T006: Batch Queue Configuration

Introduction

This document will take you through the initial setup of the Batch Queue and show you how to use the Batch Queue tool.

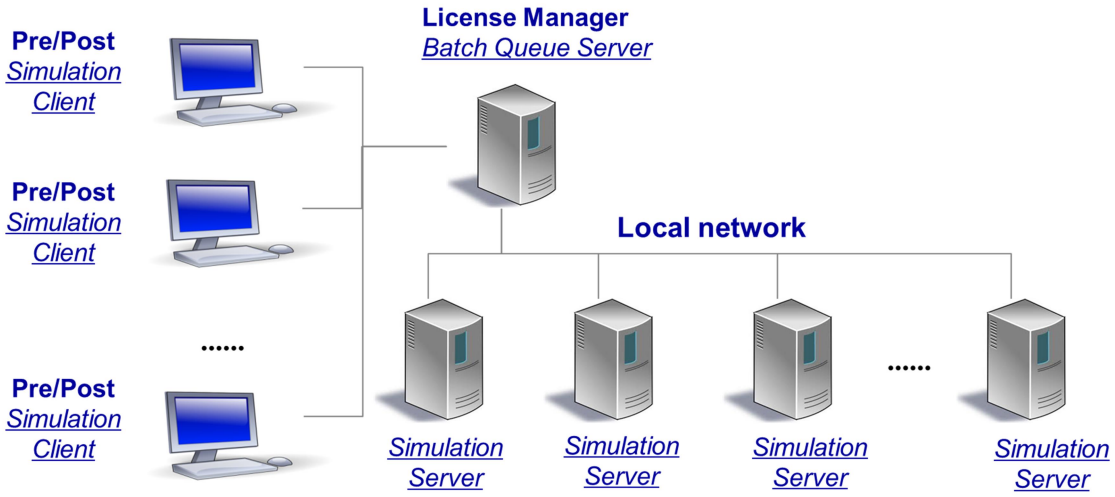
Problem Description

The DEFORM Batch Queue allows simulations to be run sequentially without the need for user intervention. The Batch Queue also allows simulations to be run on a remote computer, which will free up local resources. The Batch Queue must be configured before you can use it. Refer to the Background Information section below to configure the queue and then check out the Solution section to see how the Batch Queue is used.

Background Information

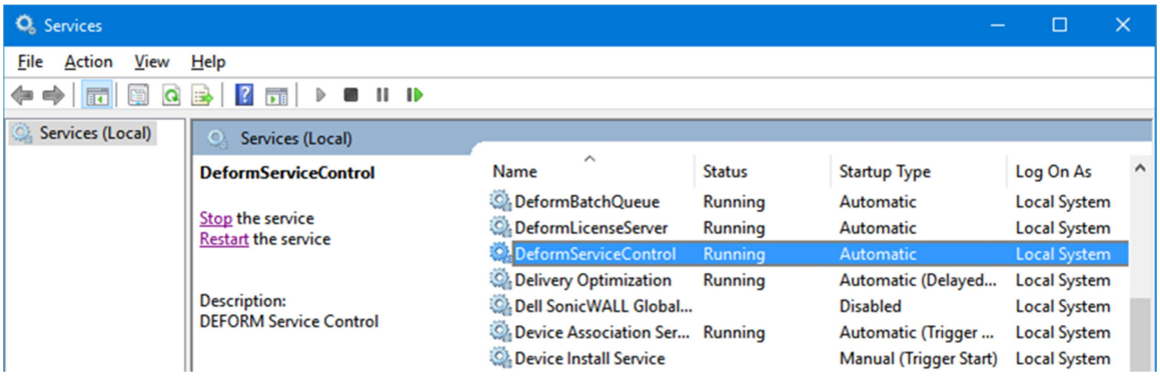
Definitions:

DEFORM license, batch queue, pre/postprocessing and simulation administration can take place on one or more computers, depending on licensing. The following network map and definitions describe the terminology used throughout this document.



Computers:

- License / Batch Queue Server
  - The computer that serves the DEFORM license server and batch queue server.
  - The hardware security dongle, password file and DEFORM License Manager must be installed.
  - The DEFORM License Manager, Batch Queue Server and Simulation Control services must be running.
- Simulation Client
  - A computer used for pre/postprocessing of DEFORM models.
  - The DEFORM software must be installed.
  - The DEFORM Service Cotnrol service must be running.
- Simulation Server
  - A computer that runs DEFORM simulations.
  - The DEFORM software must be installed.
  - The DEFORM Service Control service must be running.



Services:

- License Manager (DeformBatchQueue)
  - Controls DEFORM license access and serves it to clients.
  - Must be running on License / Batch Queue Server computer.
- Batch Queue Server (DeformLicenseServer)
  - Manages the batch queue on the batch queue server.
  - Must be running on License / Batch Queue Server computer.
- Service Control (DeformServiceControl)
  - Manages job submission to/from simulation clients and servers.
  - Must be running on all DEFORM computers, including the License / Batch Queue Server computer.

Utility:

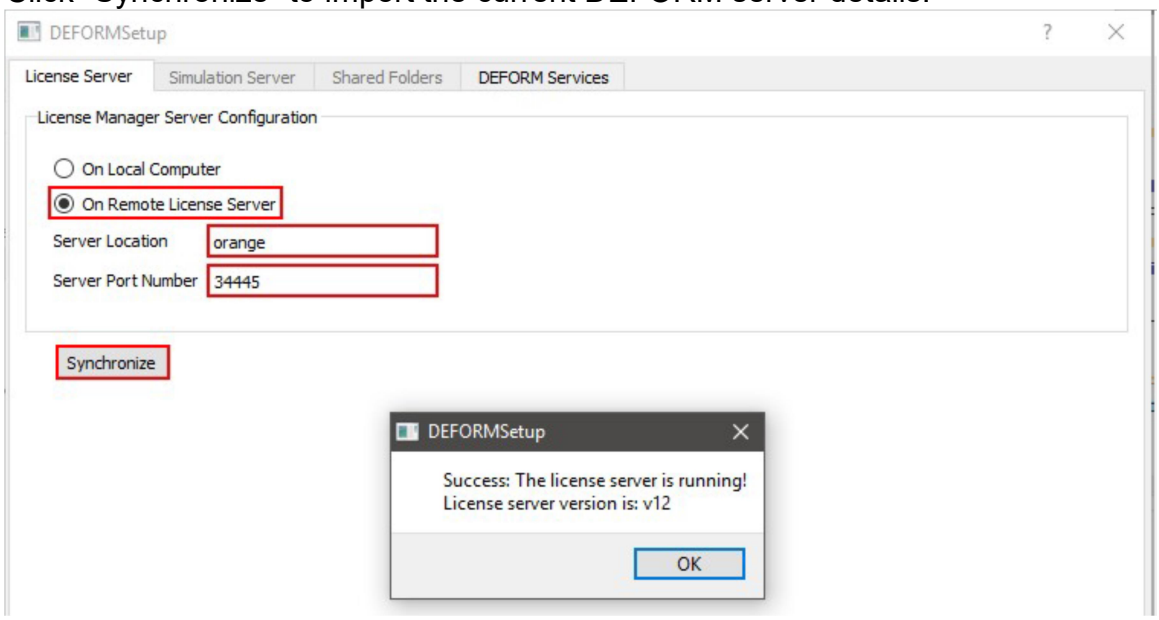
- DEFORM Services

- A utility program to manage the DEFORM background services across a network.

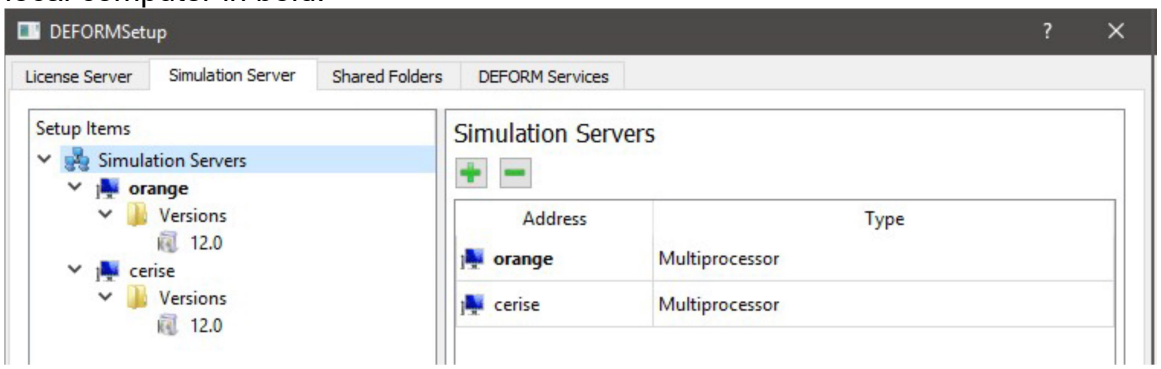
Configuring DEFORM Setup:

Assuming that the DEFORM license is already running, then DEFORM Setup must be configured on each simulation server:

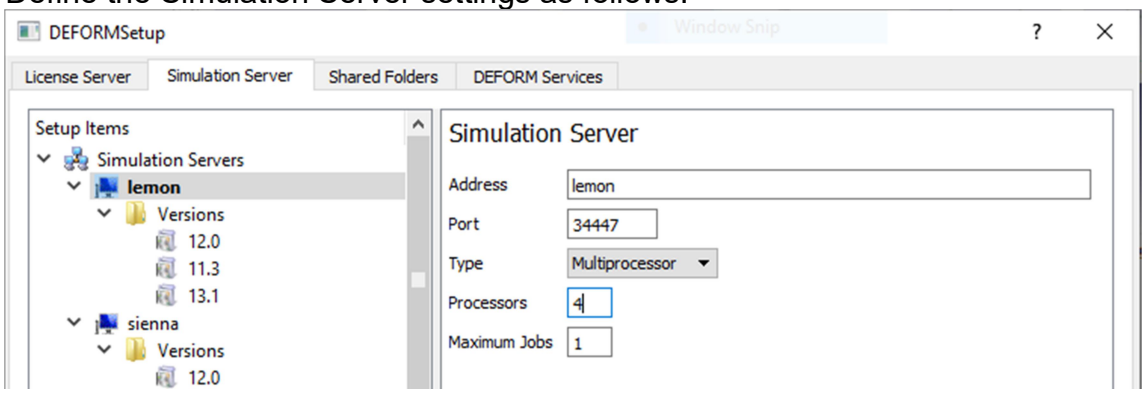
1. Open 'DEFORM Setup' - Located in the DEFORM folder (Start > All Programs). This executable is also located in the DEFORM home directory: DEFORMSetup.exe. It is also available from the Options menu in DEFORM GUI Main.
2. Click “Synchronize” to import the current DEFORM server details.



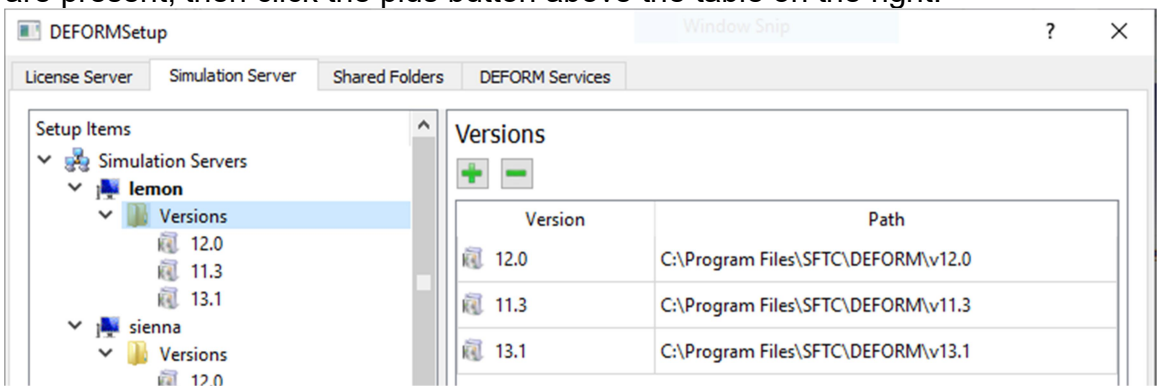
3. Go to the 'Simulation Server' tab and click on Simulation Servers in the Setup Items tree on the left.
4. Click the plus button above the table on the right to add a new Simulation Server entry for the local computer.
5. Click the newly added branch in the tree, which states the name of the local computer in bold.



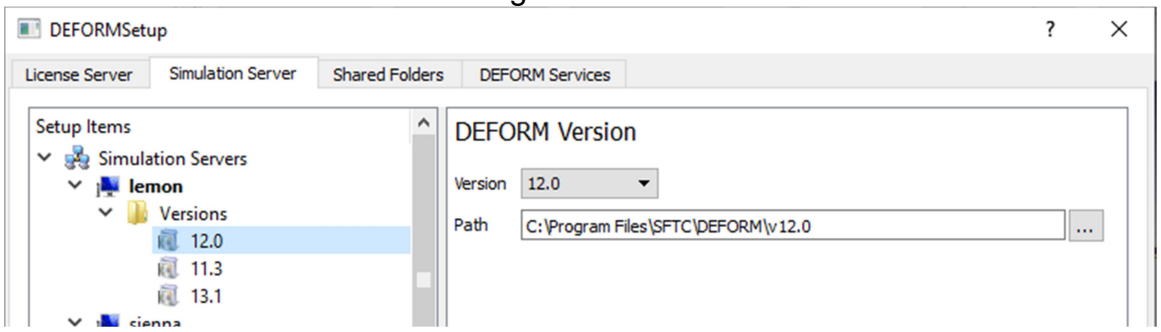
6. Define the Simulation Server settings as follows:



   a. Address: The local computer name.
   b. Port: DEFORM Batch Queue Server port (34447).
   c. Type: Select “Multiprocessor”.
   d. Processors: The amount of parallel processing that you will allow on the simulation server computer. This can typically be set to match your DEFORM MPI license option.
   e. Maximum jobs: The number of concurrent simulations that you will allow on this simulation server computer. This will be ‘1’, unless you license multiple FEM engines AND want to run more than one simulation on the computer.
7. Click the “Versions” tree branch that is associated with the local computer.
8. Ensure that the Versions table and branch include an entry for the version of DEFORM that you desire to use. If no table row and tree subbranch are present, then click the plus button above the table on the right.



9. Click the newly added branch in the tree on the left.
10. Define the DEFORM Version settings as follows:

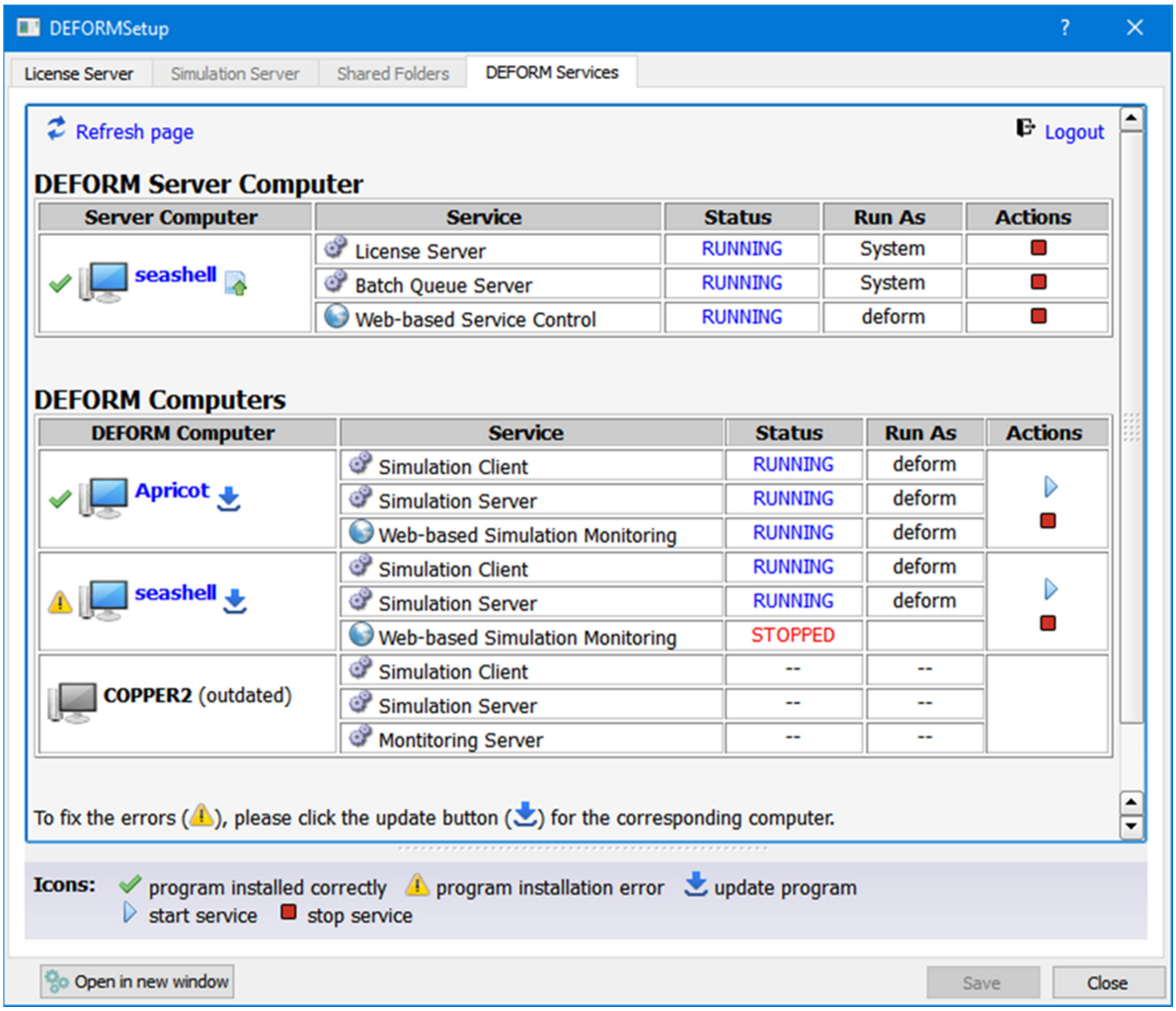


a. Version: The point release (XX.x) version of DEFORM that you want to use on the simulation server computer.
b. Path: The DEFORM installation path for that version. The path may be for a point (XX.x) or service pack (XX.x.x) release.

11. Press the "Save" button to save this information.

DEFORM Services:

The DEFORM Services utility allows for the troubleshooting and management of the computers and services required for the defined DEFORM environment. DEFORM Services can be opened for the local computer or all computers (below) managed by the DEFORM License / Batch Queue server.



The DEFORM Services menu shows the License / Batch Queue Server computer at top. The License Server and Batch Queue Server services must be running.

The other entries are the DEFORM computers defined in the Simulation Server tab of DEFORM Setup. Any computer that acts as a Simulation Server must have the Simulation Client and Simulation Server processes running on it.

If the status of any required services are listed as “STOPPED”, then click the Play button (under the Actions column) associated with the particular computer. This should start the service, after which the status will appear as “RUNNING”.

The batch queue should operate properly once all services are running. Should difficulties arise, then first try rebooting the problematic computer.

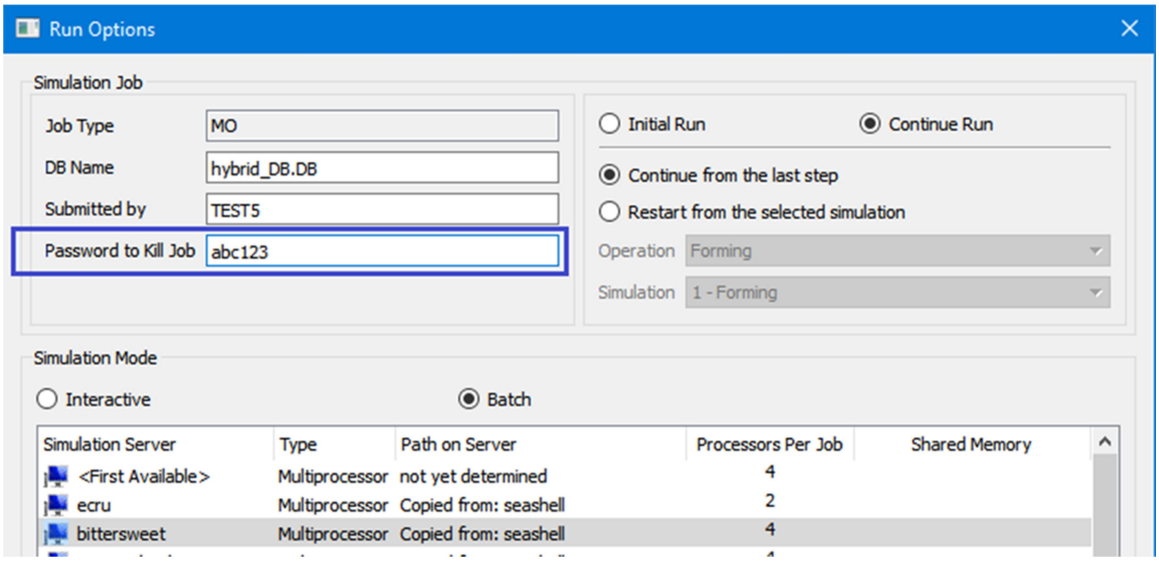
Solution

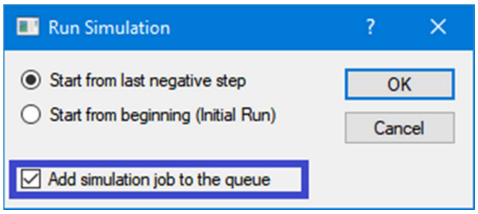
Adding Simulations to the Batch Queue:

To add simulations to the Batch Queue:

1. Find the simulation that you want to run.

2. Select Run (options) or “Add simulation job to the queue”.





3. Choose the “Batch” Simulation Mode and then select the desired Simulation Server from the list.

4. Click on the 'Add in Queue' button to submit the simulation the Batch Queue. You can follow this same procedure to add subsequent simulations to the queue.

The simulation queue will run the simulations in the order that you submitted them. If the simulation server has a license available and the 'Maximum Job' (DEFORM Setup) number has not been met then the next simulation in the queue will begin to run. When a simulation finishes the license is released which allows the next simulation in the queue to begin.

The queue can be monitored by launching the 'Process Monitor' from the main DEFORM interface. You will be able to see what simulation is running and the order of simulations in the queue. Select one of the simulations in the queue and use the up or down buttons to increase or decrease the position of the simulation in the queue or the delete button to remove it from the queue.

Troubleshooting:

The Wait codes that may appear in Process Monitor are defined below.

Wait(l) - Can't find license.

Wait(c) - Batch queue and simulation servers can't see each other. Could be a firewall issue.

Wait(d) - Can't find simulation server. Check the configuration of DEFORM Setup.

Wait(s) - Waiting for simulation server. This is a normal message when the maximum number of jobs has been met. If you have a powerful computer (and enough licenses) you can try to increase the number of jobs that can be run at the same time by increasing the Maximum job number (DEFORM Setup > Simulation Server).