

# Arius<sup>®</sup>

## 2020b

Release Notes and  
Installation Instructions



IT TAKES VISION

Information in this document is subject to change without notice. The software described in this manual is furnished under a license agreement. The software may be used or copied only in accordance with the terms of that agreement.

No portion of the contents of this publication may be reproduced or transmitted in any form or by any means without the express written permission of Milliman.

Milliman, Inc.  
3424 Peachtree Road, NE Suite 1900  
Atlanta GA 30326 USA

Tel +1 800 404 2276  
Fax +1 404 237 6984

[ActuarialSoftware.com](http://ActuarialSoftware.com)

© Copyright 2006-2020 Milliman, Inc. All Rights Reserved.

This document is the proprietary and confidential property of Milliman, Inc.

Arius® is a registered trademark of Milliman, Inc. All other trademarks are property of their respective owners.

---

## 1. Release notes

### RELEASE 2020b ADDS SEVERAL NEW CAPABILITIES

#### What's new in Arius Stochastic

##### 1. New Generalized Linear Model (GLM)

You will find all of the new GLM tables and graphics in the **Generalized Linear Model** folder in the Object Library, and corresponding collections in the **Generalized Linear Model** folder in the Collection Library. Modeling losses using a GLM framework has many benefits, including the ability to fit parameters along the calendar period dimension to account for calendar period trends, and to more completely tailor a stochastic model to the specifics of your data.

See the User Documentation *Getting Started with the Arius Generalized Linear Model* as well as new Arius sample projects *Arius\_Stochastic\_Sample.apj* and *Arius\_GLM\_Case Studies.apj*.

##### 2. New ODP Bootstrap Diagnostic tables

We added new Actual vs. Expected tables with heat maps, Hetero-adjusted Residual and Fitted Incremental triangles, and a new table of Fit Statistics for the ODP Bootstrap model. You will find all of these in the Paid and Incurred Loss Diagnostics folder in the Object Library. The Actual vs. Expected tables have also been added to the ODP Bootstrap Diagnostic collections.

##### 3. Increased maximum number of iterations from 50,000 to 1,000,000, and increased concurrent simulation counts from 100 to 10,000

Note: This change introduces differences in simulation output compared to version 2019b for a constant seed value; however, differences are insignificant if running a sufficiently large number of simulations. These differences are not due to calculation changes or errors, but rather due to the random stream of numbers used for simulations.

#### What's new in Triangles on Demand

##### Secondary ToD databases

We added the ability to link a Secondary ToD database to a Primary database as a way to merge data from multiple databases for import into Arius. This allows you to load premium or exposure data (for example) into Arius projects along with claims data using the same queries, even though the underlying premium and claims data are stored at different granularities.

#### What's new in Arius Enterprise

##### 1. New back-end reporting capabilities

We added the ability to perform database joins using two Extract tables or an Extract table and a Support table that contains data from an external CSV or text file. This allows you to allocate reserve segment-level results to other levels of aggregation for reporting purposes (for example, allocate segment-level ultimates/IBNR/etc. to group, line of business, or branch level reporting). This feature is also useful in performing such tasks as currency conversion and data reconciliation.

## 2. New API calls to update Extract tables and to download and update Reporting tables

Similar to the existing ability to download data from an Extract table via an API call, we added the ability to update the Extract table, as well as the ability to download and update Reporting tables using API calls. This feature allows for further streamlining of downstream reporting using Arius Analysis results.

## FIXES AND USABILITY IMPROVEMENTS IN THIS RELEASE

### Arius Deterministic

- Updated API Example 4B to allow users to automatically update the structure of table named ranges to accommodate new diagonals
- Updated API examples that use Excel user-defined functions to pull data from Arius to include a button to refresh the data from Arius
- Fixed the formula in data array #479 Indicated Case and IBNR Loss and LAE Net of S&S Reserves, which is used in the Canadian PfAD reports
- Added messaging when loading/refreshing very large External Factor Library files
- Fixed an issue where historical SDFs could get lost when a user opened an Arius project saved on a computer with different regional settings than theirs
- Fixed an issue where calculations were not fully finishing on the Comparison of Ultimate reports for calculated segments

### Arius Stochastic

- Revised the **Loss Ratio** calculations with partial last diagonals or **First Development Age** less than the **Development Period Length**
- Fixed an issue where users with a **First Development Age** less than the **Development Period Length** were unable to use the ODP Bootstrap Residual Graphs to select and identify outliers
- Fixed an issue with loading values from term discount rate files for regional settings other than US settings
- Fixed an issue where Arius could close when you click a residual on the **Mack Bootstrap Residual Graphs**

### Triangles on Demand

- Updated the **Advanced Query Builder** user interface for improved usability, especially when building long and complex queries with multiple conditions
- Made several enhancements to the drill-down feature available within Arius for data loaded from ToD (e.g., removed dependency to measure mapper, allow multiple Excel files to open, addressed an issue with UDO abbreviated names, addressed an issue with columnar arrays)
- Enhanced the AE Uploader utility used for loading large CSV files to Triangles on Demand to automatically determine optimal connection properties for the client's particular configuration and improve reliability of file transfers to the cloud

- Fixed issues with editing or reusing names of ToD mappers
- Increased maximum number of characters for **ClaimID** type columns from 20 to 300

### Arius Enterprise

- System now prevents users from opening/saving projects and UDO libraries with a different version of Arius desktop than the version expected by Enterprise. (To verify you are using the correct version, click the  icon in the upper-right corner of the Arius Enterprise web portal.)
- Enhanced the signoff report to include all levels of signoff for completed projects, not just the final approval. (To download this report, select the  icon from the ANALYSIS | PROJECTS page within the Arius Enterprise web portal.)
- Added a message if you try to download an extract table or reporting table while it is in the process of being updated
- Fixed an issue when updating an extract table wherein the selected valuation date wasn't flowing through as it should
- Fixed an issue with the **Copy project** command which may have triggered an error message under specific circumstances
- Increased the number of entries shown on the Automation Status page from 1,000 to 10,000 entries

### FILE COMPATIBILITY

This system opens and functions with data files from any previous version of Arius.

*Any data files created, edited, or saved in this version 2020b system do not work with earlier versions of Arius, and as such, they cannot be opened by others on your team who do not have version 2020b of Arius.*

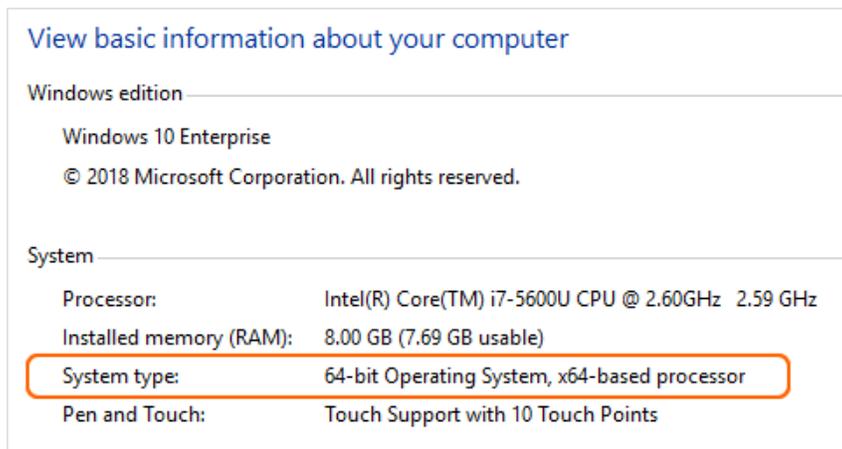
## 2. Installation requirements

System requirements for the basic Arius system are as follows:

- Minimum operating system: Microsoft Windows 10, 64-bit version
- Minimum hard disk space: 3.5 GB
- Minimum RAM: 1024 MB, though 2048 MB or more is recommended
- Related tools: Microsoft Office 2007 or newer (Arius does not support Microsoft Office XP). Arius and its API support both 32-bit (Arius v3.2 and prior) and 64-bit (Arius v2019a or later) versions of Microsoft Office. Arius requires the Microsoft .NET Framework 4.7.2 or newer and Microsoft Visual C++ 2017 Redistributable (x64). (Many Windows installations may already have this; you can confirm it at Control Panel | Programs and Features.)
- An Internet connection for license authentication at <http://admin.actuarialsoftware.com>

To assure that your Windows system is a 64-bit version (especially with older Windows 7 or 8) you can check your system:

Select **Start** and type “**Control Panel**”. Click on **Control Panel** and select **System**. You should see something similar to the window below.



### 3. Installation instructions for Arius Deterministic and Stochastic

**Note: Administrator privileges are required to perform this installation.**

In most cases, this is a multi-step installation process. You will:

- **Run the install program** for the new Arius software.
  - If there is already a version of Arius installed, the installer uninstalls that copy. This DOES NOT affect any data files.
  - If this is a new installation of Arius, it will likely also require an install of the MATLAB runtime.
- If you are directed to install the MATLAB runtime, once it completes, **re-run the Arius installer**.
- A note about moving from old 32-bit Arius to this newer 64-bit or vice versa:

The Arius install system automatically uninstalls existing Arius systems before installing its latest package. It cannot automatically do that

- when you upgrade from an old 32-bit version (3.2.1 or earlier) to this latest system, or
- when you downgrade from this latest system to an older 32-bit version (3.2.1 or earlier).

In either of those cases, you should first manually uninstall Arius via Control Panel. Go to START|CONTROL PANEL|PROGRAMS AND FEATURES and select Arius to delete it.

Anyone moving between 64-bit versions of Arius (for example, Arius 2019b to 2020b) does not need to worry about uninstalling Arius as part of this process.

#### To install this software:

1. Close any existing version of Arius and all Excel workbooks before beginning the Arius installation.
2. Click the **Download** link and **Save** (do not Open) AriusSetup\_v2020b.exe onto your computer.
3. Locate the downloaded file. **Right-click on the EXE file and select Run as Administrator**. Most users will first need to download and install a newer copy of the MATLAB runtime system.
  - When prompted to download the MATLAB installation, select **Yes** to download the runtime files. (These files are large and will take several minutes to download.) The system downloads a ZIP file containing the MATLAB Installer.
  - Once downloaded, locate and open the ZIP file. Double-click setup.exe in the ZIP file and follow the instructions to install the MATLAB runtime.
4. You then re-run the AriusSetup\_v2020b.exe install. **Right-click on AriusSetup\_v2020b.exe and select Run as Administrator**.
  - You may also see the system installing the Microsoft Visual C++ 2017 Redistributable (x64) library. This is required for Arius 2020b, and if it is not present on your computer, the install routine installs it from the Microsoft downloads server.
  - Arius also requires that the Microsoft .NET Framework version 4.7.2 is installed with your operating system. This is likely the case for most users. However, if the installation routine detects that this is necessary, your IT team may need to download this from Microsoft and install it.

## 4. Additional information

After installation, the application is listed as **Arius** in your START | ALL PROGRAMS listing.

The system installs with five sample project files. They can be found at:

`C:\Users\<yourname>\Documents\Milliman\Arius\DemoFiles`

or perhaps displayed as

`Libraries\Documents\Milliman\Arius\DemoFiles`

- **Arius\_Sample.apj** – Sample data with 5 segments, a mix of short-, medium-, and longer-tailed lines of business. This file is intended to give you a sense of the system’s capabilities and a sampling of how the models can be set up with different assumptions for different lines. Note not all segments work with all models (like in the real world).
- **Arius\_Sample\_Canadian.apj** – Sample WC data for Gross, Net, and Ceded layers. This file includes sample user-defined tables for calculating the Reinsurance Provision for Adverse Deviation as described in the User Documentation *Canadian Provision for Adverse Deviations* and the section on *Calculation Across Layers*.
- **Arius\_Stochastic\_Sample.apj** – Sample data with 4 segments, showing a detailed implementation of all four families of stochastic models. This file is an updated version of the ODP\_Mack\_Hayne.apj file, now including the Generalized Linear Model.
- **Arius\_GLM\_Case\_Studies.apj** – Includes 5 different data sets or case studies to help explain the various ways the models can be parameterized to fit the sample data. This file accompanies the case studies in the back of the User Documentation *Getting Started with the Generalized Linear Model*.
- **Hayne\_Paper.apj** – Contains the data used in Dr. Roger Hayne’s paper on Maximum Likelihood Estimator approaches, *A Flexible Framework for Stochastic Reserving Models*.