RSA®Archer GRC Suite

Implementation Guide

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RSA Archer - Palisade @Risk Integration for Monte Carlo Simulation

RSA Archer GRC Platform version: 5.3 SP1

RSA Archer Integration version: 1.0

RSA

EMC²

Contact Information

Go to the RSA corporate web site for regional Customer Support telephone and fax numbers: **http://www.emc.com/support/rsa/index.htm**.

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Contents

Preface

About This Guide

This guide is for RSA® Archer™ GRC Suite administrators who need to install the RSA Archer - Palisade @Risk Integration 1.0 solution. It is designed to be used with the *RSA Archer GRC Platform Administrator Guide* portfolio.

This guide assumes that the reader is knowledgeable about the GRC industry and the RSA Archer GRC Suite.

RSA Archer GRC Platform Documentation Set

For information about the RSA Archer GRC Platform 5.3, see the following documentation:

Guide	Description
Administrator Guide	Provides administrators with a system overview, guidelines for navigating, and detailed instructions for key tasks.
Control Panel Guide	Provides administrators with instructions for completing tasks in the release.
Installation Guide	Provides administrators the details of the steps required to plan for, prepare, install, configure, grant access to, and test the release.
Release Notes	Provides administrators a detailed listing of new features, fixed issues, and known issues at the time of the current release.
User Guide	Provides end users with guidelines for navigating, detailed instructions for key tasks, and information about using communication tools.
Web Services API Reference Guide	Provides IT managers and programmers a list of the available web services for programmatically interfacing with the release. This guide provides formatting guidelines for field results, field inputs, and search inputs, and provides sample code for searching, adding and updating users, and updating assets.

Access the documentation from the Documents page on the RSA Archer Community at **https://community.emc.com/community/connect/grc_ecosystem/rsa_archer**.

Support and Service

Note: For this integration, the RSA Archer system exports data for simulation and imports simulation results, but does not do the actual Monte Carlo simulation. For assistance with export and import, contact RSA Archer Customer Support. If you have questions about the simulation models or Palisade @Risk, go to www.palisade.com for documentation, training, and support information.

Customer Support Information	**http://www.emc.com/support/rsa/contact/phone-numbers.htm**
Customer Support E-mail	**archersupport@rsa.com**
RSA Archer Community	**https://community.emc.com/community/connect/grc_ecosystem/rsa_archer**
RSA Archer Exchange	**https://community.emc.com/community/connect/grc_ecosystem/rsa_archer_exchange**

The Community enables collaboration among GRC clients, partners, and product experts. Members actively share ideas, vote for product enhancements, and discuss trends that help guide the RSA Archer product roadmap.

The Exchange is an online marketplace dedicated to supporting GRC initiatives. The Exchange brings together on-demand applications along with service, content, and integration providers to fuel the success of RSA Archer clients.

Chapter 1: Overview

About Palisade @Risk

Palisade @Risk is risk and decision analysis software that runs in Microsoft Excel and uses Monte Carlo simulation to allow you to see possible outcomes for a risk and the likelihood of occurrence. The Monte Carlo method takes randomly sampled input data and runs a risk analysis simulation hundreds or thousands of times in order to give you a probability distribution of all possible outcomes.

RSA Archer - Palisade @Risk Integration

The RSA Archer-Palisade @Risk integration allows you to perform risk analysis by running Monte Carlo simulations on your Risk Register application records (in the RSA Archer Risk Management solution) and calculating inherent and residual risk.

During a Monte Carlo simulation, distribution values from your risk data are sampled hundreds or thousands of times, and the inherent and residual impact of the risk is calculated each time. These results enable more accurate analysis of and decision making based on possible outcomes of a risk.

The integration supports two different calculation methods: Expert Elicitation and Historical Loss Data. The Expert Elicitation method is based on expert predictions whereas the Historical Loss Data method is based on actual previous values.

Integration Requirements

The RSA Archer-Palisade @Risk integration has specific requirements for installing, configuring, and using each of the products.

RSA Archer GRC Suite Requirements

You must meet the following requirements for the RSA Archer GRC Suite:

- RSA Archer GRC Platform 5.3 SP1 or later
- Valid license for RSA Archer Risk Management 4
- User account on the RSA Archer GRC Platform with access rights to the Data Feed Manager
- User account on the Archer GRC Exchange to download the solution files

Palisade @Risk Requirements

You must meet the following requirements for Palisade @Risk:

- Palisade @Risk version 6.0 Professional for Excel must be installed and ready to use
- Valid license for Palisade @Risk

Chapter 2: Installing the RSA Archer - Palisade @Risk Integration 1.0

Introduction

This chapter contains the following sections:

RSA Archer - Palisade @Risk Integration Files

The RSA Archer - Palisade @Risk Integration includes the following files:

- RSA_Archer_Risk_Management_4_With_Monte_Carlo_Simulation_SP1.zip
- expert_elicitation_import_template.csv

Install RSA Archer Risk Management 4 with Monte Carlo Simulation SP1

RSA Archer Risk Management 4 with Monte Carlo Simulation SP1 contains changes to the Risk Register application to enable the Palisade integration. You must install these updates to your RSA Archer Risk Management solution before using the integration.

Procedure

1. Click Administration > Application Builder > Install Packages.
2. In the Available Packages section, click Import to open the Select Import File dialog box.
3. Click Add New, then locate and select the package file that you want to import, RSA_Archer_Risk_Management_4_With_Monte_Carlo_Simulation_SP1.zip.
4. Click OK.
5. In the Available Packages section, locate the package file that you want to install, and click Install.
6. To modify the components of the installation package, follow these steps:
   a. In the Configuration section, select the components of the package that you want to install.

   Note: By default, RSA Archer only selects new applications, so you must select all other applications and questionnaires as needed.

b. In the Install Method section, for each component, select one of the following options.

Option	Description
Create New Only	Only creates new objects that do not currently exist in the instance. Does not update existing objects. **Important:** You must manually update any existing items that you want to change.
Create New and Update	Creates new objects and updates existing objects that match objects in the package.

c. In the Layout section, for each component, select one of the following options.

Option	Description
Override Layout	Replaces the existing layout with the layout in the package. Moves fields that were previously on the layout that are not on the package layout to the Available Fields list.
Do Not Override Layout	No changes are made to the existing layout, but you may have to modify the layout after installing the new package.

7. Click Install, and click OK.

Chapter 3: Using the RSA Archer - Palisade @Risk Integration 1.0

Introduction

This chapter contains the following sections:

Simulation Methods

There are two methods of using the RSA Archer - Palisade @Risk Integration: Expert Elicitation and Historical Loss.

The Expert Elicitation method requires that you enter data based on expert predictions whereas the Historical Loss Data method requires that you have actual Loss Events tied to your Risk Register records. Both methods require you to enter data into the Risk Register application, export the data, prepare the data for simulation, run Monte Carlo simulation, and finally reimport the data into the Risk Register application.

The Expert Elicitation method generates both inherent and residual risk ratings, whereas the Historical Loss method only generates historical residual risk ratings. For any records on which you want to calculate historical loss residual risk, you must first run the Expert Elicitation method to calculate inherent risk.

Using the Integration for Expert Elicitation

To use the RSA Archer - Palisade @Risk Integration for Expert Elicitation:

1. Enter Risk Register Data for Expert Elicitation
2. Run Palisade Simulation
3. Import Simulation Results into Risk Register

Enter Risk Register Data for Expert Elicitation

Procedure

1. In RSA Archer, create a new record in the Risk Register application for each risk on which you want to run Monte Carlo simulation, and in the Assessment Approach field, select Monte-Carlo.

2. In the Monte Carlo Simulation section, in the Select calculation method for the Residual Risk reporting field, select Expert Elicitation.
3. In the Monte Carlo Simulation section, in the Monte Carlo: Expert Elicitation Inputs fields, enter the following:
   a. In the Impact Distribution Function field, select one of the following:
      - 3-Point Estimate (PERT)
      - 3-Point Estimate (Triangular)
      - Log Normal
      - Normal
      - Uniform
   b. In the Single or Multiple Occurrence field, select Single or Multiple
   c. Based on the values you selected for the distribution and occurrence, enter data for the other required fields.
4. When you are done filling out the records, in the Is this record ready for simulation? field. select Yes.
5. From the Risk Register application navigation menu, open the Expert Elicitation report.

   Note: Only records with the Status field set to Active are included in the report.

6. Click Export, and select CSV.
7. Select Exclude all HTML formatting tags, and click OK.
8. When the export is complete, access the file and save it as expert_elicitation.csv.

Run Palisade Simulation

Procedure

1. Launch Palisade @Risk.
2. In the @Risk toolbar, set the number of iterations.
3. Click Start Simulation.
   @Risk performs the simulation and populates columns S through Z.
4. Save the simulation results as expert_elicitation_output.csv, and when prompted to save @Risk Simulation Results and Graphs, click No.

Import Simulation Results into Risk Register

Procedure

1. Open the provided import template file, expert_elicitation_import_template.csv, and paste in the contents of expert_elicitation_output.csv.
2. Ensure that the values in the Date of Last Execution column are in a Date format, and save the file.

3. Import the file into the Risk Register application as follows:
   a. In RSA Archer, click Administration > Integration > Manage Data Imports.
   b. In the Risk Register row, click Import.
   c. In the General Information section, click Browse.
   d. From the File Upload window, click Add New, select your .csv file, click Open, and then click OK.
   e. Click Next.
   f. In the Import Type field, select Update Existing Records.
   g. In the Application Field(s) field, select Risk ID.
   h. In the Import Field Mapping section, ensure that all the values in the Application Fields row match the column headers.
   i. Click Next.
   j. Ensure that the summary information from the Data Import Wizard is correct. Click Import.

Simulation Results

Once you have imported the simulation data back into your RSA Archer system, you can open an individual Risk Register record to see the results in the following places:

- The Monte Carlo Results: Expert Elicitation section displays the inherent and residual Value At Risk (VaR) values and the inherent and residual expected losses that Palisade @Risk calculated.
- The Monte Carlo Risk Scores Normalization section displays an overall risk rating for inherent and residual risk, based on the Palisade @Risk results. For Expert Elicitation, the Inherent Risk score is based on the Inherent VaR (95%) value and the Residual Risk score is based on the Residual VaR (95%) value.

Note: The Data Used for Last Execution section displays the data that the simulation results are based on, in the case that the input values have been changed

The Monte Carlo risk scores also factor into the following risk ratings:

- The Calculated Risk tab displays an Adjusted Monte Carlo Residual Risk rating, which estimates the overall risk to the organization using the Residual Risk - Monte Carlo value.
- In the Overall Risk section, the Inherent Risk and Residual Risk ratings are based on the Inherent Risk - Monte Carlo value and the Calculated Residual Risk rating is based on the Adjusted Monte-Carlo Residual Risk value.

Using the Integration for Historical Loss

To use the RSA Archer - Palisade @Risk Integration for Historical Loss:

1. **Enter Risk Register Data for Historical Loss**
2. **Prepare Historical Loss Data for Simulation**

3. **Run Palisade Simulation**
4. **Import Simulation Results into Risk Register**

Enter Risk Register Data For Historical Loss

Procedure

1. In RSA Archer, for each new record in the Risk Register application on which you want to run Historical Loss simulation, in the Monte Carlo Simulation section, in the Select calculation method for the Residual Risk reporting field, select Historical Loss.
2. When you are done filling out the record, in the Is this record ready for simulation? field. select Yes.
3. From the Risk Register application navigation menu, open the Frequency of Loss Events Per Month report.
4. Click Export, and select CSV.
5. Select Exclude all HTML formatting tags, and click OK.
6. When the export is complete, access and save the file as Frequency per Month by Risk.csv.
7. Repeat steps 5 to 8 for the Loss Events for Last 3 Years report, and save the file as Loss Events by Risk.csv.
8. Combine the two .csv files into a single workbook, with Frequency per Month by Risk as the first worksheet and Loss Events by Risk as the second worksheet. Save the workbook as Historical Loss.xlsx.

Prepare Historical Loss Data for Simulation

Palisade requires simulation data to fit certain formats, so you must make some manual adjustments to your exported RSA Archer data before you can run the Monte Carlo simulation.

Procedure

1. In Excel, in your Historical Loss workbook, from the Frequency per Month by Risk data, create a new Frequency worksheet, as follows:
   a. Select the A1 cell.
   b. Click Insert > PivotTable, ensure that the selected Table/Range values are the entire table and that New Worksheet is selected, and click OK.
   c. In the PivotTable Field List section, drag the fields to the following areas:
      - Risk ID to Row Labels
      - Date of Occurrence to Row Labels
      - Count of Loss Event Name to Values
   d. Paste the pivot table data into a new worksheet in your Historical Loss workbook, and name the worksheet Frequency.

   Note: You should now have three worksheets in your workbook: Frequency by Month per Risk, Loss Events per Risk, and Frequency.

2. From the Loss Events by Risk data, create a new Loss worksheet, as follows:
   a. Insert a new column A, titled Row ID, and copy the following formula to each row.
      =IF(B2=B1, A1 + 1,1)

      The Row ID value should increment by one for each Risk ID and should reset when the Risk ID changes.
   b. Select the A1 cell.
   c. Click Insert > PivotTable, ensure that the selected Table/Range values are the entire table and that New Worksheet is selected, and click OK.
   d. In the PivotTable Field List section, drag the fields to the following areas:
      - Risk ID to Column Labels
      - Row ID to Row Labels
      - Gross Loss Amount to Values
   e. Paste the pivot table data into a new worksheet in your Historical Loss workbook, and name the worksheet Loss.

      Note: You should now have four worksheets in your workbook: Frequency by Month per Risk, Loss Events per Risk, Frequency, and Loss.

3. Run Batch Fit on the Frequency worksheet data to create a Frequency Fit Results worksheet, as follows:
   a. Select the data in the Frequency worksheet.
   b. Start Palisade @Risk.
   c. In the @Risk tab, click Distribution Fittings > Batch Fit.
   d. In the Range field, ensure that the range covers just the table data, not the header row or first column.
   e. In the Type field, select Discrete Sample Data.
   f. Click the Report tab, and in the Options section, deselect Include Detailed Report Worksheet for Each Fit and Include Correlations.
   g. Click Fit.
   h. Copy the results into a new Frequency Fit Results worksheet in your workbook.

      Note: You should now have five worksheets in your workbook: Frequency by Month per Risk, Loss Events per Risk, Frequency, Loss, and Frequency Fit Results.

4. Run Batch Fit on the Loss worksheet data to create a Loss Fit Results worksheet, as follows:
   a. Select the data in the Loss worksheet.
   b. In the @Risk tab, click Distribution Fittings > Batch Fit.
   c. In the Range field, ensure that the range covers just the table data, not the header row or first column.

d. In the Type field, select Continuous Sample Data.

e. Click the Report tab, and in the Options section, deselect Include Detailed Report Worksheet for Each Fit and Include Correlations.

f. Click Fit.

g. Copy the results into a new Loss Fit Results worksheet in your workbook.

Note: You should now have six worksheets in your workbook: Frequency by Month per Risk, Loss Events per Risk, Frequency, Loss, Frequency Fit Results, and Loss Fit Results.

5. Create a Simulation worksheet in your Historical Loss workbook, as follows:

a. Create a new blank worksheet with the following columns:

- Risk ID
- Frequency
- Severity
- Impact
- Historical Residual Expected Loss
- Historical Residual VaR (95%)
- Historical Residual VaR (99%)

b. In the Risk ID column, copy the column headers from the Frequency worksheet (Risk IDs) and click Paste > Transpose.

c. In the Frequency column, for each row, reference the Function result cell on the Frequency Fit worksheet for the matching Risk ID.

Important: The simulation does not work correctly if you either paste the value from the referenced cell or paste the formula from the cell. You must reference the cell for the simulation to work correctly. For example, if the referrenced cell is B9 on the Frequency Fit worksheet, you should enter ='FrequencyFit'!B9, not =RiskPoisson(8.6) (the actual formula) or 9 (the actual value).

d. In the Severity column, for each row, reference the Function result cell on the Loss Fit worksheet for the matching Risk ID.

e. In the Impact column, for each row, create a RiskCompound formula against the Frequency and Severity cells. For example, =RiskCompound(B2,C2)

f. In Historical Residual Expected Loss column, for each row, create a RiskMean formula against the Impact cell in that row. For example, =RiskMean(D2)

g. In the Historical Residual VaR (95%) column, for each row, create a RiskPercentile formula against the Impact cell in that row. For example, =RiskPercentile(D2,.95)

h. In the Historical Residual VaR (99%) column, for each row, create a RiskPercentile formula against the Impact cell in that row. For example, =RiskPercentile(D2,.99)

Run Palisade Simulation

Procedure

1. In Excel, with your Simulation worksheet open, click Start Simulation.
   @Risk runs the Monte Carlo simulation and updates the Historical Residual Expected Loss, Historical Residual VaR (95%), and Historical Residual VaR (99%) columns.
2. Save the simulation results as historical_loss_output.csv.

Import Simulation Results into Risk Register

Procedure

1. In RSA Archer, click Administration > Integration > Manage Data Imports.
2. In the Risk Register row, click Import.
3. In the General Information section, click Browse.
4. From the File Upload window, click Add New, select historical_loss_output.csv , click Open, and then click OK.
5. Click Next.
6. In the Import Type field, select Update Existing Records.
7. In the Application Field(s) field, select Risk ID.
8. In the Import Field Mapping section, ensure that the Row ID, Historical Residual Expected Loss, Historical Residual VaR (95%), and Historical Residual VaR (99%) fields are correctly mapped.
9. Click Next.
10. Ensure that the summary information from the Data Import Wizard is correct, and click Import.

Simulation Results

After you import the simulation data back into your RSA Archer system, you can open an individual Risk Register record to see the results in the following places:

- The Monte Carlo Results: Historical Data section displays the historical residual Value At Risk (VaR) values and the residual expected loss value that Palisade @Risk calculated.
- The Monte Carlo Risk Scores Normalization section displays an overall risk rating for inherent and residual risk, based on the Palisade @Risk results. For Historical Loss Data, the Inherent Risk score is still based on the Inherent VaR (95%) value calculated from Expert Elicitation while the Residual Risk score is based on the Historical Residual VaR (95%) value.

Note: The Data Used for Last Execution section displays the data that the simulation results are based on, in the case that the input values have been changed

The Monte Carlo risk scores also factor into the following risk ratings:

- The Calculated Risk tab displays an Adjusted Monte Carlo Residual Risk rating, which estimates the overall risk to the organization using the Residual Risk - Monte Carlo value.
- In the Overall Risk section, the Inherent Risk and Residual Risk ratings are based on the Inherent Risk - Monte Carlo value and Calculated Residual Risk rating is based on the Adjusted Monte-Carlo Residual Risk value.