# Ginger

by amdocs

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# **5.1** Release Notes

Oct 6, 2022

## What's New?

- **Friendly Locators**- More robust Web Automation flows with additional object locator capabilities of adjacent elements (Left of, right of, Above, Below or Near)

- **Error Handler Enhancement –** Dynamic error handling with more post execution operations to Stop Run or To Continue from Next Action, or Activity or Business flow

- **Solution Save Enhancements** Simplified user experience with easy & always accessible Save current Item and Save All buttons on the top bar

- **Email Operation Enhancement** Extended security configuration with SSL/TLS certificate support for email operation

## What's Changed?

- Save buttons from specific tabs are removed and common save and save all buttons added at the top ribbon of Ginger
- Visual Testing Action Parallel Execution issues are fixed
- Plugin Actions enhanced to capture Output value also on failure

## What's Fixed?

- Over 40 Bugs were fixed

# **4.5** Release Notes

## What's New?

- **List Variable Enhancement**- Extend the use of selection list type of variable for better input-output values, Index based access and dynamic data handling at runtime

- **Sealight Recommendations-** Get Test Recommendation from Sealight for Ginger Runset execution to optimize the efforts and reduce testing cycle time

- **Ginger execution enhancement** to allow concatenation to use same agent session across multiple runners

- **Linked Activities Enhancement** for enhanced user experience and usability while working with Shared Repository

## What's Changed?

- Source control conflict resolution enhancement to allow accept server changes or keep local changes
- Sealight integration enhanced to report the entities by id to Sealight

## What's Fixed?

- Over 75 Bugs were fixed

# **4.4** Release Notes

## What's New?

- **Visual Testing** Automated Visual testing validations for better coverage and identifying UI/UX issues Learn more

- **Web platform enhancements**
    - Enhancement to capture full page screenshot for web applications
    - Edge driver enhancement support IE Mode
    - New operations to allow reading network logs for Chrome
    - Page object model enhancement to capture screenshot of specific element
    - UI element action enhancement to show the screenshot of selected POM element

- **Mobile Driver Enhancements**
    - Device Window updated to show device details and metrics
    - New operation types added for capturing and validating Device details and metrics part of the Automation

- **Upload Solution to source control-** Ability to upload new or existing solution to source control  Learn more

- **Account Report Enhancements-**
    - Account report service enhanced to delete old screenshots after configured number of days
    - New API added to fetch the last screenshot from the execution

## What's Changed?

- **Ginger source code migrated to Dot Net 6 for faster performance and better security. Install .Net 6 Aspnet runtime from here and .Net 6 Windows runtime from here.**
- Source control conflict resolution enhanced to view conflicts on single page
- Sealight integration enhanced to report the skipped entities to Sealight
- Variable List type is deprecated and removed from the new variable page. List variables created on older version will be supported for backward compatibility.
- Selenium and Appium version upgraded to version 4.1 and 5 respectively

## What's Fixed?

- Over 75 Bugs were fixed

# **4.3** Release Notes

## What's New?

- **Azure Cosmos DB Support**- Extend Database input and validation with Azure Cosmos DB as part of end-to-end flow Learn more

- **OCR Support to read Text -** Ability to read data from Images or PDF using OCR Learn more

- **Shared Repository Activity as link**– Increase automation reusability and reduce maintenance time by publishing activities as links

- **Jenkins Plugin Enhancements**
    - o Support dynamic branch selection for git repository on Jenkins Job
    - o Support Advanced CLI capabilities using Dynamic execution build step in Jenkins

- **Integration with Sealights** publish Automation execution data to Sealights, for Faster, High-Quality, and controlled releases Learn more

- **View Raw Request/Response-** Web service action enhancement to view raw request and response details Learn more

## What's Changed?

- Sikuli Action is Renamed to **Image Based Operation** and old Image Search and Click Action is moved to Legacy
- Enterprise features such as ALM, Account Report, Sealights integration etc. won't be shown anymore unless user set to view them in User Settings using the new **Enterprise feature flag** or if loaded Solution already using one of the Enterprise features
- Selenium and Appium version upgraded to version 4.1 and 5 respectively

## What's Fixed?

- Over 80 Bugs were fixed

# **4.2** Release Notes

## What's New?

- **Remote Execution on cloud**– Execute & monitor Automation on remote from Ginger desktop Learn more

- **Cloud enablement for Azure**- Dynamically provision the execution agents using Azure VM

- **Integration with Microfocus UFT Mobile  -** Accelerate device testing by seamlessly connecting cloud devices from UTF Mobile Lab

- **Ginger Zephyr Entities mapping-** Ability to map the existing Ginger flow entities with Zephyr entities to enable parallel Test case and Automation design Learn more

- **Imaged based locator** - Locate element based on image using Sikuli to enable automating Infragistics/Active-X objects like Siebel HI Learn more

## What's Changed?

- **Visual testing using Applitools**  Learn more
  - Enhancement to configure custom Applitools URL and Key on the Agent configuration
  - Capture screenshot of entire web page
  - Ability to send Attributes like Browser, Viewport, OS information to Applitools
- **API Model Learning enhancements** - Swagger learning mechanism enhanced to learn Request headers, model parameter sample values and Output parameters

## What's Fixed?
- Over 80 Bugs were fixed

## Learn More

- [View Release New Features Review Video](#)

# **4.1** Release Notes

## What's New?

- **Self-Healing (Phase 2)-** Increased Automation flows stability and efficiency by dynamic flow correction & recovery in real time Learn more
- **Global Cross Solution –** Allow to reuse Automation nuggets across multiple Ginger solutions Learn more
- **Consolidated Execution report-** Consolidated view for automation execution for better traceability

## What's Changed?

- **Ginger Runtime Enhancements**
  - ALM Octane integration is enhanced to Publish execution results from Linux Learn more
  - Run set operations are enhanced to support execution on Linux Learn more
- **Automate tab Add actions section UI changes-** Action library, Shared repository UI is enhanced with intuitive list view
- **Visual testing enhancements** Integration with Applitools is enhanced to support full page screenshot and setting more attributes like OS, Browser, viewport etc.
- **Mandatory Variable flag-** Variable's functionality is enhanced to mark the mandatory input variables
- **Angular report Enhancements**
  - Execution time format is enhanced for better readability
  - Performance enhancement for Angular report

## What's Fixed?

- Over 60 Bugs were fixed

## Learn More

- View Release New Features Review Video

## 3.9
**Ginger Release**
Aug 26, 2021

### What's New?

- **Ginger Runtime** Execution engine for Automation execution on Linux

- **Self-Healing Phase 1** Self-healing capabilities to identify the automation brokage and self-correction in real time

- **Cloud execution on container** Execution MS integration with execution Agent running on cloud (Azure) containers

- **Auto Pilot for Mobile and Windows** Page Objects Model is now supporting learning and automating Android, IOS mobile applications and Windows applications

- **Auto Pilot Learning Enhancements for Web & Mobile**
  - Learning mechanism is enhanced to learn more dynamic and smarter relative XPath based on text, adjacent label, and other attributes
  - Ability to define the custom relative XPath templates to allow dynamically generated XPath based on element attributes

- **Online Ginger Help Library** New intuitive website for Ginger help documents and user guides

### What's Changed?

- **Security enhancements for Encryption key** Each solution now needs to have its own encryption key. This key which will be used to encrypt all password variables/values of the solution.

- **CLI Wizard** changes to fetch the Ginger executor path from System variables

- **Window Explorer with POM Integration** enhanced to support auto update and auto save the POM elements from explorer

### What's Fixed?

- Over 55 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

# 3.8
## Ginger Release
May 31, 2021

## What's New?

- **Mobile platform Enhancement -** mobile platform automation enhanced to support Appium integration in generic way for local devices and cloud (Kobiton lab) devices. It also reflects the mobile device in advance view and advanced tested capabilities for building automation flow.

- **Window Explorer Enhancement "**Explorer" capability enhanced to support new exploring methods like selecting element from screen shot and page source (XML). New integration for the latest Action types and POM for faster and easier flow creation

- **Windows Driver Enhancement -** UI element action and its operations are now supported for Windows Driver

## What's Changed?

- **Enhanced CLI Arguments** Added more possible arguments covering source control configurations to be used when running Ginger via command line.

- **Auto Pilot**
  - **Update Element enhancement** Allow user to manually map the deleted elements with newly added elements

  - **POM Execution enhancement** Automatically reprioritize the broken element locators at runtime

- **Unix Agent** new configuration parameter added to support **Keyboard Interactive Authentication**

- **Runset output variable configurations** enhanced to distinguish the variables with same name from previous business flow

## What's Fixed?

- Over 65 Bugs were fixed
- More Bug Tickets details can be in found <u>Ginger Support Site</u>

# 3.7
## Ginger Release
Mar 31, 2021

## What's New?

- **Ginger Docker Image** to support docker container-based execution on windows platform

- **Cloud MS for Ginger Execution** to trigger and distribute execution of run sets to multiple agents/nodes and query the status, output values, logs using the Microservices etc.

- **Zephyr Enterprise ALM Integrations -** ALM integration capabilities like import tests from ALM to Ginger, export Ginger flows to ALM and exporting execution results to ALM are now supported for Zephyr Enterprise

- **Bamboo Plugin-** Dedicated plugin for Ginger bamboo to allow users to configure or schedule Ginger executions including advanced CLI capabilities

- **Splunk Integration-** New Runset operation which will allow to send Ginger Runset execution data to any external sources such as Splunk. The data to be sent is configurable using the report template

## What's Changed?

- **Data source Enhancements**
  - Export to excel enhanced to support configuring specific columns to export based on specific condition
  - Action Output values Output to Data source configuration enhanced to mark all the output columns as active

- **ALM Octane SSO Support-** Ginger Integration with ALM Octane now supports Single sign on (SSO)

- **Git source control enhanced** to support downloading specific branch

- **CLI Enhancement-**
  - CLI json configuration enhanced to pass the ALM credentials
  - CLI json configuration enhanced to select specific git branch

- **Oracle Dll** is now included in the installer to avoid copying it manually

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## What's Fixed?

- Over 25 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

# 3.6
## Ginger Release
Oct 31, 2020

**NEW**

## What's New?

- **Auto Pilot (Phase 7):**
  - **POM Support for Java Widgets–** Page Objects Model is now supporting learning and automating Java Widgets screens (embedded HTML)
  - **Learning specific Frame-** Learning specific frame for Java application window is now supported
  - **Legacy actions Conversion** -Java Widgets Legacy Actions Conversion to selected POM elements
- **ALM Integrations -** ALM integration capabilities like import tests from ALM to Ginger, export Ginger flows to ALM and exporting execution results to ALM are now supported for below ALMs
  - Jira Zephyr Add on
  - Octane
  - qTest
- **Run set enhancements:**
  - Enhanced Output Variables mapping between Runner Business Flows + add option to pass data also between Runners (which running in sequential order)
  - Enhanced CLI JSON to support Output Variables passing, HTML Report addition and wider Run set configurations control
  - Added configuration to set if Runners will proceed on failure or not
  - Virtual Agents support to eliminate the need of duplicating Agents for parallel execution needs
- **Ruby Plugin:**
  - Allows to Orchestrate Ruby scripts from Ginger flow
  - Supports parsing return values from Ruby scripts to be used for later steps in Ginger flow or/and for validation
- **Other Functionalities Enhancements**
  - VE reorganization and "Flow Details" section of data added allowing to get details like: Solution Name, current Business Flow name, last failed Action Error details and much more to be used for reporting or conditions during run time
  - "Log Action" was added to allow users to write free text to Ginger log
  - Added New Variable Type Number and Date time
  - Added items ID view on UI

## What's Changed?

- **Mobile Labs Integration**- Appium Agent configurations changes/fixes to allow integration with mobile labs devices
- **Jira enhancement**
  - Support screenshot attachment to Automatic defect created from Ginger
  - Avoid Duplicate defect creation during Automatic defect creation via Ginger
- **Performance Enhancements-** Improve performance by reducing memory consumption and increased speed of common UI operation such as Automate and Run set pages loading

# What's Fixed?

- Over 85 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

## 3.5
### Ginger Release
Mar 19, 2020

## What's New?

- **Dynamic Runset execution using JSON format:**
  - User can define **virtual Run Set** and select which Business Flows to be executed and with what input values in JSON based configuration and Ginger will create the Run Set automatically on runtime and execute it
  - User can define **existing Run set** with customization of input values, Applications Agents mapping, Runner level Environments, Business Flows activation and more in JSON based configuration and Ginger will load the existing Run set, will modify (without save) and execute it.
- **Actions conversion to ease migration to Auto Pilot**
  - **SOAP & Rest Webservice Actions conversion to API Model** – Automatic conversion and mapping of SOAP and Rest webservice actions to API Models
  - **Java Legacy actions conversion to Page Object Model Actions** – Automatic conversion and mapping of Java legacy actions to Page object models

- **Shared Repository Activities Groups functionalities enhancements**
  - Support adding activities or modifying activity sequence on Activities Group from Shared repository
  - Modify Activities Groups and publish the changes from Shared repository to selected instance of this group
- **Other Functionalities Enhancements:**
  - Business flow pass rate field added in email report body
  - Option to customize execution or pass rate calculation level (i.e. Activity or Action) from report template
  - Auto Pilot Model edit from Automate tab Model API Action to speed up development
  - New "TDM" Terminology type added to support terminology for the eTDM application
  - "Publish" flag added for all solution items like Business flow, Runset, to allow filtering only relevant items from other applications like eTDM, Ginger Business Operations Portal etc.
  - User can now control the logging level from CLI configuration using the "VerboseLevel" attribute

## What's Changed?

- Actions loading mechanism improved to do lazy load to improve the Business flow load time and overall solution load time
- Variables marked with "Output" and "Publish" flags are printed in console when executing via CLI

- Debug logs are now filtered out by default to make logs more readable when running from CLI or Jenkins
- Chrome browser Selenium driver was updated to latest (required version 80+)

## What's Fixed?

- Over 80 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

## 3.4
### Ginger Release
October 16, 2019

## What's New?

- **Auto Pilot (Phase 6):**
  - o **POM Support for Java Applications –** Page Objects Model automatic learn of UI pages controls is now supporting learning and automating Java based applications like CRM/OMS
  - o **API Models Comparison** – It is now possible to compare new learned API's into existing API models for finding which API's were modified/added and take action like replacing existing or merging the two versions
- **Legacy Actions Conversion Enhancements:**
  - o Java Widgets legacy actions automatic conversion was added
  - o Multi Business Flows conversion is now possible allowing to convert hundreds/thousands of Legacy Actions in few clicks
  - o Legacy converted Actions cleanup added to allow deleting automatically all converted Actions once user confirmed the new Actions works as expected
- **Selenium Web Plugin:**
  - o New plugin which allows to automate Web application on any OS windows/Linux/Mac
  - o Allows to automate Web flows while Ginger and automated browser can be placed on different machines
    - o Capable to execute existing flows (in case those are not using legacy actions)
- **User Experience Improvements:**
  - o Common clipboard operations like Copy/Cut/Paste/Delete can now be done via keyboard on top of List/Grid views
  - o Multi items (like shared repository items) drag & drop support was added
  - o Action + Variable edit pages layout were enhanced for better use of available space, cleaner look and higher intuitively
  - o Automate page user configurations (run Analyzer, Auto report) are been saved on user profile so user not need to re-configure it on next load of Ginger

## What's Changed?

- Command line execution via arguments was modified- including new arguments with better execution/help/info control. Note- previous arguments are not supported from this version and

Source Control functionalities (like download Solution/ Get Latest) are not yet supported, support will be added in future releases

- Ginger plugin for Jenkins was updated to include control on showing UI and running Analyzer as part of the Run set execution
- Chrome browser Selenium driver was updated to latest

## What's Fixed?

- Over 140 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

## 3.3
## Ginger Release
August 07, 2019

## What's New?

- **New Automate Page:**
  - **Intuitive User Interface -** Business Flow Automate page was simplified, showing clear hierarchy relation of Business Flow child items, that together with cleaner view resulting in much more intuitive UI
  - **Faster Automation Creation**- All automation Actions creation options were grouped into single location allowing to build quick flows using drag & drop approach
  - **Integration with Auto Pilot-** API Models & POM models now can be converted into working automation flow in easy drag & drop operation, also Record integration with POM models was added
- **Angular based HTML Report (Phase 2):**
  Angular based report are our second generation of HTML reports which allows much faster reports generation and significant smaller report package size.
  - Report now can be triggered via Run Set Operations, to be stored in preferred location or to be sent over e-mail
  - Report generation is now supporting any operating system (Windows, Linux, Mac)
    Note: Lite DB configuration must be enabled for the new report to work (that will be the default report setting in future release
- **Lite DB Data Source:**
  - Lite DB was added as new internal Data Source type which supports all existing Data Source functionalities
  - Lite DB Data Source allows to use Data Source functionalities on any operating system (Windows, Linux, Mac)
- **Legacy Actions Conversion Enhancements:**
  - Legacy Java Actions can now be converted into new Java Actions which provide advanced capabilities and support
  - Legacy SOAP API Actions can now be converted into new SOAP Actions which have wider support in API requests configurations

## What's Changed?

- **Device emulation mode support added for Chrome and Firefox browsers**
- Signature was added to Ginger installer so now publisher will appear as under "Amdocs" and Anti-Virus alerts won't be shown anymore on installation
- Business Flow + Activity pages layout were replaced with new pages to allow more intuitive control
- Improved Run Set page layout for more intuitive control
- Record functionality was separated from Window Explorer tool
- Window Explorer tool is now embedded into Automate page and won't open as separate window
- Activities Grouping in Business Flows are now a must and a default group will be added upon loading of existing Business Flows
- Ability to generate "Last Executed Item Report" was removed from Automate page
- Drag & drop is now supported also for order changing on list items

## What's Fixed?

- Over 100 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

## 3.2
### Ginger Release
May 30, 2019

## What's New?

- **Enhanced Command Line Execution Capabilities:**
  - **New Automatic Run Controls**: allows to configure if Ginger UI will be loaded in automatic run or if Analyzer will scan Run Set before execution
  - **Dynamic Run Set Automatic Execution**- user can now define which Business Flows to be executed and with what input data in XML based configuration and Ginger will create the Run Set automatically on runtime and execute it
  - **Execute Ginger using C# Script-** write your own C# script and include Ginger known methods which will trigger automatic execution for specific Run Set
  - **Execute Ginger using Command Line Arguments-** specify which Solution and Run Set to execute in command line arguments directly without the need of configuration file
    - Note: all above execution capabilities are supported on any OS Windows/Linux/Mac

- **Storing Execution History in Database (Phase 1)-**
  - Allow to configure storing all execution data in local database (LiteDB) to be used for reports generation
  - Provide better execution performance, less disk space requirements and solve file-based storage limitations

Note: this will be the default execution data storage option in future release

- **Angular based HTML Report (Phase 1)-**
  - o New HTML Report including better report views and navigation control
  - o Allows generating massive reports in seconds
    - Note: LiteDB execution history mode must be enabled + that will be the default report in future release

- **Python Plugin-**
  - o Allows to execute Python scripts from Ginger flow
  - o Supports parsing return values from Python scripts to be used for later steps in Ginger flow or/and for validation

- **Conversion of Legacy REST API Actions into New Actions-**
  - o Automatic, quick and simple conversion of old API (REST) Action with all of their configurations into new API Actions which has enhanced capabilities

- **Page Objects Models (POMs) Enhancements:**
  - o Allow mapping POM to Business Flow to be triggered for loading the POM Page

- **MongoDB Connectivity Support**

## What's Changed?

- Improved Run Set page layout for more intuitive control
- Selenium Browsers support upgrade

## What's Fixed?

- Over 120 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

# 3.1

## Ginger Release
March 19, 2019

## What's New?

- **"Jira" ALM Integration-**
  - All existing ALM integration capabilities like import tests from ALM to Ginger, export Ginger flows to ALM and exporting execution results to ALM are now supported also for Jira

- **Auto Pilot (Phase 4)**
  **Enhanced Page Objects Models (POMs) Capabilities-**
  - **"Update Elements" Feature** - enables relearning the POM page elements of the current active web page and comparing them to the saved POM elements. After the comparison, the user gets a clear report showing which elements were deleted/changed/added, with full information and by the click of a button the user can update his POM elements to the latest learned from the current active web page
  - **Learning Performance Improvements** – The user now has wider control on what actually is being learned (as default, Unmapped elements are no longer being auto learned anymore. Together with back end learning process improvements, a single web page learning time has been reduced by at least 50%
  - **Customize Learning Elements Locators Priority** – Now a user can set the order of the Locators types (XPath, ID, Name) which will be learned and set to the POM elements during learning
  - **Relative XPath Locator Learning** – Relative XPath is now being learned on top of full XPath for any learned element
  - **Dynamic Elements Locators** – The user now can place value expressions in the element Locator value so actual locator becomes dynamic and can be set from run time variables, environment parameters, etc.
  - **Elements Optional Values** – Lists/drop lists optional values are now being automatically learned from the web page and appear on the element details grid, so user can customize them. (Optional values can also be added post learning to elements for which no optional values were learned for them). The optional values are then offered to be used when the element is automated in the automation flow
  - **Old Web Flows Conversion to New POM Actions** – The user now can automatically convert old Web flows Actions into latest Web Actions which will be mapped to POM elements automatically

- **Groovy Plugin-**
  - Allows to execute Groovy scripts from Ginger flow
  - Supports parsing return values from Groovy scripts to be used for later steps in Ginger flow or/and for validation

- **TestNG Plugin (Phase 2)-**
  - Enables execution of TestNG flows of regular Java project or Maven project from within Ginger flows
  - Enables sending dynamic input parameters values to the TestNG flow

- Supports parsing return values from Groovy scripts to be used for later steps in Ginger flow or/and for validation
- Supports parsing the TestNG standard execution reports and showing it within Ginger in a clear manner to be used for reporting/validation

- **Couchbase DB Type Support**-
  - Added support for communication with Couchbase DB type

- **"Perfecto" Lab Support-**
  - Added integration with Perfecto lab (mobile devices lab on cloud) to enable running Mobile testing flows created using Ginger Actions on mobile devices placed on Perfecto Lab

## What's Changed?

- Output Values Validation is now more intuitive using new validation operator column which simplifies the way a user can add validations for output values coming in run time
- Flow Control condition setup is now more intuitive using new Condition column which allows to select the desired condition with ease and still allows to set complex custom conditions
- Web Browsers can now be loaded headless using new Web Agents configuration which control it

## What's Fixed?

- Over 250 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

# 3.0

## Ginger Release
November 07, 2018

## What's New?

- **UI & UX Improvements (Phase 2)-**
  - Solution main navigation panel was replaced to simplify the Solution load/replacement and navigation between the Solution different configurations
  - New menus/windows were added to view/modify the user profile and user settings configurations
  - Application status bar was enhanced to show dynamic information on backend processing, errors and more

- **Performance Improvements-**
  - All Solution elements are now loaded in parallel, and heavy items (Business Flows) are now loaded using lazy load mechanism to speed up the Solution loading time
  - New cache mechanism was implemented to control the Solution elements much more efficiently
  - Automatic UI (trees/Grids) changes are now reflected in case of Solution elements changes (no need to do manual refresh)
  - Source Control activities are now done asynchronously to avoid blocking/delaying other processes

- **Auto Pilot (Phase 3)-**
  - **Added Web Page Objects Modelling (POM):**
    - Input web URL is all that is needed to automatically learn & store entire web Page Objects Models (POMs) in which the mechanism learns for each object its type details, properties and full locators, and stores them
    - Web page is learned <u>once</u> and all its objects are stored in a repository
    - Screenshot of the learned page is taken and saved
    - New page objects can be added to a stored POM on top of its learned objects for objects which are not yet developed (progression)
    - Learned Objects locators prioritization can be maintained and new customized locators can be added on top of them
    - Enable verifying the objects identification offline - before executing the flow
    - Increase flow stability by locating the objects using multiple locators (XPath, ID, names, etc.)
    - Substantial reduction in time and effort spent on Web automation
    - Highly reusable - with quick automated update of Web changes
    - Enables fast Web automation - even during progression
  - **Application Models Parameters Enhancements:**

- Export Parameters list and their optional values to Excel sheet for quick data manipulation (Excel then can be imported back for loading all optional values into the repository)
- Export Parameters list and their optional values to Data Source table to be used in execution time (for looping over all data combinations)
- Automatic deletion of API Models Request body nodes in case of Model Parameters deletion

- **Web Platform Enhancements-**
  - Merged all legacy Web Actions into UI Element Action which offers much more intuitive operation configuration
  - Legacy Web Actions (like "Generic Element") Action can be converted automatically into new/enhanced Actions ("UI Element" Action)
  - Added support for performing an operation on top of an element which is placed in the Page Object Models repository
  - Added support for drag & drop operation on Canvas element
  - Added support for page load timeout time configuration
  - Added Proxy configuration for Firefox browser

- **Data Source Import/Export-** Export and Import Data Source table data to/from Excel sheet

- **Plugin for Test NG Execution (Phase 1)-** Plugin was created to allow triggering Test NG Suites execution from Ginger, supporting dynamic input parameters and execution results (Passed/Failed) parsing.

- **PACT Plugin Enhancement-** Plugin solution was modified to the new plugins solution which allows to run the plugin on cross platforms

- **Other Functionalities Enhancements:**
  - Execution: Action "Wait" field is not supports Value Expression for dynamic value
  - Soap UI Wrapper Action was enhanced to capture all properties into one grid
  - ALM: QC ALM Connection using REST was added (OTA still supported)

## What's Changed?

- "Automate" tab was merged into Business Flows tab. To automate a Business Flow, the user needs to load the Business Flow page and click on Automate (double clicking the Business Flow will also do this)
- Solution elements "modified" red star icon is now shown only if element was really modified
- Solution load errors (like in case of corrupted xml's) are no longer shown on popups but instead are shown on status bar in the form of an icon and number of errors – so user can click it to view the log errors
- Support tab was removed and instead links to external support web sites were added on the top navigation bar

## What's Fixed?

- Over 300 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

## 2.7
### Ginger Release
June 26, 2018

**NEW**

## What's New?

- **Ginger is now Open Source!** We are happy to announce that Ginger project is now open source software (GitHub link) and can be used for free by everyone, under the Apache v.2.0 license.
- **Auto Pilot (Phase 2)-**
  **API Models Enhancements:**
  - o learning web service REST API's by supporting parsing of Swagger (YAML, JSON) & sample XML/JSON request files
  - o Output Values Template which allows to have generic respond validations cross Actions

  **Application Models Parameters Enhancements:**
  - o Global Model Parameters layer was added to allow sharing Parameters configurations between Models and allow passing input/output data between the Application Models and other Action types during run time
  - o Import Optional Values from DB (Oracle/MS Access) or MS Excel template sheet for allowing quick load of data
- **ALM Integration Enhancements-**
  - o **Automatic ALM Defects Creation**: Create ALM defect with customizable details for each failed Action during run time
  - o **Enhanced Export Results Capabilities**: Filter uploaded results capability, Export results of all/part of Run Set post execution, Export results definitions also in Automate window
- **Find & Replace Functionality-**
  - o Find any item cross Solution based on simple text search, open found item Edit page, customize and Save it
  - o Quick Automatic Replace for multiple items based on simple Find and Replace values (replace optional values are populated automatically based on valid values)

- **Auto Save & Recover-**
  - o Auto Saving backup of un saved modified Business Flows and Run Sets every 5 minutes
  - o Offering to Recover items which were not saved prior to application crash including preview of recovered items content
- **Run Set Enhancements (Phase 2)-**
  **Functionalities Enhancements:**
  - o Business Flows Flow Control- allowing defining stop/jump to other Business Flow based on run time condition
  - o Share Business Flows variables configurations with all similar Run Set variables in one click
  - o Set Business Flow as "Mandatory" to determined it effect on the Runner flow in case of failure

- o Reset all Runner/Specific Business Flow execution details functionality
- o Duplicate Runner functionality

**UI Enhancements:**
- o Business Flows and their child items (Activities/Actions) are now collapsible + all Runners section is collapsible to allow view of more items and allow customizing the screen to meet user screen size
- o UI Buttons layout was modified to allow more easy and intuitive use
- **Other Functionalities Enhancements:**
  - o Java: Java Security pop up messages automatic handling
  - o Power Builder: Window Minimize/Maximize/Restore and Click XY in Table Action is now supported
  - o Web Service: SOAP WS Security configuration and Content type 'application/soap+xml;charset UFT-8' is now supported, Soap UI wrapper Action was enhanced to allow configure all nodes such as Project/Test Suite/Test Case/Test Step
  - o Web:  Recording is now available also using Firefox Browser, "http Server timeout" configuration was added to Web Agents,  drawing random object was added to support needs like signatures
  - o Data Source: Export to Excel functionality was added
  - o JSON document validation capability was added (XML validation Action was enhanced to include it)
  - o Applitools integration enhancements allowing new configurations capabilities for controlling the Applitools flow
  - o ALM RQM Integration- added support for exporting to Test Suite level
  - o Reset execution results option was added from Automate window to allow resting all Business Flow on only specific Activity/Action

## What's Changed?

- UI & UX Improvements (Phase 1): First phase of changing the Ginger UI to be more intuitive:
  - o Added "Configurations" tab and moved Agents and Environments to it
  - o Added Wizards for adding Agent/Environment to make the creation flow more clear and simple
- Oracle DB Connection: Due to license reasons the Oracle connection DLL cannot be added to the Ginger installation package which means that Oracle DB connectivity will be available only after manual adding of the DLL to the Ginger installation folder (more details)
- Upload to Shared Repository now done via Wizard which will guide user throw all steps in clear and simple way
- UI Grids: Searched items are now shows their original row number
- Action Output Value "Store To" now includes more options and UI modified to drop list style
- Console Outputs: Run Set Operations details were added to the Console output (will be visible in Jenkins)
- Tree Functionalities:
  - o Copied/Duplicated items name now can be customized before the operation will be done
  - o Source Control item indication is not available for Agents/Environments (will be added back on next version)
- HTML Reports: None executed Runners/Business Flows/Activities/Actions are not been shown in HTML report
- Web Area:
  - o Selenium WebDriver was updated to version 3.12.1 together with it browsers drivers upgrade
  - o Window Explorer Live Spy is now been injected to the Browser automatically

- Java Area:
    - Java Widgets- Automatic reinitialize browser if script lost support was added
    - Support add to auto detect the available Port for Agent attach

**What's Fixed?**

- Over 280 Bugs were fixed
- More Bug Tickets details can be in found Ginger Support Site

## 2.6
### Ginger Release
February 26, 2018

## What's New?

- **Auto Pilot (Phase 1): API Models Repository:** Auto Pilot is a new functionality in Ginger being developed in phases as part of CTP (Continuous Testing Platform) in order to enable automatic modelling/learning of application capabilities in 4 model areas – Front End (UI), Middle layer (APIs), Back end processes, and Database. The idea is to be able to learn applications and store all relevant objects and capabilities, for subsequent automation, and even reuse in Progression automation. The objective is to make automation much easier to do and reduce the efforts of automation maintenance substantially down the road.
  The Models (templates) types (like: API requests, UI Controls, DB Queries, etc.) are learned by Ginger automatically, to be used in automation flow with ease.
  In this version we are releasing Auto Pilot (Phase 1) in which we deliver the API Models that enable auto-learning of web service requests from WSDL 1.1 & 1.2 documents, integrating parameters into request configurations for making it dynamic and integrating it in the automation flows (Actions) as well

- **Run Set Functionalities Enhancements (Phase 1):** Run Set backend and frontend solution was greatly enhanced, including a totally new Run Set UI window which is much clearer, informative and intuitive, combining configurations and execution details in the same view, showing all levels of execution items –
  Runners/Business Flows/Activities/Actions with debug capabilities by viewing the info of a specific Activity/Action that was executed, including Stop & Continue execution control allowing to stop and continue at each individual executable item in the flow, Auto-load the last executed Run set, Automatic indication that a Run set's Business Flow was modified, Add folder of Business Flows to specific Runner, Simple Mail sending operation and more

- **Error Handler Enchantments:** Map specific Error Handler/s for each Activity in the flow

- **ALM Integration Enhancements:** Attachment support was added for QC, allowing to upload execution HTML report (including screen shots) as attachment for each Test Case/Activities Group which was executed

- **HTML Report Enhancements:** Activities Group reporting layer was added, Navigate between report items using back-forward buttons and Dynamic Run Description per Business Flow/Activity/Action

- **Java Platform Enhancements:** Locating of table element using tree path support, support for HTML table elements embedded inside Editor Pane

- **Web Platform Enhancements:** Drag & Drop Action type was added, Browser tabs manipulation support

- **Windows Platform Enhancements:** Extract total count and property value of table element support

## What's Changed?

- Automate Tab: Execution solution engine was modified so it will be executed in the same speed like in Run set for avoiding sync issues between the Actions once ran from Run set, Dynamic Activities are marked with different color + save warning message was added from those
- Flow Control: Allow mapping by name of Activity, Stop & Fail Business Flow action was added
- Analyzer: UI changes to make it run asynchronously, auto fix for Flow Control mapping issues

## What's Fixed?

- Over 130 Bugs were fixed
- Main areas which were fixed are: Java, PowerBuilder, Run Set, HTML Reports, Web & Unix
- More Bug Tickets details can be found Ginger Support Site

# 2.5
## Ginger Release
November 13, 2017

**NEW**

## What's New?

- **Ginger On Web (Phase 1)- Execution:** Define Run Sets execution, trigger execution & view it status, view executions history
- **User Type Mechanism:** Select your user type (technical/Business) on Ginger installation and UI functionalities will be set accordingly
- **Web Service Virtualization (PACT):** Define virtual interactions (Request-Respond) using text editor, launch virtual server and execute real API calls against it
- **Automatic ASCF/GTB Actions Conversion:** Save ~70% of the Business Flow conversion from ASCF/GTB driver Actions to new Java Driver Actions
- **BDD Support (Phase 2)-** Integration with Activities Shared Repository for quick re-use of existing automation
- **Cassandra Support (Phase 2):** Multiple data fields columns (UDT) are now fully supported
- **Customizable Logging Level-** Allows to configure the required logging level (Normal/Debug) for capturing needed details for debugging
- **Java Platform Enhancements:** Implicit Wait Agent parameter added to improve sync mechanism, Selection of tabs using index support
- **PB & Windows Platforms Enhancements:** Click & Validate Action support, enhanced Table control automation
- **ALM Integration Enhancements:** Trigger the imported Ginger Activities Group refresh from existing Business Flow for getting latest ALM updates, Customize the created Run name in ALM when exporting the execution results, Offline RQM fields store & load
- **HTML Report Enhancements:** Option to show failed Actions list on Summary View
- **Analyzer Enhancements:** Option to open and edit the Activity/Action which includes the error directly from Analyzer page
- **Business Flows Enhancements:** Option to import external Business Flow XML (from other Solution)

## What's Changed?

- Report Mail: To/From/CC/Attachments fields modified to support Value Expression value (dynamic)
- ALM Execution Status Export: "During Execution" was set as default "Run At" option
- RQM (TDP) Connection Configuration: For establishing connection RQM Configuration Package (downloadable from Ginger Support Site) is required to be imported
- Web Services Actions: New JSON respond to Output Values parsing mechanism was added (Legacy parsing mechanism still be used for exiting Actions)
- Selenium- Upgraded Selenium Web driver to version 3.6.0 (also IE driver to version 3.6.0 & Chrome driver to version 2.32)
- File Operation Action: Support relative and wildcard file path
- Agent Connection: Connection will tried to be established only once per Business Flow

- Ginger Runner Functionalities: Ability to jump to Automate tab for selected Business Flow in the list
- Action Flow Control: Go To Activity/Action changed so it will be finding the mapped item only by it ID and not name

## What's Fixed?

**2.4**

Ginger Release
August 22, 2017

- Over 100 Bugs were fixed
- Main areas which were fixed are: Java, Web, PowerBuilder & HTML Reports
- More Bug Tickets details can be found Ginger Support Site

## What's New?

- **Integration with IBM RQM (TDP) & ALM(QC) 12/14:** Import/Export Test Sets/Test Cases, export execution results
- **BDD Support (Phase 1):** Gherkin Feature file creation/edit using built in editor, Converting/Importing Feature file into Ginger BDD Business Flow which allows to automate the Feature file scenarios using Ginger Actions
- **GIT Source Control Support:** Download and work with Ginger Solution which placed on GIT based repository (GitHub, Bit Bucket, etc.)
- **Source Control Enhancements:** Lock/Unlock items, view items source control information, better Conflicts handling & more
- **Action Outputs Simulation:** Simulate the Action Run and the returned Output values allowing to automate and run even if the tested application (DB, API, etc.) is down/not there yet
- **Output Variables:** Pass variables values between Business Flows in the same Ginger Runner
- **Analyzer Enhancements:** Added new check Rules for Business Flows/Activities/Actions/Run Set, improved the Analyzer results page UI to be clear & intuitive, automatically run the Analyzer checks before Business Flow/Run Set execution
- **Tags Support:** Add customized Tags to any solution item and filter the executed Activities using it
- **PowerBuilder (CSM) Drag & Drop Action Support**
- **Windows Widgets Support:** Automate HTML imbedded pages in Windows applications
- **Application Built in Help Library:** User Guides & Videos available inside the application by clicking F1
- **New Support Site:** Modern, more information & content, better Tickets tracking capabilities
- **Q&A Forum:** Ask question or view previous answered questions by Support team
- **Enhanced Deployment Process:** Including Alfa/Beta releases which provide tested & stable version once a week

## What's Changed?

- HTML Report- added support for viewing all Business Flow Activities and their Actions in one page (by grouping the Actions per Activity), Added Global/Solution variables information for items which contains Variables

- Shared Repository- Indication was added for items which were added from Shared Repository + View/Edit source item and De-link the item from Shared Repository capabilities emended in the item Edit page
- Web Platform- Click & Validate operation was added for UI Element Web action to allow combining Click & Validate operations in one action and also automatically do different types of Clicks on the same Action
- Java Platform- Show warning message instead of exception on Java Agent connection failure
- Java Platform- Added support for Double Click operation on Java table control
- Java Platform- Added support for Setting UIFDateField value in Table Element Action

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- PowerBuilder Platform- Enhanced the widgets XPATH support
- ALM- Connection behavior & page was changed- now ALM connection will be done automatically in case the stored credentials exists and correct
- ALM- Added option to export the execution results to ALM During Execution (after each Business Flow execution end)
- Action Output Values- Set To Variable and Set To Data Source were merged to one column in the Action Output Values
- Action Screen Shots- Desktop screen shots now will be taken automatically on failure also for General Actions (DB, Excel, etc.)
- Data Source- 'Where' condition was enhanced to support multiple sub conditions
- Run Set- Modified the Run Set execution summary details graphs on UI, including execution status
- Selenium- Upgraded Selenium Web driver to version 3.4.0 (also IE driver to version 3.4.0 & Chrome driver to version 2.30)

## What's Fixed?

- Over 130 Bugs were fixed
- Main areas which were fixed are: Java, Web, PowerBuilder & HTML Reports
- More Bug Tickets details can be found Ginger Support Site

# 2.3
## Ginger Release
May 22, 2017

## What's New?

- **Real Browsers Inspection:** allow inspecting & recording Web objects on real browsers using the Ginger Window Explorer
- **Data Source:** new way for storing & reading data during the Automation flow (to a Solution build in MS Access DB)
- **PowerBuilder (CSM) Widgets support:** allow inspect & automate the widgets web elements
- **Enhanced Web services Soap/REST API Actions:** support security & authentication (replacing the previous actions)
- **New HTML Report Email:** allowing to show the HTML Report Dashboard view in the mail body + the Full HTML report as attachment or as link + support embedding Variables values in mail Subject and/or Comments
- **Copy/Cut/Past/Delete functionalities for Solution tree items**
- **Support connections to Cassandra DB (basic operations) + PostgreSQL**
- **DB Action now support running SQL file**
- **Execution Details to Console:** all execution details now been sent to Console on run time (when running Ginger from command line) + proper exit code

## What's Changed?

- New Logo and Icon to Ginger application
- HTML Report layout was improved and now having professional and clear design + having new Summary View (instead of Run Set View) + new fields added to reflect the Ginger version, machine & user which executed the flow
- Improved the Action Edit page to be more clear, intuitive and easy to use
- Send Keys action configurations modified to be more easy and intuitive
- Upgraded Selenium Web driver to version 3.3.0 (also IE driver to version 3.3.0 & Chrome driver to version 2.29)
- Ginger Jenkins Plugin improvements to support Jenkins parameters + sub folders
- PDF reports + Previous Run Set Email actions were removed (existing reports and mails which configured on existing Run Sets still will work but user not able to add new ones)

## What's Fixed?

- Over 70 Bugs were fixed
- More Bug Tickets details can be found Ginger Support Site

# 2.2
## Ginger Release
March 1, 2017

**NEW**

## What's New?

- **CRM/OMS Widgets automation capabilities using Java Driver**
- **Java swing/ASCF/Widgets recording capabilities using Java Driver**
- **Execution Results Logger:** Save all execution information on JSON files in run time (for Reports creation)
- **HTML Reports:** new Reports types which allows Drill down view from Run Set to Action including full details + easy customization + items execution iterations data + generate reports on demand from history executions
- **SoapUI Wrapper Action:** allows to execute SoapUI XML's by SoapUI tool from Ginger (including automatic parsing of Request/Respond XML's)
- **Selenium Remote Web Driver (Grid):** allows to run the Web flow on multiple browsers (including Safari on Mac) which placed on remote machines
- **Ginger Plugin for Jenkins:** allows to easily select the Run set to execute using Jenkins, including automatic support for SVN updates
- **DB2 connection support**
- **Support for EDGE browser using Selenium was added (on Windows 10)**
- **Images comparison Action:** allows to compare 2 static/dynamic images
- **New Switch window action support with sync time mechanism added to power builder / windows driver**

## What's Changed?

- Solution Upgrade mechanism was improved to be more clear and controllable
- User now can stop individual Ginger Runner during Run Set execution
- DB Action configurations supports Value Expression (dynamic value)
- Automatic Select/Unselect all 'Active' checkboxes can be done from Grid tool bar
- Jenkins TestNG report now support also Activities Groups view
- PATCH mode was added to REST Action
- Smart Sync and Async Click operations are now supported also by PowerBuilder/Windows drivers
- Allow hiding non input variables from Run Set- Business Flow Configuration page
- AngularJS Locators by Selenium are also supported

## What's Fixed?

- Bug Tickets details can be found Ginger Support Site

# 2.1
## Ginger Release
December 1, 2016

### What's New?

- **Java Swing Driver:** allows to automate any java Swing based application. Support CRM/OMS Swing/ASCF controls
- **Mainframe Driver:** allows to automate Mainframe application using TN3270 emulation
- **Added Flow Control capability to call a Shared Repository Activity to be executed in run time**
- **Appium server can be launched and closed automatically**

### What's Changed?

- User now supposed to select the item instance part to update when doing Shared Repository Item instance update
- Upgrade Selenium version to 3.0.0 + Geckodriver is now supported for Firefox (version 47+ should be used)
- Upgrade Appium version to 2.0.1.1
- Now reports screen shots are been stored locally to reduce machine memory usage
- Configure implicitWait for Unix driver related actions

### What's Fixed?

- Over 170 bugs were fixed
- More Bug Tickets details can be found Ginger Support Site

## 2.0
### Ginger Release
September 5, 2016

**NEW**

## What's New?

- **Ginger-QC:** Allow setting the TC/Test set customized fields value
- **QC Manager Report:** Allow Filter Execution Data By Tester & Execution period
- **Source Control:** Add Resolve Conflicts Mechanism
- **Ginger-Design Console:** Support I/O Parameters
- **Java EXE Action was added**
- **Copy/Cut/Past functionalities were added to Grids**
- **Read/Write Text File Actions were added**
- **Last used Environment is been remembered**
- **Prompt user to save changes when closing Ginger application**
- **Added Take/Un-Take Screen shots button to Actions Grid**
- **Action Status Convertor:** user can manipulate the action status
- **Variables- Allow Link Variables to access variables from different levels**
- **Environments:** Parallel execution on multiple environments
- **Condition Validation Action to compare Variables was added**
- **Allow user to select if to run Gingers in Parallel or Consecutively in Run Set**

## What's Changed?

- DB connection details inputs were simplified + Password encryption was added
- Excel action now fully support variables as inputs
- Run Execution page was redesigned
- Script Action now support Batch Files
- Provide MaxWaitingTime for Driver (selenium)
- TestNG Report - Enhance to Support Pending and Stopped status
- Keeping the Activity-Application mapping when adding to repository and using for QC import
- Save individual reports after each Business Flow completion in a Run Set instead of waiting for all the flows to complete

## What's Fixed?

- Over 160 bugs were fixed
- More Bug Tickets details can be found Ginger Support Site