LFM Server

Dataset Generation Guide

V 4.4.2.0

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3D Data Capture Solutions

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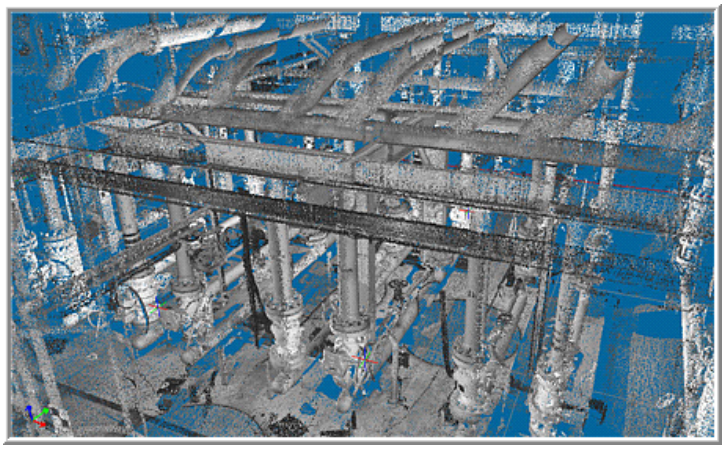
1 Introduction

Points Dataset construction is a one off operation which is performed by LFM Generator. LFM Generator is not a standalone product, but is an additional option to LFM Gateway Mode. Points Dataset construction is a completely lossless process in which none of the points from the original scans are lost. Each Points Dataset can hold any number of individual scans.

All scans which are to be put into the Points Dataset must be present at the start of the compilation. Images cannot be added at a later date without a complete recompilation. Points Dataset compilation is fully automatic, but it can take a considerable period of time. Large Points Datasets can take several days to compile. The time taken is largely a function of the machine specification.



2 Licensing/Machine Specification

LFM Software Ltd. does not routinely recommend a PC specification due to the fast moving nature of equipment release, where components are often rendered obsolete after a short period of time in the marketplace. However, a minimum machine spec is listed below to give equipment buyers an outline specification of the type of components that are known to offer basic performance with *LFM Software* products.

Processor: Intel Core 2 Duo (Quad Core recommended – as this will offer performance benefits)

Memory: (4x1024) 667Mhz DDR2 Dual Channel ECC

Hard Drive: In addition to the OS drive, 3 large capacity hard drives:

- 1 for source .zfc files
- 1 for intermediate file writing (a solid state drive is highly beneficial in terms of speed for this drive)
- 1 for the final dataset

Sata drive bay – hot swapable to “remove” when done.

Graphics:

LFM NetView/AVEVA NET project creation requires a reasonably powerful graphics card with the very latest drivers. It has been developed using NVidia graphics cards and tested on one AMD card.

Do not rely on Windows graphics driver properties to update to the latest version, use the NVidia tools instead. Visit http://www.nvidia.com/download/scan.aspx?lang=en-us to automatically get the latest version.

LFM tests your setup for the correct graphics support and *LFM NetView/AVEVA NET* project creation will be disabled if it does not find what it needs.

The supported OpenGL version information is saved in the LFM log file on startup:

- 12: GL Major version supported: 4 115
- 13: GL Minor version supported: 5 127

The above reports v4.5. The minimum needed is v4.3.

Operating System: Windows 7 64 bit

Network: 1GB Ethernet Card

Note: Please remember this is a machine guide line only. You may be able to source a better specification machine. However, it is impractical for *LFM* to test every possible specification.

2.1 Licensing

For *LFM Server* dataset generation an LFM Generator license is required.

Please contact your LFM Value Added Reseller or license.request@lfm-software.com for further information regarding LFM licenses.

2.2 LFM Generator™ - Enhanced Dataset Generation (X4 Faster)

Database generation happens at a critical stage of the project, just prior to delivery to the client. Therefore any delays need to be minimized to ensure that the client receives the data as soon as possible after scanning and registration are complete.

Generating large databases has, until now, been a time consuming process. For illustration, generation of a dataset containing around 9 billion points, or 250-300 scans, has taken around 48 hours. Extensive investigation and development has been done which is aimed at reducing these times. We are pleased to announce that 4x faster dataset generation can be achieved. There are just three simple steps you need to follow to reduce delivery times and these are explained below.

Using these three steps, a 48-hour job can be reduced to just 12 hours which is a huge leap in productivity.

STEP 1 – Use Windows 7 64-bit

Virtually all motherboards and processors have been 64-bit for a considerable time, but have been making do with a 32-bit operating system. For a very compute intensive job, such as database generation, this is very limiting. Switch over to a 64-bit operating system liberates so much more of the power of the basic machine.

STEP 2 – Download LFM Server 64-bit

LFM Server is now solely a 64-bit program. The internal structures have been reconfigured to take full advantage of working in 64-bit mode and this has led to huge speed improvements over the old 32-bit versions.

STEP 3 – Install a Solid State Intermediate Points File Drive

Replace the existing Intermediate Points File Drive (Scratchpad) with a Solid State Drive. For all of our tests, we have been using a 250GB (OCZSSD2-1SUM250G) because of its high sustained read/write speed. However, for larger projects you may need multiple or larger drives.

Background

Large Solid State drives, when applied in the right place, can produce staggering performance improvements. Although they are more expensive than a normal drive, considering the results they can help produce, they still represent good value for money.

- Core 2 duo @3.2GHz
- P35 Chipset ICH9
- 4GB memory (for generation more does not help)

Recommended Disk Configuration

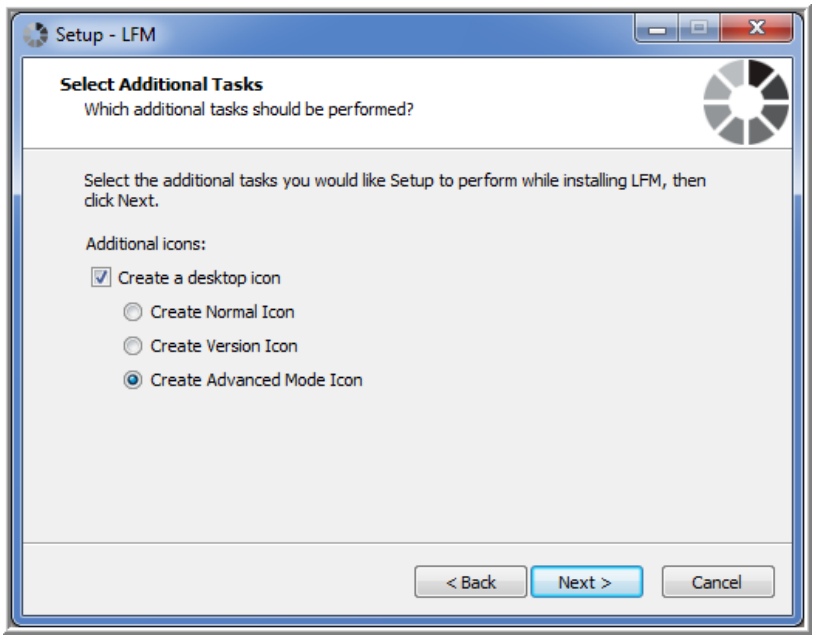
The current recommended configuration for Database Generation is to use four separate hard drives.

- Operating system drive (10,000 rpm SATA)
- Source scan drive (7200rpm SATA)
- Intermediate points file drive (OCZ Solid State) used during initial generation
- Destination drive (7200rpm SATA) containing the final dataset

It is important to ensure that the intermediate and destination drives are on physically separate disks. Replacing the destination drive with a solid state drive brings little benefit. Please do not format or de-fragment the Solid State Drive.

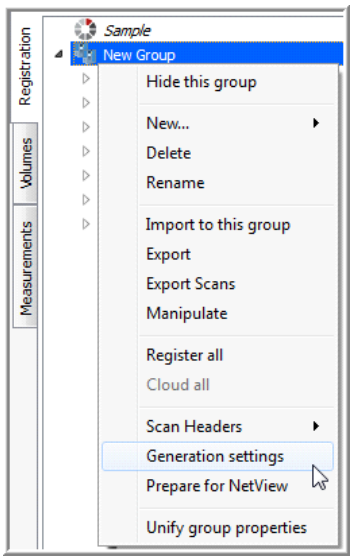
2.3 Advanced Mode Installation

LFM no longer requires a dongle for Dataset Generation. To avoid unauthorised users taking the Dataset Generation license there is now an option to install an advanced version of *LFM* which gives access to this feature. This is illustrated in the screenshot below. *LFM* should be run from the Advanced Mode shortcut in order to be able to create a new Points Dataset.

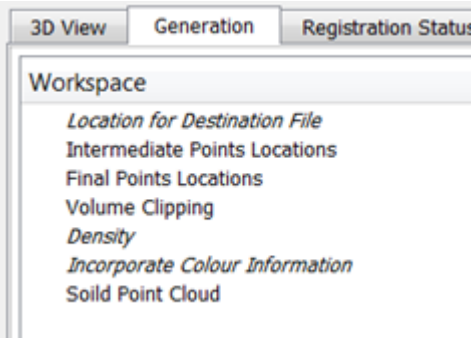


3 LFM Server Deliverable (.lfd) Creation

Once the scans in the project have been registered, an *LFM Server* deliverable (.lfd) can be created. In order to do this the user must populate the relevant options.

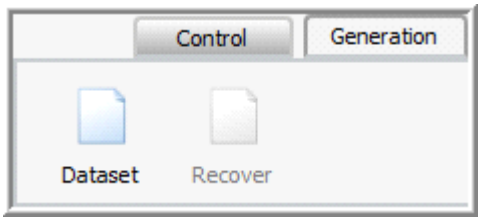


Right click on the registration group you wish to generate the *LFM Server* dataset for and select Generation Settings. This brings up the Generation tab as shown below.

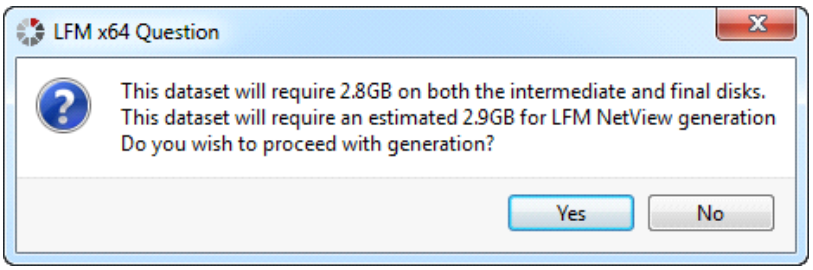


Next, fill in the options as follows:

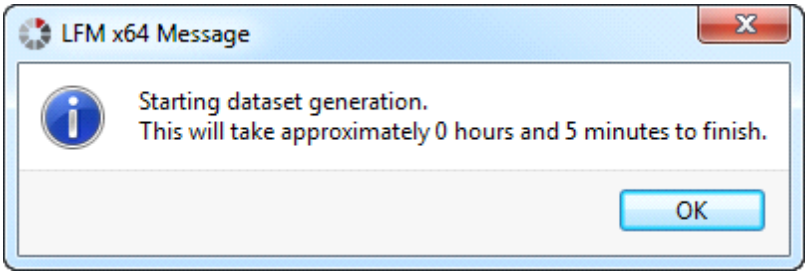
- **Location for Destination File**: The folder where you wish the *LFM Server* dataset to be created.
- **Intermediate Points Locations**: The folder where the intermediate files will be created. Select the desired folder and click **OK**. The available space will be automatically populated to 90% of the available space on the selected disk.
- **Final Points Locations**: The folder where the final points file will be created. This is filled in automatically and defaults to a points folder within the folder specified in the Location for Destination File option as described above.
- **Volume Clipping**:
  - Select **Unlimited** to generate all points from all registered scans in the group.
  - Select **Current Volume** to generate only points within the currently selected volume.
  - Select **Min/Max** to generate only points within the specified minimum and maximum corners of a volume.
- **Density**: Select either **Full**, **Half** or **Quarter** resolution.
- **Incorporate Colour Information**: Tick the box to apply colour to the 3D scan points if colour is available.
- **Solid Point Cloud**: Select **Solid Point Cloud** to enable the generation of Solid Point Cloud data. Then select the size of the solid points that you want to generate. For more information, please see the *HyperBubble and Solid Point Cloud Creation and Use Help Guide*.



Once all the required options have been filled in, the Generate Dataset button on the Generation toolbar will become active as shown left.



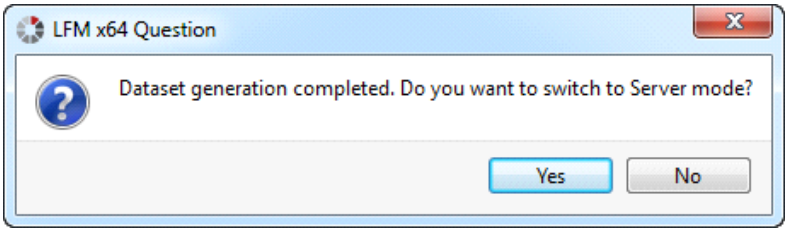
Click the Dataset button and the message shown left will appear. The first line shows how much space will be required in both the intermediate and finals disks for the *LFM Server* dataset generation (.lfd). The second line shows how much space will be required for *LFM NetView* Generation. This is useful information at this stage as the user can begin to prepare the Virtual Hard Disk (VHD). See the *LFM Server – LFM NetView Project Creation guide* for further information about producing *LFM NetView* projects.



If there is enough disk space on both the intermediate and final disks, click **Yes** to proceed. If there is not enough space available click **No** to cancel the process. After clicking *Yes* the window shown left will appear displaying approximately how much time it will take for the generation to finish.

Click **OK** to proceed.

During the generation, a progress bar at the bottom of the **LFM** interface will update to show what percentage of the generation is complete.



Once the generation is complete the message shown below will appear. Click **OK** to continue. The dataset generation is now complete.

Note:

- Datasets generated with a Generator Lite 25 license cannot be loaded with other datasets.
- If you are delivering only the **LFM Server** dataset folder then the BubbleView (.int) files will need to be copied into the pngs folder where the .lfd file is created.

4 Disclaimer

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