# Welcome to ReservePro

## System version 5.0

Welcome to Milliman's ReservePro, the dynamic loss analysis solution.   Read on to learn more about this release of ReservePro, to get support, and to send feedback to the software team.

## What's new in release 5.0.0.419                    (September 2011)

### Fixes:

- We corrected an issue with File Math wherein user defined tables in layers other than Net might not have resulted in correct results.

- Graphs of tables in layers other than Net, will now print correctly in all cases.

  Both of these issues first appeared in an earlier build of ReservePro version 5.0.

### Enhancements:

- The bottom right corner of the Navigator window now displays sixteen significant digits.

- The Navigator now displays the row label (exposure period) and column label (development months) of the active cell for easier identification.

- The title bar of the Cell Note dialog box now displays the row label (exposure period) and column label (development months) of the cell for which the cell note is being added/edited.

- We have expanded several dialog boxes for easier viewing and selection. These include Export to Excel, Copy Selected to Factor Set, Add Development Factor Sets.

## Get support

**Our Web site** contains the latest Frequently Asked Questions from our many users about using and getting the most from ReservePro. It also provides information about any potential issues or updates that may be available, and gives you a direct connection to our support experts.

**Feel free to call us** any time with any questions, or if we can help you use our solution more efficiently. Trained technical and actuarial experts are available Monday through Friday, 8:30 am to 5 pm Eastern U.S. time, excluding holidays. They will be happy to walk you through solutions or troubleshoot problems, usually within a matter of minutes. Our Customer Hotline numbers are:

- (800) 404-2276 - toll free in North America

- (404) 254-6752

## Send feedback

**Send wishes** (feature and change requests) to the ReservePro Team. We'll do our best to make them come true. We will reply to all messages, thoughts and ideas. In fact, virtually every change in this update is the direct result of a request from one of our friends around the world.

**Send bugs** directly to us. We definitely want to hear about any challenges you encounter while using ReservePro.

Thanks!
The ReservePro and TriangleMaker Team

# Notes from prior releases

Version 5.0.0.409

### Minor fixes:

This update fixed the following minor issues:

- Interpolated Development Factors -
  We modified the following reports to reference interpolated development factors if the "Use Interpolated Factors in Method" checkbox is checked under View|Exhibit Options:
  > 54 -Preliminary Selected Ultimate Loss Ratio
  > 55 - Preliminary Selected Ultimate Loss Rate
  > 56 - Preliminary Selected Ultimate Average Loss
  > 6 - Loss Development Patterns Based on Selected Development Factors
  > 15 - ALAE Development Patterns Based on Selected Development Factors
  > 24 - Claim Development Patterns Based on Selected Development Factors

- Certain user defined methods and the Comparison of Ultimates report -
  If a column in a user defined method has a formula set to "0" (zero), the results of the method's ultimate calculation appears correctly in the method. However, the results can occasionally display as blanks in a Comparison of Ultimates report. With the latest update, the calculated ultimate for the method will now appear correctly in a Comparison of Ultimates report.

- ReservePro Network -
  ReservePro Network will now properly manage the number of users in all cases.

Version 5.0.0.408

### New Feature:

Based on requests from Clients, this update adds the ability to use the API to insert data into Selected Development Factor rows in an RP5 file.

### Additional minor fixes:

- We significantly increased the efficiency with which the API pushes large data triangles into ReservePro (using *SetData*).

- A new parameter tells ReservePro to ignore any blank cells in your source data when inserting that data into an RP5 file. The default behavior of *SetData* is to insert blanks in the target RP5 data set when the source cells are similarly blank. However, a new *IgnoreBlanks* switch allows you, for example, to insert only the most recent diagonal of data into an existing triangle of balances, without replacing the existing balances with incoming blanks.

- You can now retrieve development factor data from exhibits which come to the exhibit from development factor libraries (using *GetData*).

- You can now use File Math to combine multiple RP4 files without having to first convert them and save them as RP5 files.  You can also use File Math to combine files with user defined tables of the same name but different table ID numbers.

- The Blanks-to-Zeros utility now saves new files with the RP5 extension in all cases.

- The "Number of Latest Exposure Periods" control is now available on the Weighted Average Settings screen when using ReservePro with Windows 7.

- The Help | About ReservePro screen has been expanded to include the version/build number of the currently-installed API subsystem.

## Version 5.0

### New Features:

Enhanced graphing capabilities provide higher quality graphs, significantly more flexible control over the layout, design, and the data included, numerous pre-defined graphs to get you started, and enhanced control over how multiple graphs print on page.

Residual plots allow you to see patterns in accident, development, and calendar periods, and provide a tool for assessing how much reliance users may want to place on certain development methods, given their specific data.

An external application programming interface (API) allows you to easily access and update data in ReservePro files using VBA and Excel macros.

The Tail Factor Analysis tool was enhanced to work with incremental values less than 1.0 , to work with data found in certain incurred loss triangles.

You can now edit the structure and name of development factor sets, and can easily clear factors from factor sets.

The following new user-defined functions were added for use in creating exhibits and reports: SQRT, ABS, and UNDEVELOP.

Note
These new capabilities require that ReservePro's data files be stored in an updated file format. Data saved in this new system will have an extension of ".RP5". All data from prior versions of ReservePro will be automatically converted to this new format.

## Version 4.8

### New Feature:

A new ROUND function rounds a number to a specified number of digits.

### Additional minor fixes:

- A potential memory leak has been fixed to reduce the possibility of error during Enhanced ASCII exports of files containing many user-defined tables.

- The underlying formula in Exhibit 16, "Closed Claims without Payments Development," has been revised to
  (Develop(Cumulate(Closed Claims)-Cumulate(Closed Claims with Payments)))
  from the old formula which read
  (Develop(Cumulate(Closed Claims with Payments)-Cumulate(Closed Claims))).
  Note that this change will have no effect on the resulting calculations in the exhibit.

## Version 4.7a

**New Feature:**

A new SUM function returns the sum of any row or column for use in formulas.

**Additional minor fixes:**

- Interpolated development factors could potentially be incorrectly saved as historical selections during the process of appending a new diagonal to a data set; thus, in subsequent periods they would incorrectly show up as historical selections on exhibits. This has been fixed.

- Numbers with more than 11 digits before the decimal will now correctly export to Excel in all cases.

- Reports containing only selected development factors will now print correctly in all cases.

- "Copy factors from selected factors to factor set" works correctly when selecting all objects on the list.

- ReservePro now works more closely with your computer's "Regional Options" configuration, providing enhanced display and data handling for certain non-US users in such areas as the tail factor tool, export to Excel, and the desktop status bar.

- Calculations using the exponent function now work correctly for values less than 1.000.

- User-defined scalars will now save correctly (introduced in v4.6, and corrected in the previously released 4.6a patch).

- Additional patch released December 2008:  This update allows you to use the system's "undocumented" capability of entering Excel-like formulas in data entry fields (white cells) throughout the system to perform quick mathematical calculations -- for example, entering "=average(*cell, cell, cell* )" to enter the average of three cell values into the current cell.

- Additional patch released December 2008:  When working with Development Factor Libraries, you can now select which layer you want to work with, regardless of whether or not you have a ReservePro file open at the time.

## Version 4.6

- Removing an evaluation from your triangles (Tools | File Structure) will no longer erase Selected Development Factors.

- A correction was made to the present value factor calculation utilized in cash flow reports for files with less than full period starting months (i.e. starting month less than 12 for annual development periods).

- Selections made regarding the Page Setup|Array Presentation (from Cumulative triangles to Incremental or vice versa) are now saved as part of Page Setup.

- You can now open ReservePro and load a file by simply clicking on the RP4 file in Windows Explorer.

- Cell notes contained in the Selected Ultimate column of the Comparison of Ultimate Estimates report will now print.

- In exhibits, when calculating volume weighted average excluding high and low, if two rows have exactly the same high or low value, ReservePro now excludes the older of the two values.

- When data is exported to Excel, the new XLS file will now be stored in the location specified in the "Files Path" line in respro4.ini file, also accessible from the Tools | Workstation Setup dialog box. This will provide more control over access for users in a Citrix environment.

- Additional patch released as version 4.6a:  User-defined scalars will now save correctly in all cases.


Version 4.5

**Exclude Outliers**
We have added the ability to exclude individual development factors from statistics in all development exhibits.  You can easily exclude a specific factor, a row of factors, or some subset of factors from the exhibit statistics.  Simply highlight the factors, right-click, and select **Exclude Factor(s) from Statistics** (or select Tools|Exclude Factor(s) from Statistics from the menu).  As an example, if you exclude a factor that would otherwise be included in a three-year average, that average would now be calculated using the remaining two balances.  Excluded factors will be clearly marked with a strike-out notation and the statistic calculations below will automatically update.  To return a factor to the calculations, choose the option to **Include Factor(s) in Statistics**.

**Minor Improvements and Resolutions**

- When exporting to Excel, the correct headers and footers are now displayed in all cases.

- When printing both incremental and cumulative triangles at the same time (i.e., selected array presentation under File|Page Setup|Layout tab), both triangles will now always print with the correct row and column labels and the correct headers and footers.

- You can now edit the descriptions for up to 12 sets of historical selections under Tools|File Labels|Historical Factors (the previous maximum was four periods).

- The exhibit statistic calculations were fixed for situations where the Exclude First option was used in conjunction with the Use Last option.

- The algorithm for computing the time-weighted averages in exhibits was revised to correctly account for situations when the Exclude First option or Exclude Last option was selected in combination with the Use Last option.  All other combinations were working as expected.


Version 4.5 requires a data file format revision, and automatically updates previous file formats.

## Version 4.4

### Volume-weighted Average Change

This release provides a fix to an error when using volume-weighted averages and excluding high and low amounts. This calculation error was introduced in version 4.2

Version 4.4 includes new version-checking capabilities to alert users to the availability of new updates to their existing systems.

## Version 4.3

### Batch Printing Capabilities

Version 4.3 adds extensive batch printing capabilities to ReservePro.

### Minor Improvements and Resolutions

- The Volume Weighted Averages (VWAs) in ReservePro's exhibits now properly account for zeros in all cases. The new calculation divides the sum of one column of losses or claim counts by the sum of the corresponding elements in the previous column. This new calculation will account for the development correctly for instances where there are zeroes in your triangle.

- The 2006 versions of the *US Insurance* CD-ROM service (containing 2005 annual statement data) included a file format change which requires a ReservePro update. Version 4.4 now reads the 2005 annual statement data as well as previous years' CDs.

- Exhibits can now display up to twelve sets of historical selections (the previous maximum was four rows of history).

- We added a new user-defined function, **DecumulateCDF**. When used in user-defined reports, this can help you convert an "implied" pattern into a selected pattern. You can start with a column of implied ratio-to-ultimate (e.g. ultimate/cumulative paid loss), take the reciprocal of that column to get cumulative factors, then use this function to convert those to selected development factors.

- The Comparison of Ultimate Estimate Report set-up screen now lists all methods, with icons identifying the methods that calculate to an ultimate. Also, the methods now appear in the "Selected" list in the order they were chosen, rather than alphabetically.

- The Compress Rows function now leaves selected factors in the data file rather than automatically clearing them.

- Development Factor Library tail factors now compress and cumulate correctly when there are blanks in the intervening cells and the factor set is applied to data with a smaller structure (thus requiring the compression).

- The Interpolation functions (InterpolateLinear, InterpolateWeibull, InterpolateExponential, InterpolateInversePower) now return the correct values in all cases when used in user-defined reports.

## Version 4.0

### Interpolation Capabilities

Finally, an easy way to calculate ultimates using irregular development periods or exposure periods! New user-defined functions and enhanced exhibit option capabilities allow you to interpolate development factors. Select from several fits, including linear, exponential, Weibull, and inverse power, and apply them to cumulative development or ratio-to-ultimate factors.

### Other major changes
Exhibits:
1. The View|Exhibit Options dialog (where you set up what averages to calculate on exhibits) now has new options to turn on/off different methods of interpolation on your development exhibits.
2. The exhibits can now have an additional row of selected factors, interpolated selected factors.

Methods:
Any method columns that use selected development factors (e.g. Paid Loss Development method) now use a new function called "IfInterpoplate."  This function allows the column to pull factors from either of two places, depending whether you are interpolating or not. The "switch" that controls this is on the View|Exhibit Options dialog.

### Printing Enhancements
You can now insert new page layout settings any number of times within a single print list. For example, you can print a number of pages landscape, switch to portrait for several tables, and then switch back to landscape, all within the same print job. This enhancement will provide for significantly easier batch printing and printing to PDF files.

### Cape Cod Methodologies
ReservePro's available methods now include several new Generalized Cape Cod methods for use in calculating ultimates losses, ALAE, and Salvage & Subrogation. The Cape Cod method is similar to the Bornhuetter-Ferguson approach in that it's a blend between a development method and an exposure-based method, but with the added advantage of a formula-driven expected (or a priori) loss.

### New Actual vs. Expected Analysis Reports
Ten new reports have been added to the system in Loss, Claims, ALAE, Premiums and Sal/Sub to help you perform actual vs. expected analyses. The reports will compare actual versus expected development over the last diagonal (i.e. latest year, half-year, quarter or month). The reports also leverage the system's new interpolation capabilities to adjust for cases when the latest diagonal is an interim period. The reports reference the Selected Development Factors array but can be easily replicated to reference other developmental patterns such as the prior evaluations' selected development factors or an implied pattern from the prior evaluations' selected ultimates.

### New Fit Capabilities
Ever find the need to perform a curve fit down a column of data in order to smooth your selections or extrapolate data for the most recent years? Four new user-defined functions have been added to the system to assist you in these efforts: FitLinear, FitExponential, FitWeibull and FitInversePower. Similar to Excel's TREND function, FitLinear fits a linear equation (using the method of least squares) to a set of data points and returns values in a straight line. Like Excel's GROWTH function, FitExponential fits an exponential equation (using the method of least squares) to a set of data points and returns values along an exponential curve. Similarly, FitWeibull and FitInversePower return values along a Weibull and inverse power curve. The functions will also automatically exclude all blank cells, allowing you to select only those cells you want to include in the fit. One common application might be the need to perform a fit down a column of calculated severities, loss rates, or loss ratios for use in an a priori selection for the Bornhuetter-Ferguson methods.

### New Max and Min Functions
Two new functions for Max and Min have also been added to ReservePro's collection of user-defined functions. Max(A,B) will return the maximum of the two values and Min(A,B) will return the minimum of the two values. Need to compare more than two values? Use the functions in a nested array such as Max (Max( Max (A, B), C), D). One application may be in the selection of an ultimate value based on the max or min of the calculated ultimates.

### Printing Weights in Comparison of Ultimate Reports
Are you including Weighted Averages on your Comparison of Ultimate Reports? Now you can display these weights on your report along with your calculated ultimate columns. Printed reports can also either include or exclude the weights, so you can use one for final reporting and another for workpaper documentation.

### New Rounding Option
We have added a new option for rounding totals on methods and reports. The new option can be found at Tools|Workstation Setup|Show column totals using full precision.

ReservePro has traditionally calculated column totals using the balances as displayed on the screen. This assured that a printed report could be totaled correctly with a calculator; for example, if you have a column of numbers that all round to displayed values of zero, the total of that column is zero.

Clients with data with only a limited number of data points requested that we perform calculations using the full precision that ReservePro stores internally for those balances, rather than the displayed, rounded amounts. The new rounding option provides this capability. Resulting totals may not always exactly match the numbers displayed in the column; it is possible that a column of "apparent" zeros could total to 4 or 5. However, in certain cases the new totals may agree more consistently among different reports.

### Expanded Premiums Capabilities

Though they were available for download together with some minor fixes in fall 2003, this version of ReservePro marks the first widespread release of new arrays for Earned and Written Premiums, allowing you to track and analyze either or both separately. In addition to new standard arrays, we also built in a number of helpful exhibits, development methods and summary reports that take advantage of this new data. Depending which version of the system you've been using, you may or may not have seen these before.

### Other minor fixes

- You can now abbreviate the exhibit statistics labels so they take up less room on the exhibits.

- A new option in Workstation Setup allows you to choose which layer a file will open in, as opposed to always defaulting to the Net layer.

- We added the ability to right-click on a table in the Navigator and select to replicate it to a user-defined table.  If you right click on a user-defined table, you can edit, replicate, or delete it.

- We changed the "Replace" function during import to only replace the data in those tables for which there is new data and leave other existing tables alone.  (This includes selected factors, and applies to imports from TriangleMaker, so TM no longer clears any SDFs when importing if there are no matching selections in the incoming file.)

- You can now insert page numbers >999 in printed reports.

- Copy/paste with the clipboard (Ctrl+C, Ctrl+V) now works as expected in all cases on the Weighted Average Ultimates Weights Settings screen.

- We added Euro currency symbol in File | Properties | Display.

- Selected development factors now compress rather than being cleared when you compress columns in a data set.

- We fixed an issue that occasionally appeared when replicating a user-defined method from one file to another.  It was possible under certain circumstances for the method and its ultimate to become separated in the new file, with the ultimate appearing to have come from a different method.  This issue has been resolved in version 4.

- The tail factor analysis details now print along with the related exhibits in all cases.