

JAVA STAFFING OPTIMIZATION LIBRARY

USER'S GUIDE FOR GRAPHIC VERSION

Laboratoire de Simulation
DIRO, Université de Montréal

January 8, 2015

Contents

1	Starting the program	2
2	Optimize staffing level for one contact center parameter file	2
3	Optimize staffing level for multi-contact center parameter files	4
4	Out-of-sample simulation	4

Welcome to Staffing Optimizer!

This tutorial provides a very simple and quick introduction to the StaffingOptimizer workflow by walking you through the simulation and optimization the contact center data. Once you are done with this tutorial, you will have a general knowledge of how to optimize staffing level with StaffingOptimizer program.

The goal of our program is to find staffing level which not only satisfies some chance-constraints about service level and average waiting time but also gives the minimal cost. There are some call types, one skill group over a time interval is divided into periods. First, to understand the detailed explanations on the models as well as some assumptions and to have the overview of our chance-constrained problem, we suggest that you spend time to read part **1** in the document **CCSguide**. The details, the meanings and the format of all input parameter files are also explained carefully in part **5, 6** of it. You need all of these backgrounds before using this graphic version.

1 Starting the program

There are two ways to start the Staffing Optimization program

- 1. Double click on executed file *GUIStaffing.jar*
- 2. Run the program from the command line
java -jar GUIStaffing.jar

There are six buttons to help users simulate contact center data and optimize staffing level.



Open the **Select file wizard** for adding the parameter files.



Select all input parameter files.



Remove selected files.



Optimize with one selected contact center parameter file.



Optimize with multi- selected contact center parameter files.



Out-of-sample simulate.

2 Optimize staffing level for one contact center parameter file

1. Start the StaffingOptimizer.

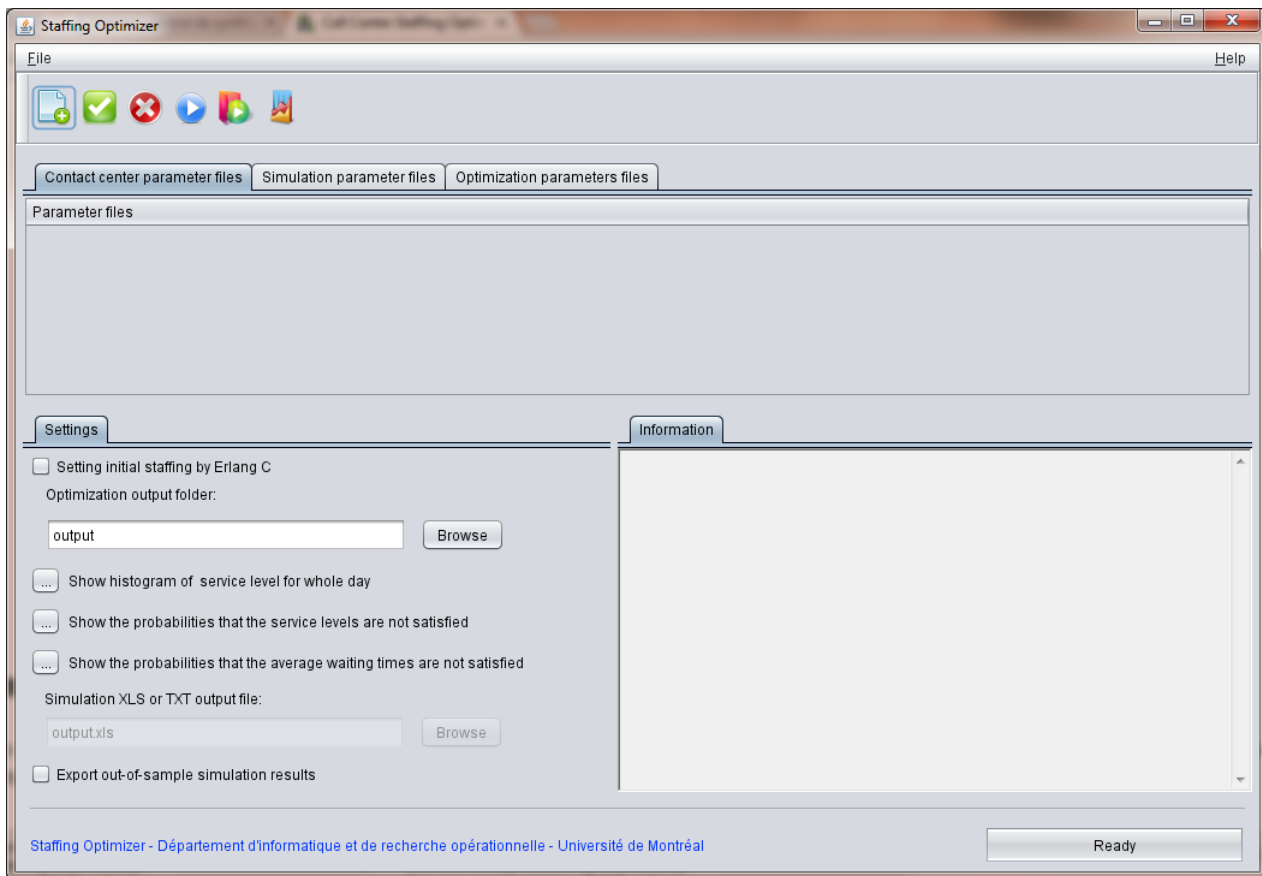



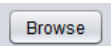






Figure 1: *Graphic Interface of GUIStaffing*

2. In the GUI, select the tab **Contact center parameter files** and click on  to add contact center parameter files.
3. Select the tab **Simulation parameter files** and click on  to add simulation parameter file. You should have only one file in this list. If you add several files, the first in the list will be automatically chosen to do the process of optimization.
4. Select the tab **Optimization parameter files** and click on  to add optimization parameter file. You should have only one file in this list. If you add several files, the first in the list will be automatically chosen to do the process of optimization and simulation.
5. In the **Setting** tab, you can check to **Setting initial staffing by Erlang C** if you want to initialize staffing level by ErlangC, or uncheck if you want to use the original staffing values in the contact center file.
6. Use button  and select the folder where you want to put the <output XML>.

7. Go back to tab **Contact center parameter files**, select one parameter file which we want to optimize with by clicking on this file. If you do not select any file, our program will automatic use the first file in the list to do the optimizing process.
8. Click  to start optimizing.
9. The users can see the histogram of service level for whole day, as well as the graphs which show the estimations of the probabilities that the service level and the average waiting time are not satisfied by clicking on the corresponding button.

3 Optimize staffing level for multi-contact center parameter files

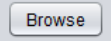

To solve the optimization problem with several input files simultaneously, you also follow 9 steps above with some small changes:

1. At step 7, you can select several input parameter files in tab **Contact center parameter files** by clicking on them with keeping **Ctrl**, or click on  to choose all files in the list.
2. At step 8, you click on  instead of .

In this case, the graphs and the histogram are drawn by using the data from the last output file.

4 Out-of-sample simulation

After obtaining the final solution for the sample problem, it is useful to perform an independent (out-of-sample) evaluation of the final retained solution, with a much larger sample size. This evaluation gives us a more accurate estimate of the probabilities in the constraints of the original problem.

Once optimization step is executed, the file <output XML>, the user may want to obtain the measures of Quality of Services corresponding to the optimized staffing stated inside this file. To proceed, first you can check to **Export out-of-sample simulation results**, then use button  and select the folder where you want to put the <XLS or TXT output file>. Next, the users select three input parameter files and click on  to do the out-of-sample simulation. After simulation, the histogram of the distribution of service level for whole day, as well as the graphs which show the estimations of the probabilities that the constraints in service level and the average waiting time is not satisfied, for each period, are ready to be shown. The users can see them by clicking on the corresponding button.