Block Else statements in the Task Prefix logic unit, collapsing the statements, and then disabling the statements resulted in Magic xpa Studio crash.
MXPA-26287	In a particular scenario, when Subform Refresh event was raised and when the related Direct SQL task failed to execute, RIA server crashed.
MXPA-26329	When a Radio control's Appearance property was set to 'Button' and the System Locale was Hebrew, then the Radio control did not appear according to the value set in the 'Choice Columns' property. The same behavior occurred on English System Locale when 'Right to Left' property was set to 'Yes'.
MXPA-26353	On zooming into the Arguments of Call Program operation (Call by Reference), the Variables List displayed also those variables which were out of scope of the current handler. It was even possible to pass those beyond-scope variables.
MXPA-26462	In a particular RIA scenario, the Magic xpa 64-bit runtime engine was found to crash, resulting in an error -197 on the client-side.
MXPA-26465	In a particular scenario, when the option 'Close tasks when activating a program from the menu' was enabled in Main Program and a RIA program was called using Call by Name operation followed by another RIA program call, then on terminating the second RIA program, the Runtime was found to crash.
MXPA-26480	While executing a Web Client task with Memory table, when the Transaction Mode was 'Within Active Transaction', then the following error appeared: 'Cannot read properties of undefined (reading 'getControlMetadata') at TaskMagicService.handleSetProperty', due to which the Subform displayed only one record despite availability of multiple records.
MXPA-26490	When the special flag SpecialIgnoreBGinModify was set to 'Y' and the Task was executed in Modify mode, then the non-white BG color of an Edit control was not getting ignored.
MXPA-26539	In a specific scenario, Magic xpa Runtime execution was found to delay for a while unduly.
MXPA-26549	In the online sample DT07_DifDateTime(), the function is as 'DifDateTime (Date2, Time2, Date1, Time1, DaysVariable, SecondsVariable)'.
MXPA-26567	While closing multiple Web Client tasks in a single request, if there was a Call to a Batch task in the Task Suffix (TS) logic unit, then the called Route task was getting called multiple times, which resulted in the erroneous execution of Task Prefix (TP) multiple times.



#	Description
MXPA-26587	In a particular scenario, when the option 'Close tasks when activating a program from the menu' was enabled and a RIA program was called using Call by Name operation followed by another RIA program call, then on terminating the second RIA program, the Runtime was found to crash.
MXPA-26658	If a file was tried to access using FileExist() function immediately after it was created, then the function returned 'FALSE' indicating that the file was not created. It happened due to a small time (milliseconds) it took to reflect the new file in the file system.
MXPA-26685	Database Tables were not accessible in PostgreSQL version 13. A keyword named <a href="#">PostgreSQLDefaultOid</a> is introduced to fix the issue of compatibility.
MXPA-26712	The function ServerFileToClient() copied the file successfully on Client but the returned location of the file on Client-side was found to have an extra '\\', due to which Windows Explorer issued the following error: 'Windows can't find "C:\...\...\\". Check the spelling and try again.'
MXPA-26917	If the text was entered into the table at Runtime with the special flag SpecialTableReduceTitleHeight set to 'Y' then the text displayed bottom-aligned to the table cell instead of center-aligned.
MXPA-27007	When the Online programs from Components were called recursively using Call By Name, then Magic xpa issued an error: 'Component used by the task does not exist or could not be opened'. Also, if the component programs were called using the Main Program local handler, then calling and closing those programs resulted in crash.
MXPA-27022	Magic xpa Studio went into non-responding state when the project was under MS Visual SourceSafe version control and when the Get Definition utility was performed on Oracle DB.
MXPA-27037	On Android devices, when a file was tried to access from Internal Cache using 'file://<path>' from a Browser control, it was not accessible and the following error was issued: 'Web page not available'.
MXPA-27045	In Browser Client, a Combo box did not show values from the attached Data Source column.
MXPA-27065	With PostgreSQL DB, it was not possible to delete or modify the records of a Table if the Table had a unique index of type Unicode. In this case, Magic xpa raised the error: 'Record has been changed by another user or process...'

#	Description
MXPA-27069	In a specific scenario, Magic xpa Runtime crashed on the occurrence of Runtime Exception. The crash was observed when a Direct SQL task was executed in a Subform and the MSSQL server was unavailable temporarily.
MXPA-27073	The contents of .rtf Blob file were not getting printed when Input/Output was generated using Print Preview.
MXPA-27079	In a Batch task, a Rich Edit control with the GUI Output Form's Expand Form property set to 'One page' printed only the first line of the data into the control.
MXPA-27192	In a Web Client task, slow page loading with 'Page Unresponsive' message was observed due to large amount of data being attached to the controls when multiple users were trying to upload their files of around 15 to 17MB size.
MXPA-27201	When an Edit control was in Autocomplete Mode, and when the control was navigated into/out of, then the long strings were not displayed correctly.
MXPA-27302	In a specific scenario, Magic xpa Runtime crashed when a user function was employed in Task Properties and the data was attempted to filter at Runtime. The crash occurred with the following errors: 'ERR-THREAD-ABORTED (-139)' and 'This session was closed by the server(-197)'.

# Magic xpa 4.7.2

We are pleased to present Magic xpa 4.7.2 update.

## CI/CD Enhancements

The following features are provided with respect to Magic xpa CI/CD.

### New Tools Infrastructure Command: 'Check'

Magic xpa provides a new command named **Check**, which you can execute to record the number of Errors, Warnings, and Recommendations into a desired output file. Check operation can be carried out on entire application or on various repositories while Magic xpa Studio is executing in the background (auto-processing).

You can load the Checker Results file which is generated in JSON format through **Check** operation in Magic xpa Studio.

The Check option can be executed in background enabling a full application check to be integrated into a Continuous Integration (CI) pipeline.

### New Menu Option: Load Background Checker Results

Magic xpa provides a new menu option named **Load Background Checker Results**, which upon clicking invokes the Open file dialog box to be able to select the Checker Results file and load it. This Checker Results file is generated through the **Check** operation mentioned above.

## Support to Deploy Applications in Background

As a continuous deployment offering, Magic xpa enables you to deploy applications on multiple machines. Magic xpa provides the following three files:

- **IIS\_web\_client.bat** and **IIS\_rich\_client.bat** files: When executed on all machines with Magic xpa copied versions, it creates the required settings to execute the deployed applications.
- **BrokerSettings.exe**: Creates Broker service.

## Web Client Enhancements

The following features are provided with respect to Web Client.

### Subform Modality

Magic xpa enables you to set a Subform to behave as Modal.

## New Property: Modal

A new property named **Modal** is introduced for Subform control, which upon setting to 'Yes' makes the Subform window behave as Modal.

**Note:** The Call operation must specify name of the Destination Subform, which should be entered as any free text string like Destination Frame.

## Numeric Directives using Third-party Numeric Mask Package

Magic xpa now enables you to use Numeric directives using a third-party Numeric Mask Package. The **ngx-Currency** package is used to support the currency-related directives.

A new Angular function **mg.getNumericPicture()** is introduced in Magic xpa, which enables you to get the object that provides various currency directive keys.

Please visit the relevant help topic at Home > Mastering Magic xpa > Web Client Application Development > How Do I Use Numeric Currency Format Using a Third Party Package?

## Web Client Preparation Utility

Magic xpa now provides **Web Client Preparation Utility** to create Web Client Models and Styles from the existing GUI or Rich Client Display Models and Styles, and Field Class and columns.

A log is created after converting OL/RC Models to Web Client Models.

Logging is supported for:

- The unsupported controls in Web Client task such as Line, Rich Edit, Tree, .Net, and Browser.
- The unsupported values of the properties for any control that are set to default in Web Client task.

You can access the utility from Magic xpa Studio menu *Options > Web Client Preparation*.

**Note:** Display Models for the unsupported controls are not created.

## Provision to Know Changed Number of Records

Magic xpa provides an event named **RecordsCountChanged**, which is raised when the number of records in a Table changed at Server is received at Client. You can override it in the generated component to trap the changed value of number of records. This event is useful to customize pagination.

## Angular 10 Support

Magic xpa Web Client was tested and is compatible to work with Angular 10.

## Customizing Error Messages

You can now replace Angular's default error message issued for invalidated control with a customized error message. Magic xpa introduces an Angular function named **mg.getPicture()** that

returns picture of a control in Magic xpa tasks. You can use the function along with mgError tag for error message customization.

## Support of Function LastClicked()

The function **LastClicked()** is now supported.

## Spinner for Busy Client

Whenever the Client is busy irrespective of the kind of operation it does, Magic xpa displays Spinner (busy indicator) after 1 second from the time the Client started to be busy.

## Provision to use Advanced UI Components

To enable you to use advanced UI components, Magic xpa introduces an Angular function named **mg.GetFormRecords()** that returns the set of records present at Client-side at a particular moment. You can use this function to be able to use components like Pivot Grid, Charts, and alike with Client-side operations like filtering, sorting etc.

## Closure of Multiple Tasks in Single Request

If a task does not have any Client-side operation or record-level transaction pending in its Task Suffix or the Task Suffix of any of its Subform tasks while closing a task, then Magic xpa closes such tasks along with their Subform tasks in a single request to Server. It improved application performance significantly.

## Support of Special Flag SpecialCancelOnCreate

If this flag is set to 'Yes', if the task had **Allow Empty Dataview** property set to 'Yes', and if the new record being created is the only record in the Dataview, then the task will go back to Empty Dataview mode.

This is the additional behavior to the existing behavior of the flag in Online tasks, in which setting this flag to 'Yes' dumps the new record and the cursor returns to the first field of the previous record in Modify mode.

## Runtime Enhancements

The following enhancements are added with respect to Magic xpa Runtime.

### New Flag: SpecialEmptyDVSubformInit

This special flag determines initialization of default values for the controls, which are placed outside a Table control when the task runs within a Subform.

Valid values: Y, N

Default value: Y

## New Flag: SpecialExternalAESEncryption

The special flag named **SpecialExternalAESEncryption** is introduced, which on setting to 'Y' aligns Magic xpa's AES encryption/decryption with the encryption/decryption of the third-party tool.

Valid values: Y, N

Default value: N

## Database Enhancements

The following enhancement is added with respect to Database.

### No Logging of 'SELECT VERSION...' Statement

No matter what the value of the keyword **LimitLinkToSingleFetch** is, the statement 'SELECT VERSION FROM V\$INSTANCE' will not be logged in to Oracle Database log file.

### New Keyword to Control Support of InMemory Tables in MSSQL Server Database: SQL\_NO\_INMEMORYTABLES

By default, for every open table the gateway queries MSSQL Server if the table is InMemory or not. A keyword named **SQL\_NO\_INMEMORYTABLES** is introduced, which upon setting to 'Y' in Database Properties, the gateway does not support InMemory tables. If this keyword is set to 'N', the default behavior is retained.

## Mobile Enhancements

The following enhancements are added with respect to Mobile.

### iOS: Provision to Control Downloading of Cache Files

Magic xpa enables you to control downloading of cache files by introducing a new keyword named **DownloadTimestampBuffer** to the execution properties, measured in seconds.

If the keyword does not exist, or equals to 0, the file will be downloaded, unless the timestamps match completely (in which case the file will not be downloaded). If the keyword equals to a number (which determines the buffer size in seconds), then the file will be downloaded only if the timestamp difference is larger than the buffer size.

## Android

### Protection from Tapjacking

Magic xpa mobile applications are now protected from tapjacking.

## New Keyword to Control JavaScript Execution: `webviewJavascriptEnabled`

Magic xpa introduces a new keyword named `webviewJavascriptEnabled`, which allows you to control JavaScript execution from Browser control. By default, this keyword lets the Browser control execute JavaScript. Setting this keyword to 'False' in `setting.properties` file disables the JavaScript execution.

**Valid values:** True, False

**Default value:** True

## Git Connectivity and Support Enhancements

While creating a repository from within a Magic xpa project, the `.gitignore` file will now contain the following entries:

```
/Source/ProgramHeaders.xml
/Source/DataSourcesIndex.xml
*.log
*.lock
*.opt
*.sln
*.suo
*.xpaproj
*.xrf
```

## A Note Regarding MSSQL Server Gateway Support for TLS 1.2

Microsoft® SQL Server Gateway is now compatible with the latest Microsoft® OLE DB Driver 18 for SQL Server® in order to support TLS 1.2. For the MSSQL gateway to work, please download the SQL OLEDB driver. It is available at: <https://docs.microsoft.com/en-us/sql/connect/oledb/download-oledb-driver-for-sql-server?view=sql-server-ver15>. This is required starting from Magic xpa 3.3b in which case you need to install the new OLEDB Driver for SQL Server. Please refer the Compatibility Guide for the information on the supported databases.

## Fixed Issues

#	Description
MXPA-20704	While executing a RIA with MSSQL DB, if Blob had large data, -139 Error sporadically occurred.

#	Description
MXPA-21535	When Find Reference was performed on a user-defined function from the Logic editor, the result pane was found to display also other functions starting with the same name along with the searched function.
MXPA-24462	If Magic's Cypher() function was used in AES encryption and if a third-party tool such as Windows PowerShell was used for decryption, then the decryption did not work.
MXPA-24558	While debugging a Rich Client task, it was found that the Variable window's contents disappeared when two consecutive Call By Name operations were called; one with a cabinet file and the other without it.
MXPA-24563	When a Combo Box containing a large number of items was expanded, in uniPaaS 1.9 it was displayed correctly whereas in uniPaaS 2.0 and all later Magic xpa versions, it was getting displayed beyond the height of the entire screen.
MXPA-24586	In a particular scenario, when the Grid Service Agent (GSA) service 'Magic xpa 4.7 GSA' was started on Windows 2019 Server, the CPU load was found to go up to at least 80% on the Server.
MXPA-24627	A particular iOS application crashed sporadically.
MXPA-24751	Magic xpa's locking mechanism was incompatible with the previous version. The mechanism is upgraded now. In some specific cases, the functions Lock() and Unlock() are not compatible with other previous versions running in parallel to this version.
MXPA-24834	While installing Magic xpa if the component 'Browser based deployment' was unselected, then the file 'MGBCL047_00ENG.xml' was found to be missing from /Scripts folder, which caused error while executing Web Client programs.
MXPA-24842	In an Online application, the nested Subtasks were found to be executing infinitely when their Allow Empty Dataview property was set to 'Yes'.
MXPA-24853	Find Reference did not search the user-defined function when the function definition was modified.
MXPA-24891	There was an incorrect mention in Magic xpa help about applying a font to Tooltip from the Fonts Repository.
MXPA-24919	For all the controls in the Models Repository, for properties such as Height/Width, it was not possible to set their values in decimals. The entered values were getting converted into the default (Dialog Units) unit thereby losing their precision.

#	Description
MXPA-25062	In a specific scenario, launching a heavy application containing multiple large components and thousands of programs leads to crash with 'error serializing task' error.
MXPA-25082	In an online application, when an Edit control's Zoom Button was assigned an image, the button erroneously showed ellipsis (three dots) along with the image.
MXPA-25094	If Control Hit handler was defined with its Propagate property set to 'No' and if clicked on the next parkable control with mouse-click, then it was found that in Online tasks, cursor was not displayed on the clicked control whereas in RIA task, it was displayed.
MXPA-25095	RIA Cache files were not getting generated in \\RIACache folder if license MGRIA_MOBILE_ONLY with setting Mobile=Y was used.
MXPA-25105	In a customer's application, it was found that a Batch task with its Window Type set to 'Modal' was almost 10 times slower in exiting than with its Window Type set to 'Default'.
MXPA-25153	In case of a RIA Desktop Client, the Menu on the Form window was found to be missing when the Form window was closed and opened again. This erroneous behavior was observed for a specific user profile only when the Username was longer than 8 characters or contained a space.
MXPA-25156	When the User Event set with Force Exit=Editing was invoked on F6 key, the Edit control did not show the updated value.
MXPA-25272	For Invoke UDP operation, 64-bit engine-specific information about the required parameters was not mentioned in Magic xpa Help.
MXPA-25284	While executing a Web Client application that called a Batch task containing some delay, it was found that the default Spinner was not getting displayed.
MXPA-25285	While executing a Web Client application, if the third-party package ngMatero was used, then Overlay window was being invisible due to getting displayed behind the ngMatero container.
MXPA-25286	In Online and RIA tasks, the function MnuReset() was found not resetting the Pulldown Menu to the default when the function was evaluated in a program from a Magic xpa Component.
MXPA-25289	An incorrect Windows Server version was mentioned in the Compatibility Guide.
MXPA-25317	The event Create Line Above was found to be not working when Allow Empty Dataview property was set to 'Yes' and when the Table had no records.

#	Description
MXPA-25320	While generating a Web Client application, if the name of the project and the name of the workspace were same, then the project was generated incorrectly.
MXPA-25328	The Messaging Component was found to crash while sending messages.
MXPA-25344	On iOS devices, the function ServerFileToClient() did not copy file to Client when the file already existed on Client and was less than one minute older.
MXPA-25348	When an Edit control had an expression that passed a blank filename, it threw an exception causing other Buttons on the Form not to get displayed at runtime.
MXPA-25354	While debugging the application if a Blob variable containing large data was hovered, its Tooltip flickered.
MXPA-25359	When Space character was used as a Thousand-separator, RIA tasks displayed the expected result whereas Web Client tasks did not display result with the desired separator.
MXPA-25362	In an Online task having Link Outer Join, when Index List was activated at Runtime, the Segments were getting populated in the Index List incorrectly.
MXPA-25379	Memory leak occurred on Japan Windows while executing an Online task and traversing through a large number of records present in the Table.
MXPA-25392	On generating Print Preview of a Report, it was observed that the data in the last row of a page was displayed overlapping the data in the first row of the next page.
MXPA-25412	In the scenario where two Component programs were loaded in a Host application and also in to one another, and when the Host application called the first Component program via Menu by passing a variable, it was found that the second Component program's variable was getting passed erroneously.
MXPA-25414	When a component program triggers a Variable Change handler, and this handler, in turn, attempts to call another internal program from this same component, then this internal program was not getting materialized.
MXPA-25418	In Web Client task having DB SQL Where clause, Record View was not updated on raising View Refresh event, if the optional parameters were not passed to it and the parking was not on the Table control.
MXPA-25448	While executing Web Client tasks, it was found that Spinner did not display when Bootstrap CSS and other files such as images and media were added to the \\asset folder.

#	Description
MXPA-25453	In a specific scenario, when an Online task displaying a single record in a Table control and the next record only partially visible, then if Next Row event was invoked Magic xpa Runtime crashed.
MXPA-25506	In Online task when SpecialKeyboardBuffering flag was set to 'E', then while selecting characters in an Edit control it was found that pressing Shift+Right-arrow keys randomly canceled the current selection and restarted it from the middle of the string.
MXPA-25516	In a Web Client task, when creating a record returned an error, then raising either Create Line or Create Line Above event caused to execute Control Verification logic unit infinitely.
MXPA-25588	When a Web Client task was executed and when the browser was refreshed, it was observed that the Routed program was receiving an incorrect value of a parameter if the parameter value was greater than 16 characters.
MXPA-25589	In a Web Client task, if a new record was created on an Empty Dataview screen and if View Refresh was performed, the existing records in the table did not seem to appear on the screen. This happened when View Refresh was performed without the optional parameters.
MXPA-25636	An error, 'The license loaded by the xpa Server cannot be used in Floating mode (-189)' was displayed while trying to use MGWEB license in Floating mode.
MXPA-25647	Virtual variables were not getting initialized to their default values for a Push button in Subforms when the task was started in Create mode and End task condition was set to 'Yes' before Record Prefix.
MXPA-25649	The Tooltips for a Tree control were being displayed over the nodes making it impossible to click on the nodes to select them.
MXPA-25664	When RC and Online tasks had two Data Sources assigned to two Combo Boxes respectively, then the second Combo Box displayed the value of the first Combo Box. This erroneous behavior was observed if the Display Field property of both the combo boxes had same field names but belonging to different Data Sources. The same scenario existed for the Linked field property as well.
MXPA-25773	Subform was found to display incorrect range of records when the task Data View had Locate operation for a Table Column and virtual variable was defined with Server-side operation in its Init.
MXPA-25802	In a Web Client task when the function SetParam() was used to set a numeric global parameter, it was found that the parameter set in the previous session was not available in the next session.



#	Description
MXPA-25803	On iOS devices, when a specific URL 'http://bagrut-calculator.huji.ac.il/calculator/#/calc-type/' was tried to open in a Magic xpa Browser Control program, then the error, 'Server Error 404 - File or directory not found' was issued. The error was observed to occur due to the presence of a '#' character in the URL.
MXPA-25841	If the DataSourceIndex.xml in the Source folder was renamed or deleted, then the new DataSourceIndex.xml, after opening the application was getting created without Table Relationship entries. This behavior was also observed on Version Control.
MXPA-25880	It was observed that if the keyword LimitLinkToSingleFetch=N was mentioned at second or third position in the list of all the keywords mentioned in the SQL Tab of Database Properties, then the statement 'SELECT VERSION FROM V\$INSTANCE' was erroneously being logged in to the developer-level log of Oracle database.
MXPA-25939	While working on an application on Git version control, when the branch was switched from Master to some other, Automatic Program Generation (APG)/Execute was not possible on Data sources.

# Magic xpa 4.7.1

We are delighted to present Magic xpa 4.7.1 with new features and enhancements.

## Studio Enhancements

The following enhancements are added with respect to Magic xpa Studio.

### GigaSpaces with Magic xpa 32-bit Server Discontinued

Provision of GigaSpaces with Magic xpa 32-bit Server was discontinued since Magic xpa 4.7 due to unavailability of 32-bit executables in GigaSpaces version 15.

**Note:** GigaSpaces option was removed from both the Magic xpa Studio and the 32bit Server installation.

## Runtime Enhancements

The following enhancements are added with respect to Magic xpa Runtime.

### New Property: Use Default Width

A property named **Use Default Width** is introduced for Edit control's Zoom Button, which upon setting to 'True' sets the width of the Image to be identical to the width of the Zoom Push Button.

### New Value for SpecialKeyboardBuffering: X

The special flag **SpecialKeyboardBuffering** is now provided with the new value 'X'. Upon setting the flag to 'X', it behaves identical to Extended buffering (E), but disregards Ctrl and Shift keys while keyboard buffering.

### New Flag: SpecialComboShowBorder

The special flag **SpecialComboShowBorder** decides whether or not the 2-D or Windows style Combo Box will have a border when it is not in focus.

On setting to N, the Combo Box appears without border (as per previous behavior) and on setting to Y, the Combo Box appears with border.

**Valid values:** Y, N

**Default value:** N

## New Flag: SpecialShowLastOrphanInFrame

A special flag named **SpecialShowLastOrphanInFrame** is introduced, which always stores the last Orphan in Frame and displays it after closing the current task window in Frame if it is evaluated to be a non-Orphan window.

When set to Y, Magic xpa displays the previous Orphan task in Frame in the following scenarios:

- After an Online task with Close Task Window property set to Y is terminated.
- After a Batch task with Close Task Window property set to Y calls an Online task with Close Task Window property set to N is terminated.

**Valid values:** Y, N

**Default value:** N

**Note:**

- The behavior on setting the flag to Y is not applicable to Subform.
- If the flag is set to Y and if the Main Program has Destination Frame set, then the Main Program is used as a Destination Subform for Online tasks.

## New Flag: SpecialDotNetAllowZeroDate

This special flag when set 'Y', retains the older behavior of allowing .Net DateTime object to be initialized with 0.

**Valid values:** Y, N

**Default value:** N

## Git Connectivity and Support Enhancements

The following Git-related enhancements are added to Magic xpa.

### Optimized Git Connectivity

If you want to register yourself with Git and when you start the process of registration, Magic xpa issues a dialog informing that the registration process might take a while to complete. Also, if you have already registered yourself with Git, Magic xpa opens your project promptly.



## Branch ID Optimization

The file `branchIDs_x.txt` will not be tracked by Git now. The file `.gitignore` residing at repository level will now contain the entry `MagicIDs/branchIDs*.*`.

## Web Client Enhancements

The following Web Client enhancements are added to Magic xpa.

### Third-party Time Picker

Magic xpa now enables you to add an OS-independent third-party Time Picker (for instance: `ngx-material-timepicker`) to support 12-hours and 24-hours' time format in Web Client Applications. Please visit the relevant help topic at *Home > Mastering Magic xpa > Web Client Application Development > How Do I Use a Third-party Time Picker?*

**Note:** The third party Time Picker `ngx-material-timepicker` does not support seconds.

### Smooth Navigation of Records in Table

The server can proactively load records in to the client's table when the client is idle to give you a smooth records navigation experience. Magic xpa introduces a property named **Server Read Ahead** which upon setting to 'Yes', the client informs the server to fetch all records from the database chunk-by-chunk and send them back to the client.

**Note:** The property is available for Table controls that have Web Style of Material Design Grid.

### Support for ISAM Database as Data Source

Magic xpa update supports ISAM Database as a linked Data Source only in Linked Query operations, for paginated tables.

## Mobile Enhancements

The following Mobile-related enhancements are added to Magic xpa.

### iOS:

**Support for Dark Mode:** iOS Client now supports dark mode of iOS 13.

**Support for iOS 14:** Rich Internet Applications running on iOS can now be executed on iOS 14.

## New Flag: SpecialShowKeyboardOnReadOnlyEdit

A special flag named **SpecialShowKeyboardOnReadOnlyEdit** is introduced to determine whether or not to invoke the soft keyboard after parking on a read-only Edit control.

When the flag is set to Y, the keyboard is invoked and you can copy the Edit control's contents.

When the flag is set to N, the keyboard is not invoked and no copy mechanism is allowed.

**Valid values:** Y, N

**Default value:** Y

**Note:** This behavior is valid for iOS only.

## Known Issues: User Interface

We have upgraded our binaries to be compiled using .Net framework 4.7.2, which brought the following side effects:

3. The System event Ctrl+A is not raised for the Edit controls, which have their Multiline Edit property is set to 'True'. It is considered by .Net as though you selected all lines in the Edit control.
4. When the Form's Window Type property is set to 'Fit to MDI', then height of the Title Bar increases by 10 pixels.

## Fixed Issues

#	Description
MXPA-750	When a project was added into TFS version control and when the Checkout button on Web Application Settings dialog was clicked, then the error, 'Critical error of Source Control Provider, Please restart IDE.' occurred if the Application Properties were not checked out.
MXPA-19918	The BG color of the image was getting displayed when the Display Settings > Scale and layout setting was increased from 100% to 125%.
MXPA-20762	If a Tree control was placed on a Subform and if the program execution control was parked on the parent form, then while trying to expand a node of the Tree control it didn't expand and the first node of the Tree was shown highlighted.

#	Description
MXPA-21011	When the title of the Class-1 Form was scrolled down with Vertical Scroll Bar to move it to be just behind the Horizontal Scroll Bar, then the Horizontal scroll bar stopped functioning.
MXPA-21105	The Logon dialog box displayed Question Marks (؟؟؟؟) in the place of application name in Hebrew if the application was invoked as StartApplication using Runtime.
MXPA-21248	When Help File parameter was set to blank in Magic.ini and Help was invoked by pressing F1 while executing an Online program, the error, '\[Error ] - \[MgGui.dll] Help URL ' is not valid.' was getting logged in mgerror.log file.
MXPA-21332	On migrating an application from uniPaaS to Magic xpa, it was found that the Class 0 Form's Window Type property that was set to 'ApplicationModal' in uniPaaS did not get converted to 'Modal' in Magic xpa.
MXPA-21370	A customer's specific mobile app took 3 minutes to open on iPhone 11 device when the images were packed with IPA (Assets Folder). Also, on a specific iPhone8 Plus device, the same app took 3 minutes to open.
MXPA-21532	If there was a preceding space character before the 'task var names' parameter of DataViewToText() function, Magic xpa issued an error, 'DataViewToText - Illegal task variables specified :'. '.
MXPA-21740	In a program when 'Title Bar' property of the GUI Display form was set to 'False', the Minimize and Maximize buttons were getting displayed momentarily before terminating the program execution.
MXPA-22230	On Hebrew machine, when an Online application was executed on xpa 3.3x and when a .rtf file was tried to open in a Rich Edit Control, it was found that the Table columns were displayed in reversed order with the data inside them aligned to left instead of right as against uniPaaS 2.0.
MXPA-22454	While executing RIA Offline application for the second time, if User Functionality component was present in the application and when 'ConnectOnStartup' was set to 'No', then the error, 'Metadata files are not synchronized. (-271)' was issued.
MXPA-22669	When a GUI Output form was printed as a PDF, it was found that the BMP images higher than 16-bit did not appear on the printed document.
MXPA-22744	While adding records in an empty Table, the Table's DataGridView was not getting refreshed immediately and showed only one record, which was entered last.

#	Description
MXPA-22791	When HTTPCall() function was invoked with option GET, the header part 'Content-Type: application/json; charset=utf-8' was getting removed from the message header.
MXPA-22806	If an Edit control's Show Zoom Button property was set to 'Yes' and Button Style was set to 'Image button', the zoom button's width was getting altered.
MXPA-22835	When a Push button event was raised using an 'Enter' key, the function LastClicked() returned blank instead of returning the Push button's control name.
MXPA-24086	If Control Hit handler was used with Propagate property set to 'No' and values were tried to select using Space Bar, then they were not getting selected.
MXPA-24133	When an Online application containing a Subform with Placement property was set to execute in Full Screen mode, and when an Edit control was in an out of the focus repeatedly, then the Subform was found to increase its size and the Check Box on the Subform changed its position.
MXPA-24163	Magic xpa runtime crashed while debugging a specific customer application using GFlags.
MXPA-24165	In Web Client tasks, if an Edit control had a data expression attached to it and when the control was clicked on during runtime, an error occurred: 'Control either has an expression or has parent task variable attached to it. Failed to park on control with name: <control name>'. The bug is fixed and the error is now logged into the console for more clarity.
MXPA-24219	If the picture format of an Alpha type variable was set as '1 A' (where 1 is size and A is auto-skip), then the application did not allow to enter a character in an Edit control.
MXPA-24244	When a comment was entered for any item from the repositories, the color of the serial number of that item changed to default color (blue), but it did not change to the original color (black) when the same comment was deleted.
MXPA-24246	The focus was shifting to incorrect Radio control after pressing the Tab key when both the Radio controls were attached to the same Data variable.
MXPA-24247	When HttpFramework was set to 'J', and the header 'Content-Type: application/json; charset=utf-8' was tried to send through HTTPGet() function, then the header was not getting displayed in the header list.

#	Description
MXPA-24294	On iOS devices, the soft keyboard was getting opened when the Edit control's Modifiable property was set to 'False'. Please see <a href="#">SpecialShowKeyboardOnReadOnlyEdit</a> in this Release Notes document.
MXPA-24295	In a particular customer's application scenario, memory leak was observed on the RIA server.
MXPA-24297	The User Functions defined in the Main Program of a Web Client project were not getting executed.
MXPA-24298	When an expression number is set to the Data property of an Edit control by typing the expression number and then zooming into the Expression editor, if another expression is selected, then the previously typed expression number stays on the property instead of the newly selected one.
MXPA-24303	When Invoke OS Command operation was executed for launching apps on Android client, the string between the two percentage symbols (%string%) was found to be getting disappeared.
MXPA-24308	The menu options 'Open in Visual Studio Code', 'Generate Form Component', and 'Generate Controls Accessors' were found disabled in the Form Editor of Web Client program if the project was under version control and program was not checked-out.
MXPA-24341	When MailFramework was set to 'J', while reading some specific mails, it was found that MailMsg functions had returned blank body. In case of some other specific mails, when MailFramework was set to either 'L' or 'J', the functions returned blank header.
MXPA-24464	The time taken to insert records into DB2400 Table via EASYCOM gateway was found to be considerably more than to insert the same number of records via ODBC gateway and IBM Client Access driver when the transaction was executed before Task Prefix.
MXPA-24471	On a German machine, when an application was created and the Form Designer was opened, a Visual Studio error occurred, '"XamlDesignerPackage" package was not loaded properly'.
MXPA-24504	When a 2-D or Windows style Combo Box was placed inside a Table control and when the Combo Box was not in focus, it still appeared with a border. Please see <a href="#">SpecialComboShowBorder</a> in Release Notes.
MXPA-24506	When SpecialKeyboardBuffering flag was set to 'E' and when a Batch task called from an Online task was being executed, the behavior of pressing

#	Description
	Ctrl/Shift+Click key(s) was still effective after changing the focus to the parent task. Please see <a href="#">New Value for SpecialKeyboardBuffering</a> in this Release Notes document.
MXPA-24516	On iOS devices, a Combo Box was found to expand on opening and closing it few times.
MXPA-24565	On iOS devices, when switching to Dark Mode, the text on the Title Bar was not clearly visible.
MXPA-24571	When an application with a Batch task containing a DSQL having Link Query operation on Memory table was executed on both Magic xpa 3.2d and Magic xpa 4.7; it was found that the performance of the latter had reduced in terms of speed.
MXPA-24588	In a particular scenario, a RIA task had a Table control with its Scroll Bar Thumb property set to 'Absolute' and a few thousand records in it. When the task was executed, the xpa Runtime engine was found to crash.
MXPA-24596	The information regarding return value of FileListGet() function in xpa help documentation was not in accordance with the function's actual return value.
MXPA-24651	When an application was executed in Screen mode, a Phantom Subtask was expected to display the same data that was entered in its parent task in an Edit Control, but the Phantom Subtask's Edit Control was found to be empty.
MXPA-24660	While working on the projects under Git, it was found that for each module added in the project, the batch file 'ProjectUnderGit.bat' was getting executed multiple times causing delays in opening projects under Git having multiple modules.
MXPA-24661	If two projects under a solution were tried to open in two different instances of Magic xpa, then error occurred in either of the two projects and .edp project files were getting deleted.
MXPA-24681	When the flag SpecialDisableGITFunctionality was set to 'Y', Magic xpa erroneously checked if the project was under Git or not.
MXPA-24952	In a particular scenario, MgxpRuntime crashed while reading the contents of Binary/ANSI vector using the function VecGet().
MXPA-25003	.Net Snippet Code was not getting executed if Date attribute was passed as an argument with the default value 00/00/0000. Please see <a href="#">SpecialDotNetAllowZeroDate</a> in this Release Notes document.

#	Description
MXPA-25023	Memory leak was observed on Linux and Windows machines while executing a Batch task and sending a few thousand requests to the Server.
MXPA-25073	In a Web Client application when the Internal Event 'ViewRefresh' was used without the first parameter then the error, 'TypeError: Cannot read property 'substr' of null' occurred in the Browser Console and the client stopped responding.

# Magic xpa 4.7

We are excited to present Magic xpa 4.7 with new features and enhancements.

## Studio Enhancements

The following Studio-related enhancements are added in Magic xpa.

### Enhanced APG (Ctrl+R)

The existing APG utility is enhanced to create Browse programs quickly when Data Source has relationships defined for Table linking. The programs are created with the following:

- Multiple and multi-level Subforms (for 1:N relationships)
- Linked Tables (for 1:1 and N:1 multiple and multi-level relationships)

The programs are created based on the selected relationship(s) from the APG Relationship Tree.

For creating the Browse programs, you need to set a Relationship Criteria to link the Tables.

If you have linked two tables in 1:1 relationship, then with the enhanced APG, a program is created with a Link Query in it.

### Confirmation while Deleting a Data Source before Overwrite

While overwriting a Data Source, Magic xpa issues a confirmation message for deleting the Data Source from the SQL-type and ISAM-type databases.

### Enhanced Block Operations

Magic xpa supports expanding (+) and collapsing (-) the Block operations in Program Logic.

**Note:** In case of nested Block operations, expand/collapse state for the inner blocks is retained.

### Debugging: Variable Values Available in Tooltips

Magic xpa provides runtime values of the variables in the tooltips while debugging programs.

### Searching Program using Source File Name

Magic xpa enables you to find a desired program from the entire repository when you enter the program's source file name in **Find Text** dialog box. Magic xpa optimizes search by providing a

checkbox named **Search source file name only**, which on clicking searches the text only in the source file name of the program.

## Customizing Colors of Columns in Link Operations

Magic xpa enables you to customize the foreground (FG) and background (BG) colors of Columns in Link operations.

## Automatic Installation of Visual Studio 2015 Shell

Magic xpa automatically installs Visual Studio 2015 Shell. Please see [Known Issue](#).

## Enhanced Git Connectivity and Support

Magic xpa brings up a number of enhancements to enable you to work with Git version control effortlessly. With the 4.7 update, Magic xpa deprecates the use of PushOk Git plugin and supports TortoiseGit plugin as a default for connecting to Git.

The following features are provided to enhance working with Git:

### Automatic Identification of Project under Git

Magic xpa identifies whether a project is under a Git repository or not.

**Note:** Irrespective of whether a project is under Git or not, the three flags **VCActive**, **WorkOffline**, and **VCUseGitPlugin** are set to 'N' by default in the <project\_name>.edp file.

### Automatic Identification of Change of Working Branch from Outside Studio

If the working branch is changed from outside Magic xpa, it identifies the changed branch and loads the contents of the project repositories with the branch's name reflected in the Title bar.

### Automatic Generation of Unique Version Control ID

While working with Git, Magic xpa takes the responsibility of generating developer IDs, so uniqueness of ISNs is guaranteed. Magic xpa creates developer IDs to assign unique ISNs to all the developers. It records these developer IDs in the file named **devids.txt**, which is created inside the folder in the uniqueness branch named **magicids**.

When you connect a project to Git for the first time, Magic xpa adds the following information into devids.txt file:

- Developer's ID
- Developer's Name
- Developer's eMail

When you open a Git project via xpa Studio, Magic xpa reads the uniqueness file and sets the developer's ID and Branch ID to create the ISN for that particular Developer for that specific project.

## Automatic Identification of a Unique Branch

Similar to **devids.txt** file, Magic xpa maintains a branch ID file named **branchids\_x.txt** in which it stores the active branch names and numbers to be able to identify a branch uniquely. The file is maintained in the uniqueness branch named **magicids** of the Git repository.

When you create a branch for the first time, Magic xpa creates *branchids\_x.txt* file and pushes it to the uniqueness branch in the Git repository.

**Note:** You can work on at the most 64 branches.

## Prerequisites for Working with Git

You will find a new option named 'Git Connectivity' under the menu **File > Version Control**. On selecting this option Magic xpa will check if:

5. TortoiseGit is installed
6. Compare and Merge is installed and configured
7. Developer eMail ID is configured
8. Developer ID is allocated for the current developer
9. A Branch ID is allocated for the current branch

If anything from the above was not done then Magic xpa informs you.

While adding a new project to Git repository, by default Magic xpa launches a Git connectivity check dialog to verify all required plugins, configurations, and settings. Once the project is added into Git, you can avail verification from **Version Control > Git connectivity check** when required.

## Removal of Source Control Plugin Setting

Now that Magic xpa supports TortoiseGit by default, the **Environment** setting **Source Control Plugin** is removed, thereby relieving you from setting the type of Git Plug-in.

## Overriding xpa Git Functionality

Magic xpa introduces a special flag named **SpecialDisableGITFunctionality**, which upon setting to 'Y' in Magic.ini disables all the Git-related icons and all the menu options under **File > Version Control** for a project added in Git version control.

This flag enables you to treat a Git project as a non-Git project and allows you to work with your project as though it were not in the Git repository.

## Git Flow Commands

Magic xpa provides Git Flow commands as a recommended branching model. The Git Flow entries in the **File > Version Control > Git Flow** menu provide the following options:

- Git Flow Init - Initialize a directory as a Git Flow repository.
- Git Flow Feature Start - Start a Git Flow feature
- Git Flow Feature Finish - Finish a Git Flow feature

For more details regarding Git Flow, please see <https://www.atlassian.com/git/tutorials/comparing-workflows/gitflow-workflow> or other references to Git Flow.

## Logging Git Commands from Magic xpa

You can log the commands generated by Git from Magic xpa. A special flag named **SpecialGITLog** is introduced in order to log them. The flag when entered under [MAGIC\_SPECIALS] with the value **SpecialGITLog=<Filename with absolute path>**, all the direct Git commands executed in Magic xpa studio are logged in the given file.

**Note:** When developing with Git, Magic's **Compare and Merge** tool is mandatory. The tool is external to Magic xpa installation. It is available at Downloads Area ([downloads.magicsoftware.com](https://downloads.magicsoftware.com)). The tool is licensed separately. Please contact your local branch/representative regarding its license.

## General Enhancements

The following general enhancements are added in Magic xpa.

## Support of HTML Format in Mail

In addition to Plain Text format, Magic xpa now enables you to send and receive mails in HTML format. You can set the mode of the format to 1 (Plain Text) or 2 (HTML) using a function named **MailFormatSet(mode)**.

**Note:** The support for HTML format is applicable only on Java mail framework.

## Support for New Functions: FileOpenDlg and FileSaveDlg

Magic xpa introduces two new functions named **FileOpenDlg()** and **FileSaveDlg()**, thereby enabling you to upload and download the selected file(s) respectively.

**Note:** FileOpenDlg and FileSaveDlg functions are available in Online tasks only.

## 32-bit/64-bit Open JDK with Magic xpa Installation

Magic xpa now provides 32-bit and 64-bit Open JDK version 1.8 along with xpa installation.

## Support to Handle SUPERVISOR\_GROUP as SUPERVISOR GROUP

While working with LDAP/AD you can create **SUPERVISOR\_GROUP** (underscore in between) instead of **SUPERVISOR GROUP** (space in between) and while validating against the security file, Magic xpa treats it as **SUPERVISOR GROUP** in order to assign supervisor rights to the users.

## UI Enhancements

The following user interface enhancement is added in Magic xpa.

### Scaling of RIA Forms, Frames, and Controls

Magic xpa now supports scaling of Forms, Frames, and Controls in RIA executing on desktops.

## Migration Enhancements

The following migration enhancements are added in Magic xpa.

### Label Control Border

A 2D Label control will be migrated from UniPaaS to Magic xpa with its borders as follows:

- Thick => 2D
- Thin => Windows



- No Border => No Border

## Conversion of Edit Controls to Label Controls

While migrating an application from UniPaaS, Magic xpa enables you to convert an Edit control with Data set as an Expression and located outside the container control to a Label control with the same Expression as its Text. A new Command Line Option **UpEditWithExpToLabel** is introduced, which upon setting to 'Yes' enables this conversion.

## RIA Enhancement

The following RIA enhancement is added in Magic xpa.

### Enhanced Scroll Bar

In RIA, using **Scroll Here** option you can jump directly to the clicked position when **Scroll Bar Thumb** is set to **Absolute**. Magic xpa supports **Scroll Here** functionality for Preload View also.

## Runtime Enhancement

The following runtime enhancement is added in Magic xpa.

### New Event: Create Line Above

An Editing event named **Create Line Above** is introduced, which creates a record above the current record during Runtime. This event is supported in Online, Rich Client, and Web Client applications.

## Database Enhancements

The following database enhancements are added in Magic xpa.

### Enhanced Support for MySQL ODBC Gateway

Magic xpa's MySQL ODBC gateway now supports MySQL 8.x.

### Support to Define Table Relationships

Magic xpa now enables you to define One-to-One (1:1), One-to-Many (1:N), and Many-to-One (N:1) relationships among the tables created in Magic Data Repository. Once the table relationships are defined, you can use the new APG (triggered by Ctrl+R) to generate programs based on those relationships.

**Note:** Defining relations is not supported on XML table.

## Binding Support in Oracle Database

You can now use the binding (~) for the statements that do not return a result set.

## Microsoft® SQL Server 2019 Support

Magic xpa was tested and is compatible to work with Microsoft SQL Server 2019.

## Web Client Enhancements

The following Web Client enhancements are added in Magic xpa.

### Re-initialization of the Context on Abnormal Termination of Sessions

Magic xpa introduces an **Environment** setting to handle re-initialization of the context when sessions terminate abnormally. The setting named **Reinitialize Web Client sessions on abnormal terminations** offers three options:

**Yes:** Reinitialize the context by default.

**No:** Do not re-initialize the context.

**Alert:** Issue an alert message to let the user decide whether they wish to reinitialize the context or not.

#### New Keyword: 'WebClientReInitSession'

You can use the keyword named **WebClientReInitSession**, which upon setting to 'A' in Magic.ini issues the same Alert message. The setting is effective on restarting Magic xpa Studio.

#### New Function: 'IsContextReinitializing()'

Magic xpa introduces a function named **'IsContextReinitializing()'** to indicate whether the context has been reinitialized after abnormal termination of application. The function when called from Main Program/Task Prefix returns 'TRUE' when the context is being reinitialized after crash.

### Issuing Warning Message before Context Inactivity Timeout

Magic xpa introduces an **Environment** setting named **Context Inactivity Warning Time**. This setting enables you to set how much time before terminating the session you want Magic xpa to issue a warning message about termination of the session.

**Note:** For some Chromium browsers, the warning message is shown when the current browser tab is in focus.

### New Keyword: 'ContextInactivityWarningTime'

You can use the keyword named **ContextInactivityWarningTime** to set the time in Magic.ini.

### Support for Blank 'Zero fill' Characters in Numeric Pictures

The Directive for Numeric pictures is supported with blank 'Zero fill' characters. With this directive, Magic xpa fills the variable value with blanks if the variable value was zero.

**Note:** The characters other than blanks are not permitted in Directive of Numeric pictures.

### Support for Blank Date and Time

When Date or Time is zero, Date Picker or Time Picker will display it blank respectively.

### Customizable Date and Time Formats Defined on Magic xpa's Form

You can change Date and Time formats to be different than that defined on Magic xpa's Form. Please refer to Magic xpa help for more information.

### CallJS() Supported in Web Client

Magic xpa now supports **CallJS()** function in Web Client tasks to let you call a JavaScript method of Magic Angular component.

### Support for Character-level Binding

Magic xpa now enables you to define the level of binding between Edit control and variables. A property named **Binding Level** is introduced which lets you define binding option either as *Control* (where a variable receives a control's value on leaving the control), or as *Character* (where a variable receives a control's value on each character typed).

### Support for Lazy Loading in Overlay Programs

You can now call Overlay programs from Load on Demand folder without Route.

## Support for Client-Side Logging

A log level named **RequestInfo** is introduced, which upon setting in Web Client Application Execution Properties, the requests sent to server and their corresponding responses received from the server are logged on the console.

## Notification of Change in Custom Properties Property

A method named **PropertyChanged()** is introduced, which on writing in the .ts file of the component notifies you about change in the value of Custom Properties property in Magic xpa. The method is invoked whenever value of any custom property changes.

## Closure of Active Web Application's Browser Tab

When you change the contents of a Web page and attempt to close it without saving the changed contents, means **when the transaction cache is not empty**, Magic xpa raises a warning about the pending changes.

**Note:** On all browsers except Chrome the context is terminated after the context-inactivity timeout. On Chrome the context is terminated immediately.

When you do not change the contents of the Web page and attempt to close it, means **when the transaction cache is empty**, Magic xpa terminates the context immediately without issuing any warning.

## No Confirm Update Dialog on Using Record Flush

Magic xpa does not issue Confirmation update dialog box on using Record Flush event.

## Provision of Enum for Accessing Custom Properties

Magic xpa now provides Enum for Custom Properties so that you can access them easily.

## Location Changed of displayedColumns[] Array

Earlier on generating an application containing Table control(s), the array displayedColumns[] used to be entered into **<component\_name>.component.ts** file. The array is now entered into **mg.controls.g.ts** file to avoid updating the **<component\_name>.component.ts** file each time a new column is added into the array.

## Provision of Choice to Make Tasks non-Interactive

You have an option to make the Web Client tasks non-interactive.

## Debugging Client Side Error Messages

Magic xpa now identifies the runtime path of the error message that might appear in Client-side browser console while debugging Web Client applications.

## Microsoft® Visual Code IntelliSense Enabled

Microsoft® Visual Studio Code now identifies the binding and shows the drop down box of IntelliSense.

## Mobile Enhancements

The following enhancements are added with respect to mobile.

### Android

ZBar SDK is no longer supported in Android. Barcode is not supported via Zbar and sample project has been modified to use Pic2Shop on Android.

### Android 10 Support

Magic xpa was tested and is compatible to work with Android 10.

#### Android Specific Functionality

Update the project target SDK and compatibility libraries to **API 29**: You need to upgrade Android SDK compatibility libraries to API 29 so that your custom applications developed for higher versions will work smoothly on your latest Android devices.

### iOS

#### Replacing deprecated UIWebView with WKWebView

- Sample projects and previously missed-out references are updated as per WKWebView implementation.
- ZBar SDK is no longer supported in iOS. Barcode is not supported via Zbar and sample project has been modified to use Pic2Shop on iOS.

## GigaSpaces Enhancements

The following enhancement related to GigaSpaces is added in Magic xpa.



## GigaSpaces Version 15 with xpa Installation

The underlying GigaSpaces infrastructure is updated to version 15.

## Behavioral Change

The following behavioral change is implemented.

### Backward Compatibility for Virtual Values Rollback

In version 3.3e, Quit and Cancel events changed their behavior and rolled-back virtual variables to their initial values. This turned out challenging in the existing applications where xpa programmers required the changed values of the virtual variables after raising a Cancel event. To facilitate the previous behavior a flag named **SpecialKeepVirtualsOnQuitOrCancel** is provided.

#### SpecialKeepVirtualsOnQuitOrCancel

When set to Y, this flag facilitates the previous behavior of virtual variables retaining their modified values.

**Note:** In case Quit event is raised, Task suffix will receive the modified values for virtual variables.

Valid values: Y, N

Default value: N

## New Special Flags

The following special flags are added in Magic xpa.

### SpecialUnicodeDefaultExpressionArgument

This flag was introduced for default return type while converting string parameters used in expressions. Magic xpa has some expression evaluations where the returned string could be of type 'Alpha' (ANSI) though all the function parameters are Unicode as in EvalStr('a'&'b'). Upto xpa versions 3.2d, the default value of this flag was N. Means by default ANSI string was considered as return type. This was problematic to xpi because it converted Unicode strings to ANSI and lost the characters thereby getting '?' instead of characters. So from xpa version 3.2e onward, the default was changed to Y. Means, by default Unicode string was considered as return type.

**Valid values:** Y, N

**Default value:** N till version 3.2d, Y 3.2e onward

**Since version:** 3.2d

### SpecialValNewPolicy

If the flag is set to 'Y', the following rules apply for the Val() function:



1. If the picture is too small for the digits after the decimal separator: cut.
2. For digits before the decimal separator: never cut.

If the flag is set to 'N' or it is nonexistent, then the previous behavior is retained.

Valid values: Y, N

Default value: N

## Known Issue

As a consequence of upgrading to Visual Studio Isolated Shell 2015, there is a problem with the Form Designer ONLY while using **mgconstw.heb**. The scroll bars are displayed on incorrect side in the Form Designer for Forms and for Table controls. Despite this incorrect display, they behave properly at runtime.

## Fixed Issues

#	Description
MXPA-88	A newly-defined Logical variable's 'Default value' property is displayed as 'True' instead of 'False' by default, when the 'Default value' property of the previously defined Logical variable was changed from 'False' to 'True' using mouse double click.
MXPA-128	The Edit controls in the Filter Box were not displayed properly when Font was applied to the Table's Column and Set Allow Filtering property of Column was set to 'True'.
MXPA-212	In a particular scenario, a Table definition done in MSSQL was applied on Magic xpa Data Repository where a Table was already present with one Index entry, then if a new Index was attempted to add above the existing Index, the Position index value was not getting recorded in Datasources.xml file, which resulted in Magic xpa Runtime crash.
MXPA-425	The function Val() did not return correct value according to the 2nd parameter if the number of characters in the 2nd parameter were less than the number of characters in the 1st parameter and 'N' was part of the 2nd parameter as in Val('1234', 'N3') erroneously returned 1234. Please see <a href="#">SpecialValNewPolicy</a> in Release Notes.
MXPA-429	Magic xpa Component Interface Builder takes a long time (up to 2 sec) to open if a substantial number of Logical names were present.

#	Description
MXPA-537	Magic xpa Help is updated with the information on the maximum number of Blobs allowed in various databases.
MXPA-2719	When an invalid number was entered in a numeric field and a User Event was raised on a Button click, both Online and RC programs displayed an error on Status bar and reset value to original. But when the same programs were executed on uniPaaS 2.0 onward, the expected event was raised in RC and was not raised in Online program.
MXPA-19628	When a Batch task was called from Main program multiple times, Menu flickered.
MXPA-19751	While using function DataViewToJson(), some unwanted characters 'ï»¿' were displayed in Blob variable.
MXPA-19896	A program having multiple query names after WITH clause in SQL command and the Result Database set as MSSQL, issued a DB error and discontinued execution.
MXPA-19912	Edit Control Zoom Button was found visible when Show Zoom Button was set to 'True', and Visible and Enable properties were set to 'False' for Image Button type, and was seen enabled although Enable was set to 'False' for any Button type.
MXPA-19928	An error '\[MgGui.dll] Property.RefreshDisplay(): Property 730 wasn't handled.' was recorded in mgerror.log if Owner Drawn property of Checkbox was set to True in Online task.
MXPA-19938	Magic xpa studio crashed when trying to select Simba Athena ODBC driver. Also, DB error 'Driver is not supported by the gateway' was displayed when clicking on 'Cancel' button in 'Select data source' window to select DSN name.
MXPA-19946	In UniPaaS the 'Mark Previous Char' event marked the selected characters in an Edit box whereas in Magic xpa, the event did not mark the selected characters.
MXPA-19967	The behavior of Magic xpa 4.5 and Magic xpa 4.6x was found different when a .Net decimal variable was updated with a decimal number. In Magic xpa 4.6x the decimal value was getting treated as a whole value.
MXPA-19979	When a RIA deployed on Broker as well as on GigaSpaces generated an error, it was found that on Broker the error was logged in detail whereas on GigaSpaces, the same error was logged briefly.
MXPA-20015	In case of a header detail scenario, if the header record was deleted, then instead of deleting its corresponding detail records, some other detail records were getting deleted. The header task used the condition stat(0,'D'MODE).

#	Description
MXPA-20019	When you selected 'Magic Xpa Deployment Client' installation, Magic xpa help files used to get installed by default. Now you have a choice whether to install or not to install the help files.
MXPA-20024	In some specific environments, Studio performance was found degraded when performing actions like opening Program Repository or zooming into a program, or executing a program from Program Repository.
MXPA-20056	In RIA tasks, when cancelling a record which is connected to a subform, 'Record lost' error occurred. In such a scenario, moving to a new record created an empty record on the form as well as in the database.
MXPA-20068	On executing a Web Client application, when the browser was closed, the context remained opened. The context was released only when the 'ContextInactivityTimeout' was expired. This erroneous behavior was observed only on Google Chrome browser.
MXPA-20143	The function Len() returned incorrect value when Unicode type parameter was passed to it.
MXPA-20271	If the function ClientFileRename(origin, target) contained only the filename (without its path) as the Target parameter, it previously worked like a Move operation on the current working directory. Now in such a case, it will perform the operation on the source directory itself.
MXPA-20441	In Web Client tasks, MLS translation did not work when logical names were used in Language File path of Language Repository.
MXPA-20479	A redundant confirmation dialog box was getting displayed in Version Control with the message 'Entering read-only mode', when attempted to open a program that was not checked-out at first place.
MXPA-20550	While executing an SQL Stored Procedure in an MSSQL Database application, a blank dialog box was getting displayed and the error 'Error in executing SQL command...' was getting recorded in mgerror.log.
MXPA-20620	In case of Online tasks, the focus was unduly getting shifted to Parent task from Child task when a Timer handler having Raise event (View Refresh/Screen Refresh) or Verify operation was getting executed.
MXPA-20645	The information regarding 32-bit and 64-bit Server and Database Client combination was not found in xpa help documentation.
MXPA-20648	When a Web Client application was executed from Studio with Deployment Mode set to 'Runtime', RunMode() function returned incorrect value.

#	Description
MXPA-20652	While working with multiple Class 1 GUI Output forms, when a reference from Find Results pane was clicked, the control did not jump to its corresponding matching result. The same behavior was found in case of Checker error.
MXPA-20674	An Online application was found to crash at runtime when its Parent window was set as 'Task in focus' and a button was clicked in the Parent window after a Subtask having Control Hit event with Propagate property set to 'No' was called.
MXPA-20675	Print Data functionality did not display all existing files in the directory when 'All Files' (i.e. *.* ) option was selected in File Open dialog.
MXPA-20715	In a particular scenario on iPad devices, an iOS application was found to crash.
MXPA-20717	When Transparent colors were applied to Label, Edit, or Line controls and when they were placed into the Table control's Column Header, the controls were displayed neither during Form design time nor during runtime. Also, the same controls when placed inside the Table were not getting displayed during design time.
MXPA-20743	The Magic xpa Studio was getting stuck during ECF creation activity using Tools Infrastructure when AutomaticProcessingMode was set to 'B'.
MXPA-20784	In a particular scenario, when a Windows application such as Notepad, Excel, etc. and Magic xpa were co-running, and when Magic xpa invoked a Batch task with Open task window set to 'Yes' and Window type set to 'Child', then Magic xpa Batch task kept appearing intermittently while working on that Windows application.
MXPA-20798	The behavior of uniPaaS and Magic xpa 3.3 (both Japanese versions) were different with respect to displaying logon window when it was given as a command line argument. In uniPaaS the logon window was displayed with Username and Password whereas in Magic xpa 3.3, the logon window was displayed with only Username. The issue is fixed now.
MXPA-20799	In a particular scenario on iPad devices, an iOS application was found to crash while performing a general search.
MXPA-20832	In MSSQL gateway, when the function CndRange() was used on DateTime column, it failed at Runtime and threw the error 'Incorrect syntax near the keyword 'AND''.
MXPA-20866	XMLInsert() returned error -6 "Attribute already defined for element" while adding an Attribute to an Element in an existing XML, even though the Attribute was not defined.

#	Description
MXPA-20922	A Table with Checkbox/Button controls was found to get loaded slower than the Table without Checkbox/Button controls in it.
MXPA-20955	In a particular scenario on the Japanese environment migrating the application, two Radio buttons having different height and same Y value placed on a Form in uniPaaS were found to have changed their positions in Magic xpa 4.6.
MXPA-20960	Radio Button was getting slightly cut when Radio control's Vertical Alignment property was set to 'Top', Multiline property was set to 'False', and Font Size was inherited from the Radio control's default Font size.
MXPA-20964	If an Expression ("False"log) was attached to Confirm Update property and a record was attempted to delete, then the Confirmation Dialog was appearing in RIA unlike in Online task. This erroneous behavior taking place in RIA task is now fixed.
MXPA-20983	When a Magic 9.40 application was migrated to uniPaaS or Magic xpa, some of the default images of Menu icons were observed to be incorrect in uniPaaS 1.9p and some default icons were missing from Magic xpa 4.7.
MXPA-21004	In Create mode, it was impossible to enter a value in an Edit control when a User event was executed with Force Exit set to Post Record Update, and a Batch program was called to update a variable in Record Prefix.
MXPA-21012	When an application was migrated from uniPaaS 1.9 to Magic xpa 4.6 and when a .Net Object for Date was used, then while setting Date '00/00/0000' to .Net Month Calendar Control, uniPaaS issued an exception whereas Magic xpa did Uninot issue any exception.
MXPA-21061	When Cache Strategy was set to 'Position' for parent program to 'None' for child program, then the control was getting parked on an undesired column in the Table while trying to park it on a particular column.
MXPA-21118	When 'VCProjectID' was changed in the project, it was found that the node_id and parent_id on loading the XSD file were different than the node_id and parent_id after reloading the same XSD file.
MXPA-21180	The value of the next record was getting displayed momentarily and intermittently in the field of the previous record while navigating through the records in a Table, when Record Prefix had Wait property (Invoke Operation) in GUI. It was observed that the delay was apparently caused due to calling several Online Phantom tasks from Record Prefix.

#	Description
MXPA-21182	The Parallel Batch programs did not execute when tried them using GigaSpaces middleware.
MXPA-21254	When SpecialFirstRangeOnEmptyField was set to 'Y', Range property was set for an Edit control, and the value in the Edit control was deleted, then the Edit control displayed a blank instead of the first value defined in the Range property.
MXPA-21280	In a particular scenario, an application crashed. The reason is identified and fixed now.
MXPA-21301	In RIA, on opening a project from uniPaaS 1.9 to Magic xpa 2.3 or a version latter, the Edit controls were getting displayed with Vertical Alignment as 'Center' instead of as 'Top'.
MXPA-21310	On migrating an application from uniPaaS to Magic xpa, the value of Edit control was getting trimmed by one pixel from the left-side when the Edit control's Style property was set to 3D-Sunken and the Horizontal Alignment property was set to Right.
MXPA-21313	If MLS was used, then the label controls displayed in a PDF did not change according to the MLS language selected.
MXPA-21319	When a Label control's Style was set to any style (other than 'No Border') and when it was placed in a Table control with Alternating BG Color defined, the Label control Border did not appear in the Table.
MXPA-21349	In Web Client tasks, when APG was performed on a Program with Form Size option set to 'As Content', the Form was not getting created large enough to accommodate all its contents without a Horizontal Scroll Bar.
MXPA-21373	In a particular scenario, an Internal Event used on a Button worked fine but a User Event, which in turn raised a Cancel event on a Button, did not work.
MXPA-21379	The value of the next record was getting displayed momentarily and intermittently in the field of previous record while navigating through the records in a Table.
MXPA-21465	After migrating RIA and Online projects from uniPaaS to Magic xpa, the Control Hit event handler which was not getting executed in uniPaaS was found to get executed in Magic xpa, when clicked on the Table's Scroll Bar.
MXPA-21491	In a particular scenario, an Android mobile application crashed. The reason is identified and fixed now.
MXPA-21494	While using the SQL statements UPDATE or INSERT on Japanese machines, the '\n' (Newline) characters were getting replaced with white-spaces.

#	Description
MXPA-21499	If HTTPCall(Post) was invoked for a specific URL, an error 'invalid_request' was issued.
MXPA-21578	On migrating an application from uniPaaS to XPA 4.6, it was observed that the query 'SELECT VERSION FROM V\$INSTANCE' was being sent to Oracle DB although the flag 'LimitLinkToSingleFetch' was set to 'No'.
MXPA-21616	Magic xpa Help is updated with the information about MySQL & SQLite databases being supported with MGXTK, MGXRT, and MGXSRV license types.
MXPA-21697	On deleting any record(s) barring the last record from the Table, the Button control or Checkbox control were found to be present on the last record's row, when the last record itself was absent.
MXPA-21710	If two Link Write operations were executed to write data in a Table, then the second Link Write operation failed to write the data if it was performed in a RIA Non-Interactive task.
MXPA-21743	When a Batch program was being executed on setting the special flag 'SpecialKeyboardBuffering' to 'E' in Magic.ini, the Runtime window being in focus did not close on pressing the Esc key upon switching to some other program window and returning back to it.
MXPA-21791	Files of size 0-bytes were found left in Linux TMPDIR after an xpa process was finished in case TMPDIR was set to a non-default location. Also, MgxpaTempClasses subdirectory was found left in TMPDIR.
MXPA-22467	In Magic xpa Studio, the controls like .Net, Edit, and Label were impossible to bring in front of the Subform control.
MXPA-22715	If either of 'DATA' or 'SESSION' strings were used as a parameter in GetParam() function, then the function returned Null.
MXPA-22751	While executing Online and RC programs when an Edit control's 'Show Zoom Button' property was set to 'True', the Edit control's zoom button placed on the Subform appeared narrower than the Edit control's zoom button placed on the parent form.
MXPA-22759	Magic xpa Help is updated with the information about the reasons why requester reset the connection to xpa server.
MXPA-22765	Magic xpa Help is updated with the information about the reason why scrollbar is visible even when there are less number of records than the view size.

#	Description
MXPA-22779	While executing Online and RC tasks when an Edit control's 'Show Zoom Button' property was set to 'True', the Edit control appeared without its zoom button on the Subform.
MXPA-22804	On iOS devices while executing a RIA program using HTTPS protocol, it was found to issue an error, 'This session was closed by the server (-197)'.
MXPA-22906	During runtime, the password that was defined as a Secret Name in the database was erroneously remaining readable and available in the memory via dumps of the Runtime engine.

# Magic xpa 4.6.3

We are delighted to present Magic xpa 4.6.3 with enhancements.

## Database Enhancement

The following general enhancement is added in Magic xpa.

### Oracle - Ability to Determine SQL type for DSQL String Binding

Since Magic xpa version 3.3a, the expressions used to bind Direct SQL parameters for Oracle are bound as NVARCHAR instead of VARCHAR2.

A DBMS flag named **DSQL\_STRING\_BIND\_VARCHAR** is introduced in order to allow you to use VARCHAR as the type for binding. This brings back the behavior before Magic xpa version 3.3a. Upon setting it to 'Y', binding of string values using expressions is done as VARCHAR2 instead of NVARCHAR. This is relevant for Direct SQL commands using '~' for Oracle binding.

## Fixed Issues

#	Description
MXPA-21360	In a Rich Internet Samples program, when a record of a Table having a multi-segment index on numeric fields was attempted to update, Magic xpa issued an error 'Operation failed. Record has been changed by another user or process'.
MXPA-21409	Calling a User-Defined Function defined in the Main program took more time as compared to previous xpa version i.e. xpa 3.x.
MXPA-21413	The text in an Edit control was aligned incorrectly when an expression was used in the Format property.
MXPA-21573	While trying to close a Phantom task, it reappeared at a different position when called from Record Prefix, Task Prefix, or from a Button Handler. This happened if Call Task was done using a Destination.

# Magic xpa 4.6.2

We are delighted to present Magic xpa 4.6.2 with new features and enhancements.

## General Enhancements

The following general enhancements are added in Magic xpa.

### Support of RC5 Methods in Cipher() DeCipher() Functions

Magic xpa now supports the use of **RC5 Encryption** method in Cipher() and DeCipher() functions.

### Removal of Component Logging

You can now customize the behavior of component logging while loading a Magic component (ECF) at the time of opening a host application. A special flag named **SpecialComponentLogging** is introduced in order to customize the behavior of component logging.

#### SpecialComponentLogging

The flag upon setting to 'N' prohibits the following two lines to be displayed in the engine log:

- Starts loading component
- Ends loading component

Valid values: Y, N

Default value: Y

### Removal of ANSI Blob NULL Check

You can now customize the display of the warning message about presence of a NULL in an ANSI Blob. A special flag named **SpecialAnsiBlobCheckNull** is introduced to customize the behavior.

#### SpecialAnsiBlobCheckNull

The flag upon setting to 'N', disables the functionality of showing the warning message that informs about presence of a Null character in an ANSI blob. When this special flag is set to 'Y', the Null Blob check is performed and as a consequence, the warning message, "Null in an ANSI blob, possible loss of data" is displayed; if a Null character was found.

Valid values: Y, N

Default value: Y

## Fixed Issues

In this update we addressed performance-related issues and carried out some internal optimization.



# Magic xpa 4.6.1

We are delighted to present Magic xpa 4.6.1 with new features and enhancements.

## General Enhancements

The following general enhancements are added in Magic xpa.

### New Function `UserRightGet()`

A function named `UserRightGet()` is introduced to retrieve the rights of the logged-in user.

### New INI Parameter: `MailFramework`

A new INI parameter named `MailFramework` is introduced, which specifies the underlying framework used for mail functions.

When set to 'J' (Java), the mail functionality will be based on Java and when set to 'L' (Legacy), it will be based on the legacy technology.

Valid Values: J, L

Default Value: L

The setting is not available via Settings > Environment interface.

Magic.ini and Command Line name: `MailFramework`

### Support for TLS and SSL for Mail Functions over Java Framework

TLS and SSL mail functionality is supported only over Java framework. To enable you to choose among SSL, TLS, or Plain, a new argument named 'protocol' is introduced in `MailConnect()` function, which is regarded when `MailFramework=J`. The argument `protocol` can accept either of the three values: 0 (Plain), 1 (TLS), and 2 (SSL).

**Note:** The existing applications will not be affected, as `protocol` is an optional argument. If the `protocol` argument is not mentioned in an existing call to `MailConnect()` function, then the value 0 (Plain) is regarded.

### Removal of Special Flag 'SpecialRIAEcryptAES'

The special flag `SpecialRIAEcryptAES` is removed from Magic xpa Help.

## UI Enhancements

The following user interface enhancements are added in Magic xpa.

## Enhanced Form Scaling Options

The Combo box on the Status Line provided for scaling the active form during Runtime now presents enhanced scaling options such as 110%, 120%, 130%, 140%, 150%, 175%, and 200%.

## Scaling of GUI Frames Forms

**Allow Scaling** property which was previously present in GUI Display forms is now also added for GUI Frames forms. Scaling of GUI Frames forms is now exactly same as the scaling of GUI Display forms.

## Database Enhancements

The following database enhancements are added in Magic xpa.

### 64-bit Gateway for AS/400

Magic xpa now provides 64-bit gateway for AS/400. The name of the dll file for AS/400 gateway is changed from mgeac32.dll to **mgeac.dll**.

#### 32-bit Gateway Users:

3. All Invoke UDP operations related to this DLL will have to be modified from mgeac32 to mgeac.
4. The MGDB16=mgeac32.dll entry in the Magic.ini file will have to be changed to mgeac.dll in case of upgrade installation.

### 64-bit Gateway for DB2/400

Magic xpa now provides 64-bit gateway for DB2/400.

## Web Client Enhancements

The following enhancements related to Web Client are added in Magic xpa.

### Control Verification in Web Client

Control Verification is now supported for Web Client tasks.

**Note:** Magic xpa executes all Control Verification handlers in the current task just before executing Record Suffix. Control Verification handlers are executed in the order of their definition in the task.

### New Property: Custom Validators

**Custom Validators** property is introduced to enable you to define a set of validators. If the condition in an expression against a validator is evaluated to 'True', then an error message is displayed.

## Mobile Enhancements

The following mobile enhancements are added in Magic xpa.



## iOS

**Support for iOS 13:** Rich Internet Applications can now be executed on iOS 13.

**Support for XCode 11:** Magic xpa 4.6.1 is compatible to work with Xcode 11.x.

## Backward Compatibility Enhancement

The following backward compatibility enhancement is added in Magic xpa.

### Flag for Space between Radio Button and its Label

To maintain the appearance of Radio button compatible with its appearance in version V9.4, the flag **SpecialRadioSpacingV9Compatibility** is introduced.

#### SpecialRadioSpacingV9Compatibility

The special flag **SpecialRadioSpacingV9Compatibility** when set to Y, creates an adequate space between Radio button and its Label.

Valid values: Y, N

Default value: N

Since version: 3.3g

## Fixed Issues

#	Description
MXPA-143	In Magic xpa help, an incorrect license token was displayed for Web Client.
MXPA-215	Magic xpa was found to crash with an error message, "The folder <folder name> (set by the environment variable JAVA_HOME) is missing mandatory sub folders: 'jre' and 'bin\\server'." , if the executing program had Java functions such as JCall() or JCreate().
MXPA-224	In xpa installation, the option 'WinRunner Support' was renamed to 'Support Test Automation Frameworks/Tools'.
MXPA-251	The help pages named 'Java Environment' and 'Java Integration with Unix Platforms' were found to be missing in the Help of latest xpa versions.
MXPA-18681	Not all the user-defined .NET events for user controls were visible in the event list with a specific DLL of the customer.
MXPA-19433	An unknown screen was displayed in the upper-left corner on minimizing or maximizing the called Modal window in case a program was called from a non-interactive task with Raise event's Wait property set to 'No'.
MXPA-19442	When some multiline text was sent via MailSend() function, the text lost its format.

#	Description
MXPA-19476	Mgerror.log displayed the error, 'There is a mismatch in return attribute of function', on executing a user-defined function having return type as Java variable which was the part of Data View.

# Magic xpa 4.6

We are delighted to present Magic xpa 4.6 with new features and enhancements.

## UI Enhancements

The following UI features and enhancements are added in Magic xpa 4.6.

### Form Scaling

You can scale the client area of an active form of the type SDI, MDI, and child window during runtime to different sizes such as 200%, 300%, 400%, and 500% by using a combo box provided on the Status bar. You can set the flag **SpecialFormScalingByDefault** to 'Y' to set the value of **Allow Scaling** property for all the GUI Display forms in the project by default.

#### SpecialFormScalingByDefault

If this flag is set to 'Y', then the default value of **Allow Scaling** property will be 'True' and the form will be scalable. This means if **Allow Scaling** property is not broken, its value will be 'True'. If the property is broken, the broken value will be used.

If this flag is set to 'N' (or is nonexistent in Magic.ini), then the default value of **Allow Scaling** property will be 'False' and the form will not be scalable. This means if **Allow Scaling** property is not broken, its value will be 'False'. If the property is broken, the broken value will be used.

Valid values: Y, N

Default value: N

**Note:** The use of Runtime Form Designer is not supported for the forms that allow scaling.

### Freezing Table Columns

Now you can set the desired number of columns in a Table control to remain frozen while scrolling the Table horizontally. The frozen columns are marked by a dark grey-colored divider by default. You can choose a color to demarcate the frozen columns from the rest. When you save a task containing tables with frozen columns and reopen it, the frozen columns that you saved last time are retained.

**Note:** There is no support to freeze table columns in RTL tables.

### Zoom Button for Edit Control

You can add a Zoom button [...] next to the Edit control, which on clicking raises Zoom event. You can also customize the Zoom button's look and feel.

## Autocomplete for Edit Control

You can autocomplete the text while typing, using a new property named **Autocomplete Mode** available for Edit control.

## Flag for 3D-Sunken Radio Button Colors

In order to provide backward compatibility with uniPaaS and retain the current behavior of 3D-Sunken Radio button's background and foreground colors in xpa, a special flag named **SpecialUseColorForRadio** is added.

### SpecialUseColorForRadio

If this flag is set to N, the background and foreground colors are disregarded.

Valid value: Y, N

Default value: Y

## Flag for Owner-Drawn Checkbox

In order to provide backward compatibility and mark the checkboxes as owner-drawn, a new property named **Owner Drawn** and a special flag named **SpecialCheckBoxOwnerDraw** are added.

### SpecialCheckBoxOwnerDraw

When this flag is set to Y, all the checkboxes with their Appearance property set to Box in all the applications will be owner drawn.

Valid values: Y, N

Default value: N

## Auto Drop-down for Combo Box Control

You can make the Combo Box in focus drop-down automatically and view its items immediately using a new property **Auto Drop-down**.

## Setting Color for Disabled Edit Control

You can set a color of your choice for the disabled Edit control.

## Controlling Border Property of 3D-Sunken Edit Controls

While migrating your uniPaaS applications to Magic xpa, you have an option for controlling the Border property setting for 3D-Sunken Edit Controls in the Migration wizard.

## Setting Table Control Title's Background Color

While migrating applications from uniPaaS to Magic xpa, you can set the Table control title's background color.

## Studio Enhancements

The following enhancements related to studio are added in Magic xpa 4.6.

### Copy-Paste Logic Lines across Tasks

You can copy and paste Logic, Data View, and Header lines across tasks located within the same program or outside it.

### Long Names for Tasks, Programs, and Forms

You can enter Task Name, Program name, and Form name as long as 100 characters.

## General Enhancements

The following general enhancements are added in Magic xpa 4.6.

### Unicode Arguments for Mail Functions

Mail functions of Magic xpa support Unicode arguments.

### Apache Tomcat Installation Upgraded

Apache Tomcat is upgraded from 7.0.62 to 9.0.20. The previously deployed Web Services should be copied to "%tomcat\_home%\webapps\axis2\WEB-INF\services\".

## Web Client Enhancements

The following enhancements related to Web Client are added in Magic xpa 4.6.

### Display of Spinner

You can display spinner on the page(s) of your Web Client application when the server processes lengthy requests. You can also customize the spinner.

### Accessing Form Controls from HTML

A new **Controls Accessor** component named `<component name>.mg.controls.g.ts` is introduced to enable you to access Form controls and their properties from the relevant HTML file. The Controls Accessor component implements easy validation for Form controls in html.

### Enhanced Web Application Generation Dialog Box

You can see the list of programs you select to generate a Web application along with the folder names in which they are created.

### New Concept Paper

The following concept paper is added in the help:



## Using Magic Components in Web Client Applications

You can find it under the link [Home > Concept Papers > Developing Web Client Applications](#).

## Database Enhancements

The following enhancements related to databases are added in Magic xpa 4.6.

### Native PostgreSQL Database Gateway

PostgreSQL database gateway is supported natively, which is compatible with PostgreSQL 11.5. You need to procure its license separately.

### Support for Physical Locking in MySQL Gateway

Magic xpa now supports physical locking in MySQL gateway. The physical locking works with MySQL server version 8.0. It can be enabled using the flag `SQL_PHYSICAL_LOCKING=Y`.

### Support Oracle 18 and 19

Magic xpa was tested and is compatible to work with Oracle 18 and 19.

### Scrolling to the Desired Record

It is now possible to jump directly to the desired record using Table scrollbar. For more details, please refer to Magic xpa help.

### WITH Clause

You can use 'WITH' clause in Direct SQL statements.

### Temporary SQLite Database Files

Now SQLite database also can be used as a Temporary database in the **Environment** setting 'Database for Sort/Temporary' under the Preferences tab.

A database information flag named `TEMP_DB` is introduced in order to define a Temporary SQLite database. For more details, please refer to Magic xpa help.

### New Keyword: 'DataTypeCompatibility'

A keyword named `DataTypeCompatibility` is introduced in DB Information, which upon setting to 'Y' in the database properties of MSSQL database makes the new MSOLEDB driver handle the data in the same way the legacy SQLOLEDB driver handles it.

## GigaSpaces Enhancements

The following enhancements related to GigaSpaces are added in Magic xpa 4.6.

## Determining Status Update Rate

### SpecialGSWorkerStatusUpdateRate

This special flag determines the number of seconds at which the worker updates its last modification time periodically.

For example, if  $N = 5$ , then the worker will update its Last modification time every 5 seconds.

Valid values:  $\geq 1$

Default value: 10

This special keyword can assist in distinguishing between non-responsive workers and genuinely busy workers engaged in executing long requests.

## Provision of Workers Dynamically

The NumberOfWorkers element in the ProjectsStartup.xml file is now enhanced. According to this enhancement, the Server will create additional Workers if the current Workers count is less than  $(\text{NumberOfWorkers} + \text{AdditionalOnDemand})$ , and a request waited longer than 'LoadOnDemandTimeout' seconds before processing it, even with available licenses.

## Workers Pane

It is now easy for you to distinguish non-responsive workers from the workers busy executing long duration programs while using GS middleware. A pane is provided to display the workers of the selected server.

## RIA Enhancements

The following enhancement related to RIA is added to Magic xpa 4.6.

### Client-side Cache Clearing

A function named **ClientClearCache()** is introduced, which on passing a logical argument 'True' clears the local cache of Rich Client tasks immediately.

## Mobile Enhancements

The following enhancements related to Mobile are added in Magic xpa 4.6.

### Android

#### 64-bit Compliance

Magic xpa Android client is now 64-bit compliant.

## Android and iOS

### Client-side Cache Clearing

A function named **ClientClearCache()** is introduced, which on passing a logical argument 'True' clears the local cache of Rich Client tasks immediately.

### Keeping the Device Awake

A property **Keep Awake** is provided for Rich Client Display forms to facilitate keeping the device awake. When the property is set to 'True' and when the current form is active, the device remains awake.

## Browser Client Deprecated

As of Magic xpa 4.6 Browser Client feature is declared as deprecated, it will be removed from the Magic xpa offering in a future release.

## Fixed Issues

#	Description
77124	A Window Hit event defined in a subtask with Propagate set to 'No' caused the child window to move to the background while clicking on the parent Form or the title.
149898	In a particular scenario, a RIA crashed while sorting with UserFunctionality Ctrl+T.
152600	CndRange() function was found to be executed when the 'False' value was passed as its argument.
153045	When a Model was applied to an SQLite Table name and clicked on 'Inherit All Properties', DB Column name was found to be removed.
155980	The mls_bld.exe file was not getting converted properly according to the source file.
156805	Magic xpa Documentation updated for RIA License count.
157065	If there was a space at the beginning of the task variables, 'DataViewToText() - Illegal task variables specified' message was displayed.
157296	Magic xpa Studio crashed when Default Database with XML Data Source in Database was used and clicked on Data View of a program.
157309	Two Online programs behaved differently when Cnd was set to 'No' for a batch.
157499	When a Label control was placed on the Table header, the higher Z-order was displayed in the back instead of in the front.
157561	In an Online program, the message 'Valid control input range is: ' was displayed when Range was not set.

#	Description
157659	When control verification had an Internal event 'Subform Refresh', the cursor was found to be parked on the second Edit control of the called program.
157969	In a specific scenario, Magic xpa Runtime engine crashes in the host application.
158486	DBErr() function returned only 255 characters when a custom error message was longer than 255 characters.
158639	Decimal Parsing snippet returned an incorrect value.
158646	On an iOS device with the language set to Japanese, Null character appeared at the end of the fields automatically.
158742	In a particular scenario, Magic xpa Studio crashed when a user-defined function from the Main program was called in a Batch program using Evaluate operation.
158798	The Push Button was found in disabled state erroneously when an event was raised using GetParam() function.
158938	When a non-interactive program was called from an interactive program, WinMinimize() function on executing second time onwards did not work.
159054	Radio Button was found to have incorrect Vertical Alignment on migrating from UniPaaS to Magic xpa.
159055	The column title was found cut after migration.
159285	On a particular version of iOS, when the Japanese language was set, the data was not extracted.
159505	When the incremental update was set to 'Y', the variable Init was recomputed at the last record.
159534	Magic xpa Studio crashed while activating F8 on an RC program if 'Else Block' was disabled in the program.
159714	A Push Button on a phantom task having zero records was seen as disabled when its Enabled condition was set to 'True'.
159789	The Internal event 'Mark Previous Char' was found working incorrectly at the end of the first character in an Edit box.
159810	When the encrypted text in Blob was tried to save using function Blb2File(), garbage data was displayed.

#	Description
159906	If Color property was set to GUI Display in Data View, and if a 3-D style was applied to a control on the form, a new color of the reference color was found to be created for it after migration.
160524	Data was not displayed on navigating among pages using Back and Forward buttons, a Route event was raised in parent program and it was invoked from one of the two sibling programs.
161179	An error "Uncaught Reference Error: global is not defined." was returned while executing Web Client programs due to the newly introduced Angular behavior.
161289	Space was getting selected in the text selection for a Virtual variable of picture size '<space>X10', when reparked on the Edit control using the Tab key.
161466	The function Rights() was found to return an incorrect value for 64-bit engine using Active Directory.
161704	On iOS device, CndRange() function was found to be executed in a particular scenario on Local DB tables although 'False' value was passed as its argument.

# Magic xpa 4.5a

We are delighted to present Magic xpa 4.5a update with new features and enhancements.

## Web Client New Features

The following new features are added in Magic xpa 4.5a.

### Support for Calling an Overlay Window Present in a Web Module Marked as Load on Demand

Now you can call an Overlay window present inside a Web module, when the Web module marked as 'Load on Demand' is loaded.

**Note:** If you have any projects generated in Magic xpa versions prior to 4.5a, you need to perform certain steps. Please refer the help topic [Home > Reference Guide > Navigation and Workspace > Repository Manipulations > Web Module Properties](#).

For new projects generated in 4.5a, those steps are not required as the generation process handles them.

## Web Client Enhancements

The following features are enhanced in Magic xpa 4.5a.

### Support for Angular 8

Magic xpa 4.5a update supports Angular 8 for Web Client. You are required to use node.js version 10.9 or greater.

To upgrade your Magic xpa Web Client applications from Angular 7 to Angular 8, please refer the help topic [Home > Mastering Magic xpa > Web Client Application Development > How Do I Upgrade Magic xpa Web Client Applications from Angular 7 to Angular 8?](#)

### Enhanced Table Row Editing

To enhance the functionality of row editing in a Table, in addition to the existing Angular function `isRowInRowEditing()`, a new Angular function `mg.isCurrentInRowEditing()` is introduced. The later enables you to edit a row in a table when the controls are part of the logical record but not inside the table.

You need to use this method only while using the controls outside the Table control and if the current row is in row editing status.

## Support for Customizing Error Message

Magic xpa 4.5a update enables you to write a custom error message using **mgError** tag.

## Support for Web Application Generation from Inside a Program

You can generate a Web Client application while being inside a program. The program in working is automatically saved before application generation.

## 64-bit Runtime Features

The following features are provided in Magic xpa 4.5a Runtime.

### Support of WMQSeries

WMQSeries is supported for 64-bit xpa Runtime Engine.

### XXLNumericSize Special Flag Set to 'Yes'

For Magic xpa 64-bit Runtime Engine, the default value of the special flag **XXLNumericSize** is set to 'Yes' internally. If you set this flag to 'No' in Magic.ini, Magic xpa overrides your setting. For 32-bit Runtime Engine, the behavior remains unchanged.

## General

The following concept paper is added in the help and in the documentation:

[Connecting Magic xpa with Git Repository.pdf](#).

## Fixed Issues

Defect	Description
157537	In a Web Client task, 'Index out of bounds' error occurred when the task had a Link Query, the number of records were less than a page, and the Create Line event was raised.
157839	While invoking an Overlay window, when the second record was attempted to create in a table, 'Duplicate index' error occurred.
158366	In SFDC project FactoryMaster(Access), the server requests in a Subtask triggered the server requests for parent task when the parent task had main source with Link Query/Locate and an Expression in Init of a Variable causing server-side operation.
158732	Studio crashed when 'vcgantt', a third-party control was dropped on a Form.

# Magic xpa 4.5

We are delighted to present Magic xpa 4.5 with the addition of some interesting features and enhancements, as well as removal of some features.

## Support for 64-bit Server Engine

Magic xpa version 4.5 comes with 64-bit server engine supported in background mode in order to take utmost benefit of a 64-bit operating system. The following points are concerned with 64-bit server engine support:

- In case of Studio product installation, the default selection for 64-bit engine support is according to the Operating System (OS). For 64-bit OS, both 32-bit and 64-bit xpa engines are installed. For 32-bit OS, only 32-bit xpa engine is installed.
- In case of Server product installation you can select either from 32-bit and 64-bit Server product installation.
- While adding 64-bit pointers to buffer you need to take care of adjusting positions of the next members in the buffer so that the application can be used with 32-bit and 64-bit xpa engines.

## Unsupported Gateways

All gateways except the below ones are supported:

- AS400/Db400 gateway
- Gigaspaces gateway
- Web Service gateway

## Unsupported Runtime Features

- MgComCreator
- DDE
- WMQ

## Discontinued Provision of Other Runtime Features

- Java installation that earlier came bundled with Magic products installation is now discontinued. You need to install Java separately.
  - **For Studio product installation:**
    - Always set 32-bit Java in all configuration files (even Web Requester of GS is 32-bit).
    - In Magic.ini, set both JAVA\_HOME\_32 and JAVA\_HOME\_64 (if installed).



- **For Server product installation:**
  - 64-bit: Always set 64-bit Java in all configuration files.
  - 32-bit: Always set 32-bit Java in all configuration files.
- **For Desktop Client product installation:**
  - Always set 32-bit Java in all relevant configuration files.
  - In Magic.ini, set only JAVA\_HOME\_32 (if installed).

Once you install Java, you can use Magic's utility **MagicJavaConfig** to set a new/update the existing JAVA\_HOME path in various configuration files of xpa.

- Hardware Based Licensing (HASP) will be supported only in 32-bit products and components installation.

## Web Client New Features

The following new features are added in Magic xpa 4.5.

### New Events

The following new internal events are introduced:

#### Subform Close

The **Subform Close** event explicitly closes the running task in the specified Subform control and returns the Subform to 'None' state.

#### No Program Execution Right

The **No Program Execution Right** event is raised when the user trying to execute the program did not have the program execution right.

### New Function `mg.SimulateClick()`

A new function `mg.SimulateClick()` is introduced for enabling you to raise Magic events from Angular.

### New Authentication Functions

Magic xpa 4.5 provides the following new functions to enable you to work in anonymous and authenticated sessions.

5. **IsLoggedIn()**: Checks if a user is logged in or not.
6. **Logout()**: Logs-out a user from the on-going session.

## Sophisticated Web Application Generation

Magic xpa update brings you a sophisticated Web generation output dialog with the provision to display the generation progress. The dialog shows the progress of generation in the step-by-step

manner in the order of the tasks completion. The generation output dialog box stays on the screen until you close it. You can press the image buttons next to each step of generation to view the filtered log for the desired task.

## Support for Sophisticated Functions under Web Menu

### Integration with Microsoft® Visual Code

You can now open the generated project in Visual Studio Code by selecting the option **Open in Visual Studio Code** under Web menu.

### Support to View Recent Generation Log

You can view the log of Web application generation recorded in the file nodejs.log file by selecting the option **Show Recent Log** under Web menu.

## One-click Minimization of Modals

Now you can minimize and restore multiple modal windows in a single click. Magic xpa update introduces a new flag named **SpecialAllowMinimizeAllModals** to provide minimization of modal windows.

### SpecialAllowMinimizeAllModals

When you set this flag to 'Y' and when you have multiple modal windows open, then clicking on the minimize button of the modal window in focus minimizes all the windows in the runtime tree.

Valid values: Y, N

Default value: N

## Support for Ability to Modify the Code during Runtime

Now you can make changes to the Web Client project files while the runtime engine is executing in the background. All you need to do is set the value of the option 'Run project as' to 'Web Client' and set the 'Edit Project mode' on.

## Support for Ability to Change the Program during Runtime

Now you can select another startup program and execute it without the need to stop and start the runtime engine while one program is already executing.

## Web Modules for Better Folder Management

Instead of the **ngModule** that includes all the Magic components, you can now create independent Web Modules per folder for your Web Client applications, which can be generated and loaded on demand.

## Utility to Check Availability of Required npm and node.js Packages

Magic xpa now provides a way to verify the Web environment on your computer. It determines if the **npm** and **node.js** Angular packages are installed and if they match the required versions.

## Provision of New Property: ConfirmUpdateForWebClient

In order to override the default value of Confirm Update for Web Client tasks, a new property named **ConfirmUpdateForWebClient** is introduced. It is added to Magic.ini to control the default value for Confirm Update on Web Client tasks.

## Provision of New Directives

### mgFormat

Magic xpa 4.5 provides you a free hand to be able to implement masking of mobile number formatting, currency, etc., your way. Magic provides you a directive named **mgFormat** that replaces the **Pattern** attribute and the two earlier directives **AlphaMagicDirective** and **BooleanMagicDirective**.

### NonMagicControl

You can assign a new directive **NonMagicControl** to a focusable non-Magic html element to intimate the Magic engine about a new html element in focus. If the previous control-in-focus was a Magic control, then this directive updates the variable attached to that Magic control.

## Support for Customization of Alert and Confirmation Messages

Magic xpa 4.5 allows you to use your own component to customize the alert and confirmation messages to the desired ones in your Web application in place of the default JavaScript alert and confirmation messages. All you need to do is to employ the service **ConfirmationComponentsMagicProvider** to customize the UI messages.

## Web Client Enhancements

The following enhancements are done in Magic xpa 4.5.

### Support of Web Client for Single User Edition

The Single User Edition supports Web Client tasks. You can use the standard studio during development as in case of the other tasks. You need to set **LicenseName=MGWEB** during deployment in order to load the correct default license.

### Enhanced Table Display

The tables with empty records will not show default values in columns now when 'Allow Empty DataView' property is set to 'Yes' in Web Client tasks.

## Enhanced HTML Generation

With Magic xpa update, you can generate HTML code for the selected individual control, for the selected control with its child controls, and for the entire Web Client form.

You can also avail the generated HTML code for future use. You can press the Copy button and the generated HTML code is copied to Windows clipboard without having you to mark the code before copying.

## No Generation or Overriding of CSS Files per Component

Magic xpa does not generate separate CSS files for each component. If you already have a project in Magic xpa 4.1/4.0 and you upgrade to Magic xpa 4.5, you need to update the file **Magic-style.css** with the following styles:

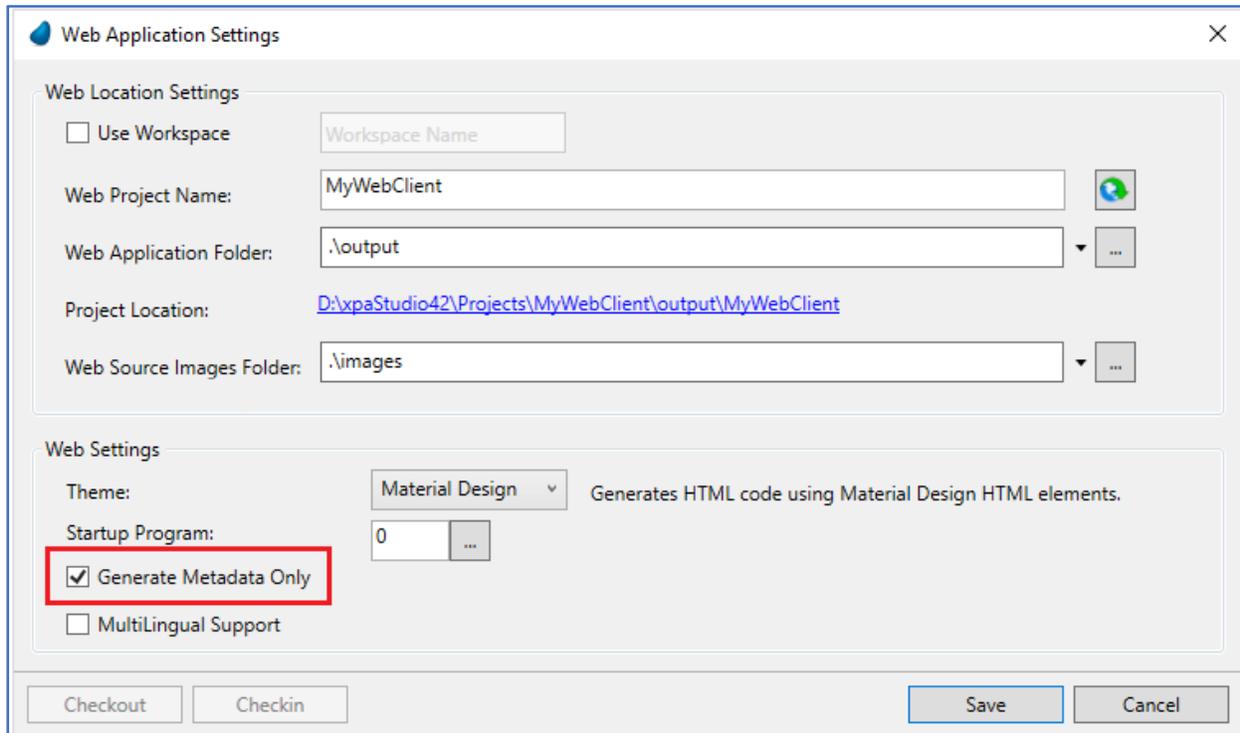
```
.button_image_background_size{
  background-size: 100% 100%;
}
.lable_overflow{
  overflow: hidden;
}
.table_scrollBar{
  height: 600px;
  overflow-y: scroll;
}
.container_border{
  border: lightskyblue solid 1px;
}
.selected {
  background: #F5F5F5;
}
.table_row:hover {
  background-color: #EEEEEE;
}
```

Now onwards, when a program or a form will be generated, the css file will not be created inside the component. The common css file will be referred.

## Support to Generate Metadata

### Support to Maintain Identical Metadata between Magic and Angular Projects

The Magic xpa update now copies the generated metadata files from the Magic project's `\input` folder to the Angular folder `\magic-metadata`.



Thus, you can maintain the same versions of the metadata files between xpa and Angular projects.

### Support to Maintain the Most Recent Metadata

When you generate the same Web application second time onward, Magic xpa 4.5 clears the previously created `\input` folder.

## The Overlay Windows

An overlay window in Magic xpa 4.5 behaves identical to a Modal window. Means, all operations after the Call operation are executed only after the Called window is closed.

You can now control the properties of overlay windows from Angular/HTML/CSS. For more information, please see the concept paper Developing Web Client Applications.

## Support for Same Workspace for Multiple Projects

Magic xpa update now provides you the ability to have multiple applications or sites under one Angular (CLI) workspace. Additionally, you can create shared set of components, directives, and services for your applications within the same Angular workspace.

## New Concept Papers

The following concept papers are added in the help and in the `\Support` folder:

- Developing Web Client Applications
  - Row Editing in Web Client
  - Routing in Web Client
  - Customizing Overlay Windows
  - Navigating Browser History
  - Customizing Alert and Confirmation Messages
  - Concepts of Login and Logout
  - Understanding Web Modules
- Deploying Web Client Applications

## Removal of Mouse Events for Web Client

The support for two events 'Mouse Over' and 'Mouse Out' is removed for Web Client tasks.

## Non-Web Client New Features

The following non-web client features are added in 4.5.

### Provision to Disconnect from SQLite Database

You can disable all the existing database connections to the SQLite database once the special flag **SpecialPostRequestDBDisconnect** is set to Y.

#### SpecialPostRequestDBDisconnect

The runtime engine disconnects all the existing connections to the connected SQLite databases when all of the following conditions are true:

- This flag is set to Y.
- The runtime engine was executed via the xpa studio.
- The runtime engine is activated as an enterprise server (connected to a middleware).
- The runtime engine finished executing the request (the engine has just moved from available status) and is now returning control to the studio. This status can be seen when the engine is connected to a middleware.
- The connection is to a SQLite database.

Valid values: Y, N

Default value: N

## Non-Web Client Enhancements

The following non-web client features are enhanced in 4.5.

### Improve Git support

To overcome the limitations of PushOK Git and to enable you to work with Local and remote Git repositories, xpa integrated with TortoiseGit and work with repositories directly from the xpa studio interface.

With TortoiseGit, xpa makes it possible for you to:

- Add project files to the repository, commit your changes, pull the changes from and push them to repositories, compare, and merge for individual project repository items; without leaving the studio.
- Cherry-pick instead of merging to have exact control over which commits are ported back to the master branch.

### Session Hijacking Prevention for Web Client

The flag **SpecialRIAGenerateAndValidateSessionID** is renamed as **SpecialClientGenerateAndValidateSessionID** in Magic xpa 4.5. The latter is now effective for Web



Client as well. In the previous versions (starting from Magic xpa 3.2d up until 3.3c), the flag retains its old name: `SpecialRIAGenerateAndValidateSessionID`. The flag `SpecialClientGenerateAndValidateSessionID` is not supported for Broker.

## Android: Migration to Android Jetpacks

Magic app now uses AndroidX for management of Android Support Library using Jetpacks.

## iOS: Support of iOS 10

Magic xpa Rich Client Applications now support minimum iOS 10.

## Non-Web Client Removed Features

The following non-web client features is removed from Magic xpa 4.5.

### Support for Windows 10 Mobile

Support for Windows 10 Mobile is discontinued in Magic xpa 4.5.

### Support for FlexLM Licensing

Support for FlexLM License Server is discontinued from the installation of Magic 4.5 for all product types.

# Magic xpa 4.1

## New Features and Enhancements

We are delighted to present the Magic xpa 4.1 update with new features and enhancements.

### New Features

The following new features are added in Magic xpa 4.1.

#### Magic xpa Needs Angular 7

Magic xpa 4.1 update now works with Angular 7.

#### Support for Row Editing in Table Control

Magic xpa now supports editing a row in Table control. The following new features are added to be able to achieve the row editing functionality.

- A new internal event named 'Enter Row Editing'
- A new Magic function named 'IsRowEditing()'

#### Support for Updating Magic Data View from Outside

Magic xpa now adds the ability to update the variables defined in Data View from Angular code. Consider it to implement uploading files to the server.

#### New Function DataViewToJSON()

Magic xpa introduces a new function `DataViewToJSON()` to return the data from program Data View to JSON format to be able to read it from Angular code.

#### Support for Date Field Using Form Control

Magic xpa now supports editing Date field using Input Type = Date. This is applicable for Native theme. The Date value accessor is added to support editing Date field, which is inspired by angular-date-value-accessor: <https://www.npmjs.com/package/angular-date-value-accessor>.

### Enhancements

The following enhancements are added in Magic xpa 4.1.

#### Easy Row Selection

You can select a row by clicking anywhere on the desired row. If you click on the disabled controls placed on the desired row, the control does not select the desired row.

## Provision for Better Clarity in Console Messages

In order to bring more clarity with the source of errors in console, Magic xpa now marks the errors to indicate that they are distinctively from Magic.

## Record Flush Event - Control Re-fetching from DB

An optional parameter named 'Refetch Record' is now added to the Internal Event 'Record Flush' to control whether the event will re-fetch the record from the database.

## Fixed Issue

Defect	Description
154736	In a particular case, not all records are displayed while calling a program using Route.

# Magic xpa 4.0

## The Magic Web Application Framework

We are delighted to introduce our most awaited offering of Magic xpa, the Magic Web Application Framework, to provide rapid business application development with modern UI development capabilities using Angular, HTML5, and CSS.

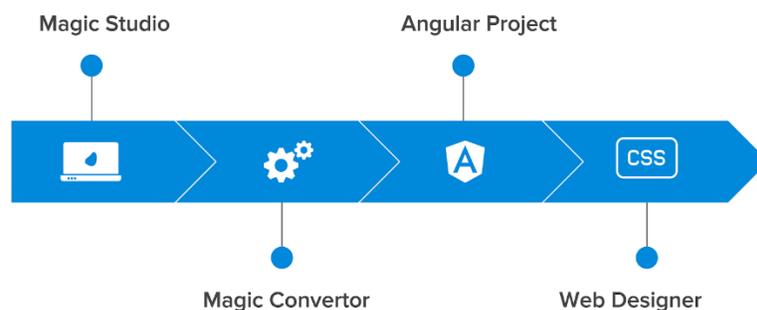
### Apps Powered by Angular

You can now easily create modern business apps powered by Angular to provide a rich user experience and meet the increasingly complex enterprise business expectations for digital transformation.

You can now take your Magic xpa business logic for the back and the front end, and easily generate Angular code from it. The new Angular-based application can then work seamlessly with any Web presentation framework. The new Web application framework is beneficial in the following ways:

- You are free to tap into the world of Angular.
- Your apps are client-free since the deployed application is pure JS, HTML5, and CSS3.
- You can outsource the screens design.

The Web Client application generation can be viewed in the following illustration:



7. In the **Magic Studio**, you define your business logic.
8. In the Magic studio, with just a click of a button, you generate your Angular code using the **Magic Converter**, which is customizable by advanced users.
9. In **Angular**, your code is now ready-to-use, but you can also add additional Angular code that is pure client-side logic using some Magic tags.
10. Outside the Magic, you or a designer can update your screens using **HTML and CSS**.

In this way, you can develop highly-responsive Web applications in no time. You can use the structured, low-code Magic xpa development platform for creating the business logic together with an open platform for the presenting your screens including the UI and the UX.

## Why Do You Need Magic's Web Application Framework?

Here is why you need Magic's Web Application:

### Magic and Angular Fit Well Together

Applications created with Magic's Web application framework will be pure Angular applications, meaning they will be deployed and managed exactly like any Angular application.

### State-of-the-art Technology

Magic's Web application framework uses state-of-the-art client-side technologies including JavaScript, Angular, CSS3, HTML5, and TypeScript. You can create full-fledged business heavy-duty, transaction intensive web-based applications including data entry, enabling you to integrate your applications with Web Technology.

### Magic xpa's Client-side Architecture

All of the UI-related work, including the UI logic, is done by the browser (the client), which enables you to create fast and dynamic Web applications. In this architecture, the server only sends raw data to the client and the client generates the screen.

### Manageable Large Scale Angular Applications

Over the years, the number of lines of code needed to develop functionality-intensive Web applications has been growing at a very rapid pace. As applications are evolving, the market keeps coming up with better ways to handle the ever-increasing lines of code.

### Advanced Customization of Your UIs

The beauty of the decoupling of the UI and logic, which Magic's Web application framework makes possible, is the flexibility to split the effort and time invested, between the business logic and the UI/UX.

### Less Code; More Versatility

The Magic engine's robust business logic paradigm can save a lot of code in Angular. It helps to set-up most of the behind-the-scenes logic for presenting the UI dynamically.

Magic offers a wide range of control and form properties, which are very simple to use and can save a lot of lines of coding in Angular. For example, validation, recompute, conditions, visible, enabled, tooltips, and more.

Expressions on any of the properties are very easy to use in Magic, which otherwise would take dozens of lines of codes to develop in Angular, to achieve dynamic behavior in apps.



The appearance properties, such as Font, were removed and the basic appearance is done in HTML/CSS/Angular. The remaining properties are for either binding or behavior and these are set in Magic with no need to code these functionalities in Angular. So, by adding a tag to Angular for one of these binding or behavior functionalities, you are basically linking Magic to Angular.

## Fully Compliant with Single-Page Applications (SPAs)

Magic's Web application framework is fully compliant with single-page applications (SPA), which provide a smoother and richer user experience.

## Cloud Enabler: The Sky's the Limit

Since the Web client is Web-enabled, running in the browser, the Web client is cloud enabled. This means that your apps can be deployed on any cloud.

## Cross Browser Support and Portability

Your Web applications will be platform-agnostic. They will run on any browser and on any device with zero footprint. You do not need to install anything.

## Ease of Maintenance in the Future

You can change your application logic from Magic and it will be reflected automatically in your Angular-based apps. Thus, there are less efforts to make changes in your application in future.

## Full Git Support

Magic xpa is equipped to empower team development with its full Git support (including branching and merging).

# About Magic Software Enterprises

Magic Software Enterprises (NASDAQ: MGIC) empowers customers and partners around the globe with smarter technology that provides a multi-channel user experience of enterprise logic and data. We draw on 30 years of experience, millions of installations worldwide, and strategic alliances with global IT leaders, including IBM, Microsoft, Oracle, Salesforce.com, and SAP, to enable our customers to seamlessly adopt new technologies and maximize business opportunities.

For more information, visit <http://www.magicsoftware.com>.



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