



IBM Software Group

# WebSphere® Business Modeler V6.0

## *Simulation Support*



@business on demand.

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This presentation will focus on Simulation Support in WebSphere Business Modeler V6.0.

## Goals

- Provide an overview of the simulation capabilities
- Describe different simulation enhancements



The goals for this presentation are to provide an overview of the simulation capabilities and describe enhancements to simulation support.

## Agenda

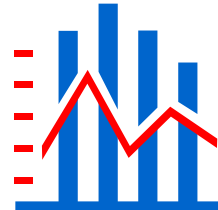
- Overview of Simulation Capabilities and Options
- Simulation Enhancements
- Summary



This section will provide an overview of simulation capabilities and available options.

## Analysis Overview

- Analysis of business processes, resources and organizations provides insight into current and future business performance
- Types of analysis
  - ▶ Static
  - ▶ Simulation Profile
  - ▶ Dynamic
- Each analysis provides different information at different times in business process development and optimization



WebSphere Business Modeler V6.0 provides some of the best simulation capabilities in the industry by taking a business process, resources that the process uses, costs, availability, and profit and executing them in a simulation format. With these capabilities you can do various types of analysis on information representative of your actual environment. You can also check if a process produces expected results based on the specified parameters. There are three types of analysis available; Static, Simulation Profile, and Dynamic and simulation is very tightly coupled with Dynamic types of analysis. Each type of analysis is very important at different stages within the development process and at different points in the development life cycle.

## Types of Analysis



Static analysis can be performed after a process has been defined and values such as cost, duration, and availability assigned. Static analysis allows you to see the breakdown of a task to roles or to other types of qualifiers that are defined on a particular element. With this analysis, you can have reports generated for the different information such as a list of role availability or total resource costs. These reports can be defined using Crystal Reports, which is new support for WebSphere Business Modeler V6.0 or you can also define your own report formats. Reports and results can be printed using these templates or Crystal Report formats. With simulation analysis, you can plug in additional values, extreme values or legitimate business values in regards to the environment. Through the simulation engine, you can get a result of what might be a possible outcome based on these values. Results are displayed in a tabular format and also in a graphical way and can be printed. For dynamic analysis, additional information can be obtained after running simulations and better insight into business process potential performance can also be obtained. Simulation analysis results in a tabular format of results and only through dynamic analysis can you utilize these results and dive deeper into the performance of a business process and get more information from the results. You can obtain information about how different factors affect different parts of business process, look at things such as multiple instances, shortest path, longest path, critical path and costs associated with them.

## Features of Analysis with Simulations



The simulation engine in WebSphere Business Modeler V6.0 is the same basic simulation engine used in WebSphere Business Integration Modeler V5.1 and has the same simulation features. The weighted average analysis feature provides a static and long term view of the process, whereas the process simulation captures the shorter-term view. It has the ability to model different scenarios and compare results and replay a simulation of a process with some changes to the model. It provides the capability to specify different resources, resource allocations, processing time, costs and revenue and allows you to define multiple resources. Simulation output provides detailed information regarding resource utilization levels as well as cost and cycle time calculations and supports multiple possible input distributions, which are based on a calendar date for varying data.

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This section will provide an overview of simulation enhancements in WebSphere Business Modeler V6.0.

## Resource durations in Simulations



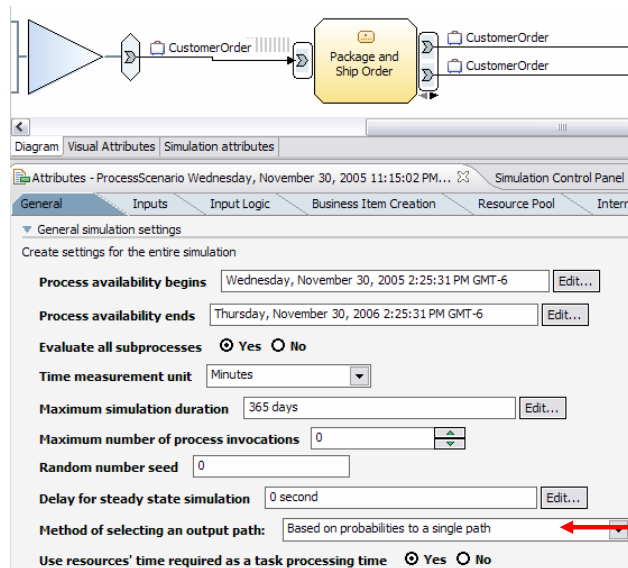
One of the new enhancements in WebSphere Business Modeler V6.0 is the capability to specify whether or not to use resource duration on a particular task. You can use this global setting in a simulation to specify that processing durations for each activity in a process should always be equal to the resource requirement that has the longest duration for the activity. If no duration is specified on the task, then one second is used as the simulation time for tasks. Decisions, merges, and fork elements do not have a duration setting and any changes you make to the simulation settings only apply to that simulation. If you create a new simulation snapshot, it will not contain any changes and changes made at the process level will be used for new snapshots, but not existing snapshots.



## Method of Selecting an Output Path Setting

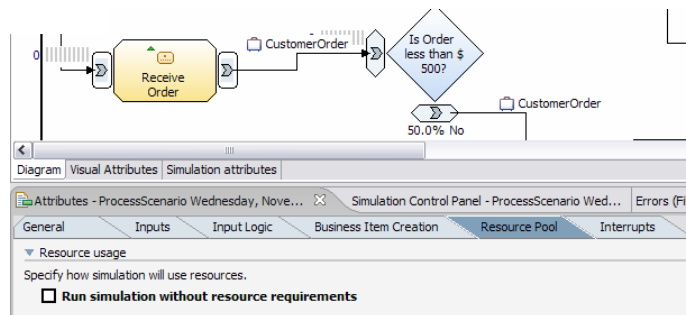


- Default Method of selecting an output path is now **Based on probabilities to a single path** rather than setting Randomly to a single path
- Better simulates expected outcome



The default method of selecting an output from multiple outputs coming out of any element was random for simulations in WebSphere Business Modeler V5.1. In WebSphere Business Modeler V6.0, the default method of selecting an output path has changed and is now based on the probabilities settings on the various paths rather than random selection. This changed default settings is better representative of expected outcome.

## Resource Requirements in Simulations

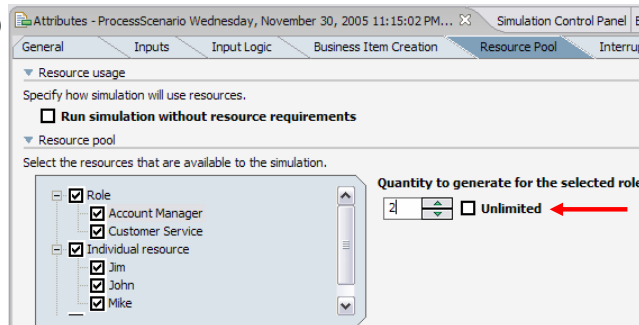


Another new feature in WebSphere Business Modeler V6.0 allows you to use one switch to disable all the resources. With this feature, with one setting you can turn off the resources and exclude them from simulation process and get exact information more quickly because of the reduced amount of input information. Feature to “Run simulation without resource requirements” overwrites the value of the setting of “Use Resource Requirement’s time required as the processing Time for a Task”, which was discussed earlier.

## Specifying Quantity for Roles



- If a task has a resource requirement of a required role, the resource manager will allocate resources from individual or bulk resources that has a qualification of the specified role
- New feature allows the user to set a quantity on number of roles available in the simulation process profile
- User no longer has to manually create/remove individual/bulk resources with the qualified role during modeling time

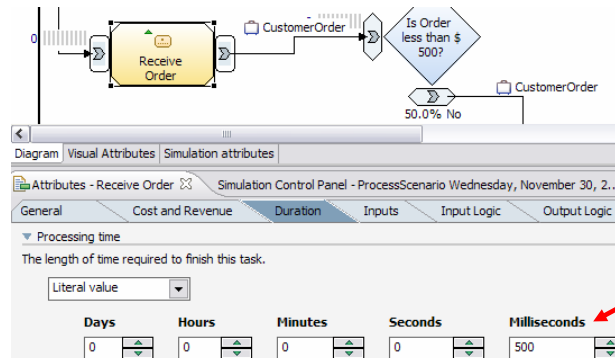


When specifying quantity for roles in WebSphere Business Modeler V6.0, you are allowed to specify the required number of resources (people) available for that specific role. This enforces a resource pool of individuals who can be used in determining how long it will take to complete a task. If a task has a resource requirement of a required role, during a simulation, only a limited number of resources will be available when a resource is required to fill a role. Another option is to specify a quantity of qualified resources to generate for each role required by the process, enabling you to examine the effects of adjusting the availability of qualified resources without actually creating individual resources that are qualified for or set to that role.

## Duration settings include Durations



- Ability to specify the time value with milliseconds precision
  - ▶ Processing time
  - ▶ Resource awaiting timeout
  - ▶ Recurring time interval for bundle creation
  - ▶ Time unit for a distribution

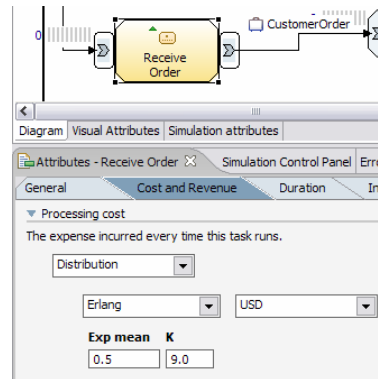


Another new feature in WebSphere Business Modeler V6.0 is the ability to specify the duration in milliseconds for the processing time, resource awaiting timeout, recurring time interval for bundle creation, and time unit for a distribution

## Cost and Revenue Distributions



- New distribution options available for duration, cost and revenue settings of a task
  - ▶ Beta
  - ▶ Continuous
  - ▶ Erlang
  - ▶ Johnson
  - ▶ Triangular
  - ▶ Weibull
- Each distribution has different settings and parameters



You can specify literal values for simple situations for duration, cost and revenue values. For more random cases however, there are mathematical functions, which can be more random or increase the possibility and probability. Many of these mathematical expressions that can be used in determining the cost and revenue have been added to WebSphere Business Modeler V6.0. The new distribution functions are Beta, Continuous, Erlang, Johnson, Triangular, and Weibull. Each distribution has different parameters and settings that correspond to that mathematical function.

## Simulate Attributes View



- New view summarizes simulation instance settings
- Provides a faster way to input and visualize simulation profile settings
- Reduces the need to repeat a number of clicks and switch pages

| Name                   | Processing time | Resource wait time | Processing cost | Pro... | Startup cost | Sta |
|------------------------|-----------------|--------------------|-----------------|--------|--------------|-----|
| Receive Order          | 00:01:00:00.000 | 365:00:00:00.000   | 100             | USD    | 0            | USD |
| Approve Order          | 00:02:00:00.000 | 365:00:00:00.000   | 300             | USD    | 0            | USD |
| Package and Ship Order | 00:00:30:00.000 | 365:00:00:00.000   | 0               | USD    | 0            | USD |



The Simulate attributes tab is new for WebSphere Business Modeler V6.0 and displays all of the settings before running the simulations specified for a particular simulation instance. With the tabular format, it is easy to see all of the different values that can affect the outcome of a simulation. The spreadsheet-like grid table lists out a number of often-used settings for the simulation profile, such as Process time, timeout, cost, and revenue.

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This section will provide a summary of this presentation.

## Summary

- Simulation support provides a means to analyzing business process performance
- New features allow for easier management of applying resources to simulations, directing processing, and viewing overall settings



In summary, simulation support provides a means to analyze business process performance. New features in WebSphere Business Modeler V6.0 allow easy management for applying resources to simulations, directing the processing, and viewing the overall settings.



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