Quick Start Guide

Excel Solver Upgrader Version
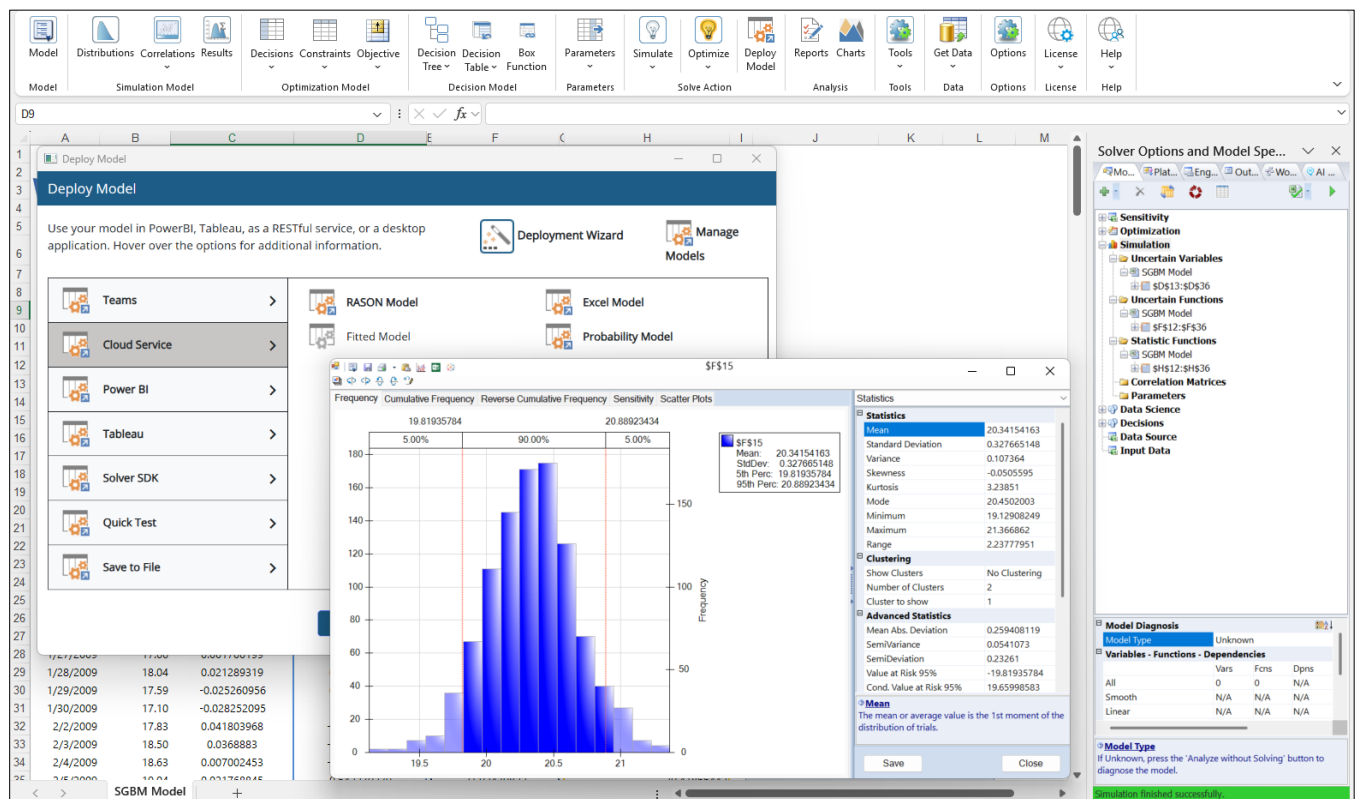
Upgrader Quick Start Guide Version 2025 Q4

Congratulations. As a user of the basic Excel Solver you already likely know the benefits of optimization. Since you're reading this, you probably have a problem that goes beyond what the basic Excel Solver was designed to handle:

1. You would like to solve larger optimization models, or solve them faster.

2. You would like to get better answers for more complex and challenging problems.

3. You would like to capture and manage uncertainty in your model.

4. You would like to solver optimization and simulation models or create data science and prediction models **in the Cloud**.

You can rest assured that you are in good company, since Frontline Systems not only built the basic Excel Solver but offers powerful upgrades that are the leading optimization and simulation tools in Excel, preferred by over 7,000 businesses and universities around the world.

This Upgrader Quick Start Guide covers key pieces of information to help you get started quickly and successfully with our Solver upgrade products. You'll be able to use Analytic Solver Comprehensive on a free trial basis. Everything discussed in this Quick Start Guide also applies to our most powerful product, Analytic Solver Comprehensive, and it's subset products: Analytic Solver Optimization, Analytic Solver Simulation and Analytic Solver Upgrade.

For more information on any of these steps or topics, refer to the User Guide and Reference Guide, available in the Support section of Solver.com, or from within Excel by going to the **Help** menu on the **Analytic Solver** tab and selecting **User Guides**.

Key Enhancements from the Basic Excel Solver

Let's start with what **isn't** going to change when you upgrade:

1. ***You can instantly solve your existing models and continue to use any existing VBA code.*** Your existing optimization model built using the basic Excel Solver should work as-is without any changes.

2. ***You can continue to use an interface similar to the Excel Solver dialog if you want***. All our optimization Solver upgrades include an enhanced version of the basic Excel Solver dialog, so you can take advantage of the larger problem size limits and additional engines without even having to learn how to use the Ribbon and Task Pane interface (although after you do try it out, we think you'll never want to go back).

Now let's quickly summarize the features and benefits **you do get** when you upgrade:

1. ***The ability to solve much larger problems, much faster***. Our upgraded products allow you to solve problems anywhere from 10x to 40x larger than the basic Excel Solver, and solve them much faster than before. With optional plug-in Solver Engines, you can solve problems of virtually unlimited size.

2. ***The ability to solve a wider variety of problems***. With the new constraint types and Solver Engines we include, you can solve more types of problems.

3. ***Automatic guidance, giving you insight into your model and results***. Analytic Solver will analyze your formulas, determine the type of model you've created, provide ideas to help you get a better answer more easily, automatically choose the best available Engine to solve it, and then help you understand the results.

4. ***Instant connection to knowledgeable technical support***. Connect to a live person from right inside Excel, and skip the explanations you'd have to give by email or phone – our software will send diagnosis and error information automatically to the tech support rep.

5. ***A whole new way to model business situations with many dimensions***. Besides building "regular" models that are compatible with the basic Solver, with Analytic Solver you can use Dimensional Modeling to replace thousands of copied formulas with just a few cells.

6. ***The ability to capture and manage uncertainty***. Very rarely do we have perfect information. Rather than putting in a single value to represent factors such as the weather, stock prices, and interest rates, using Monte Carlo simulation techniques in Analytic Solver, you can include uncertainty in your model, see the full range of potential outcomes, and make better decisions.

7. ***Powerful Data Science and Time Series Analysis tools within Excel.*** Analytic Solver Comprehensive includes Analytic Solver Data Science (formerly Analytic Solver Data Mining) which is the only comprehensive data science add-in for Excel. Analytic Solver Data Science may also be purchased as a stand-alone product. Analytic Solver Data Science's capabilities include neural networks, classification and regression trees, logistic regression, linear regression, Bayes classifier, K-nearest neighbors, discriminant analysis, association rules, clustering, principal components and more.

8. **Access to Analytic Solver Cloud.** The release of Analytic Solver V2025 Q4 includes our latest offering, Analytic Solver Cloud – a "modern JavaScript add-in" usable in both

Excel for the Web (formerly Excel Online) and the latest versions of desktop Excel, for Windows and Macintosh. Analytic Solver Cloud handles optimization and simulation models, forecasting and data science models; fully compatible with models created in previous versions of Analytic Solver. Your license for Analytic Solver will allow you to use Analytic Solver Desktop in desktop Excel or Analytic Solver Cloud in either desktop Excel or Excel for the Web.**.**

9. **Capability to translate your Excel optimization, simulation or data science workflow into Frontline's new RASON modeling language** - radically simplifying the path to create an application that can run in a **web browser**, or a **mobile app** for phones or tablets. RASON® – **R**estful **A**nalytic **S**olver® **O**bject **N**otation – is a modeling language embedded in **JSON** and a REST API that makes it easy to create, test and deploy **decision services** powered by **analytic models** in **web** and **mobile** applications – using business rules and DMN decision tables, optimization, simulation, forecasting and machine learning. For more information, go to www.RASON.com.

Installing the Software

You can use Analytic Solver Cloud in Excel for the Web through a Web browser (such as Edge, Chrome, Firefox or Safari), without installing anything else. This is the simplest and most flexible option, but it requires a constant Internet connection.

To use Analytic Solver Cloud in Excel Desktop on a PC or Mac, you must have a current version of Windows or iOS installed, and **you will need the latest Excel version installed via your Office 365 subscription** – older non-subscription versions, even Excel 2019, do not have all the features and APIs needed for modern JavaScript add-ins like Analytic Solver Cloud.

To use Analytic Solver Desktop (Windows PCs only), you must have first installed Microsoft Excel 2013, 2016, 2019, or the latest Office 365 version on Windows 10, Windows 8, Windows 7, or Windows Server 2019, 2016 or 2012. (Windows Vista or Windows Server 2008 may work but are no longer supported.). It's not essential to have the standard Excel Solver installed.
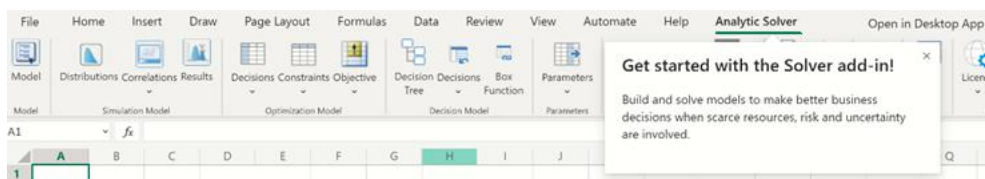
Installing Analytic Solver Cloud

Analytic Solver Cloud is composed of two addins: Analytic Solver and Analytic Solver Data Science (formerly Analytic Solver Data Mining). To use the Analytic Solver and Data Science add-ins, you must first "insert" them for use in your licensed copy of desktop Excel or Excel for the Web, while you are logged into your Office 365 account. Once you do this, the Analytic Solver and Data Science tabs will appear on the Ribbon in each new workbook you use.

To insert the add-ins for the first time, open desktop Excel (latest version) or Excel for the Web, click the **Home** tab on the Ribbon, then click the down arrow next to the **Office Add-ins** button.
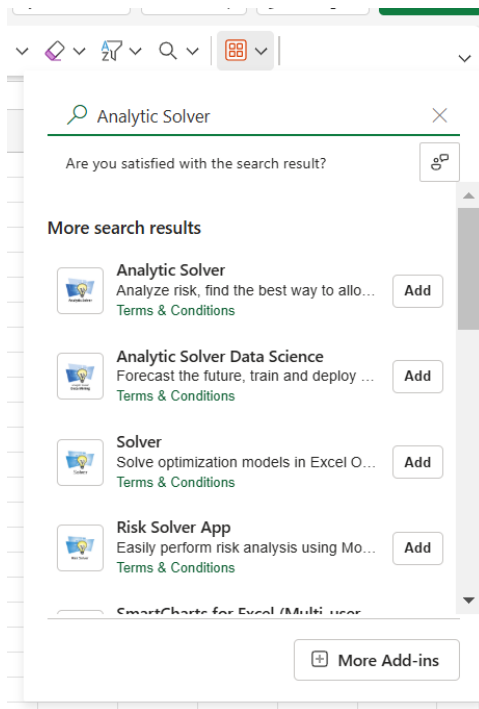
Type "Analytic Solver" in the search field. The Analytic Solver add-in will appear at the top of the search results, click **Add**. After a moment, you should see the **Analytic Solver** tab appear on the Ribbon, with a note about how to "Get started with the Solver add-in!", as shown below.

Repeat these steps to search for, locate and Add the Analytic Solver Data Science add-in. After a moment, you should see the Data Science tab appear on the Ribbon, with a similar "Get started" note.

After you perform these steps (one time) to insert the Analytic Solver and Analytic Solver Data Science add-ins, they will appear under "My Add-ins". If you ever need to remove the add-ins, click the "…" symbol to the right of the add-in name, then click the Remove choice on the dropdown menu that appears.
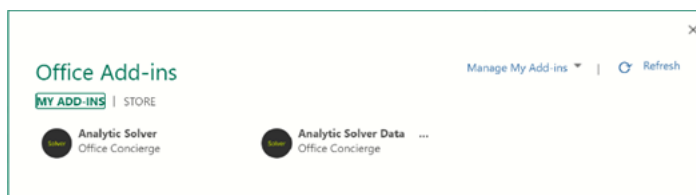
Installing Analytic Solver Desktop

Run the SolverSetup.exe program to install the Analytic Solver Desktop – whether you are using Analytic Solver Comprehensive, or any of its subsets, with either 32- or 64-bit Excel. The

User Guide chapter "Installation and Add-Ins" covers installation step-by-step, and explains how to activate and deactivate the Analytic Solver Excel add-in.

Logging in the First Time

The first time you run Analytic Solver (Desktop or Cloud) after installing the software on a new computer, when you next start Excel and visit the Analytic Solver tab on the Ribbon, **you will be prompted to login**. Enter the **email address** and **password** that you used to register on Solver.com. Once you've done this in Analytic Solver Desktop, your identity will be "remembered," so you won't have to login every time you start Excel and go to one of the Analytic Solver tabs. In Analytic Solver Cloud, you may be asked to login more frequently. To login or logout at any time, click License – Login/Logout.

Using Your Existing Models

All Analytic Solver versions are 100% compatible upgrades to the basic Excel Solver, from Analytic Solver Decision to Analytic Solver Comprehensive. This means you can solve your existing models immediately, taking advantage of Analytic Solver's faster speed, additional solving methods, and larger problem size limits, without having to make any changes to your model or existing VBA code. Simply open the workbook containing the model and use the **Solver Parameters** dialog, or just click the **Optimize** button on the Ribbon (see below).

> ***Online Resource:*** *You can see an overview video of a model built using the Excel Solver and how to solve it in Analytic Solver as-is. In addition, you can also see how to quickly and easily build the same model from scratch using the Ribbon and Task Pane interface by clicking here.*

Using the Ribbon and Task Pane

This section contains an overview of the Ribbon and Task Pane interface, as well as the alternative Solver Parameters dialog (similar to what you've used in the basic Excel Solver).

> ***Online Resource:*** *You can also see a short overview video of the Ribbon and Task Pane interface on our website by clicking here.*

The Ribbon is your 'gateway' to Analytic Solver's graphical user interface. Most often, you simply click on the arrow at the bottom of a button on the Ribbon to open a dropdown gallery with more buttons, and then you click one of these choices.

The Analytic Solver Ribbon (in both the Desktop and Cloud apps) appears as a tab on the standard Ribbon at the top of the Excel application window, and it stays in this position:
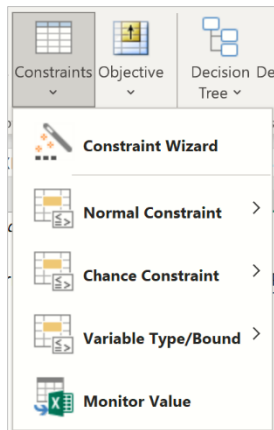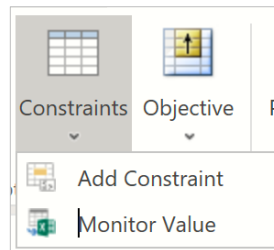
Analytic Solver Desktop
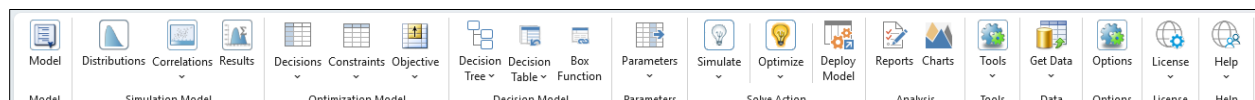
Analytic Solver Cloud
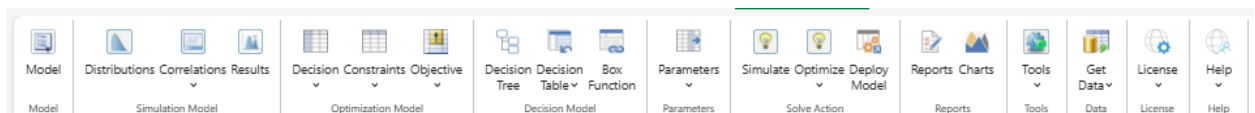
The small downward pointing arrow below each of the buttons indicates that you can open a **dropdown gallery** of options related to that button. For example, clicking the downward arrow for **Constraints** opens a gallery of further options for defining constraints:

Clicking **Normal Constraint** in Analytic Solver Desktop shows the traditional constraint relations, and clicking the remaining gallery choices will display new options that you haven't had in the basic Excel Solver.

Clicking **Add Constraint** in Analytic Solver Cloud opens the Add Constraint dialog where you can enter a constraint with traditional relations or any new options not featured in the basic Excel Solver.

The buttons on the Ribbon play the following roles:

- Clicking the **Model** button displays the Task Pane (see more on this below).

- The *Simulation Model* group of buttons relate to setting up simulation models:
  - Clicking the **Distribution** button gives you a range of pre-defined probability distributions you may choose to represent uncertainty in your model and access to our new Distribution wizard.
  - Clicking the **Correlations** button brings up a dialog to allow you to easily create, edit or delete correlation matrices or fit a copula. The down-arrow allows you to turn the use of correlations on and off.
  - Clicking the **Results** button opens a gallery of options that allow you to designate a cell as an output cell for an uncertain function (to obtain statistics, charts or other simulation results), or insert calls to PSI Statistics functions to compute statistics, risk measures, or range values for uncertain functions.

- The *Optimization Model* group of buttons relate to setting up optimization models:
  - Clicking the **Decisions** button creates a new "normal" decision variable using the currently selected cell. Clicking the down arrow allows you to designate a cell as a decision variable, and in stochastic optimization, choose normal or recourse decisions.
  - Clicking the **Constraints** button opens the Add Constraint dialog which lets you easily define constraints, including bounds and integer restrictions on decision

variables, and chance constraints in stochastic optimization. Clicking the down arrow allows you to do all of the above plus gives you access to our new Constraints wizard.

- o Clicking the **Objective** button opens the Add Objective dialog which allows you to designate a cell as the objective function, and choose whether it should be maximized or minimized. Clicking the down arrow allows you to do all of the above plus "summarize" an objective containing uncertainty if solving a stochastic optimization model.

- The *Decision Model* group of buttons relate to setting up decision trees or decision table models or models that use custom box functions.
    - o Click **Decision Tree** to easily create decision nodes and branches, event nodes and branches, and terminal nodes. The tree is drawn in graphic form on the spreadsheet; standard Excel worksheet formulas compute 'rollback' values at each node, and the best-choice value at the root node, based on either expected value or utility function (certainty equivalent) criteria. With a Ribbon choice, you can graphically highlight the optimal path through the tree.
    - o Click **Decisions** to add a decision table to the worksheet. Decision tables contain a set of rules which specify actions to perform based on specific conditions. Decision tables are a good tool to use when there is a consistent number of rules, or conditions, to be evaluated followed by a specific set of actions to be performed once a rule, or condition, is met.
    - o Click **Box Function** to create and utilize a user-defined function within an Excel model.

- Clicking the **Parameters** button allows you to designate a cell as a parameter to be varied across multiple optimization or simulation runs, or designate a cell range as input data for runtime use. You can even find *candidate* cells for parameters *automatically*, displaying a tornado chart that shows which cells have the greatest impact on your model results.

- The *Solve Action* group of buttons relate to *solving* your optimization or simulation model:
    - o Clicking the **Simulate** button turns on *Interactive Simulation*, and lights up the bulb; clicking it again turns off *Interactive Simulation* and the bulb. The down-arrow allows you to run a single simulation at a time.
    - o Clicking the **Optimize** button runs an optimization, while clicking the down-arrow gives you a list of choices for how to solve the model. You can use the Analyze Without Solving option to find out what type of model (linear, nonlinear, etc.) you've defined, and what Solver Engine can be used to solve it.
    - o Clicking the **Deploy Model** button opens a new dialog with a list of choices that automatically convert your existing optimization, simulation or simulation optimization model into a model written in the new RASON Modeling Language that can be solved in Rason Cloud Services, Power BI, Tableau, with the Solver SDK, from within a customized Web application or shared via Microsoft Teams. This feature reduces months of development work to a single button click!
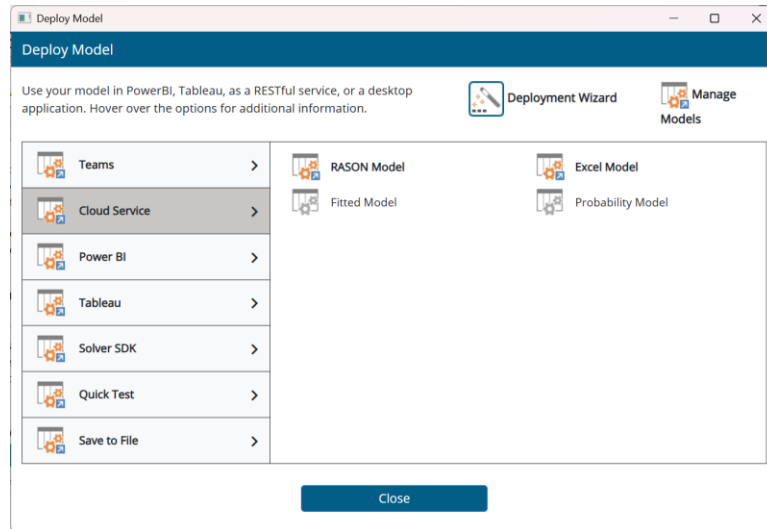
See the chapter, Deploying Your Model, within the Analytic Solver User Guide for more information on this exciting feature!

- The *Analysis* group of buttons relate to analyzing your results:
    o Clicking the **Reports** button gives you access to a full range of reports for optimization, simulation, sensitivity analysis, and discriminant analysis.
    o Clicking the **Charts** button lets you create and manipulate charts related to your optimization, simulation, or sensitivity analysis results – including charts that cover multiple optimization or simulation runs, with varying parameters.

- The *Tools* menu is covered more fully in the User Guide. It allows you to convert @Risk models to use Solver functions, save an optimization model to the Excel worksheet, identify constant input parameters and publish models to users that do not have a license for Analytic Solver.

- Compute summary measures (sum, average, standard deviation, minimum or maximum) for variables in a dataset with up to billions of rows, stored across many hard disks in an external compute cluster running Apache Spark (https://spark.apache.org/), by clicking the **Get Data** icon. This kind of summary data is often what you need as input parameters to an optimization or simulation model. See the Analytic Solver Data Science User Guide for more help on this new feature.

- Clicking the **Options** button displays a dialog of options for controlling the optimization and simulation processes, as well as for formatting charts and graphs.

- Use the **License** button to manage your account and licenses.

- Use the **Help** button to open example models or the Help Center, where you can find pre-recorded webinars and explore our User Guides.

Each of these GUI functions is described more in depth in the Reference Guide chapter "Using the Ribbon and the Task Pane."

Alternatively, if you've used the basic Excel Solver we developed for Microsoft, you'll find the **Add-Ins** tab in Analytic Solver Desktop contains a **Premium Solver** button which displays a

Solver Parameters dialog very similar to the one you've used before. Changes you make to a model here are reflected in the Task Pane, and vice versa. You can easily switch between the Solver Parameters dialog, and the Ribbon and Task Pane as often as you wish, without having to restart Excel or close and re-open any open workbooks. See the Analytic Solver Reference Guide for more information.
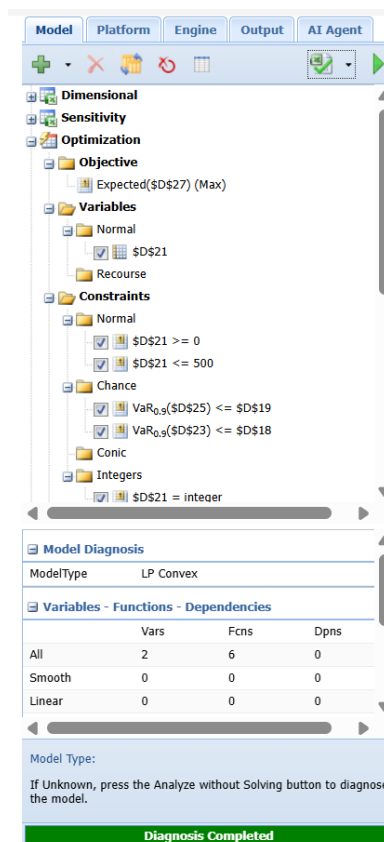
The Task Pane

Clicking the **Model** button displays the Task Pane, normally docked at the right edge of the Excel window. On the Task Pane **Model tab**, you'll see an outlined list of all the elements of your model: (i) objective, decision variables, and constraints for optimization models, (ii) uncertain variables, uncertain functions, statistics, and correlations for simulation models, (iii) parameters for both kinds of models and (iv) datasets and results for data mining, text mining, and time series models. As explained below, other tabs on the Task Pane provide quick access to option settings, a log of events that happen during an optimization or simulation, and for long-running optimization models, a continually updated status report plus a dynamic chart of the objective.
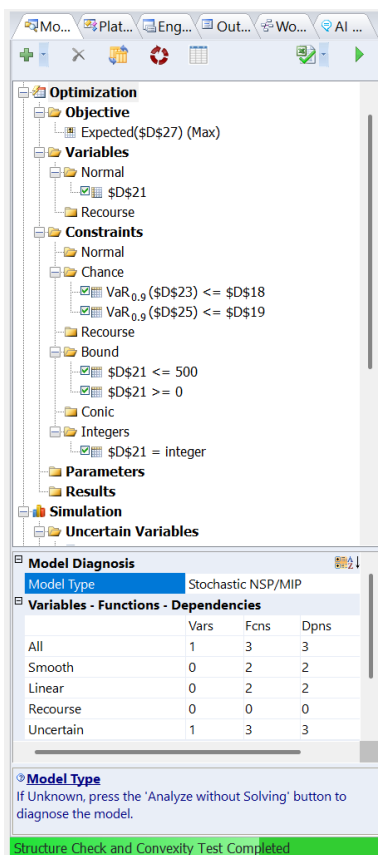
Analytic Solver Desktop   *Analytic Solver Cloud*

The Task Pane Model tab is *modeless*: You can move the mouse outside the pane, edit formulas on the worksheet, or use other commands.

The Task Pane is initially docked to the right side of the Excel window, but you can select its title bar with your mouse, **drag** it to another position, and **resize** it, as shown on the next page. To "re-dock" the Task Pane, select its title bar with the mouse, drag to a position just beyond the right edge of the Excel window, then release the mouse.

Use the **Model tab** to view your model in outline form, and optionally edit model elements in-place. Use the **Platform tab** to view or change Platform options, such as the number of optimizations or simulations to run, or default bounds on decision variables or uncertain variables. Use the **Engine tab** to select a Solver Engine and view or change its options. Use the **Output tab** to view a log of solution messages, or a chart of the objective values. Use the **Platform** tab to set the number of optimizations and simulations to be performed or the **Output** tab view a specific simulation trial.

If forecasting and data science are new for you, don't worry – you can learn a lot about them by clicking the **AI Agent** tab to open Frontline's artificial intelligence technical support assistant. AI Agent is designed to provide assistance and support for users of Frontline Solvers' Analytic Solver and Analytic Solver Data Science software. The AI Agent is knowledgeable about the functionality and features of the software, as well as the concepts and processes involved in optimization, simulation and data science/forecasting. Just open AI Agent while your model is open or enter a topic or question such as "How can I make my nonlinear model, linear?" and click Ask AI to get started.
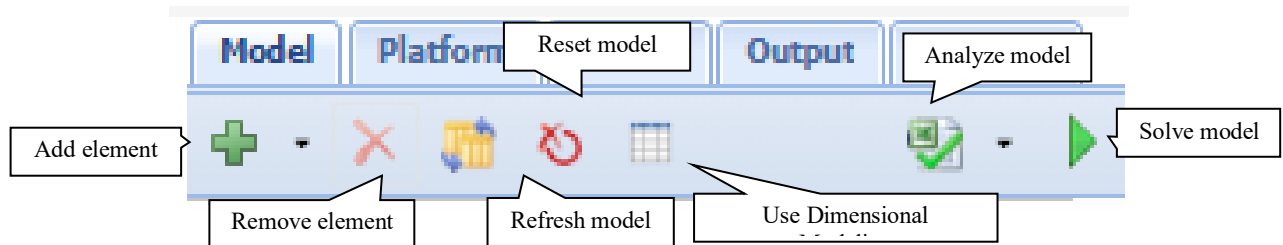
Using Buttons on the Task Pane

Use the **buttons** at the top of the **Model tab** to add or remove model elements (you can also use the Ribbon options to do this), refresh the model outline when you've made unusual changes to the worksheet, **analyze** the structure of your model, or **solve** (run) the optimization or simulation model:
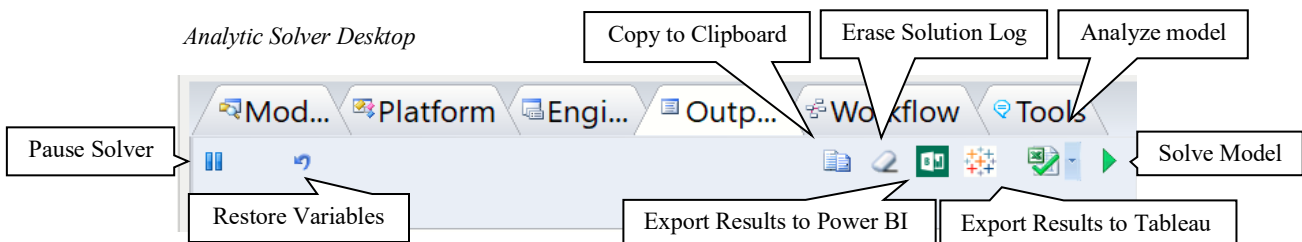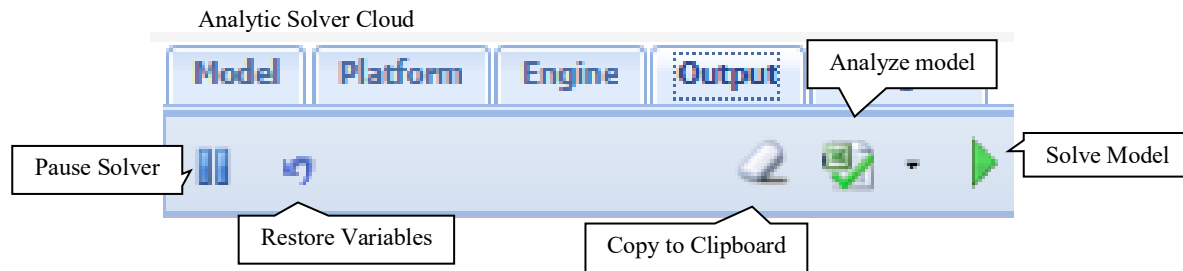
Analytic Solver Desktop
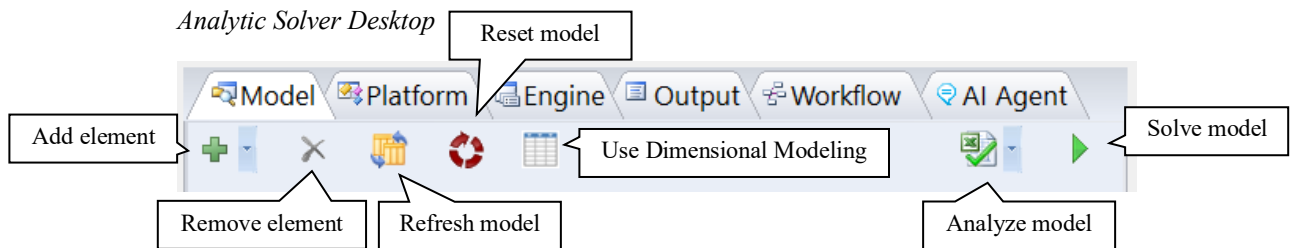
Analytic Solver Cloud

Use the **buttons** at the top of the **Output tab** to pause or stop the Solver, **restore** the original values of the decision variables**, copy** the solution message log to the Windows Clipboard (so you can paste it into another application), **erase** the solution log, **export** the Solver results to **Microsoft's Power BI** or **Tableau**, **analyze** or **solve** the model.

Analytic Solver Desktop

Analytic Solver Cloud

Analyze model

Pause Solver

Solve Model

Restore Variables

Copy to Clipboard

Getting Help

If you are new to Analytic Solver and/or optimization, simulation, forecasting and data science, don't worry – Frontline's AI technical support assistant, AI Agent, is here to help. Click the AI Agent tab (on the far left of the Analytic Solver Task Pane) while your model is open to allow AI Assist to analyze your model and check the formulation for correctness. AI Agent is knowledgeable about the functionalities and features of the software, as well as the underlying concepts and processes involved in optimization, simulation, forecasting, and data science. Just enter a topic or question such as "How do I convert my nonlinear model to a linear model?" and click **Ask AI** to get started!

Welcome to Analytic Solver AI Agent!

Whether you're a business or decision analyst, risk analyst, data scientist, or a manager driving performance – you're in the right place.

Our AI-powered Analytic Solver is built to help you tackle real business problems, no matter how complex or uncertain.

- **Just starting out?** Describe your challenge in plain language business terms, typed in the text box below. Our AI Agent, pre-trained on our user guides, reference guides and example models, plus experience across the world with optimization, simulation and data science, can often tell you step by step **how to create** an analytic model to solve your challenge.

- **Have an existing model?** If it's built with our Solver, Risk Solver or Analytic Solver, just **open the workbook** with the model. Click the Analytic Solver tab, and in the right-side Task Pane, click this AI Agent tab to prepare to **read and analyze** your model. The Agent is now ready to identify errors, suggest extensions, and answer questions you type in the text box below.

Click to change AI Settings, show example queries, save the current session or open a previously saved session.

Clears the window.

Interact with the AI Agent and receive answers given the specifics of Frontline Systems' software products.

Click here to read our full privacy commitment and learn how we safeguard your information.

Performs a search through Frontline Systems' extensive documentation.

Submit query here.

After typing a query,

- **Click *Ask AI*** to interact with the AI Agent and receive answers based on the specific details of Frontline Systems' software products. If your model uses Analytic Solver, open the workbook

and click the *AI Agent* tab to analyze the model, find errors, suggest fixes, and answer questions specific to your model!

For each new question, the AI Agent considers the chat history from your current session. You can click *Show Sources* to view links to the relevant pages in the official documentation.

- **Click *Search Documentation*** to perform a semantic search across all Analytic Solver and RASON documentation. The search results will appear in a format similar to the *Show Sources* section described above.

For more information on AI assistance in Analytic Solver, see the Analytic Solver User Guide.

Note: Frontline's AI Agent uses artificial intelligence which could produce erroneous information about people, places or facts, including misinformation concerning Frontline Systems software products. Frontline Systems bears no responsibility for these inaccuracies.

Building an Optimization Model

While you likely already know how to build a basic optimization model, in the User Guide there is a chapter called "Examples: Conventional Optimization" which contains a section on building your first optimization model, as well as an overview of examples included with Analytic Solver. These examples will be useful for ideas as you look to build more ambitious models that better capture the business challenges you face.

> ***Online Resource:*** *You can see an overview video on our website of how to build an optimization model from scratch by clicking* here*.*

You can access the User Guide from within Excel by clicking on **Help** on the Analytic Solver Ribbon and choosing **User Guides**. In addition, see below for links to helpful introductory videos in addition to the one above.

Building Your First Simulation Model

Better *understanding* the range of potential outcomes in a situation, and *optimizing* your decision given that range, can be a very powerful way to make even better decisions. In the User Guide there is a chapter called "Examples: Simulation and Risk Analysis" which contains a section on building your first simulation models as well as an overview of examples included with Analytic Solver.

> ***Online Resource:*** *You can see an overview video on our website of how to build a simulation model from scratch by clicking* here*.*

Again, you can access the User Guide from within Excel by clicking on **Help** on the Analytic Solver Ribbon and choosing **User Guide**. In addition, see below for links to helpful introductory videos in addition to the one above.

Exploring Example Models

Finding the Examples

Use **Help – Example Models** on the Ribbon to open optimization, simulation, forecasting/data science, stochastic optimization, simulation optimization and decision tree example workbooks with a list of examples you can open by clicking hyperlinks.

Using the Example Models and User Guide

The Analytic Solver and Data Science User Guides provide more detail on building your first optimization or simulation model, as well as step – by – step instructions for Analytic Solver Data Science. Example models used in these guides can be found by clicking **Help – Example Models** and relate to:

- Conventional Optimization
- Simulation and Risk Analysis
- Forecasting / Data Science
- Stochastic Optimization
- Sensitivity Analysis
- Decision Trees

Mastering Optimization and Simulation Concepts

Go from beginner to expert, and learn how to fully exploit the software by reading the **Mastering Concepts** chapters in the Analytic Solver User Guide.

New Features for Forecasting and Data Science

Analytic Solver Data Science software offers over 30 different methods for analyzing a dataset in order to forecast future events. The Data Science ribbon is broken up into five different segments as shown in the screenshot below.

Analytic Solver Data Science Desktop

Analytic Solver Data Science Cloud Ribbon
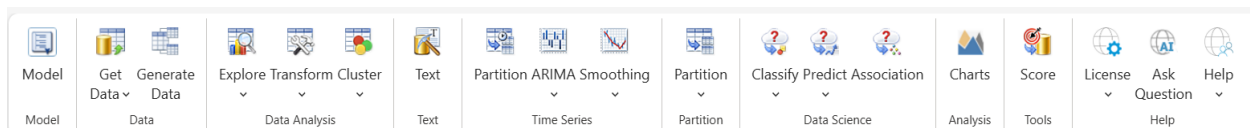
- Model – Click this icon to display the Analytic Solver Task Pane. Using the model tab, you can easily navigate between worksheets containing datasets and data science results.
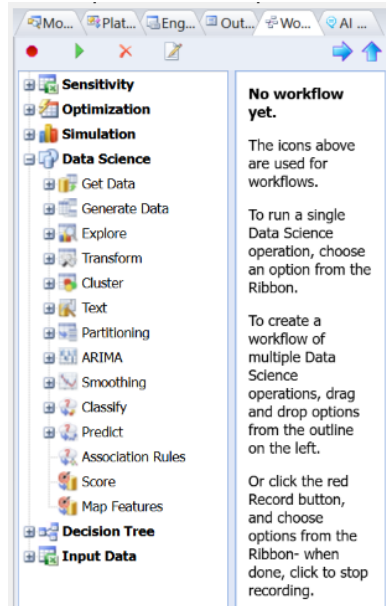
Data Science Desktop   *Data Science Cloud*
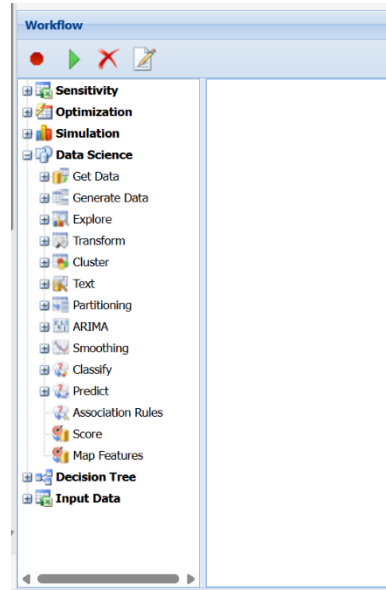
The Workflow tab in Analytic Solver, allows the combination of all available data science techniques into an, all-inclusive workflow, or workflows. Once the workflow, or pipeline, is created, either manually or simply by recording your actions, each data science method included in the workflow will be executed sequentially. See the *Analytic Solver Data Science Overview* chapter within the *Analytic Solver Data Science User Guide* for more information on this new feature.
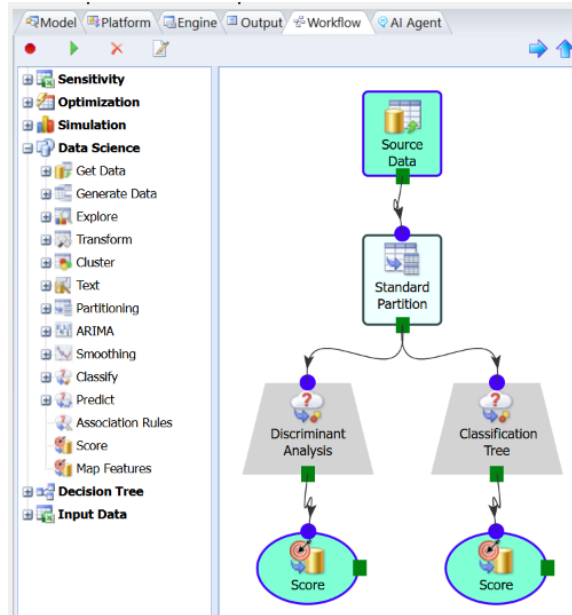
- Data – This section includes the Big Data and the Generate Data icons. Click the down arrow on the Big Data icon to reveal the menu. Select *Worksheet* to draw a representative sample from an Excel worksheet. Select *Database* (Analytic Solver Desktop only) to retrieve all data or draw a representative sample from a SQL database table. Select *File Folder* (Analytic Solver Desktop only) to import all files or a representative sample from within a single file folder. Click *Big Data* to either sample or summarize from a very large dataset. Results can be obtained immediately or at a later time.

  RASON Decision Services, Frontline's REST API, features an innovative (and patent pending) new capability for **automated risk analysis** of **machine learning** models. A further benefit of this feature is a general-purpose, easy to use new tool for **synthetic data generation**, to augment the data you already have. **Synthetic data generation** has come into use in recent years to augment available datasets, when the available data is limited, or is restricted by law or regulation, such as with personal health information (PHI).

- Data Analysis – This section includes four icons: Explore, Transform, Cluster and Text. (In the Cloud app, the Text icon is included immediately to the right of the Data Analysis.) Click Explore to create and manage charts, run Feature Selection or Analyze the data. Click Transform to transform datasets with missing date, perform binning and to transform categorical data. Click the Cluster Icon to perform cluster analysis. Click Text to perform an analysis on a collection of text documents using the new Text Miner feature.

- Time Series – This section includes three icons: Partition, ARIMA and Smoothing and are used when analyzing a time series.

- Data Science – This section includes four icons: Partition, Classify, Predict and Associate and are used to perform data mining activities. (In the Cloud app, Partition is included to the immediate left of the Data Science section.) Click Partition to partition a

dataset using Standard Partitioning or Partitioning with Oversampling. Click the Classification icon to use a classification method such as Discriminant Analysis, Logistic Regression, k – Nearest Neighbors, Classification Tree, Naïve Bayes, Neural Networks or Ensemble Methods to build a classification model. Click Prediction to use Linear Regression, k-Nearest Neighbors, Regression Trees, Neural Networks or Ensemble Methods to generate a prediction model.

- Click the **Score** icon to score your test data. In the Desktop app, click the Options button to open the Web Subscription Manager, check for software updates and set your preference for Operating/Support modes. In the Cloud app, this button does not exist.

- If forecasting and data science are new for you, don't worry – you can learn a lot about them by consulting our by clicking **Ask Question**, Frontline's artificial intelligence technical support assistant. AI Agent is designed to provide assistance and support for users of Frontline Solvers' Analytic Solver and Analytic Solver Data Science software. The AI Agent is knowledgeable about the functionality and features of the software, as well as the concepts and processes involved in optimization, simulation and data science/forecasting. Just enter a topic or question such as "What classification algorithms are supported in Analytic Solver Data Science?" and click Submit Query to get started. See below for more information.

- Click the **License** icon to open the Analytic Solver Licensing Center where you can view/change/add licenses and view and pay outstanding invoices. Click the Help icon to open sample datasets, open the Help File and check for updates. See below for a complete discussion of the Help icon.

- Use the **Help** button to open example models, open the Help Center, where you can find pre-recorded webinars or access our Knowledge Base or explore our User Guides.

Cloud Version and Solver Home Tab

With your free trial or paid license, you can use Analytic Solver in desktop Excel, and its cloud-based counterpart, [Analytic Solver](#) Cloud.

Analytic Solver Cloud is a "modern JavaScript add-in" that works in Excel for the Web, Excel for Windows and Excel for Mac (latest versions).

- All versions offer a Ribbon user interface featuring nearly-identical buttons and menus, and a Task Pane that summarizes models and provides access to Platform and Engine options.
- All versions use the same modeling languages (Excel formulas and our RASON® modeling language, handled by our PSI Interpreter), and both use the same algorithmic "engines" for mathematical optimization, Monte Carlo simulation and risk analysis, forecasting, data science and text mining.
- All versions can create or open existing optimization, simulation and data science models and datasets in Excel workbooks – and you can easily move such workbooks back and forth between desktop and cloud.

Security and Privacy Considerations

When you use Analytic Solver Desktop in Excel for Windows, your model is solved on the same computer, in the same memory and running process where Excel for Windows runs. You can save your workbook on your own computer, on Microsoft OneDrive "in the cloud", or elsewhere.

When you use Analytic Solver Cloud, your workbook is stored, at least temporarily, "in the cloud", and your model is **solved "in the cloud"**, using Frontline's RASON servers on Microsoft Azure. While many steps are taken to ensure your security and privacy, you should understand and be comfortable with how the technology works:

When the browser running on your computer communicates with Excel for the Web, all the information transmitted is encrypted using **Transport Layer Security (TLS) 1.2**, as is true for all "https" websites.

When you run or solve a data science, optimization or simulation model, a copy of your Excel workbook is transmitted to Frontline's RASON servers, again using **TLS 1.2**. A copy of your workbook is stored temporarily on these Azure-based servers, but is always **encrypted** "at rest" and "in motion". After the model is run or solved, all copies of your workbook are **deleted**; only a log of filename, model size and time taken to solve remains on the RASON servers.

Analytic Solver Cloud

Analytic Solver Cloud can be used with Excel for the Web, Excel for Windows and Excel for Mac (latest versions). Excel for the Web functions very similarly to desktop Excel so there's no learning curve; you can immediately be up to speed with Excel for the Web.

It's easy to move files between Analytic Solver Desktop and Analytic Solver Cloud products by simply saving your existing files to your Microsoft OneDrive account. Files saved on OneDrive may be opened in Microsoft Online or desktop Office. For Analytic Solver Cloud, **you will need the latest version installed via your Office 365 subscription** – older non-subscription versions, even Excel 2019, do not have all the features and APIs needed for modern JavaScript add-ins like Analytic Solver Cloud.

Solver Engines for Optimization

Using the Included Solver Engines

Your trial of Analytic Solver includes a comprehensive set of built-in Solver Engines which can be used to solve the entire range of problems you are likely to face including linear, non-linear, quadratic, non-smooth, and mixed integer problems, among others. Each Solver Engine has different strengths, making it better suited to solving a particular class or range of problems. You can choose which one you want to use by going to the **Engines tab** in the Task Pane, clicking on the drop down menu at the top, and selecting a Solver Engine.

Don't worry if you aren't sure what type of problem you have or which Engine would be best suited to solve it. If you wish, our "Automatic Mode" will analyze your model for you and automatically select the best choice from the available Engines to get you the best results. Simply go to the **Engines tab** in the Task Pane and make sure the "Automatically Select Engine" box is checked:
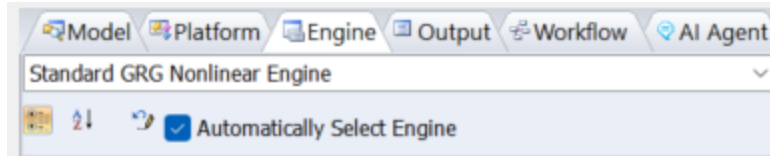
In addition, the Solver Engine Option Reference chapter in the Reference Guide includes details for each Solver Engine bundled in Analytic Solver Comprehensive, Analytic Solver Optimization and Analytic Solver Decision. It also briefly describes how these options may be examined or set using VBA, or in another programming language using Frontline's Solver SDK Platform.

Using Large-Scale Solver Engines

In addition to the included Solver Engines Analytic Solver Comprehensive and Analytic Solver Optimization and Solver SDK Platform allow you to install additional plug-in Solver Engines.

The installation program SolverSetup.exe installs the following optional plug-in Solver Engines: Gurobi, MOSEK, OptQuest, XPRESS, and KNITRO, as well as our own Large Scale SQP, Large Scale GRG, and Large Scale LP solvers for use with both Excel 32- and 64-bit. These Solver Engines allow you to solve virtually unlimited sized models at amazing speeds. Again, our Automatic Mode can automatically choose the best one for your particular problem. You can learn more about each Engine here. The new Solver Engine(s) will appear in the dropdown engine list shown at the top of the Task Pane Engine tab.

Using VBA Code in Analytic Solver Desktop

You don't have to know or use VBA to use Analytic Solver. But if you are familiar with the power of VBA, the User Guide includes two very useful chapters: "Automating Optimization in VBA" and "Automating Simulation in VBA." These chapters explain how to use the Object Oriented API in Analytic Solver Desktop to create, modify, and solve optimization and simulation models under the control of a custom application you've written in VBA.

Help Center

The Help Center gives you easy access to video demos, User Guides, online Help, example models, and Website support pages to learn how to use our software tools, and build an effective model.
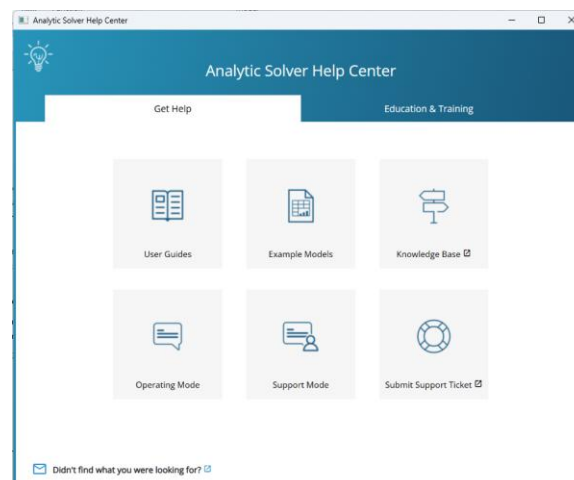
User Guides

Click the User Guides menu choice to open PDF files of the Analytic Solver Optimization and Simulation User and Reference Guides, Analytic Solver Data Science User or Reference Guides, or our Quick Start Guides.

Example Models

Clicking this menu item will open the Frontline Solvers Example Models Overview dialog with nearly 120 self-guided example models covering a range of model types and business situaltions.

Knowledge Base

Click Knowledge Base to peruse a multitude of online articles related to support and installation issues or to locate articles that will help you to quickly build accurate, efficient optimization, simulation, and data science models.

Operating Mode

Click Operating Mode to switch between three different levels of help.   The Excel formulas and functions you use in your model have a huge impact on how fast it runs and how well it solves. If you learn more about this, you can get better results, but if you don't, your results will be limited. Guided Mode can help you learn.

- Guided Mode prompts you step-by-step when solving, with dialogs.

- Auto-Help Mode shows dialogs or Help only when there's a problem or error condition.

- Expert Mode provides only messages in the Task Pane Output tab. (This mode not supported when using a trial license.)

Support Mode

Click Support Mode to switch between three different levels of support.   No information (cell contents etc.) from your Excel model is ever reported automatically to Frontline Systems, in any of these Support Modes. Only events in Frontline's software, such as menu selections, Solver Result messages, or error messages are reported.

- **Active Support** automatically reports events, errors and problems to Frontline Support, receives and displays messages to you from Support, and allows you to start a Live Chat with Support while working in Excel (**Recommended**).Auto-Help Mode shows dialogs or Help only when there's a problem or error condition.

- **Standard Support** automatically reports events, errors and problems anonymously (not associated with you) to Frontline Support, but does not provide a means to receive messages or start a Live Chat with Support.

- **Basic Support** provides no automatic connection to Frontline Support. You will have to contact Frontline Support manually via email, website or phone if you need help.

Submit a Support Ticket

If you're having installation, technical, or modeling issues, submit a Support Ticket to open an online support request form. Submit your email address and a short, concise description of the

issue that you are experiencing. You'll receive a reply from one of Frontline's highly trained Support Specialists within 24 hours, and generally much sooner.

Our technical support service is designed to supplement your own efforts: Getting you over stumbling blocks, pointing out relevant sections of our User Guides or example models, helping you fix a modeling error, or -- in rare cases -- working around an issue with our software (always at our expense).
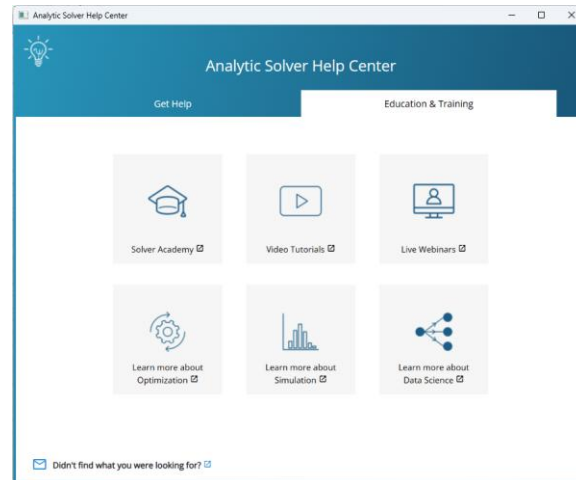
Solver Academy

Solver Academy is Frontline Systems' own learning platform. It's the place where business analysts can gain expertise in advanced analytics: forecasting, data science, text mining, mathematical optimization, simulation and risk analysis, and stochastic optimization.

Video Tutorials/Live Webinars

Click Video Tutorials to be directed to Frontline's You Tube Channel. Browse videos on how to create an optimization or simulation model or construct a data mining or prediction model using Analytic Solver.

Click Live Webinars to be redirected to www.solver.com to join a live or pre-recorded webinar. Topics include *Using Analytic Solver Data Science to Gain Insights from your Excel Data*, *Overview of Monte Carlo Simulation Applications*, *Applications of Optimization in Excel*, etc.

Learn more!

Click any of the three Learn More buttons to learn more about how you can solve large-scale optimization, simulation, and data science models, reduce costs, quantify and mitigate risk, and create forecasting, data science and text mining models using Analytic Solver.

Help Menu

Use the Help Menu to gain short cuts to live chat, example models, documentation, set your operating and support mode preferences, and also to open the Welcome Screen and check for software updates.
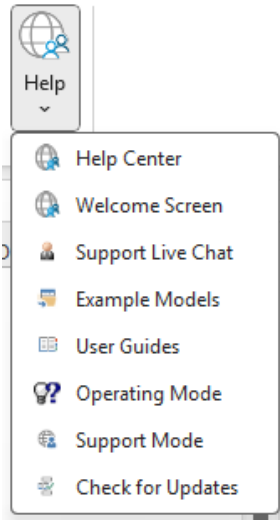
Use the Welcome Screen to check the status of your license or watch a quick video on how to get running quickly with Analytic Solver.
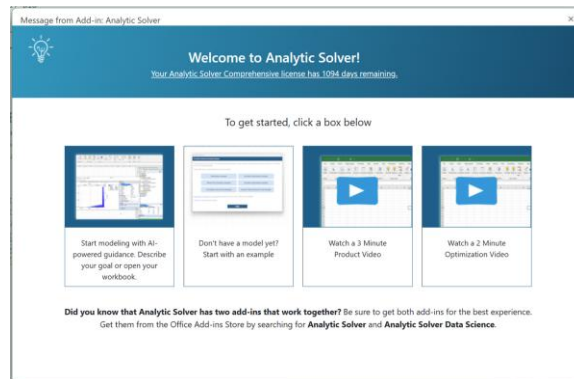
Support Live Chat

If you run into any issues when using the software, the best way to get help is to start a Live Chat with our support specialists. Click *Support Live Chat* to open a Live Chat during our business hours (or send us a message at other hours), just as if you were to start a Live Chat on www.solver.com. You'll see a dialog like this:
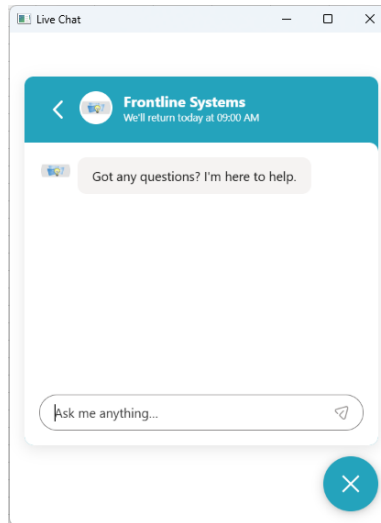
Note: If Support Live Chat is disabled, click the down arrow beneath Help and select *Support Mode – Active Support*.

Using Online Help Available in Analytic Solver Desktop

Analytic Solver's online Help appears when you click the Help button in the Analytic Solver Desktop Ribbon. More Help options appear on the dropdown menu below the Help button. You can also get help on Solver Result messages, Platform options, or any element of your model, by clicking the hyperlink that appears at the bottom of the Task Pane. For example, clicking the **Relation** hyperlink displays the Help window shown below.
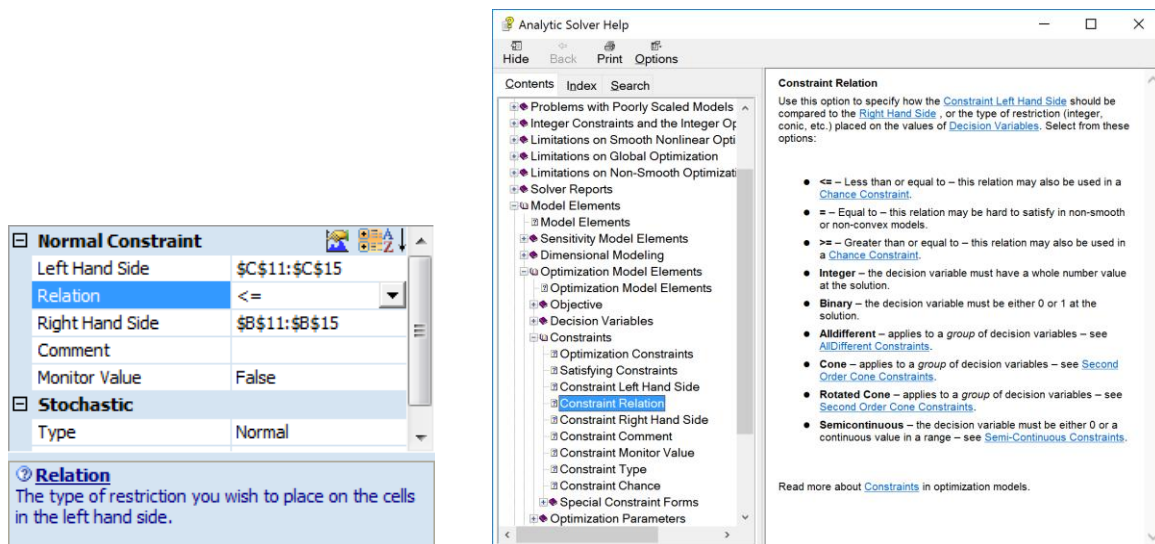
As with other buttons on the Ribbon, clicking the first menu choice has the same effect as clicking the main button: It opens the online Help viewer.

Managing Your Licenses

Click the License button to login or logout of Analytic Solver.
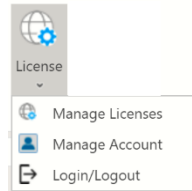
Click **License – Manage Licenses** to open the License Manager where you can manage your current licenses and accounts, open our Product Selection Wizard, connect to Live Chat or peruse through a list of FAQs.

The "MyLicenses" tab displays your current license and license type, along with the expiration date. Click "I'd like to…" to switch to a different license type, explore upgrade options or chat with a live agent. If you have a trial license, or your license has expired, you can request a quote to renew your current license.
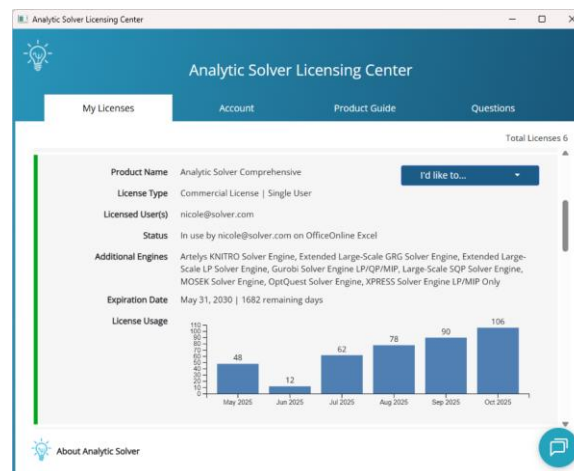
Click *About Analytic Solver* to open the following dialog containing information on this release.
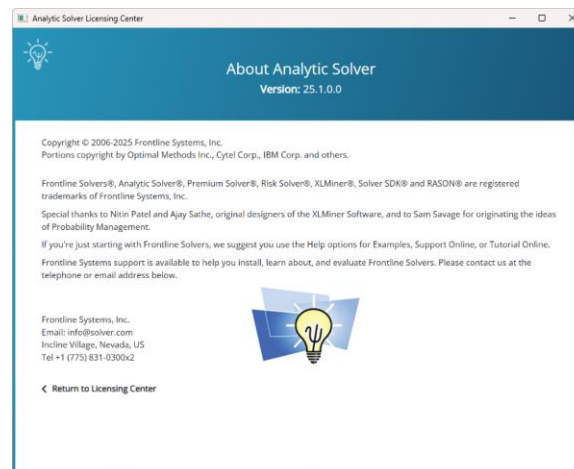
Click the Account tab to view your account on www.solver.com. Click Edit Profile to edit the information. Click Live Chat to open a Live Chat window or Log Out to log out of the product.
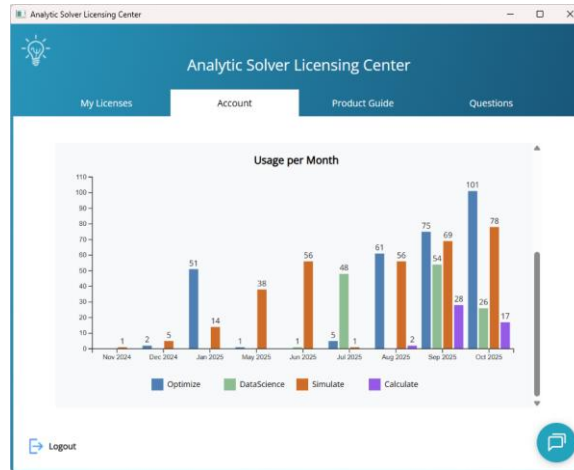
Click the Product Guide tab to view a list of products and pricing information. Click Product Selection Wizard to open the Product Selection Wizard. See the next section for information on this feature.

Click the Questions tab to review a list of FAQs, submit a support ticket or start a live chat.
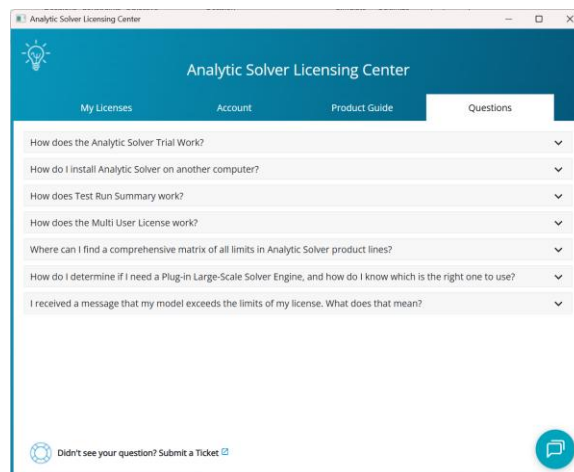
Product Selection Wizard

Select **Product Selection Wizard** from the Product Guide in the Licensing Center to open a series of dialogs that will help you determine which product will best meet your needs based on your recent pattern of use.

Select the Product that you'd like to purchase and then click **Next**. Click the *Optimization Choices* link to learn more about Analytic Solver products that can solve optimization models and to find more information on speed, memory, and the use of plug-in Solver Engines.

On this screen, the Product Selection Wizard will recommend a product or products based on your answers on the previous screens. Click Upgrade to purchase the recommended product. Click the *Optimization Choices* link to learn more about Analytic Solver products that can solve optimization models.   If at any time you'd like to chat with a member of our Technical Support staff, click **Live Chat**. Or if you'd like to amend your answers on a previous dialog, click **Back**.

When you run a simulation or optimization model that contains too many decision variables/uncertain variables or constraints/uncertain functions for the selected engine, the Product Wizard will automatically appear and recommend a product that *can* solve your model.
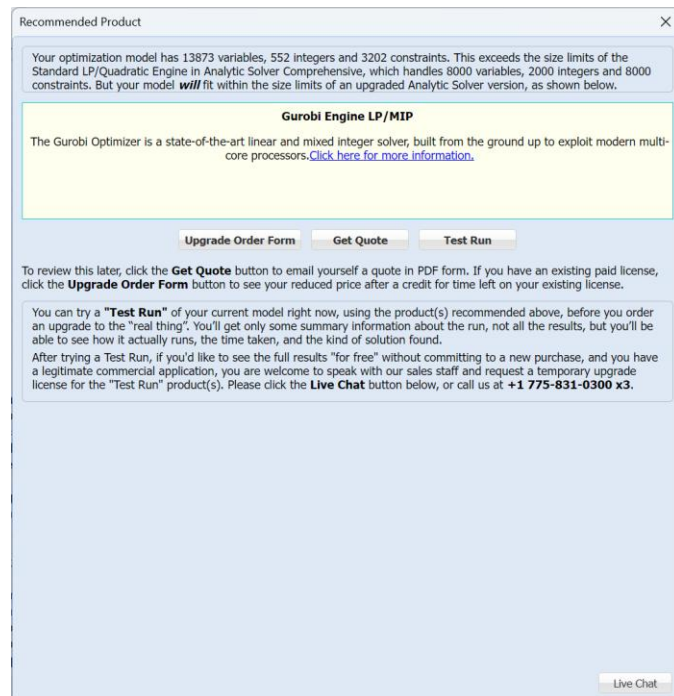
When you click "Test Run", the Product Wizard will immediately run the optimization or simulation model using the recommended product.   (Only summary information will be available.) At this point, you can purchase the recommended product(s), or close the dialog.

This same behavior will also occur when solving smaller models, if you select a specific external engine, from the Engine drop down menu on the Engine tab of the Solver Task Pane, for which you do not have a license. The Product Wizard will recommend the selected engine, and allow you to solve your model using this engine. Once Solver has finished solving, you will have the option to purchase the product.
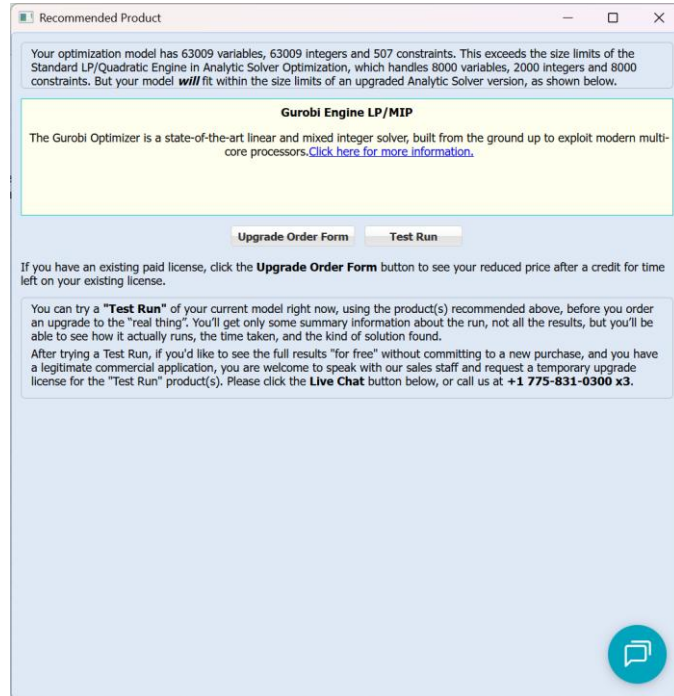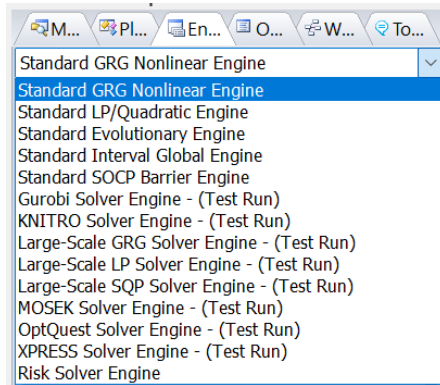
Help Building Models

We also offer consulting assistance, from helping you define the problem, to building and solving the model, to interpreting and communicating results. You can learn more online on our Consulting Assistance Page. You can also call us at 775-831-0300, or email us at support@solver.com.