Elbit Systems™
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MAPCORE

MapCore™
Map Layer Server v. 7.11.11
User Guide

Revision C

June 2024

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TABLE OF REVISIONS

Revision	Date	Description	Changes
A	July 2022	Revision A	–
B	October 2023	Revision B	Clarification of instructions throughout, amalgamation and elaboration of basic concepts, addition of `McLayersDataConfig.xml` and sections related to system folder structure and management including system execution parameters, addition of new parameters for raster, vector, and DTM layers, removal of Chapter 7.
C	June 2024	Revision C	Introduction of target vs. source coordinate systems; addition of new parameters; GUI updates throughout Chapter 4 and addition of log window; clarifications throughout Chapter 5 regarding silent import; removal from Chapter 6 of all internally used APIs.

LIST OF CHANGES

Revision	Date	Page
C	June 2024	Chapter 1 | INTRODUCTION • *Figure 1-1 MapCoreTM Map Server process flow*: removed obsolete Chapter 7. • Layers Backlog has been renamed as Layer Backlog. The change has been applied throughout the document, specifically in Chapters 1 and 4. • Section *1.5.11 Tiling Scheme*: Clarified the use case of tiling scheme and its relationship to the layer's coordinate system. • Section *1.5.12 Coordinate System*: Clarified the distinction between source and target coordinate systems. Accordingly, all references to coordinate systems throughout Chapters 3 and 4 now point to this section. • Section *1.5.13 Map Unit*: Clarified units for z axis (height).
		Chapter 2 | SERVER OPERATIONS Added description of server log file in new section: *2.3.3 Server Log File*.
		Chapter 3 | SERVER CONFIGURATON The parameters `UseSpatialIndexing` and `IndexingFolder` have been added to the Vector 3D Extrusion layer type, documented in Section *3.3.1.5 `Vector3DExtrusion` Parameters*.

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		Chapter 4 | SERVER OPERATION VIA MAPCORE™ GUI:
		• Section purpose has been clarified and consequently termination of processes has been renamed and moved to a new location, which now also includes the explanation on counter resetting. These changes are documented in the following sections:
		  • *Section I. GUI DESCRIPTION*
		  • *Section II. GUI OPERATION*
		  • *4.5 Display-related Actions* (new section)
		  • *4.5.2 Aborting GUI Actions* (section renamed and relocated)
		  • *4.5.1 Reset Upload Counters*(section relocated)
		• The parameter `SSL Usage` has been removed from the MapCore™ Map Layer Server GUI. The change is reflected in the following sections:
		  • *Figure 4-26 Server Configuration window*
		  • *Table 4-8 Image controls* (image example for Boolean field was changed)
		  • *Table 4-10 Server configuration parameters*
		  • Updated interface images throughout to reflect change in location of **Layer Backlog** (above the **Map Layer Repository**) and the addition of the **Log messages**.
		• Log messages documented in these sections:
		  • *4.3.5 Log* Display (new section)
		  • *Figure 4-7* (new figure)
		  • *4.3.4.1 Running processes*
		  • *4.4.7 Log Display Controls* (new section)
		  • *4.10 Log Display Actions* (new section)

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		Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI continued:
		• Updated Layer Backlog group and layers menu options documented in these sections:
		  • *4.4.2 Layer Backlog Controls*
		  • *4.7 Layer Backlog Actions*
		• Updated Group menu options documented here:
		  • *4.4.3 Group Controls*
		  • *4.8 Group-related Actions*
		  • Majority of images under Section *4.8.2 Add New Layer*.
		  • *4.8.2.2 Define layer parameters per layer type* (including new section: *4.8.2.2.1 Native Layer*)
		• Updated Layer menu options are documented in these sections:
		  • *4.4.4 Layer Controls*
		  • *4.9 Layer-related Actions*
		  • *4.9.2 Build Search Indexes* (new section)
		  • *4.9.6 Attach Layer to Different Group(s)*
		• Upload of all types of native layers is now handled via the **Add Layer > Native Layer** group submenu option. Accordingly, Traversability and Material menu options and respective sections in this user guide were removed.
		• Updated Map Layer Repository menu options as well as modifications to exporting and importing of groups and layers (as MC package) are documented in these sections:
		  • *Figure 4-27 Server configuration*
		  • *Table 4-10 Server configuration parameters*
		  • *4.6.2 Import MC Package* (moved section)
		  • *4.6.3 Export Repository* (new section)
		  • *4.6.5 Configure Preview Options* (new section
		  • *4.8.5 Export Group*
		  • *4.9.5 Export Layer*

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		Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI continued:
		• Changes to selection of multiple groups or layers and respective **More options** menu contextual versions are documented in these sections:
		  • *4.8.1 Select Multiple Groups* (new section)
		  • *4.9.1 Select Multiple Layers*
		• Section *4.8.2.1 Upload Layer Content from Folder*: Add layer process clarified.
		• GUI parameter forms updated per layer type:
		  • The parameter `Image Coordinate System` has been added to the **Raw Raster** layer parameters, documented in Section *4.8.2.2.2 Raw Raster Layer*.
		  • The parameter `High Resolution` has been added to the **Raw DTM (Elevation)** layer parameters, documented in Section *4.8.2.2.3 Raw DTM (Elevation)*, and the parameter `Draw Priority` has been removed from this form.
		  • Changes in **Raw Vector** layer parameters are documented in Section *4.8.2.2.4 Raw Vector Layer*:
		  ◦ The parameter `Locale (Language)` has been added to the layer parameters.
		  ◦ Optimization parameters of hiding objects have been grouped in the advanced form of the layer.
		  • Changes in **Raw S-57** layer parameters are documented in Section *4.8.2.2.5 Raw S-57 Layer*:
		  ◦ The parameters `Draw Priority` and `Version Compatibility` have been added to the layer parameters.
		  ◦ An advanced form has been added to the layer parameters.

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		Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI continued:
		
		GUI parameter forms updates continued –
		
		• The parameter `Draw Priority` has been removed from **Raw 3D Model** layer parameters, otherwise documented in Section *4.8.2.2.6 Raw 3D Model Layer*.
		• Changes in **Raw 3D Vector Extrusion** layer parameters are documented in Section *4.8.2.2.7 Raw 3D Vector Extrusion Layer*:
		  ◦ The parameters `Use Spatial Indexing` and `Object ID Column` have been added to the layer parameters.
		  ◦ The parameter `Draw Priority` has been removed from the layer parameters.
		
		• Section: *4.8.3 View Layers in Group*: Opening and closing groups to display or hide layers is now achieved using a double-click rather than a single-click.

		Chapter 5 | SERVER OPERATION WITHOUT MAPCORE™ GUI (Silent Import): • Table 5-1 Silent import mechanism pros and cons: added pro (time). • Silent import procedure, requirements, and best practices clarified throughout the chapter.
		Chapter 6 | RESTFUL APIs : Removed all internally used APIs, leaving only those APIs that are useful for end users.

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WARNINGS, CAUTIONS, AND NOTES

The following notations are used to place special emphasis on procedures or to call attention to precautionary measures.

WARNING

An operating procedure, practice and so forth, which if not followed correctly, could result in personal injury, or loss of life.

CAUTION

An operating procedure, practice and so forth, which if not followed correctly, could result in damage to, or destruction of equipment.

NOTE

An operating procedure, condition and so forth, to which special attention should be paid.

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Chapter 1 | INTRODUCTION

1.1. Purpose

The MapCore™ Map Layer Server is used to store and stream layers of GIS Maps.

1.2. Scope

This manual details MapCore™ Map Layer Server operation, data manipulation, and API options for both the server. The following diagram illustrates the order of actions to be taken and the chapters in which these actions are detailed.

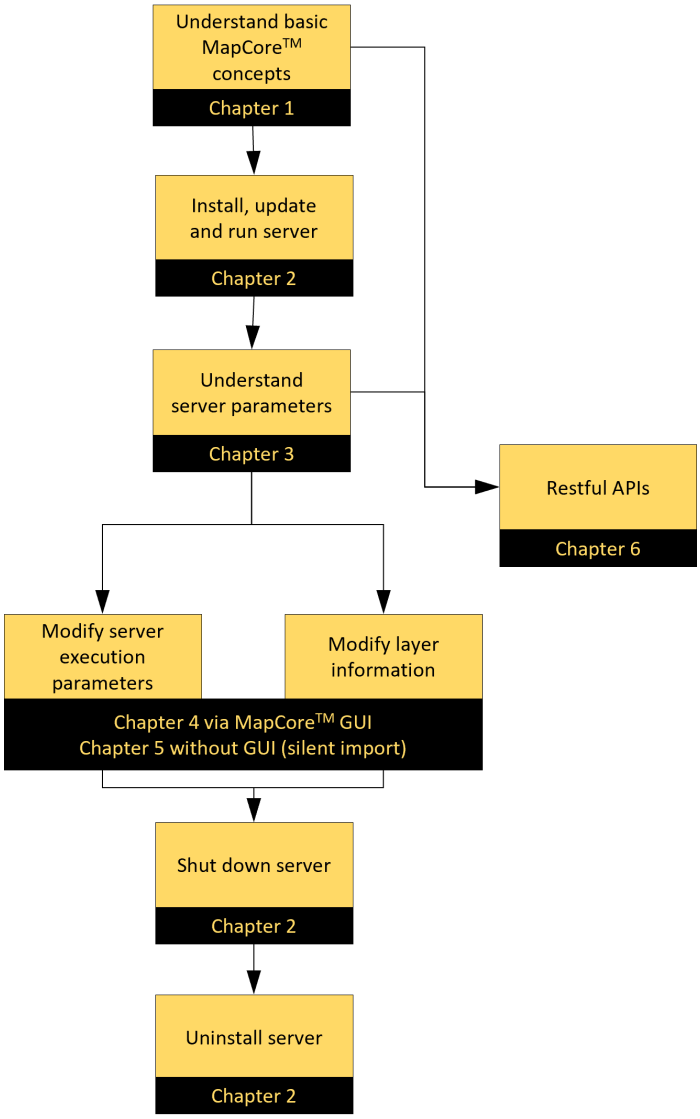

Figure 1-1 MapCore™ Map Server process flow

1.3. Abbreviations

Table 1-1 Abbreviations

Abbreviation	Term
3D	Three-dimensional (as in 3D objects and vector maps)
API	Application Programming Interface
CA	Certification Authority
CPU	Central Processing Unit
CRS	Coordinate Reference System
DNS	Domain Name System
DTM	Digital Terrain Maps
EPSG	European Petroleum Survey Group (name of geodetic systems public registry)
ESRI	Environmental Systems Research Institute (name of geodetic systems public registry)
GIS	Geographic Information System
GPU	Graphic Processor Unit
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol
ID	Identifier
IP	Internet Protocol
JSON	JavaScript Object Notation
KML	Keyhole Markup Language
MC	MapCore
MSI	Microsoft Installer

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Abbreviation	Term
OGC	Open Geospatial Consortium
OS	Operation System
PEM	Privacy Enhanced Mail
RAM	Random-Access Memory
RPM	Red Hat Package Manager file
SaaS	Software as Service (Windows)
SDK	Software Development Kit
SRID	Spatial Reference Identifier
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTM	Universal Transverse Mercator
WMTS	Web Map Tile Service
XML	Extensible Markup Language

1.4. Glossary

Table 1-2 Glossary

Term	Description
Administrator	IT specialist allowed to Install and configure the mapping server.
Client application	An application that uses MapCore™ Map Layer Server to get mapping data.
Data repository	MapCore™ Map Layer Server folder where all layer data and other customized data resides. Refer to Section *1.5.4 Server Execution Parameters* for a detailed description

Term	Description
Group	The group is a logical entity used by the server to present layers together. Refer to Section *1.5.7 Group* for a detailed description.
Layer	Mapping materials that contain observable, geo-positioned information, stored on MapCore™ Map Layer Server; refer to Section *1.5.5 Layer* for a detailed description.
Operator	A specialist managing the MapCore™ Map Layer Server content.
Package	Mapping materials arranged to be uploaded to the server; refer to Section *5.6 Package Descriptor* for a detailed description.
Server execution parameters	Set of parameters that may be defined when starting the MapCore™ Map Layer Server. Refer to Section *1.5.4 Server Execution Parameters* for a detailed description.
Silent import	Non-GUI manual background process of uploading new layers to the MapCore™ Map Layer Server.
Source coordinate system	Relevant only for cases of coordinate system conversion between the input coordinate data by which the layer data may be interpreted and a different coordinate system. In such cases, the input coordinate data is called *source coordinate system* Refer to Section *1.5.12 Coordinate System* for detailed information.
Target coordinate system	This is the coordinate system used by MapCore™ Map Layer Server when importing and previewing the layer. Refer to Section *1.5.12 Coordinate System* for detailed information.

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1.5. Basic Concepts

The following concepts are used throughout this user guide. Depending on the action(s) taken, some concepts may apply while others do not.

1.5.1. Default Installation Folder

This is the folder to which the MapCore™ Map Layer Server is installed by default. By default, it contains both the default data repository folder and the default server executable folder. Understanding the structure of the MapCore™ Map Layer Server installation directory is important for proper management of configuration files. Refer to Section *2.3 System Folders and Configuration Files* for further information.

1.5.2. Default Server Executable Folder

This is the folder in which the server executable resides by default and from which the server is started. It is also the folder in which the server configuration file `McMapLayersServerConfig.xml` resides by default. Refer to Section *2.3 System Folders and Configuration Files* for further information.

1.5.3. Default Data Repository Folder

This is the folder to which the MapCore™ Map Layer Server saves by default all customized user data, including layer data as well as the layer configuration file `McLayersDataConfig.xml`. In new installations, it is advisable to move the data repository to a customized location. In existing installations that are configured to work with the default data repository folder, the data must be copied temporarily to a different location when updating the server and then copied back to the default data repository folder. Refer to Section *2.3 System Folders and Configuration Files* for further information.

1.5.4. Server Execution Parameters

Server execution parameters are a set of parameters defining server execution preferences, including the respective locations of the server configuration file and the layer configuration file. Refer to Section *2.3 System Folders and Configuration Files* for further information on these files. Refer to Section *2.4 Server Execution Parameters* for details regarding available parameters and their usage.

1.5.5. Layer

A layer is a set of geo-referenced mapping data. Each layer in the server's repository can be previewed via the GUI on its own or together with other layers in a group providing that all layers in the group are of the same area of interest, coordinate system, and tiling scheme. The following table describes the possible layer types.

Table 1-3 Geo-referenced layer types used by MapCore™ Map Layer Server

Layer type	Description
Raster	A layer based on a bitmap of pixels containing rectified image or map. Raster images typically store topographic maps as well as aerial reconnaissance and satellite images.
DTM (Elevation)	A form of raster layer. A Digital Terrain Map (DTM) storing altitude data that enables a 3D presentation of the terrain, line of sight calculation, and other relevant terrain height information. Thus, other layers previewed together with the DTM layer can be shown in three dimensions (3D). The DTM layer also allows the client application to perform spatial calculations such as retrieving the altitude of each pixel over the viewed layer
Vector	Layer comprising a geographical database that contains a collection of vector-based geographic information system (GIS) data as well as geometries (e.g., text, lines, areas, or points) of geo-referenced entities with various levels of detail. The vector layer may also contain styling information (e.g., instructions on how to render it) as well as additional meta-data (such as names, population, neighborhood, etc.).
S57	Vector layer adhering to the standard S-57 for vector layer format and containing multi-layer upgradeable maritime charts. This format comprises a directory tree containing subdirectories and files, where each file contains multiple layers (object classes). All files are fused into a single large chart with predefined layer names, geometries, and the S-57 chart symbology. Parameters used for the S-57 layer type are identical to those used for vector layers with the stipulation that the value of the `StylingFormat` parameter be `S52`. Refer to Section *1.5.10 Styling Format* for further details on the S52 styling format

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Layer type	Description
3D model	Layer storing a photorealistic 3D model of an entire terrain including buildings, vegetation, and other land coverage. The layer contains both the geometry of that area and its visual appearance.
Vector 3D extrusion	Special vector layer containing outlines and height values of 3D entities, such as buildings, along with styling information. This layer type allows to easily display the 3D representation of a large urban area above the terrain.

1.5.6. Layer source materials

Source materials for the layers can be Raw or Native.

- Raw layers are unprocessed original source files formatted in any supported standard (see *Table 1-3 Geo-referenced layer types used by MapCoreTM Map Layer Server* above). Compared to the native format, they might perform poorly.
- Native layers comprise raw data which has been converted to a format native to MapCore™ Map Layer Server and therefore optimized for best performance.

> NOTE
>
> Vector raw layers are automatically converted to a native format as they are added to the server using an on-the-fly conversion process.

1.5.7. Group

A group is a container of layers combined under one common name used by the client application to group layers together. It is advisable to group layers with a common area of interest, coordinate system, and tiling scheme so they produce a sensible image when viewed via the GUI. A layer can be a member of several groups.

Refer to Section *1.5.12 Coordinate System* for detailed information on the layer's coordinate system.

Refer to Section *1.5.11 Tiling Scheme* for detailed information on the tiling scheme and its relationship to the layer's coordinate system.

1.5.8. Layer Backlog

A special system group that is always present, even when the server is empty after a new installation. The **Layer Backlog** group contains all layers that are not associated with any group. It may thus contain any layer type regardless of its area of interest, coordinate system, etc.

While backlog layers are not visible to the client applications, they may still be managed by an operator through non-GUI server operations (using Restful APIs). Deleting a layer from the Backlog group will delete that layer permanently from the server.

1.5.9. Search Index

Relevant for the vector layer only, a search index stores organized layer information for a speedier search within the layer. Search indexes are stored in a database that can later be exported and used to search the layer content by a client application.

1.5.10. Styling Format

Relevant for vector layers only, including S-57 layers. Defines the layer rendering format for these layers. Possible styling formats are:

Table 1-4 Styling formats

Styling format	Description
NONE	If no styling format us defined, the default MapCore™ schemes are applied, according to the data source geometry.
INTERNAL	Relevant for `KML`, `KMZ` file types only. The data source internal styling is applied.
S52	Relevant for S-57 layer type only. S-52 chart symbology is applied.
CUSTOM	A folder containing user-defined styling in which XMLs and MapCore™ object schemes must be specified.

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1.5.11. Tiling Scheme

The tiling scheme is the method used to attach map tiles to a geo-positioned, scale-sensitive grid. The tiling scheme parameter comprises both a method for cutting the maps into tiles and the axis origin (in world coordinates) of the tile matrix. A single tiling scheme must be shared by layers in order to preview them together.

The default system tiling scheme is used to display raw layers unless another scheme is specified. For native layers, the designated native layer tiling scheme is set when the native layer is created. The following table details possible tiling schemes:

Table 1-5 Tiling schemes

Tiling scheme	Description
MAPCORE	A tiling scheme that was designed by MapCore™ and is thus made for best performance. By default and unless otherwise specified, native formats are created using the MapCore™ tiling scheme. This is also the default tiling scheme in the map layer server unless otherwise configured. NOTE: This tiling scheme is not supported by OGC WMTS; therefore, if the server is used as a WMTS server to non-MapCore™ clients, a different scheme must be specified.
GLOBAL_LOGICAL	Widely used tiling scheme in most WMTS servers; used mostly in geographical (latitude-longitude) coordinate systems.
GOOGLE_CRS84_QUAD	A pseudo-Mercator tiling scheme using the WGS84 as its foundation.
GOOGLE_MAPS_COMPATIBLE	Used mainly by Google maps.

The choice of tiling scheme is tightly related to the choice of coordinate system used for the layer:

- When no coordinate system is provided by the operator and the server is using the coordinate system embedded in the input data, the `Default Tiling Scheme` parameter is used.
- When the target coordinate system is provided and it is not specified in the tiling scheme exception table, the `Default Tiling Scheme` parameter is used.

- When the source coordinate system is provided and it is additionally specified in the tiling scheme exception table, the tiling scheme defined by the source coordinate system is used.
- When the target coordinate system is provided and it is additionally specified in the tiling scheme exception table, the tiling scheme defined by the target coordinate system is used.

Refer to Section *3.2.1 `TilingSchemePolicy` Parameters* for details on the `DefaultTilingScheme` and `TilingSchemesByCRS` (tiling scheme exception table).

Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system parameters.

1.5.12. Coordinate System

The coordinate system is a set of parameters required for the import and display of layers in MapCore™ Map Layer Server. MapCore™ Map Layer Server supports all coordinate systems defined by ESPG. Refer to https://epsg.io/ for more details.

> WARNING
>
> In the absence of such data the layer will fail to upload.

In order for MapCore™ Map Layer Server to present layer data, the EPSG code for the coordinate system used by the layer must be present. The coordinate system used by MapCore™ Map Layer Server to present layer data is called the *target coordinate system*. For some layer types this is the input coordinate system while for layer types that support conversion between coordinate systems, this is the final coordinate system to be used by MapCore™ Map Layer Server. In the case of coordinate system conversion, the input coordinate system is called *source coordinate system*. Where no conversion takes place, the *source coordinate system* is also the *target coordinate system*.

Depending on the layer type, coordinate system information may be supplied in one of two ways:

- It may be embedded within the layer data (in which case it is automatically recognized by MapCore™ Map Layer Server); or
- It may (or is required to) be supplied by the user.

For native layers, the coordinate system is embedded within the data.

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For some raw layer types, the information embedded within the layer data may be manually overridden through designated MapCore™ Map Layer Server parameters (see Section *3.3.1 `RawLayerInfo` Parameters*).

Assumptions, options, and requirements related to the coordinate system parameters are detailed in the following table:

Table 1-6 Source and target coordinate system

Layer type	Source coordinate system	Target coordinate system
Raster	Embedded in input data or manually supplied in layer configuration data. Link to GUI chapter: *Coordinate System*	None may be supplied as coordinate system for this layer type cannot be converted by MapCore™ Map Layer Server.
DTM	Embedded in input data or manually supplied in layer configuration data. Link to GUI chapter: *Coordinate System*	None may be supplied as coordinate system for this layer type cannot be converted by MapCore™ Map Layer Server.
Vector	Embedded in input data or manually supplied in layer configuration data. Link to GUI chapter: *Source Coordinate System*	Optionally supplied in layer configuration data. Link to GUI chapter: *Target Coordinate System*
S-57	Embedded in input data (cannot be supplied manually).	Optionally supplied in layer configuration data. Link to GUI chapter: *Target Coordinate System*
3D model:		
3D Tiles	Embedded in input data (cannot be supplied manually).	Mandatory, must be supplied in layer configuration data. Link to GUI chapter: *Target Coordinate System*

Layer type	Source coordinate system	Target coordinate system
All other cases	Embedded in input data (cannot be supplied manually).	Optionally supplied in layer configuration data. Link to GUI chapter: *Target Coordinate System*
3D vector extrusion	Embedded in input data or manually supplied in layer configuration data. Link to GUI chapter: *Source Coordinate System*	Optionally supplied in layer configuration data. Link to GUI chapter: *Target Coordinate System*

1.5.13. Map Unit

The size of the map unit varies based on the type of coordinate system (see Section *1.5.12 Coordinate System* above) used:

- In the metric coordinate system, the map unit equals 1 meter, the x and y coordinates equal the specified value, and the z coordinates (height) are always in meters.
- In the geographic coordinate system, where the x and y coordinates represent longitude and latitude respectively, the map unit equals 1 degree multiplied by 100000. the z coordinates (height) are always in meters.

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Chapter 2 | SERVER OPERATIONS

2.1. Scope

This chapter is intended for administrators who are authorized to install and configure the MapCore™ Map Layer Server. The information provided in this chapter includes:

- *Minimum System Requirements*
- Overview of *System Folders and Configuration Files*
- Overview of *Server Execution Parameters*
- *Notes for Windows Users*
- *Note for Linux Users*
- *Server Install*
- *Changing the Location of the Data Repository Folder*
- *Server Start*
- *Server Update*
- *Server Shut Down*
- *Server Uninstall*

The following diagram illustrates steps to be taken in server operations per system and server configuration.

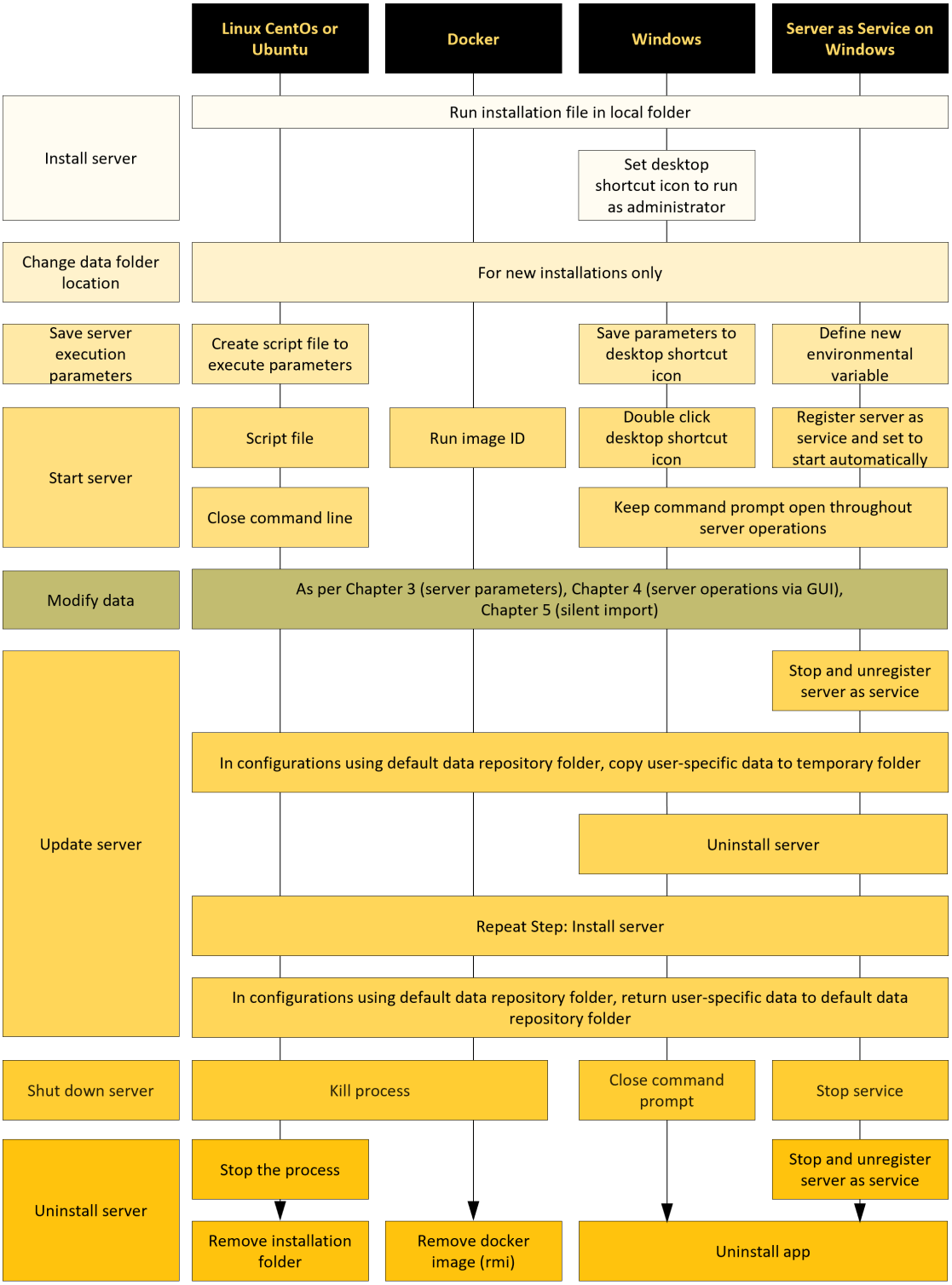

Figure 2-1 Server operations process flow

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2.2. Minimum System Requirements

The computer on which the MapCore™ Map Layer Server is installed must meet or exceed the following specifications:

- Processor (CPU): Intel I3 or higher
- Memory (RAM): 8 GB
- Storage (HDD): 500 GB
- Operating system:
  - Windows 7, 8, 10, 11 (x64)
  - Linux CentOS/7 (x64)
  - Linux Ubuntu 14 and up (x64).
- Browser, current versions:
  - Chrome
  - Edge
  - Firefox

2.3. System Folders and Configuration Files

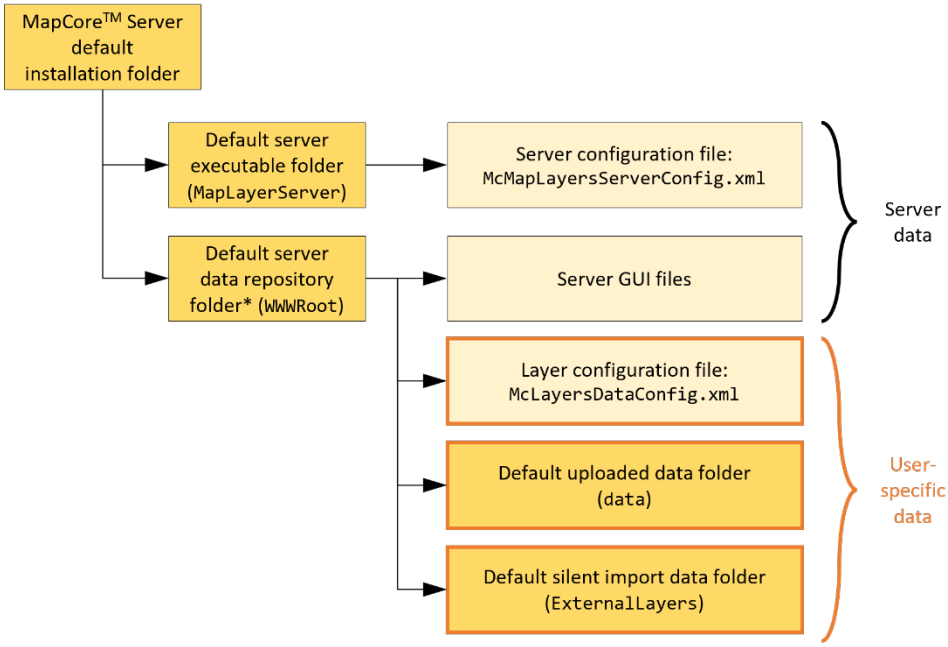

Figure 2-2 Configuration files and user-specific data in MapCore™ Map Layer Server directory

While the name of the default installation folder varies according to the operating system of the machine on which MapCore™ Map Layer Server is installed, the structure within that folder is always identical, regardless of operating system. For the purpose of running and managing the MapCore™ Map Layer Server, knowledge of only the information detailed herein is relevant.

The default installation folder contains both system data and user-specific data such as layers and configuration choices. By default, server data resides in both folders while user-specific data resides in the default server data repository folder. Configurable server data is found in the server configuration file (see Section *2.3.1 Server Configuration File* below). All user-specific data regarding layers is stored in the configurable layer configuration file (see Section *2.3.2 Layer Configuration File* below).

> CAUTION
>
> User-specific data should be moved to a customized location to prevent data loss in the event of a server update.

It is strongly advisable to change the location of all user-specific data folder and files to prevent data loss when updating the server. Note, however, that the default server data repository folder also holds all server GUI files, which must not be moved. Refer to Section *2.8 Changing the Location of the Data Repository Folder* for detailed instructions.

The names of both the default installation folder and the default data repository folder vary according to the operating system of the machine on which MapCore™ Map Layer Server is installed as detailed in the following table.

Table 2-1 Default server installation and server data repository folders per operating system

Operating system	Default server installation folder	Default server data repository folder
Linux CentOS	`/Package/McMapLayerServer/x86-64`	`/Package/McMapLayerServer/WWWRoot`
Linux Ubuntu	`/usr/local/bin/McMapLayerServer-<version>/x86-64` Where `<version>` is the version number of the MapCore™ Map Layer Server (e.g., 7.11.7.0)	`/usr/local/bin/McMapLayerServer-<version>/WWWRoot` Where `<version>` is the version number of the MapCore™ Map Layer Server (e.g., 7.11.7.0)

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Operating system	Default server installation folder	Default server data repository folder
Docker	NA	NA
Windows	`C:\Program Files\Elbit Systems\MapLayerServer`	`C:\Program Files\Elbit Systems\WWWRoot`

2.3.1. Server Configuration File

The server configuration file `McMapLayersServerConfig.xml` resides by default in the server executable folder (see *Figure 2-2 Configuration files and user-specific data in MapCoreTM Map Layer Server directory* for layer configuration file location) and holds server-specific information that controls how the server is run, such as default tiling scheme. These parameters may be set via the Server GUI. Refer to Section *3.2* Server Parameters for details on the structure and content of this file. While it is inadvisable to change the location of this file, it is possible to do so.

Refer to *Figure 2-2 Configuration files and user-specific data in MapCoreTM Map Layer Server directory* for configuration file name and location.

Refer to Section *2.4 Server Execution Parameters* for details on running the server when the server configuration file is in a location other than the default location.

Refer to Section *4.6.4 Change Server Configuration* for details on accessing and changing configuration parameters via the GUI.

Refer to *Chapter 3 | SERVER CONFIGURATON* for a detailed explanation of each configurable parameter.

2.3.2. Layer Configuration File

The layer configuration file `McLayersDataConfig.xml` resides by default in the data repository folder (see *Figure 2-2 Configuration files and user-specific data in MapCoreTM Map Layer Server directory* for layer configuration file location) and contains information about all layers that have been defined in the server. Refer to Section *3.3 User-specific Layer Parameters* for details on the structure and content of this file. Information stored in the layer configuration file is accessed by the server each time it is run in order to open all layers.

In case layers are referenced in the layer configuration file but actual data of layers is missing (e.g., accidently removed from the server computer, renamed, or moved to another location), a backup file is created of the original layer configuration file including the information of the missing layers, after which those layers are deleted from the layer configuration file. When the backup file is created, a warning message

is issued in the terminal console while the server continues to load. The backup file is named `McLayersDataConfig_backup_<timestamp>.xml` where `<timestamp>` has the following structure: `YYYY_MM_DD_HH_MM_SS`, for example: `McLayersDataConfig_backup_2023_05_28_14_16_20.xml`.

The contents of the layer configuration file may be retrieved via the GET `GetCapabilities` Restful API request. Refer to Section *6.3 GetCapabilities Request (WMTS Compatible)* for detailed information.

2.3.3. Server Log File

The MapCore™ Map Layer Server log file is called `McMapLayerServer_<timestamp>.log` where `<timestamp>` is presented in this format: `YYYY_MM_DD_HH_MM_SS` (such as: `McMapLayerServer_2023_11_21_09_34_28.log`).

The location of server log file depends on the operating system:

- In Windows, it is located by default in the folder `c:\programdata\Elbit`. Note that you may type `%programdata%` in the file explorer address bar to quickly locate the `programdata` folder.
- In Linux, it is located in the same folder as `McMapLayersServerConfig.xml`. Refer to Section *2.3.1 Server Configuration File* for name and location of the default server executable folder.

Up to 10 instances of the `McMapLayerServer_<timestamp>.log` may be created. The eleventh instance of this file will cause the oldest log file to be deleted.

A second log file is created on demand through the MapCore™ Map Layer Server GUI. Refer to Section *4.3.5 Log* Display for detailed information about this log file and its location.

2.4. Server Execution Parameters

Starting the MapCore™ Map Layer Server involves defining parameters in the following syntax (parameters in angled brackets <> are mandatory while parameters in square brackets [] are optional) as detailed in the table below.

Server execution parameters are applied when running the server (from the `<server executable folder>`; Refer to *Table 2-1 Default server installation and server data repository folders per operating system* for file name and location of this folder).

```
<local address> <port> <number of threads> <server GUI folder>
[server configuration file folder] [data repository folder] [layer
configuration file folder]
```


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Where:

Table 2-2 Server execution parameters

Parameter	Description	Reference for more details
`<local address>`	Address of server on local machine. The value is always `0.0.0.0`.	NA
`<port>`	Server communication port. The recommended value is 6767.	NA
`<number of threads>`	Number of requests that can be carried out simultaneously without overloading the server computer. For a machine meeting minimum requirements, the recommended value is 5. For stronger machines with more CPU cores and greater memory capacity, more threads may be used.	NA
`<server GUI folder>`	Folder containing all server GUI files. By default, this is the default data repository folder.	Refer to *Table 2-1 Default server installation and server data repository folders per operating system* for folder name and location
`[server configuration file folder]`	Optional parameter representing the folder in which the `McMapLayersServerConfig.xml` server configuration file is found. By default, in the same folder where the Server executable was installed.	Refer to *Figure 2-2 Configuration files and user-specific data in MapCoreTM Map Layer Server directory* for configuration file name and location

Parameter	Description	Reference for more details
`[data repository folder]`	Optional parameter representing the folder in which the data repository folder is found. It is highly recommended you change the location of the data repository folder to prevent potential data loss when upgrading server. If not defined, the default location is **`<server GUI folder>`** (see above)	Refer to *2.8 Changing the Location of the Data Repository Folder* for detailed instructions
`[layer configuration file folder]`	Optional parameter representing folder in which the layer configuration file `McLayersDataConfig.xml` is found. If not defined, the default location is `[data repository folder]` (see above)	Refer to *Figure 2-2 Configuration files and user-specific data in MapCoreTM Map Layer Server directory* for configuration file name and location

For example:

```
0.0.0.0 6767 5 ../WWWRoot/ ChosenConfigurationFileFolder
ChosenRepositoryDataFolder ChosenLayersXMLFolder
```

Refer to Section *2.3 System Folders* for detailed information on MapCore™ Map Layer Server folders and configuration file locations.

2.5. Notes for Windows Users

NOTE

Treat the following as guidelines, as actual screens may vary depending on your Windows version.

2.5.1. Instructions for Windows Operating System

The Windows operating system is outside the scope of this document. Due to the variation between different Windows version, we offer only guidelines for processes involving default Windows components.

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2.5.2. Open the Command Prompt in Windows Operating System

1. On the keyboard press **Windows + S** to open Window's search box.
2. Enter the term `command prompt` to search for the application.
3. Click on the search result that looks something like this:

Figure 2-3 Windows search result for the term command prompt

2.5.3. Start the Command Prompt as an Administrator

1. On the keyboard press **Windows + S** to open Window's search box.
2. Enter the term `command prompt` to search for the application.
3. Right-click on the relevant search result (see *Figure 2-3* above), and on the context menu, click the **Run as administrator** option. If prompted, click the **Yes** button to confirm your choice.

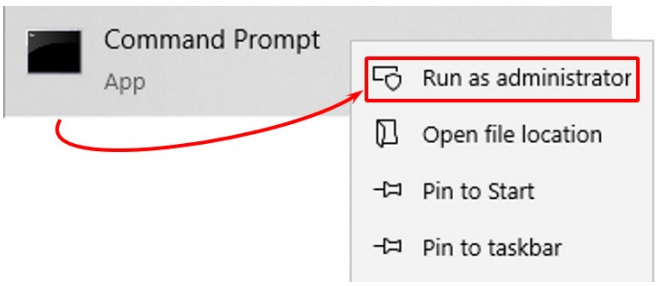

Figure 2-4 Run command prompt as administrator

2.5.4. Close the Command Prompt

Click on the **X** control at the top right corner of the window.

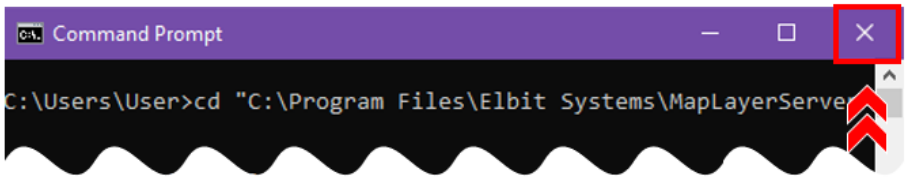

Figure 2-5 Closing the command prompt window

2.5.5. Folder Paths

Unless otherwise stated, all examples of folder paths in this document are displayed in Linux format (e.g., Path/folder). Paths are identical for Windows, with the exception of the direction of the folder delimiter (e.g., Path\folder).

2.6. Note for Linux Users

> NOTE
>
> Pay particular attention to code and command case, as the Linux operating system is case sensitive.

Section I. INSTALLATION

2.7. Server Install

The MapCore™ Map Layer Server can be installed on Linux CentOS, Linux Ubuntu, or Windows OS.

The server installation package is also available as a self-extracting Linux docker image for Linux CentOS.

2.7.1. Install Server on Linux CentOS

2.7.1.1. For MapCore™ Map Layer Server

1. Copy the `tgz` installation file (e.g., `McMapLayerServer-centOS-7.11.10-B0.tgz`) to a local folder.
2. Open command prompt, and issue the following commands:

   ```
   cd <destination folder>
   tar xvzf McMapLayerServer-<version>.tgz
   cd package/McMapLayerServer/x86-64
   chmod a+x McMapLayerServer
   chmod a+x *.so*
   ```

   Where:

   - `<destination folder>` is the folder to which you copied the installation file in Step #1 above.
   - `<version>` is the version of the MapCore™ Map Layer Server being installed.

3. Continue to Step *2.7.3 Post-installation Steps for Linux CentOS and Linux Ubuntu* below.

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2.7.2. Install Server on Linux Ubuntu

1. Copy the `deb` installation file (e.g., `McMapLayerServer7.11.10-B0.deb`) to a local folder.
2. Open command prompt, and issue the following command:

   ```
   sudo dpkg –install McMapLayerServer<version>.deb
   ```

   Where: `<version>` is the version of the MapCore™ Map Layer Server being installed.
3. Continue to Step *2.7.3 Post-installation Steps for Linux CentOS and Linux Ubuntu* below

2.7.3. Post-installation Steps for Linux CentOS and Linux Ubuntu

Define the environment variable `LD_LIBRARY_PATH` as follows:

1. Open command line, and issue the following command:

   ```
   export | grep LD_LIBRARY_PATH
   ```

2. Verify that the result contains the following:

   ```
   declare -x LD_LIBRARY_PATH=“.”
   ```

   - If the result contains the required line, the variable is properly defined, and you may start using the MapCore™ Map Layer Server.
   - If the result does not contain the specified line, continue to Step #3 below:

   3. Open the file `~/.bashrc` in a text editor, and search for the variable `LD_LIBRARY_PATH`.

   - If the variable was found, add the string `:.”` at the end of the line before the quotation mark, for example.

     Variable before editing:
     `export LD_LIBRARY_PATH=“/usr/bin/somefolder”`
     Variable after editing:
     `export LD_LIBRARY_PATH=“/usr/bin/somefolder:.”`

   - If the variable was not found, add the following to the end of the file as a last line:

     `export LD_LIBRARY_PATH=“.”`

4. Save the file, and close it.

Repeat Steps 1 through 4 above until the variable is defined correctly as described in Step #2 above.

5. Continue to Step *2.8 Changing the Location of the Data Repository Folder*.

2.7.4. Install Server via Docker

1. Copy the `tgz` file (e.g., `McMapLayerServer7.11.10-B0.tgz`) into a local folder.
2. Open command line, and issue the following command:

   ```
   docker import <you McMapLayerServer-<version>.tgz>
   ```

   Where: `<version>` is the version of the MapCore™ Map Layer Server being installed.

3. Upon completion of the server installation, create a new server installation image ID for future use by opening the command prompt and issuing the following command:

   ```
   docker images | grep land_c4i-mapcore-docker
   ```

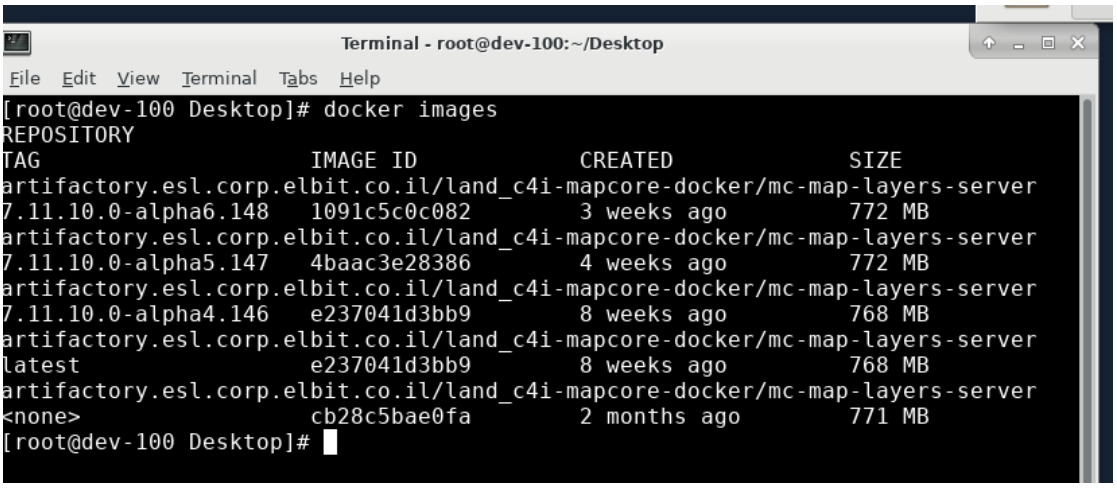

Figure 2-6 Creating a docker image

4. Continue to Step *2.8 Changing the Location of the Data Repository Folder*.

2.7.5. Install Server on Windows

1. Save the installation file `MapLayerServerSetup.exe` to a local folder, right click on it, and run it as administrator. The **Setup** window is displayed. If prompted by a security message such as the following, click the **More info** link, and then click the **Run anyway** button.

Figure 2-7 Starting the MapCore™ Map Layer Server installation file as administrator

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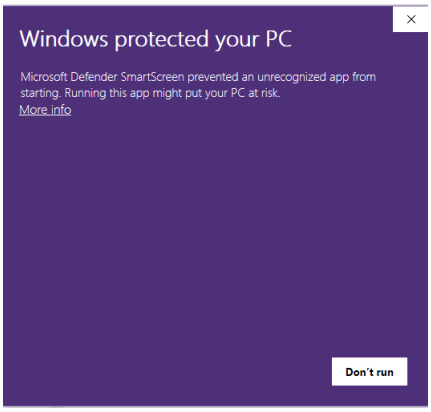

Figure 2-8 Permission prompt

2. Check the option **I agree to the license terms and conditions,** and click the **Install** button. If prompted, approve the request to use administrator privileges.

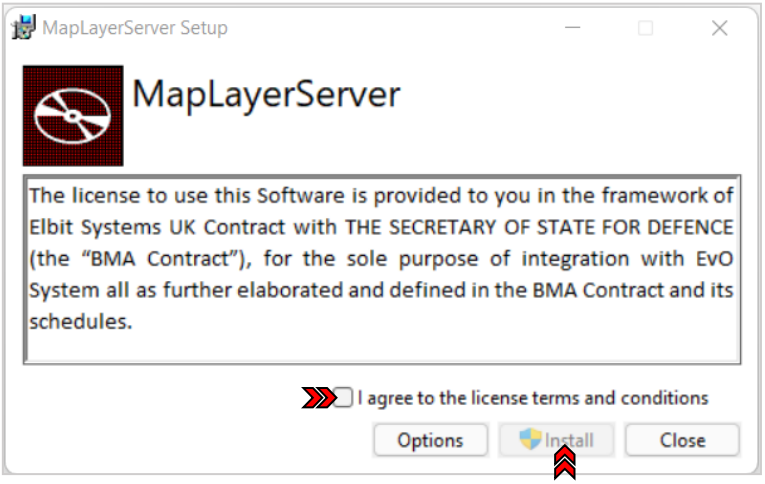

Figure 2-9 MapLayerServer Setup, start window

3. Once the installation completion message is displayed, click the **Close** button.

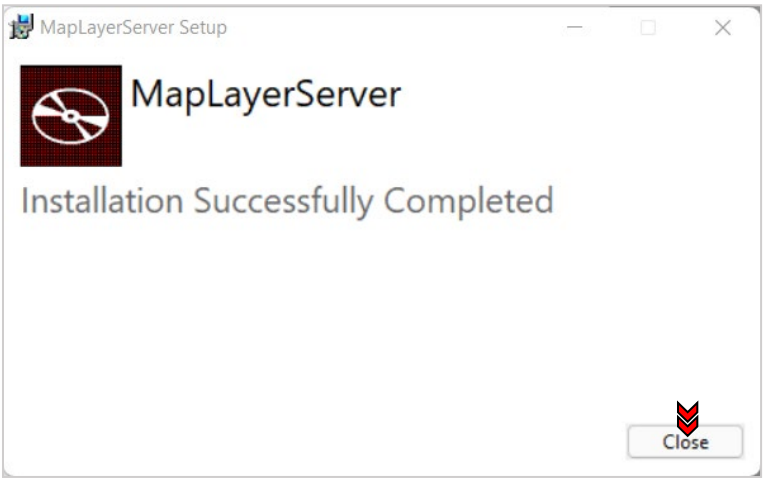

Figure 2-10 MapLayerServer Setup, installation completion

4. Upon completion of the server installation, right-click the **Map Layers Server** desktop icon, and from the pop-up menu click the **Properties** option.

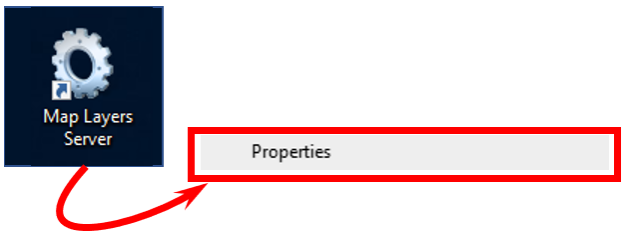

*Figure 2-11 Desktop icon of the MapCore™ Map Layer Server and right-click context menu **Properties** option*

5. On the **Shortcut** tab of the **Map Layers Server** window, click the **Advanced** button.

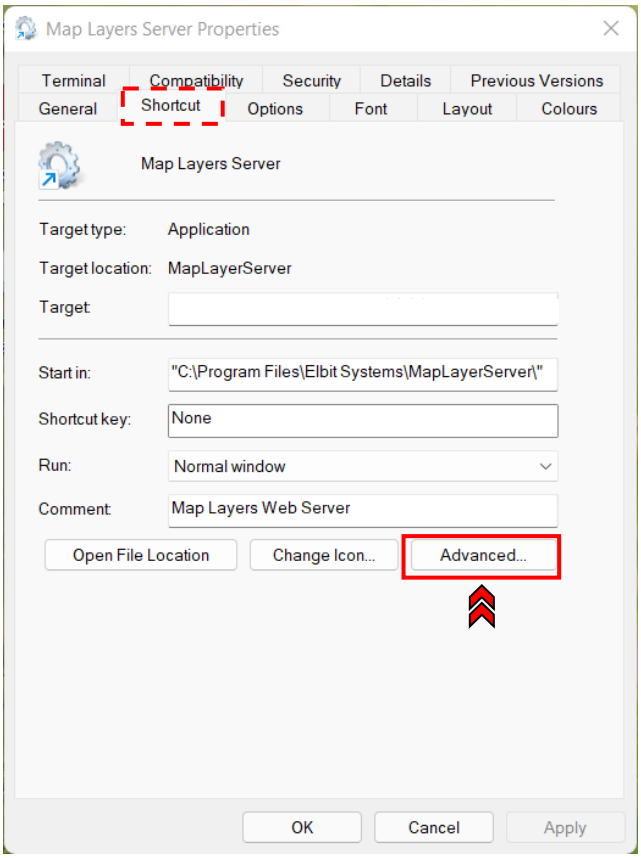

*Figure 2-12 Windows shortcut properties (**Advanced** button)*

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6. In the **Advanced Properties** window, check the option **Run as Administrator**, and then click the **OK** button to close the window.

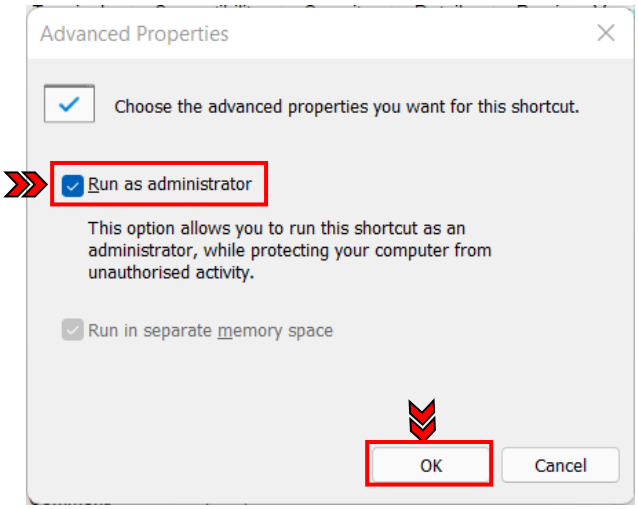

Figure 2-13 Advanced properties

7. For convenience, you may wish to save customized server execution parameters at this point. Refer to *2.10 Save Server Execution Parameters for Automatic Deployment* for detailed instructions.
8. On the **Map Layers Server Properties** window, click the **Apply** button to submit the change and close the window.
9. Continue to Step *2.8 Changing the Location of the Data Repository Folder*.

Section II. CHANGING THE LOCATION OF THE DATA REPOSITORY FOLDER

2.8. Changing the Location of the Data Repository Folder

Two steps are required for changing the location of the data repository folder:

- Creating a new folder. Refer to Section *2.9 Create a New Data Repository Folder* for detailed instructions.
- Letting MapCore™ Map Layer Server know the location of the newly created folder using the server executable parameter. Refer to Section *2.10 Save Server Execution Parameters for Automatic Deployment* for detailed instructions.

2.9. Create a New Data Repository Folder

This process differs depending on whether you are creating a new data repository folder for a new installation or a server update, as detailed below.

2.9.1. For a New Installation

1. Create a new folder in a desired location as your new customized data repository folder.
2. Use server execution parameters to direct MapCore™ Map Layer Server to the customized data repository folder. Refer to Section *2.11 Server Start* for detailed instructions.

2.9.2. For a Server Update

If customized client software data has already been stored in the default data repository folder (see Section *2.3 System Folders and Configuration Files* for detailed information), it is inadvisable to change the location of your customized client software data. Refer to Section *2.12 Server Update* for detailed instructions on how to handle such data.

Section III. STARTING THE SERVER

- If you have created a customized data repository folder or wish to change other server execution parameters on a regular basis, continue to Section *2.10 Save Server Execution Parameters for Automatic Deployment*.
- If you have no need to customize your server parameters, continue to Section *2.11 Server Start*.

2.10. Save Server Execution Parameters for Automatic Deployment

This process differs per operating system as detailed below.

2.10.1. Save Execution Parameters on Linux

Create a script file to store the following commands:

```
cd <default server executable folder>
```

```
McMapLayerServer <server execution parameters>
```


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Where `<default server executable folder>` is as detailed in Section *2.3 System Folders and Configuration Files* and `<server execution parameters>` are as detailed in Section *2.4 Server Execution Parameters*.

2.10.2. Server Execution Parameters on Windows When Running the Server as a Service

To customize server execution parameters, define the system variable `MCLAYERSERVER_ACTIVATION_STRING` as follows:

1. Open the **System Properties** window. To do so, either:

   - On the keyboard press **Windows + S** to open Window's search box, enter the term `environment variable`, and click on the search result that looks something like this:

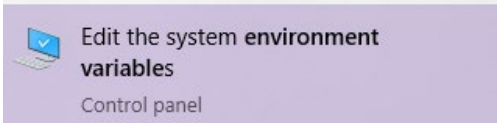

Figure 2-14 Windows search result for the term environment variable

   - Click on the Windows icon, and then click on the Settings option. In the **Setting** window, enter the term `environment variable`, and click on the search result that looks something like this:

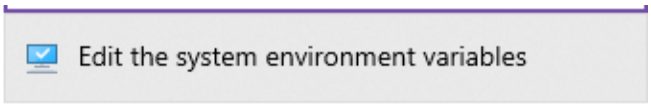

Figure 2-15 Windows system search result for the term environment variable

2. On the **Advanced** tab of the **System Property** window, click the **Environment Variables** button.

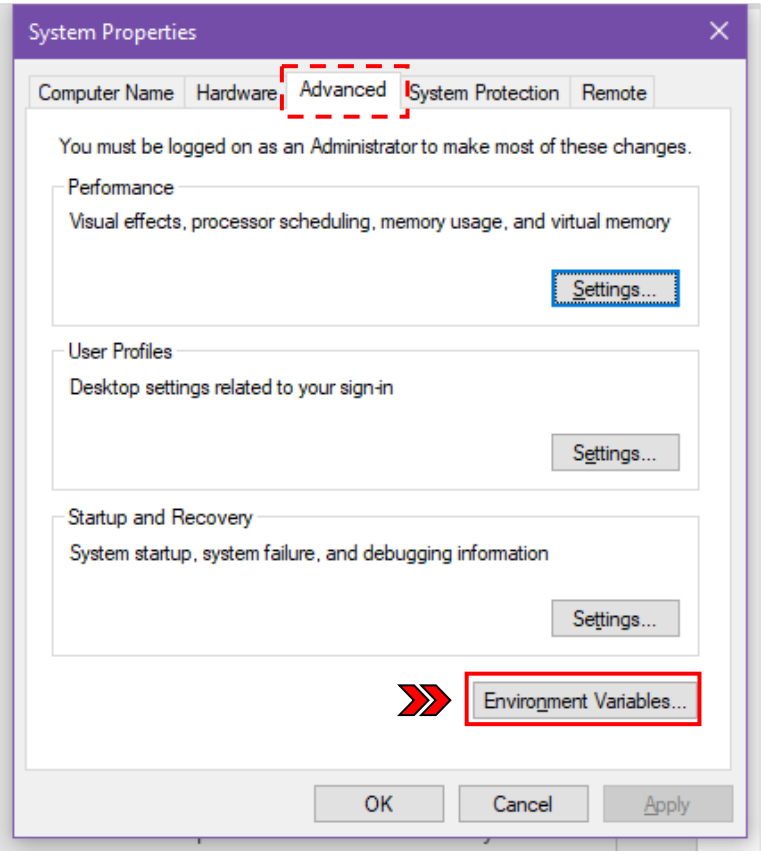

*Figure 2-16 **System Property** window*

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3. Under the **System Variable** window on the **Environment Variables** window, click the **New…** button.

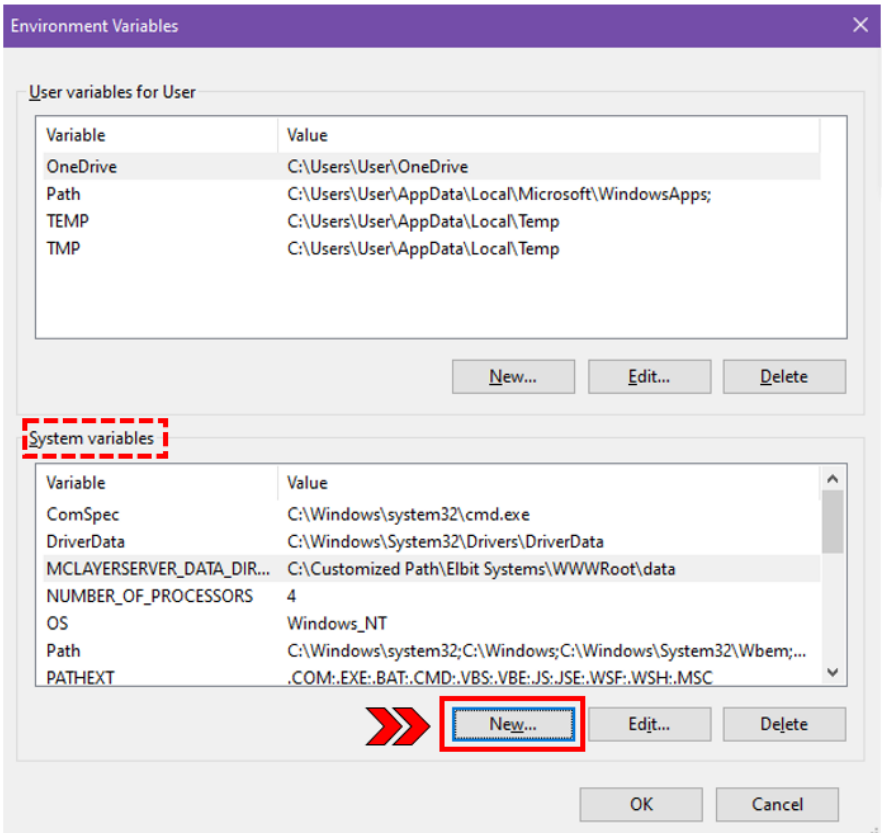

*Figure 2-17 **Environment Variables** window*

4. In the **New System Variable** window, enter the following, and then click the **OK** button:

   - In the field **Variable name**, enter the value: `MCLAYERSERVER_ACTIVATION_STRING`
   - In the field **Variable name**, enter `<server execution parameters>` as detailed in Section *2.4 Server Execution Parameters*.

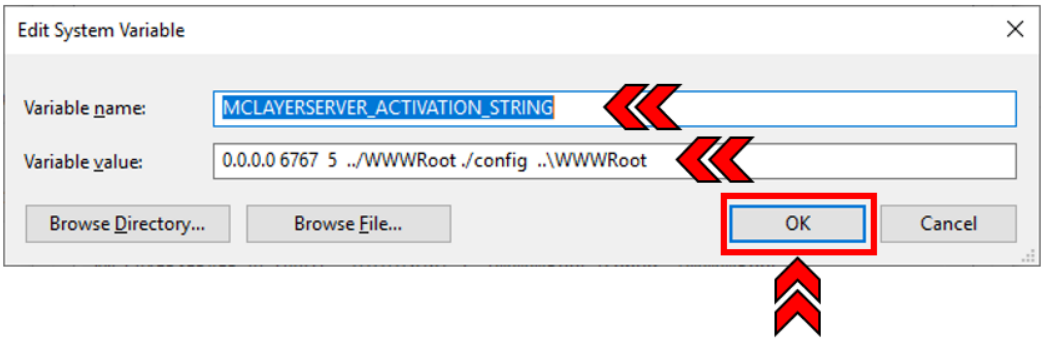

Figure 2-18 Customizing server execution paramaters via `MCLAYERSERVER_ACTIVATION_STRING` environment variable

5. Click the **OK** button to exit the **Edit System Variable** window.
6. Click the **OK** button to exit the **Environment Variables** window.
7. On the **System Properties** window, click the **Apply** button and then click the **OK** button.
8. Reboot the system for your changes to take effect.

2.10.3. Server Execution Paramaters on Windows When Running the Server from the Desktop Shortcut Icon

The following instructions are relevant for running the MapCore™ Map Layer Server from the desktop shortcut icon (see Section *2.11.3 Start Server on Windows* for more details).

1. Locate and right-click the **Map Layers Server** desktop icon, and from the pop-up menu click the **Properties** option.

2. In the **Target** field, enter following value:

   `“<default server executable folder>\McMapLayerServer.exe” <server execution parameters>`

   Where `<default server executable folder>` is as detailed in Section *2.3 System Folders and Configuration Files* and `<server execution parameters>` are as detailed in Section *2.4 Server Execution Parameters*.

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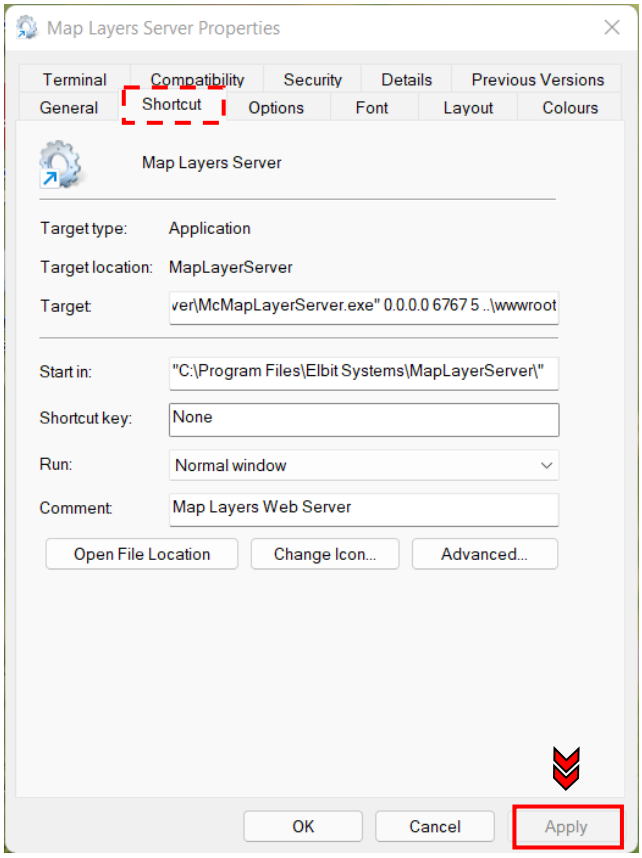

*Figure 2-19 Windows shortcut properties (**Target** field)*

3. Click the **Apply** button and then click the **OK** button.

2.11. Server Start

This process differs based on operating system as detailed below.

2.11.1. Start Server on Linux CentOS and Ubuntu

1. Run the script file which you created in Section *2.10.1 Save Execution Parameters on Linux* above.
2. To operate the MapCoreTM Map Layer Server, follow instructions detailed in *Chapter 3 | SERVER CONFIGURATON* and *Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI*.

2.11.2. Start Server via Linux Docker Package

1. Open the command line, and issue the following command:

```
docker run -it <image id>
```

Where:

`<image id>` is the image ID of the last server installation. You can find the image ID by issuing the following command and within the resulting prompt, identify the image ID of the entry that was created latest (top row):

```
docker images | grep land_c4i-mapcore-docker
```

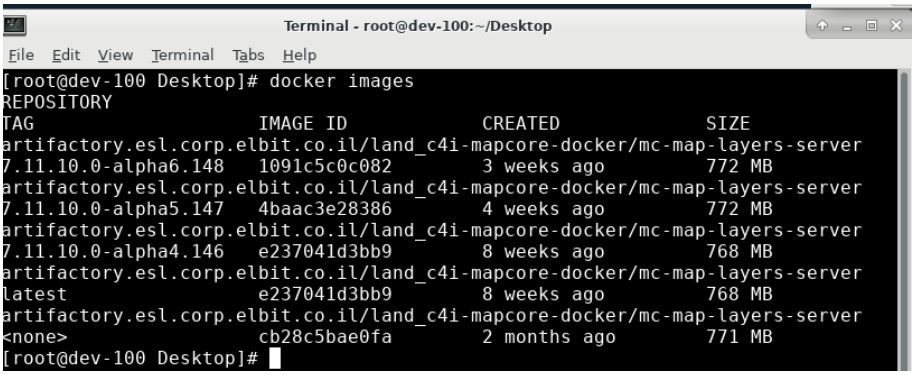

Figure 2-20 Identifying the server image ID on Docker

2. Once the message **Server is up and ready to receive requests** is displayed, you may operate the MapCore™ Map Layer Server. Keep the command line window open for as long as you are working with the server.
3. To operate the MapCore™ Map Layer Server, follow instructions detailed in *Chapter 3 | SERVER CONFIGURATON* and *Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI*.

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2.11.3. Start Server on Windows

NOTE

To configure and run MapCore™ Map Layer Server on Windows you will need to provide administrator permissions. Should you encounter an error message along the following lines, click the **Continue** button to complete the operation:

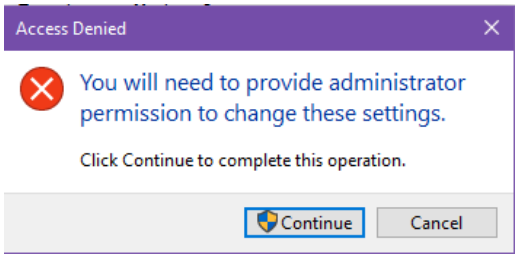

Figure 2-21 Running commands as administrator in Windows

You may run the MapCore™ Map Layer Server on Windows in either of the following ways, which are further detailed below:

- Set up the server to automatically start during operating system startup (running the server as a service) in which case, it is recommended to save server parameters within a designated environment variable. This is the recommended option.
- Use the desktop shortcut icon to manually start the server, in which case, it is recommended to save server parameters within the shortcut properties to be employed each time you start the server.
- Use the command prompt to manually start the server while overriding any saved server execution parameters. It is not recommended to use this option.

2.11.3.1. Start the Server Automatically on Computer Startup (Running the Server as a Service)

1. If not already done, save server startup parameters. Refer to Section *2.10.2 Server Execution Parameters on Windows When Running the Server as a Service* for detailed instructions.
2. Open the command prompt as an administrator (see Section *2.5.3 Start the Command Prompt as an Administrator*).
3. Issue the following commands:

```
cd <Default server executable folder>
```

```
McMapLayerServer /register
```

Where `<Default server executable folder>` is detailed in Section *2.3 System Folders and Configuration Files*. Use *Figure 2-2 Configuration files and user-specific data in MapCoreTM Map Layer Server directory* for reference.

4. Close the command prompt window (see Section *2.5.4 Close the Command Prompt* for detailed instructions).

5. On the keyboard press **Windows + S** to open Window's search box, enter the term `services`

6. Right-click on the search result that looks something like this and from the context menu select **Run as administrator**. If prompted, click the **Yes** button to confirm your choice.

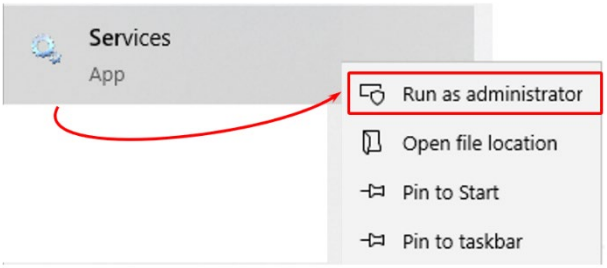

Figure 2-22 Windows search result for the term services

7. On the **Extended** tab of the **Services** window, locate the service `McMapLayerService` by scrolling to it in the list of displayed services (it will only be displayed on the list if it has been successfully registered first).

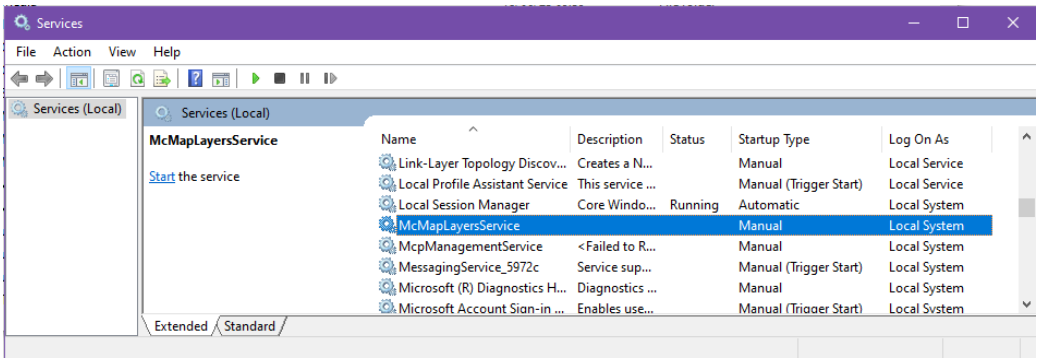

*Figure 2-23 Successfully registered McMapLayerService listed in **Services** window*

8. Right-click on the `McMapLayerService` service, and then click the **Properties** option.

9. On the **General** tab of the service **Properties** window, Click the dropdown arrow of the field **Startup type**, and click the option **Automatic**.

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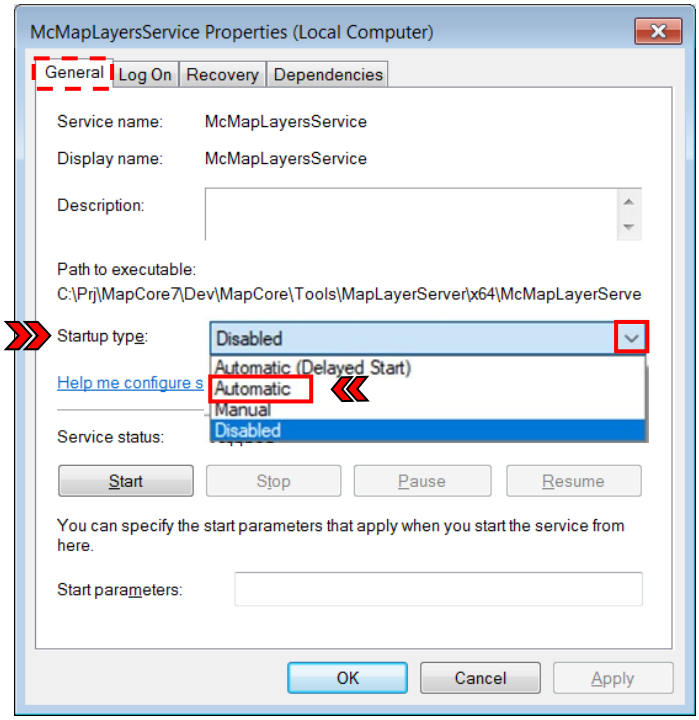

*Figure 2-24 **Services** window*

10. Click the **Apply** button and then click the **OK** button to close the **Properties** window. The status of the service in the **Services** window is changed to **Running**.

11. Close the **Services** window by clicking on the **X** control at the top right corner of the window.

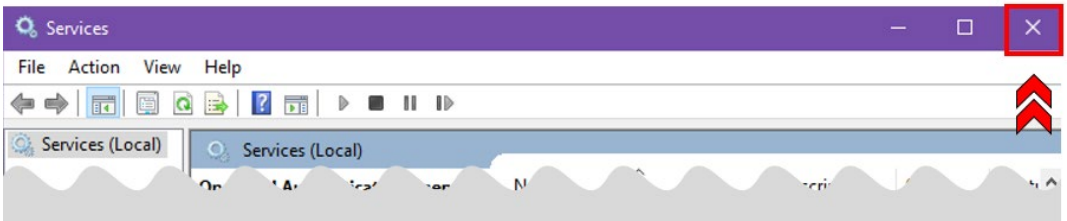

*Figure 2-25 Closing the **Services** window*

2.11.3.2. Start Server via Desktop Shortcut Icon

1. If not already done, save server startup parameters. Refer to Section *2.10 Save Server Execution Parameters for Automatic Deployment*.

2. Locate and right-click the **Map Layers Server** icon on your desktop, and from the pop-up menu click the **Run as administrator** option. This will prompt the command line window.

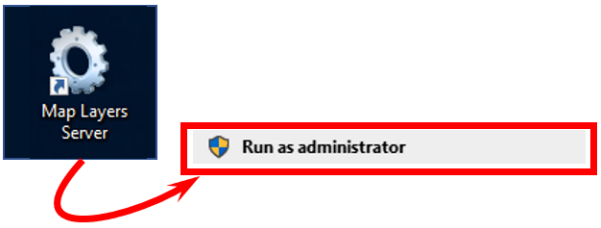

*Figure 2-26 Desktop icon of the MapCore™ Map Layer Server and right-click context menu **Run as administrator** option*

> NOTE
>
> Keep the command prompt window open for as long as you are working with the MapCore™ Map Layer Server. Closing the command prompt window will shut down the server.

3. Once the message **Server is up and ready to receive requests** is displayed, you may operate the MapCore™ Map Layer Server. Keep the command prompt window open for as long as you are working with the server.
4. To operate the MapCore™ Map Layer Server, follow instructions detailed in *Chapter 3 | SERVER CONFIGURATON* and *Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI*.

2.11.3.3. Start Server via Windows Command Prompt

1. Open the command prompt as an administrator (see *2.5.3 Start the Command Prompt as an Administrator* for detailed instructions).

2. Issue the following commands:

```
cd <server executable folder>
```

```
McMapLayerServer <server execution parameters>
```

Where `<server executable folder>` is as detailed in Section *2.3 System Folders and Configuration Files* and `<server execution parameters>` are as detailed in Section *2.4 Server Execution Parameters*.

Once the message **Server is up and ready to receive requests** is displayed, you may operate the MapCore™ Map Layer Server. Keep the command prompt window open for as long as you are working with the server.

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3. To operate the MapCore™ Map Layer Server, follow instructions detailed in *Chapter 3 | SERVER CONFIGURATON* and *Chapter 4 | SERVER OPERATION VIA MAPCORETM GUI*.

Section IV. SERVER UPDATE

2.12. Server Update

1. If the server is used as a service on Windows, stop and unregister the MapCore™ Map Layer Server. Refer to Section *2.14.1* Stop and Unregister the MapCore™ Map Layer Server for detailed instructions.
2. Based on your data configuration, do the following:
   - If your server data repository folder is in its default location (see *2.3* System Folders and Configuration Files), copy the following server folders to a temporary location that is unrelated to any of the MapCore™ Map Layer Server folders:
     - `/WWWRoot/Data`
     - `/WWWRoot/ExternalLayers`
     - `/WWWRoot/McLayersDataConfig.xml` (if exists)
     - `/MapLayerServer/McMapLayersServerConfig.xml`
   - If your server data repository folder has been moved to a customized location, continue to Step #3.
3. According to your operating system, do one of the following:
   - For Linux, continue to step #4 below.
   - For Windows, uninstall current version of the MapCore™ Map Layer Server as described in Section *2.14 Server Uninstall*.
4. Install the new version of the MapCore™ Map Layer Server. Refer to Section *2.7 Server Install* for detailed instructions.
5. Based on your data configuration, do the following:
   - If you copied data to a temporary location in Step 2 above, copy that data back to the default data repository folder.
   - If you server data repository folder has been moved to a customized location, you are not required to do anything else.

Section V. SHUTTING DOWN THE SERVER

2.13. Server Shut Down

This process differs based on operating system as detailed below.

> NOTE
>
> This step is relevant only if the MapCore™ Map Layer Server is running.

2.13.1. Shut Down Server in Linux

1. If not already active, go to the **Map Layers Server** console window and issue the following command:

   ```
   ps -all | grep McMapLayerServer
   ```

   The result should look something like this:

   ```
   4 S 0 21241 18946 0 80 0 - 172784 futex_ pts/4 00:04:44
   McMapLayerServer
   ```

   Where the fourth group of numbers (i.e., `21241` in the above example) is the process ID.

2. Issue the following command:

   ```
   kill -9 <ProcessID>
   ```

   Where `<ProcessID>` is the process ID returned in the previous Step.

2.13.2. Shut Down Server in Windows

If the MapCore™ Map Layer Server is running as a service (see Section *2.11.3.1 Start the Server Automatically on Computer Startup (Running the Server as a Service)*), go to Section *2.13.3 Shut Down Server as Service in Windows*. Otherwise:

Close the command prompt (see Section *2.5.4 Close the Command Prompt*).

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2.13.3. Shut Down Server as Service in Windows

Use either of the following alternatives:

- Use the command prompt:

  a) Go to the open the command prompt and issue the following commands:
  `cd <default server executable folder>`
  `McMapLayerServer /stop`
  Where `<default server executable folder>` is as defined in Section *2.3 System Folders*.
  b) Close the command prompt window (see Section *2.5.4 Close the Command Prompt*).

- Use the **Services** window:

  a) On the keyboard press **Windows + S** to open Window's search box, enter the term `services`, and right-click on the relevant search result (see *Figure 2-24 Services window*).
  b) On the **Extended** tab of the **Services** window, locate the service `McMapLayerService` by scrolling to is in the list of displayed services.
  c) Right-click on the desired service, and then click the **Stop** option.
  d) Close the **Services** window.

Section VII. SERVER UNINSTALL

2.14. Server Uninstall

To uninstall you must follow these two steps, which are further detailed below:

1. If using MapCore™ Map Layer Server as service (see Section *2.11.3.1 Start the Server Automatically on Computer Startup (Running the Server as a Service)*), then first stop and unregister the MapCore™ Map Layer Server.
2. Uninstall server.

2.14.1. Stop and Unregister the MapCore™ Map Layer Server When Used as a Service (Windows only)

1. Open the command prompt (see Section *2.5.2 Open the Command Prompt in Windows Operating System*).

2. Issue the following commands:
   `cd <server executable folder>`
   `McMapLayerServer /stop`
   `McMapLayerServer /unregister`
   Where `<server executable folder>` is the folder to which the MapCore™ Map Layer Server was installed. Use *Table 2-1 Default server installation and server data repository folders per operating system* for reference.
3. Close the command prompt window (see Section *2.5.4 Close the Command Prompt*).

2.14.2. Uninstall the MapCore™ Map Layer Server

2.14.2.1. Linux CentOs or Ubuntu

In the command prompt, according to your Linux setup, issue the following command:

- For Linux CentOS:
  `sudo yum erase mcmaplayerserver`
- For Linux Ubuntu:
  `sudo dpkg --remove mcmaplayerserver`
- For Docker:
  `docker rmi <image id> -f`
  Where `<image id>` is the image ID of the last server installation (see *Figure 2-20 Identifying the server image ID on Docker* for details).

2.14.2.2. Windows

> NOTE
>
> Server uninstall may only be executed by a system administrator.

1. Locate the **Apps Settings**. The **Settings** window is typically accessibly via the **Start** menu or the Windows search box, and then locate the **Apps** option.

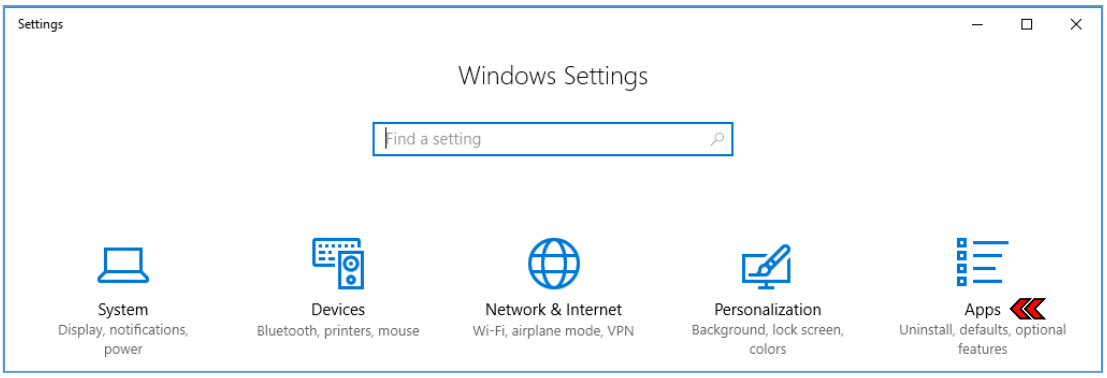

Figure 2-27 Windows settings

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2. Locate the **Map Layer Server** app and click it to select it. Locating the app may typically be achieved by scrolling through the list of apps or using the search box.
3. Click the **Uninstall** button.

Figure 2-28 Windows uninstall app

4. If prompted, confirm uninstallation.
5. On the **MapLayerServer Setup** window, click the **Uninstall** button.

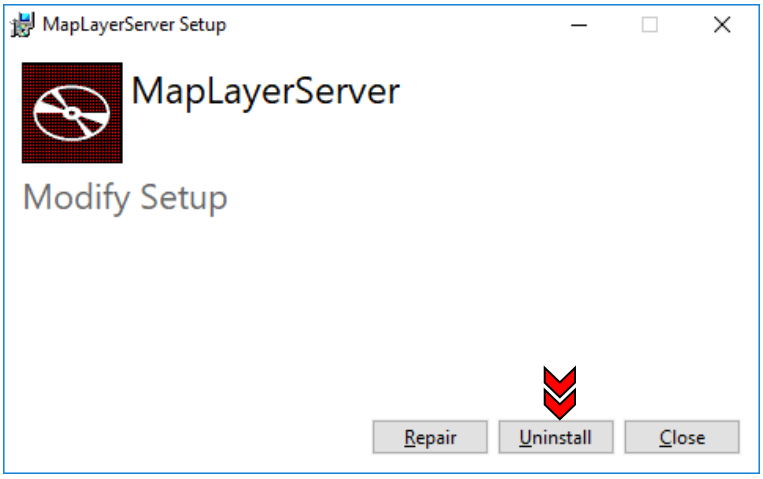

Figure 2-29 MapLayerServer Uninstall

6. Upon successful completion, click the **Close** button.

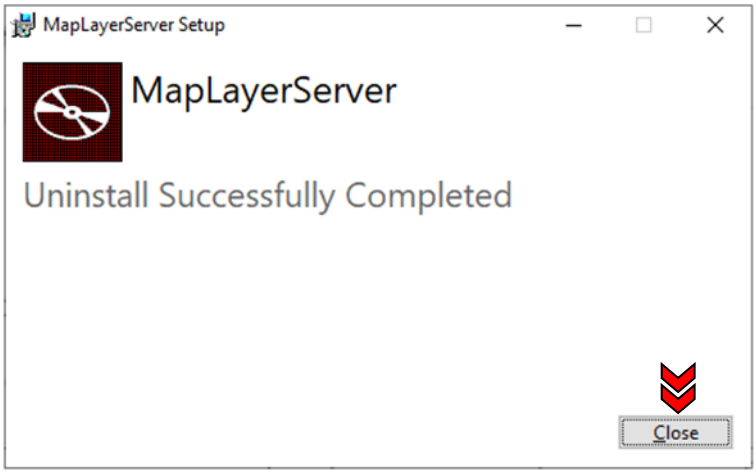

Figure 2-30 MapLayerServer successful completion of uninstall process

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Chapter 3 | SERVER CONFIGURATON

3.1. Scope

This chapter describes the server configuration parameters, stored in the MapCore™ Map Layer Server configuration files. Refer to the following details for detailed information:

Table 3-1 Configuration parameters reference table

Configuration File	Description	Configure parameters
Server configuration file `McLayersDataConfig.xml`	Refer to Section *2.3.1 Server Configuration File*	Refer to Section *3.2 Server Parameters*
Layer configuration file `McMapLayersServerConfig.xml`	Section *2.3.2 Layer Configuration File*	Refer to Section *3.3 User-specific Layer Parameters*

This chapter is intended for administrators who are authorized to install and configure the MapCore™ Map Layer Server.

CAUTION

Only qualified personnel should change the server parameters as unreasonable changes in these parameters can result in unrecoverable error of the server.

NOTE

Changes to `MapLayersConfig` parameters will take effect only after the next server reboot.

3.2. Server Parameters

Configurable server parameters are stored in the server configuration file `McLayersDataConfig.xml`. Refer to Section *2.3.1 Server Configuration File* for more details. The `ServerConfig.xsd` scheme governing this file is described below.

Throughout this chapter, where parameters are used in the GUI interface of the MapCore™ Map Layer Server, links are provided to respective location in the current document.

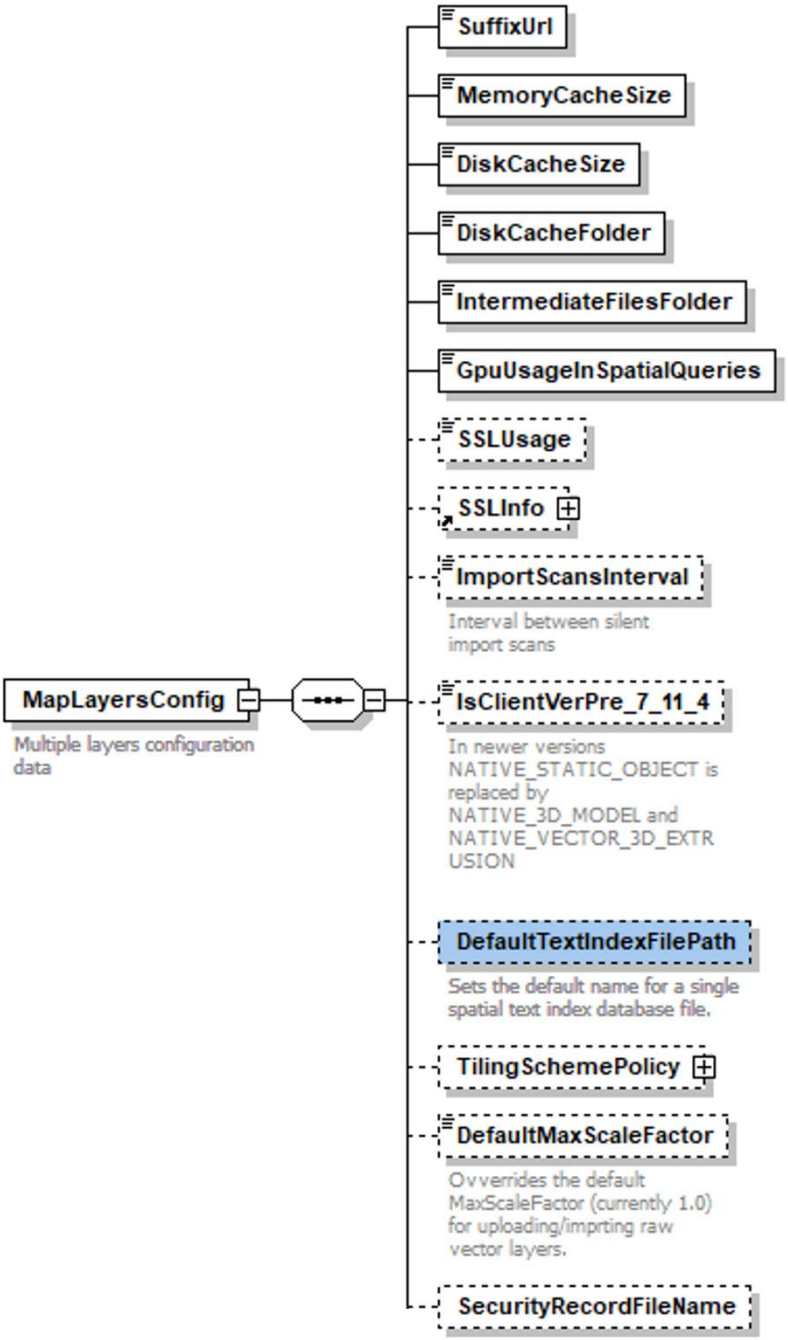

Figure 3-1 `MapLayersConfig` scheme

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Where:

Table 3-2 `MapLayersConfig` parameters

Parameter	Mandatory	Default value	Description
`SuffixUrl` Link to GUI chapter: *Suffix URL*	Yes	`/map/opr`	The URL suffix used by the server after `http://serverName:port/declaration`.
`MemoryCacheSize` Link to GUI chapter: *Memory Cache Size [in MB]*	Yes	`512`	The total size (in MB) of cache memory dedicated to the server. If actual cached data exceeds the customized value, the oldest used items will be removed from the cache. A value of `0` disables the memory cache.
`DiskCacheSize` Link to GUI chapter: *Disk Cache Size [in MB]*	Yes	`2048`	The total size (in MB) of disk cache memory dedicated to the server, used to extend the cache size. A value of `0` disables the disk cache.
`DiskCacheFolder` Link to GUI chapter: *Disk Cache Folder*	Yes	NA	Path to the disk cache root folder. A subfolder is created for each layer within this root folder, where its disk cache will reside.
`IntermediateFiles Folder` Link to GUI chapter: *Intermediate Files Folder*	Yes	NA	Path to a folder used for temporary files and raw vector styling data.
`GpuUsageInSpatial Queries` Link to GUI chapter: *GPU Usage in Spatial Queries*	No	NA	Defines if the spatial queries involve the Graphic Processor Unit (GPU) to enhance performance. `true` enables GPU processing, `false` disables it.
`SSLUsage`	NA	NA	For future use.

Parameter	Mandatory	Default value	Description
`SSLInfo`	NA	NA	For future use.
`ImportScanInterval` Link to GUI chapter: *Import Scans Interval*	No	`30`	Interval (in seconds) between periodic scans of the `ExternalLayers` folder for updates. (e.g., a package copied by administrator into an `ExternalLayers` subfolder).
`IsClientVerPre_7_11_4` Link to GUI chapter: *Is Client Version Earlier than 7.11.4*	Yes	`false`	Set this flag to `true` if the client software MapCore™ API version is earlier than 7.11.4 to allow the `GetCapabilities` API to return older 3D Models and Vector 3D Extrusion map type (`NATIVESTATICOBJECTS` and `RAW_STATIC OBJECTS`).
`TilingSchemePolicy`	No		Block of information defining the policy of handling tiling schemes in RAW formats. Refer to Section *3.2.1 TilingSchemePolicy Parameters* below for detailed information.
`DefaultMaxScaleFactor` Link to GUI chapter: *Map Scale Factor*	Yes	`1`	Factor used to convert screen meter per pixel scale to printed map.
`DefaultTextIndexFilePath` Link to GUI chapter: *Default Text Index File Path*	NA	NA	For future use
`SecurityRecordFileName` Link to GUI chapter: *Security Record File Name*	NA	NA	For future use

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3.2.1. `TilingSchemePolicy` Parameters

`TilingSchemePolicy` parameters are described below.

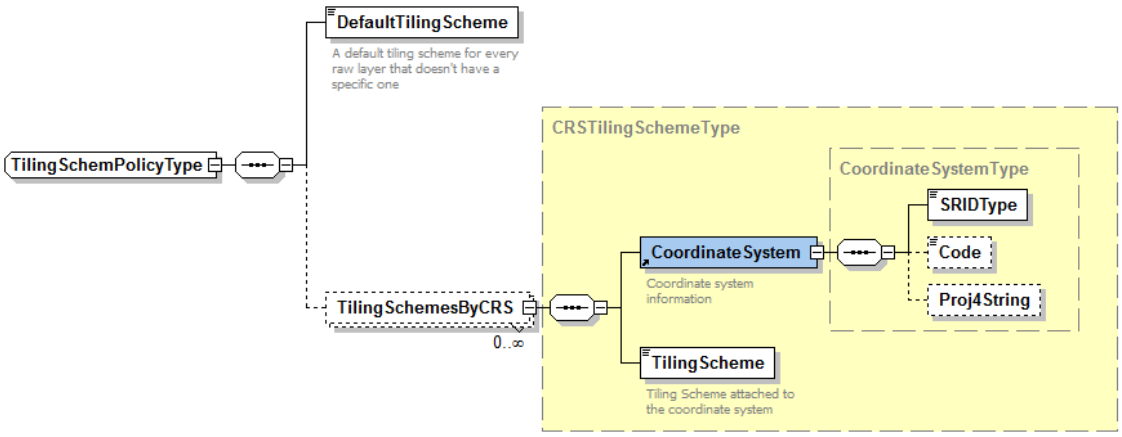

Figure 3-2 `TilingSchemePolicy` scheme

Where:

Table 3-3 `TilingSchemePolicy` parameters

Parameter	Mandatory	Default value	Description
`DefaultTilingScheme` Link to GUI chapter: • Server configuration parameters: Default Tiling Scheme • Tiling scheme parameters: Default Tiling Scheme	Yes	`MAPCORE`	Tiling scheme applied to every raw image added to the server or imported without a tiling scheme. Refer to Section *1.5.11 Tiling Scheme* for detailed information on possible values and their relationship to the layer's coordinate system.

Parameter	Mandatory	Default value	Description
`TilingSchemesByCRS` Link to GUI chapter: *Tiling Schemes Exceptions By CRS*	No	NA	Array of exceptions to the default tiling schemes. Instances are used to set a different default tiling scheme per target or coordinate system (CRS). Refer to Section *1.5.11 Tiling Scheme* for use case scenarios. See parameters in *Table 3-4 TilingSchemeByCRS parameters* below. Refer to Section *1.5.12 Coordinate System* for details on coordinate system.

Table 3-4 `TilingSchemeByCRS` parameters

Parameters	Mandatory	Default value	Description
`CoordinateSystem`	No	NA	The coordinate system for which an independent tiling scheme is defined. Possible values are ESPG codes. See *Table 3-5 CoordinateSystem parameters* below. Refer to Section *1.5.11 Tiling Scheme* for use case scenarios. Refer to Section *1.5.12 Coordinate System* for details on coordinate system.
`TilingScheme`	Yes	NA	The tiling scheme used by default in the specified coordinate system. Refer to Section *1.5.11 Tiling Scheme* for detailed information on possible values.

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Table 3-5 `CoordinateSystem` parameters

Parameters	Mandatory	Default value	Description
Note that the identical structure applies to CoordinateSystem, SourceCoordinateSystem, and TargetCoordinateSystem			
`SRIDType`	Yes	NA	Spatial Reference ID (SRID) type. Possible values: `EPSG`: EPSG codes repository. If this value is selected then `Code` is mandatory.
`Code`	No	NA	This parameter contains the EPSG code of the coordinate system.
`Proj4String`	No	NA	Not in use.

3.3. User-specific Layer Parameters

The layer configuration file `McMapLayersServerConfig.xml` holds information of an array of layers, each stored in a `MapLayerConfig` element. Its parameters are described below.

Refer to *2.3 System Folders and Configuration Files* for further information on this file and its location.

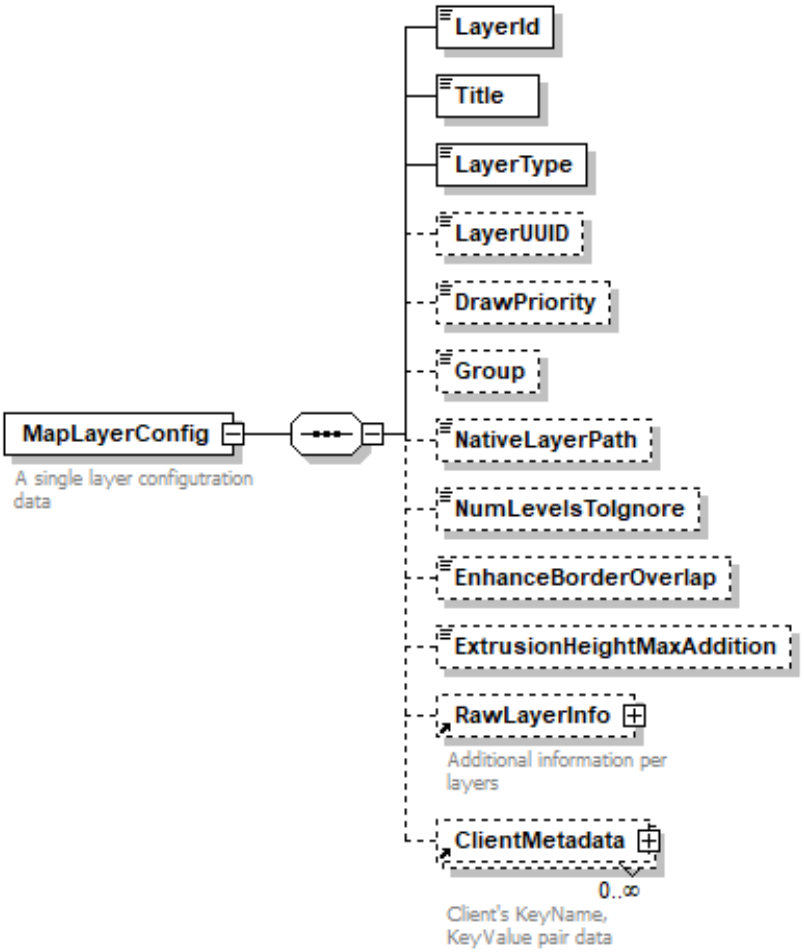

Figure 3-3 `MapLayerConfig` scheme

Where:

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Table 3-6 `MapLayerConfig` parameters

Parameter	Mandatory	Description
`LayerId` Link to GUI chapter: • Native layer Layer ID • Raw raster layer Layer ID • Raw DTM (Elevation) layer Layer ID • Raw vector layer Layer ID • Raw S-57 layer Layer ID • Raw 3D Model layer Layer ID • Raw 3D Vector Extrusion layer Layer ID	Yes	A unique, case-sensitive string that identifies the layer and used by MapCore™ client. May contain letters a-Z, numbers 0-9, dash, and underscore.
`Title` Link to GUI chapter: • Native layer Title • Raw raster layer Title • Raw DTM (Elevation) layer Title • Raw vector layer Title • Raw S-57 layer Title • Raw 3D Model layer Title • Raw 3D Vector Extrusion layer Title	Yes	String that may be used by the client application as the layer's name. The title may contain any ascii character.

Parameter	Mandatory	Description

`LayerType`	Yes	Possible values:
		`NATIVE_RASTER`
		`NATIVE_DTM`
		`NATIVE_VECTOR`
		`NATIVE_3D_MODEL`
		`NATIVE_VECTOR_3D_EXTRUSION`
		`NATIVE_TRAVERSABILITY`
		`NATIVE_MATERIALRAW_RASTER`
		`RAW_DTM`
		`RAW_VECTOR`
		`RAW_3D_MODEL`
		`RAW_VECTOR_3D_EXTRUSION`
		Refer to Sections *1.5.5 Layer* and *1.5.6 Layer source materials* for detailed information on layers.
		If a native layer is specified, the parameter `NativeLayerPath` (see below) must also be specified. Note that the specification of native layer type is mandatory for the purpose of silent import (see *Chapter 5 | SERVER OPERATION WITHOUT MAPCORETM GUI (Silent Import)*).
		If a raw layer is specified, the parameter `RawLayerInfo` (see below) must also be specified.

`LayerUUID`	NA	Internal server parameter used to control layer version. A new UUID is assigned whenever the layer is updated. The old layer version is stored in cache until the last client using it closes the layer.

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Parameter	Mandatory	Description
`Group` Link to GUI chapter: • Native layer Group Name • Raw Raster *Group Name* • Raw DTM (Elevation) layer *Group Name* • Raw vector layer *Group Name* • Raw S-57 layer *Group Name* • Raw 3D Model layer *Group Name* • Raw 3D Vector Extrusion layer *Group Name*	No	Array of group name(s) associated with this layer. Group name may contain any ascii character.
`DrawPriority` Link to GUI chapter: • Native layer Draw Priority • Raw Raster Draw Priority • Raw DTM (Elevation) layer Draw Priority • Raw vector layer Draw Priority • Raw S-57 layer Draw Priority	No	An integer between `-128` and `127` specifying the drawing order of layers displayed in a single viewing canvas (i.e., Viewport). When not specified, the value `0` is used. A layer with higher priority is rendered above a layer with a lower one. Regardless of priority, all vector layers are always rendered above all raster layers.
`NativeLayerPath`	No	Mandatory for native layers only, contains the path to the mapping materials of the native layer.
`NumLayersToIgnore`	No	For Raster and DTM layers as well as 3D models, a way to reduce scale by specifying the number of pyramid levels to ignore if the map is too detailed.

Parameter	Mandatory	Description
`EnhancedBorderOverlap` Link to GUI chapter: *Enhance Border Overlap*	No	Set to `true` to show layer overlap contiguous (border is not displayed).
`ExtrusionHeightMaxAddition`	No	Limit maximal height (meters) for object extrusion. This may be useful when the client application artificially inflates building or mast heights.
`RawLayerInfo`	No	Mandatory for raw layers only. This block of parameters contains information about raw layer. See Section *3.3.1 RawLayerInfo Parameters* below.
`ClientMetadata`	No	An optional block of parameters to store client metadata, if exists. See Section *3.3.2 ClientMetadata* below.

3.3.1. `RawLayerInfo` Parameters

`RawLayerInfo` parameters are described below. To avoid redundancy, parameters that are used in several layers are described only once, where they first appear. All other instances point to that first appearance. To facilitate navigation, for every parameter that is included in the MapCore™ Map Layer Server GUI, references are

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added to the GUI form field(s) that are further described in Chapter 4 | SERVER OPERATION VIA MAPCORE™ GUI.

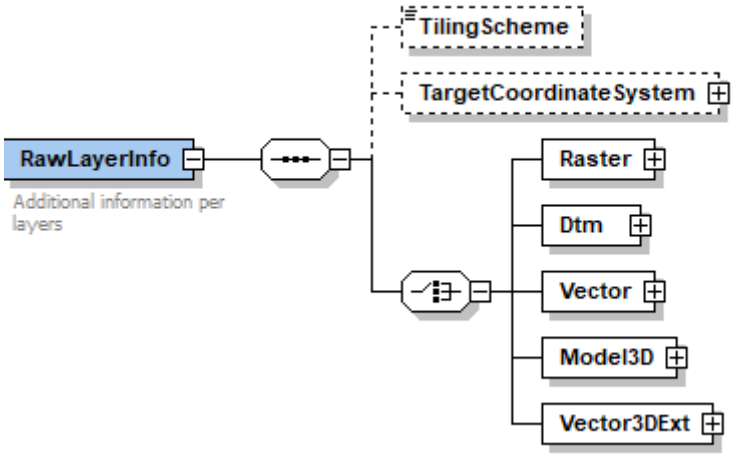

Figure 3-4 `RawLayerInfo` scheme

Where:

Table 3-7 `RawLayerInfo` parameters

Parameter	Mandatory	Description
`TilingScheme`	No	Refer to **TilingScheme** configuration parameter in Table 3-4 parameters.
`TargetCoordinateSystem`	No	Refer to Section *1.5.12 Coordinate System* for details on sou system. Refer to *Table 3-5 `CoordinateSystem` parameters* for details parameter.
`Raster`	Yes, for this layer type only	For raw raster layer only, a block of information about this ty *3.3.1.1 Raster Parameters* below for detailed information ab
`Dtm`	Yes, for this layer type only	For DTM layer only, a block of information about this type of *DTM Parameters* below for detailed information about inclu

Parameter	Mandatory	Description
`Vector`	Yes, for this layer type only	For vector layer only, a block of information about this type HighestResolution — No — See HighestResolution Vector and S-57 Parameters below for detailed information parameters. Note that the same parameters are used for the S-57 layer t that the value of the `StylingFormat` parameter be `S52`. Ref *Styling Format* for further details on the S52 styling format.
`Model3D`	Yes, for this layer type only	For 3D model only, a block of information about this type of *Model3D Parameters* below for detailed information about i
`Vector3DExt`	Yes, for this layer type only	For Vector 3D Extrusion layers only, a block of information a Section *3.3.1.5 Vector3DExtrusion Parameters* below for det included parameters.

3.3.1.1. `Raster` Parameters

`Raster` type parameters are described below.

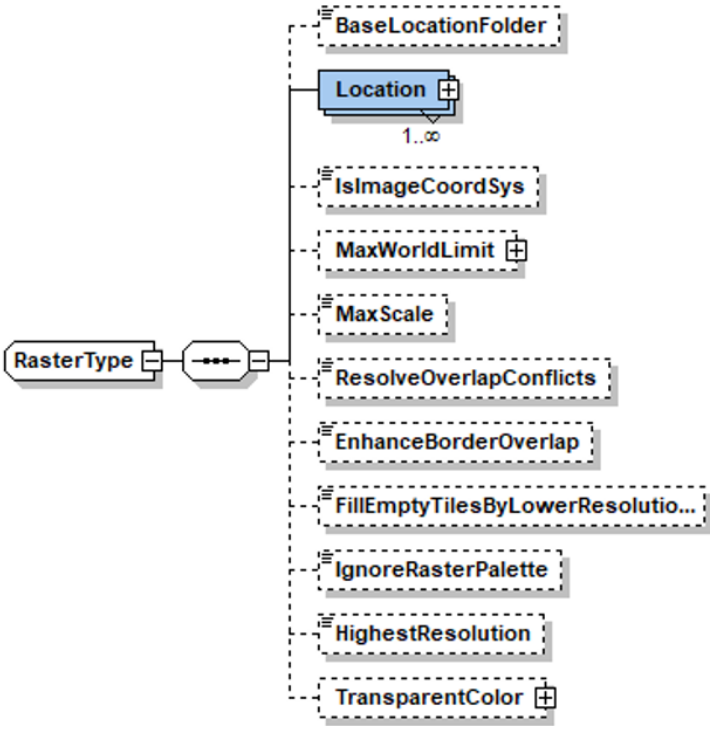

Figure 3-5 `Raster` type scheme

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Where:

Table 3-8 `Raster` type parameters

Parameter	Mandatory	Description
`BaseLocationFolder`	No	Path to base folder of the data.
`Location`	Yes	Block of information containing references to the set of data sources that comprises the raster data. See Section *3.3.1.1.1 Location Parameters* below.
`IsImageCoordSys` Link to GUI chapter *Image Coordinate System*	No	Used to define whether image is not georeferenced. Set `true` for non-orthographic images (in which case the parameter TargetCoordinateSystem is not relevant and therefore not mandatory). Default value is `false`.
`MaxWorldLimit`	No	Block of information defining a rectangle cropping area for a map clip. The resulting layer will include only the area inside this rectangle. See *3.3.1.1.2 MaxWorldLimit and ClipRect Parameters* below for details on included parameters.
`MaxScale` Link to GUI chapter: • Raw raster layer Max Scale (m/pixel) • DTM (Elevation) layer Max Scale (m/pixel	No	Layer's typical maximal scale in float format for source data without built-in pyramid of levels-of-detail. Best performance is achieved in camera scales equal to or lower than specified value. NOTE: This parameter differs from the `MaxScale` parameter contained in the Vector layer information.
`ResolveOverlapConflicts` Link to GUI chapter: *Resolve Overlap Conflicts*	No	Determines how conflicts are resolved for each pixel in overlapping areas. Set to `true` to ignore transparent pixels (affects performance). Set to `false` to enforce transparent pixels (pixels from other source files may not be displayed).

Parameter	Mandatory	Description
`EnhanceBorderOverlap` Link to GUI chapter: *Enhance Border Overlap*	No	Determines whether to enhance the quality of layer border and prevent black border lines to display in case of overlapping layers. Set to `true` to prevent border display (affects performance).
`FillEmptyTilesByLowerResolutionTiles` Link to GUI chapter: Fill Empty Tiles by Lower Resolution Tiles	No	Use only when the highest resolution varies within a single levels-of-detail-based layer. Set to `true` to fill empty tiles with data from lower-resolution tiles.
`IgnoreRasterPalette` Link to GUI chapter: *Ignore Raster Palette*	No	Set to `true` to ignore the raster palette and display palette as grayscale.
`HighestResolution` Link to GUI chapter: *Highest Resolution*	No	Highest (finest) resolution in map units per pixel (in raster layers) or per DTM point (in DTM layers) to be used instead of that specified by the components. Default value is `0` (that is, use source data information).
`TransparentColor` Link to GUI chapter: *Transparent Color*	No	Block of information used to change color (in RGB format) of colored pixels to transparent pixels. Refer to *3.3.1.1.3 TransparentColor Parameters* for details on included parameters.

3.3.1.1.1. `Location` Parameters

`Location` parameters are described below.

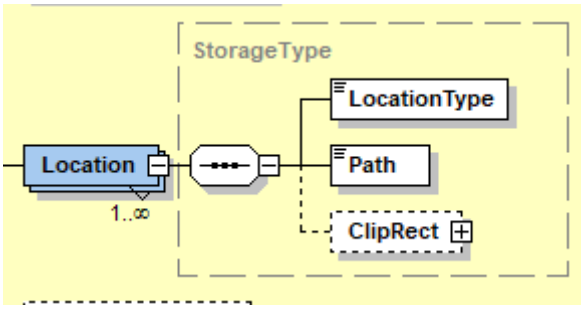

Figure 3-6 Location scheme

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Where:

Table 3-9 Location parameters

Parameter	Mandatory	Description
`LocationType`	Yes	Type of data location. Might be one of the following: `FILE` - The location is a single file. `FOLDER` - The location is a folder containing multiple files.
`Path`	Yes	Path to `FILE` or `FOLDER` specified in `LocationType` parameter above. A relative path is defined relative to server data repository folder by default (see Section *2.3 System Folders and Configuration Files*), or relative to `BaseLocationFolder` parameter, if defined (see *Table 3-8 Raster type parameters* above).
`ClipRect`	No	The Layer's clipping (cropping) bounding box used to limit the footprint of the displayed layer. It is recommended to use `MaxWorldLimit` parameter in *Table 3-8 Raster type parameters* if the same clipping is required for all layers in group. See Section *3.3.1.1.2 MaxWorldLimit and ClipRect Parameters* below.

3.3.1.1.2. `MaxWorldLimit` and `ClipRect` Parameters

`MaxWorldLimit` and `ClipRect` blocks have the same parameters. It is recommended to use the `ClipRect` block only if different crop size is required for different layers in the group. `MaxWorldLimit` and `ClipRect` parameters are described below.

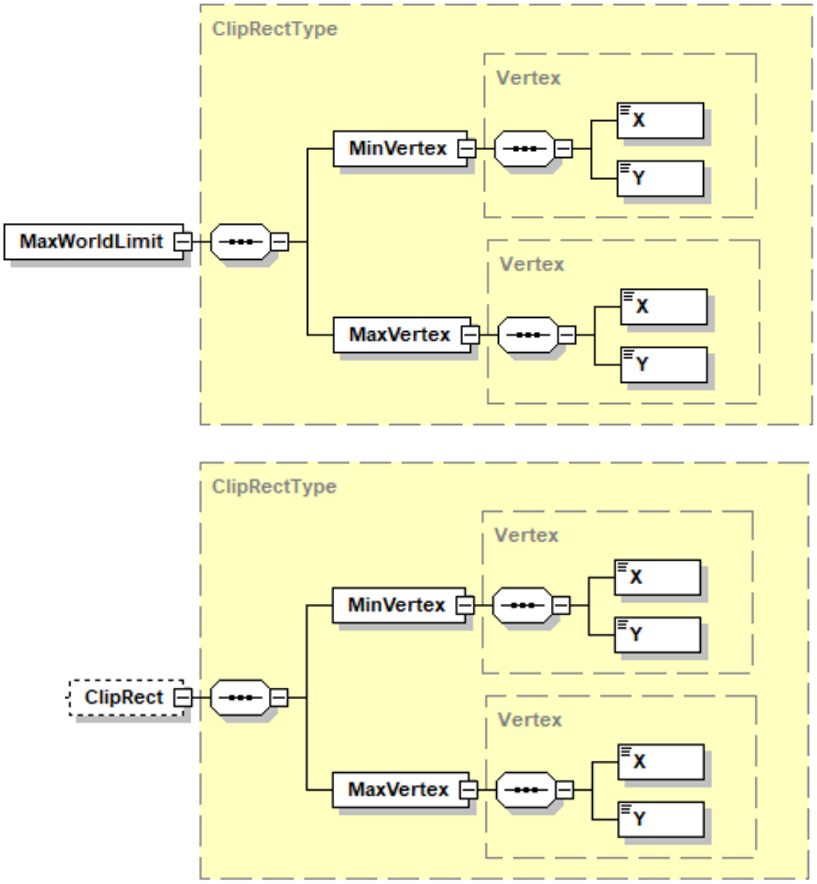

Figure 3-7 `MaxWorldLimit` and `ClipRect` schemes

Where:

Table 3-10 `MaxWorldLimit` and `ClipRect` parameters

Parameter	Mandatory	Description
`MinVertex`	Yes	Bottom left corner of the clipping bounding box defined by `x` and `y` (see below).
`MaxVertex`	Yes	Top right corner of the clipping bounding box defined by `x` and `y` (see below).

`x` and `y` in each of the parameters above are coordinates in MapCore's format. If the metric coordinate system (see Section *1.5.12 Coordinate System*) is used, it is the `x` and `y` (map unit equals 1 meter). If the geographical coordinate system is used, `x` and `y` are longitude and latitude respectively, both multiplied by 100000 (map unit equals 1 divided by 100000).

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3.3.1.1.3. `TransparentColor` Parameters

`TransparentColor` parameters are described below.

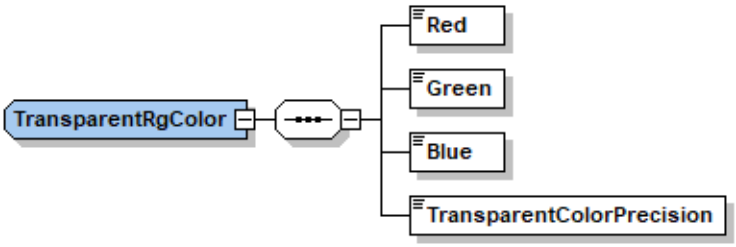

Figure 3-8 `TransparentColor` scheme

Where:

Table 3-11 `TransparentColor` parameters

Parameter	Mandatory	Description
`Red`	No	Value of red in RGB byte color format (value `0` through `255`).
`Green`	No	Value of green in RGB byte color format (value `0` through `255`).
`Blue`	No	Value of blue in RGB byte color format (value `0` through `255`).
`TransparentColorPrecision`	No	Use in cases of raster data overlap. Specifies the degree of pixel precision (integer) for RGB value to be set as transparent. When specified, `Red`, `Green`, and `Blue` parameters are mandatory.

3.3.1.2. DTM Parameters

DTM type parameters are described below.

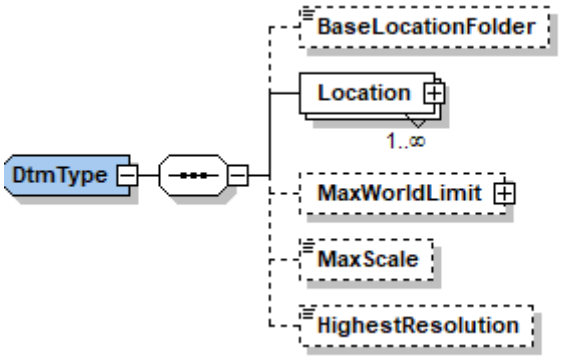

Figure 3-9 DTM type scheme

Where:

Table 3-12 DTM type parameters

Parameter	Mandatory	Description
BaseLocationFolder	No	See *EnhanceBorderOverlap*
Location	Yes	See *Location*
MaxWorldLimit	No	See *MaxWorldLimit*
MaxScale	No	See *MaxScale*
HighestResolution	No	See HighestResolution

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3.3.1.3. Vector and S-57 Parameters

`Vector` type parameters are described below.

Note that the same parameters are used for the S-57 layer type with the stipulation that the value of the `StylingFormat` parameter be `S52`. Refer to Section *1.5.10 Styling Format* for further details on the S52 styling format.

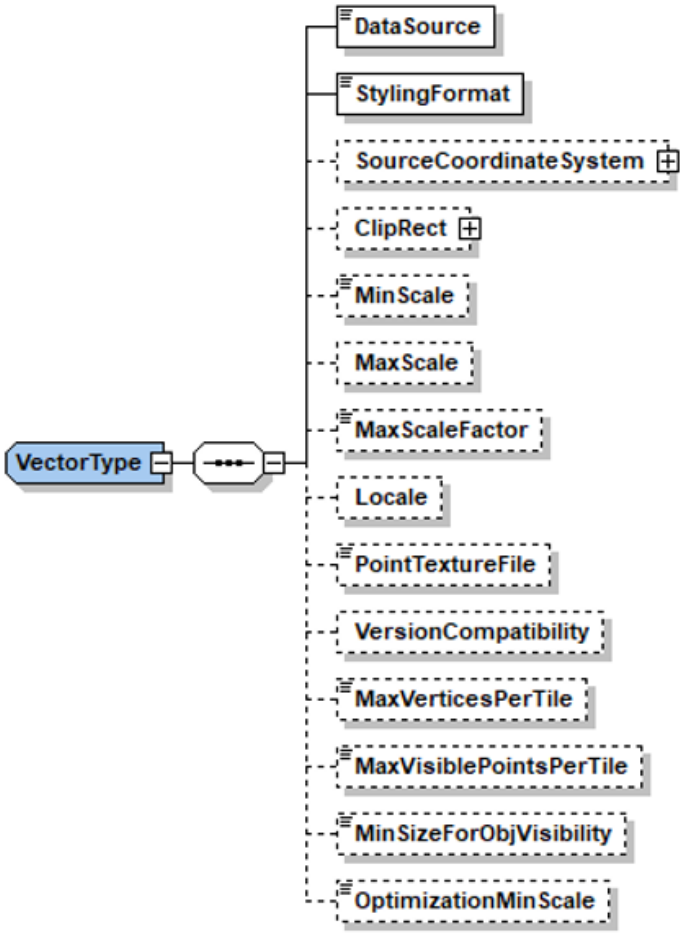

Figure 3-10 `Vector` type scheme

Where:

Table 3-13 `Vector` type parameters

Parameter	Mandatory	Description
`DataSource` Link to GUI chapter: • Raw vector layer Data Source • Raw 3D Vector Extrusion layer Data Source	Yes	Path for the vector information data source. May be the path to: • A single data source (this is the only option for GUI client) • A folder (this is the only option for GUI client). • Internal layer within a vector data (e.g., `MyLayer/MyFile.kmz*Polygon@Lakes` describes a layer named Lakes with polygons geometry within the file `MyLayer.kmz`). For vector layers only (not 3D vector extrusion layers): • If the data source contains more than one layer, each layer separately. • If MapCore styling XML is used, specify the relevant `.xml` file; otherwise, default styling is applied to the data.
`StylingFormat`	No	Determines how to render the layer. Specify the value `S52` for an S-57 layer type. Refer to Section *1.5.10 Styling Format* for detailed information and possible values.
`SourceCoordinateSystem`	No	Coordinate system supplied in this field is used to override information embedded in the layer's data or supply information if none exists in the layer's data. Refer to Section *1.5.12 Coordinate System* for detailed information on source and target coordinate systems. Refer to *Table 3-5 CoordinateSystem parameters* for details the structure of this parameter and included attributes.

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Parameter	Mandatory	Description
`ClipRect`	No	Refer to the **ClipRect** parameter under *Table 3-9 Location parameters* for a detailed description. Refer to Section *3.3.1.1.2 MaxWorldLimit and ClipRect Parameters* for detailed information about included parameters.
`MinScale` Link to GUI chapter: *Min Scale (m/pixel)*	No	Specify value to limit minimum scale for layer display. If omitted, the value `0` is used.
`MaxScale` Link to GUI chapter: *Max Scale (m/pixel)*	No	Specify value to limit maximum scale. If omitted, the value `∞` is used. **NOTE**: This parameter differs from the `MaxScale` parameter contained in the Raster and DTM layer information.
`MaxScaleFactor`	No	Maximal scale factor used in client applications to multiply the max scale when displaying this layer.
`Locale` Link to GUI chapter: • Raw vector layer Locale (Language) • Raw S-57 layer Locale (Language)	No	The 2-letter language code that describes the language of text in the layer. If omitted, language is derived from the locale ID string found in the host computer's settings. Language codes can be found at https://www.science.co.il/language/Locale-codes.php
`PointTextureFile` Link to GUI chapter: *Default Point Image*	No	If MapCore XML styling is not provided, specify path to a customized image file with which to replace the default point icon.

Parameter	Mandatory	Description
`VersionCompatibility` Link to GUI chapter: • Raw vector layer Version compatibility • Raw S-57 layer Version compatibility	No	Specify when the client application uses a MapCore™ API (SDK) version that is older than the current server API version to allow for backward compatibility when converting vector layers into `NATIVE_VECTOR` layers. To find the MapCore™ API version, refer to SDK documentation found in the file `MapCore7.chm` under the section `IMcOverlayManager::ESavingVersionCompatibility`, for example: Enumerator ESVC_7_6_1 — Compatible to versions starting with 7.6.1. If MapCore™ API version is current, the default value `LATEST` is used.
`MaxVerticesPerTile` Link to GUI chapter: • Raw vector layer Max Vertices per Tile • Raw S-57 layer Max Vertices per Tile	No	Maximal number of vector object vertices assigned to tile. Allows to avoid graphic system overload when displaying at a small scale a layer that has many objects. Higher numbers improve performance and memory consumption in zoom-in; smaller numbers improve performance in zoom-out. When omitted, the value `100000` is used.
`MaxVisiblePointsPerTile` Link to GUI chapter: Raw vector layer *Max Visible Points per Tile* Raw S-57 layer *Max Visible Points per Tile*	No	Maximal number of visible vector point objects per tile; objects exceeding this threshold are not displayed. Allows to avoid graphic system overload when a layer with many points is zoomed out. When omitted, the value `5000` is used. The actual number of visible objects depends on camera scale so that the threshold filters out less information when zooming in.

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Parameter	Mandatory	Description
`MinSizeForObjVisability` Link to GUI chapter: • Raw vector layer Min Size for Object Visibility • Raw S-57 layer Min Size for Object Visibility	No	Minimal threshold (in pixels) for displaying vector lines and polygons; objects smaller than the threshold are not displayed. Allows to avoid graphic system overload when a layer with many lines and polygons is zoomed out. When omitted, the value `8` is used. The actual number of visible objects depends on camera scale so that the threshold filters out less information when zooming in.
`OptimizationMinScale` Link to GUI chapter: • Raw vector layer Optimization Min Scale • Raw S-57 layer Optimization Min Scale	No	Minimal map scale for the implementation of `MaxVerticesPerTile`, `MaxVisiblePointsPerTile`, `MinSizeForObjVisability` parameters described above. When omitted, the value `0` is used and optimization is performed at all scales.

3.3.1.4. `Model3D` Parameters

`Model3D` parameters are described below.

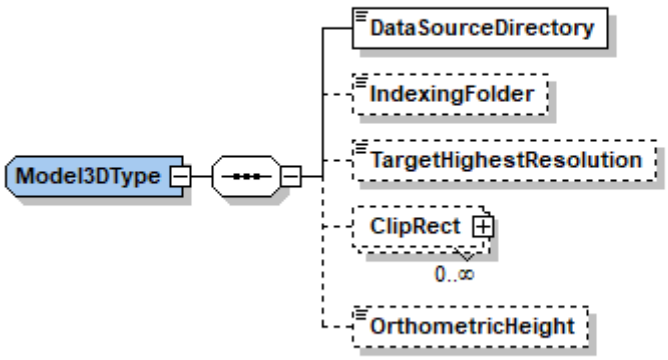

Figure 3-11 `Model3D` type scheme

Where:

Table 3-14 `Model3D` type parameters

Parameter	Mandatory	Description
`DataSourceDirectory`	Yes	Path to the folder containing 3D model data: • If 3D Tiles format is used, specify path to the directory that contains the main `JSON` file. • If OpenSceneGraph (OSG) format is used, specify path to the folder that contains the `metadata.xml` file.
`IndexingFolder`	Yes	When a raw 3D model layer is added to the server, to enhance performance the server creates model indexing data which is stored by default in the folder `<DataSourceDirectory>.mcindex` where `<DataSourceDirectory>` is as defined above. Change the location of the indexing data by specifying a path relative to that was has been defined in the `DataSourceDirectory` parameter above (e.g., `../MyDirectory`).
`TargetHighestResolution` Link to GUI chapter: *Target Highest Resolution*	No	Highest (finest) resolution in map units per pixel to be used instead of that specified by the source data. Default value is `0` (that, is use source data information).
`ClipRect`	No	Refer to the *ClipRect* parameter under *Table 3-9 Location parameters* for a detailed description. Refer to Section *3.3.1.1.2 MaxWorldLimit and ClipRect Parameters* for detailed information about included parameters.

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`OrthometricHeights` Link to GUI chapter: *Orthometric Heights*	No	Defines the reference point used for handling z axis (height) coordinates. If not specified, data is assumed to be orthometric. `true` measures orthometric height from sea level. `false` measures ellipsoidal height from ellipsoid surface, in which case, MapCore™ Map Layer Server recomputes on-the-fly the z axis coordinates as orthometric. **WARNING** Specifying `false` when the data is orthometric will result in errors due to the recompilation of height data.

3.3.1.5. `Vector3DExtrusion` Parameters

`Vector3DExtrusion` type parameters are described below.

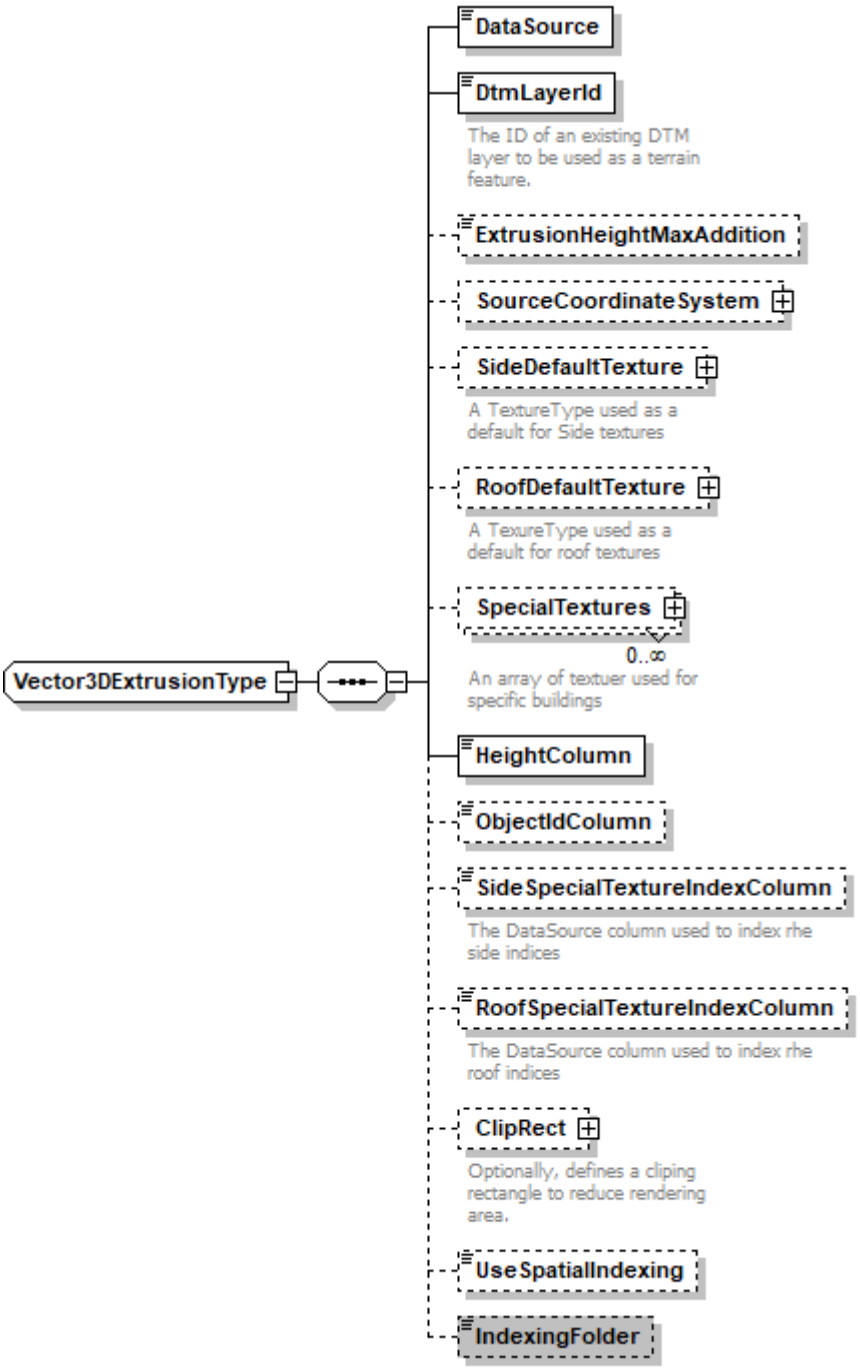

Figure 3-12 `Vector3DExtrusion` type scheme

Where:

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Table 3-15 `Vector3DExtrusion` type parameter

Parameter	Mandatory	Description
`DataSource`	Yes	See *DataSource* parameter in *Table 3-13 Vector type parameters*.
`DtmLayerId` Link to GUI chapter: ***DTM Layer ID***	Yes	Name of the DTM layer in which terrain heights are provided. The DTM layer must point to the same tiling scheme and coordinate system as the vector 3D extrusion layer.
`ExtrusionHeightMaxAddition`	No	See *ExtrusionHeightMaxAddition* parameter in *Table 3-6 MapLayerConfig parameters*.
`SourceCoordinateSystem`	No	Coordinate system supplied in this field is used to override information embedded in the layer's data or supply information if none exists in the layer's data. Refer to Section *1.5.12 Coordinate System* for detailed information on source and target coordinate systems. Refer to *Table 3-5 CoordinateSystem parameters* for details the structure of this parameter and included attributes.
`SideDefaultTexture`	No	Block of parameters defining a default image file used to display building wall textures. Refer to Section *3.3.1.5.1 Texture Parameters* below for detailed information about included parameters.
`RoofDefaultTexture`	No	Block of parameters defining a default image file used to display building roof textures. Refer to Section *3.3.1.5.1 Texture Parameters* below for detailed information about included parameters.
`SpecialTextures`	No	Array of parameters defining image files to display specific buildings. See Section *3.3.1.5.1 Texture Parameters* below for detailed information about included parameters.
`HeightColumn`	No	Name of database column in which building height-above-ground is provided. When unspecified, it is assumed that building height-

Link to GUI chapter: *Height Column*		above-sea is provided in building points; the height is displayed based on the highest z-value of the building's polygon.
`ObjectIDColumn` Link to GUI chapter: *Object ID Column*	No	Name of database column in which object ID is found instead of vector item ID.
`SideSpecialTextureIndexColumn`	No	Name of database column in which indexes are found for the `SideDefaultTexture` parameter defined above.
`RoofSpecialTextureIndexColumn`	No	Name of database column in which indexes are found for the `RoofDefaultTexture` parameter defined above.
`ClipRect`	No	Refer to the *ClipRect* parameter under *Table 3-9 Location parameters* for a detailed description. Refer to Section *3.3.1.1.2 MaxWorldLimit and ClipRect Parameters* for detailed information about included parameters.
`UseSpatialIndexing` Link to GUI chapter: *Use Spatial Indexing*	No	Set to `true` (default) to use spatial indexing (and create if necessary). Recommended for use with data source without built-in spatial indexing.
`IndexingFolder`	No	Path to user-specified folder containing the spatial index (replaces the default folder which is located under the `DataSource` folder - See *DataSource* parameter in *Table 3-13 Vector type parameters*). Will only be used if the `UseSpatialIndexing` parameter (see above) is set to `true`.

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3.3.1.5.1. `Texture` Parameters

`Texture` type parameters are described below.

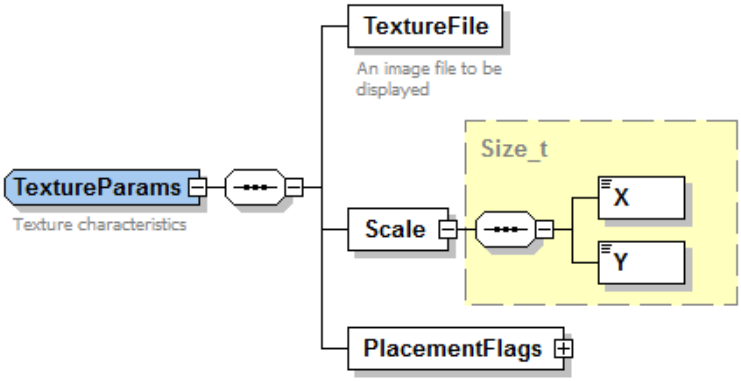

Figure 3-13 `Texture` parameters scheme

Where:

Table 3-16 `Texture` parameters

Parameter	Mandatory	Description
`TextureFile`	Yes	Path to image file used to display texture.
`Scale`	Yes	Scale in meters of x and y axes of the texture.
`PlacementFlags`	Yes	Determines how texture image are placed over the object along x and y axes during rendering: `NONE`: Positions the image over the object's face starting from origins. `REPEAT_EDGE_PIXELS`: Repeats the image edge pixels to cover the object's face if it is larger than the texture image. `REPEAT_EACH_FACE`: Repeats the entire image to cover the object's face if it is larger than the texture image. `ALIGN_CENTER`: Aligns the center of the texture image with the center of the object's face. `REVERSE_ALIGNMENT`: Reverses x and y axes so that the x axis is read from right to left and the y axis is read from top to bottom. `FIT`: Fits the texture image to the object's face.

3.3.2. `ClientMetadata` Parameters

`ClientMetadata` parameters are described below.

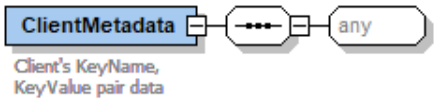

Figure 3-14 `ClientMetadata` scheme

Where:

Table 3-17 `ClientMetadata` parameters

Parameter	Mandatory	Description
Any	No	Any pair(s) of `KeyName` and `KeyValue`. These may be added to a layer via silent import of the `MapLayerConfig` file. Refer to *Chapter 5 | SERVER OPERATION WITHOUT MAPCORETM GUI (Silent Import)* for further details.

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Chapter 4 | SERVER OPERATION VIA MAPCORE™ GUI

4.1. Scope

This chapter provides information required to operate the MapCore™ Map Layer Server via GUI in browser. The chapter describes the GUI controls and functions and provides detailed instructions on how to operate the server using GUI.

This chapter is intended for operators who are authorized to manage the MapCore™ Map Layer Server.

4.2. Start the GUI Client

1. If not already running, start the MapCore™ Map Layer Server. Refer to *2.11 Server Start* for detailed instructions.
2. Using any of the supported browsers (see *2.2 Minimum System Requirements*), navigate to the following URL:

   `http://<server>:<port>`

   Where:

   - `<server>` is either:
     - `localhost`, when the GUI client and the MapCore™ Map Layer Server are running on the same machine,
     - Server's **DNS name** or **IP address** when the GUI client and the MapCore™ Map Layer Server are running different machines.
   - `<port>` is the port on which the server is running. Refer to *2.4 Server Execution Parameters* for details.

   For example:

   `http://localhost:6767`

Section I. GUI DESCRIPTION

This section is divided into two high-level aspects of the GUI:

- *User Interface Structure*, which describes the structure and use of each area of the MapCore™ Map Layer Server graphic interface.
- *User Interface Controls*, which describes the purpose and manner of use of controls found in the different interface areas.

Refer to *Section II. GUI OPERATION* for detailed instructions on how to perform different tasks using the MapCore™ Map Layer Server graphic interface.

4.3. User Interface Structure

The GUI window consists of the following components as detailed in *Figure 4-1 User interface structure* below. Each of these sections further described below. Controls available for each component on the screen are detailed and explained in Section *4.4 User Interface Controls* while instructions for achieving any goal using the graphical interface are detailed under *Section II. GUI OPERATION*.

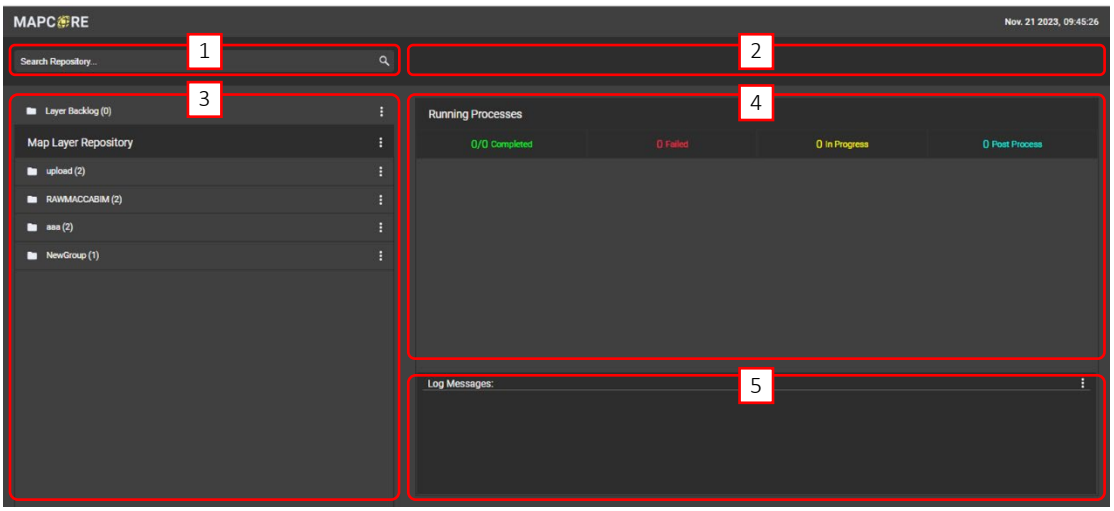

Figure 4-1 User interface structure

Where:

1. Content repository search box.
2. Preview controls, when applicable.
3. Action display.
4. Content repository.
5. Log display.

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4.3.1. Content repository search box

This field is used to search for layers within both the **Map Layer Repository** and the **Layer Backlog** group. Typing in the field results in a filtered list in the **Content Repository** area, displaying only groups and layers matching the string present in the search box. Refer to the Section *4.3.3 Content Repository* for more details on the group and layer display as well as the Layers Backlog.

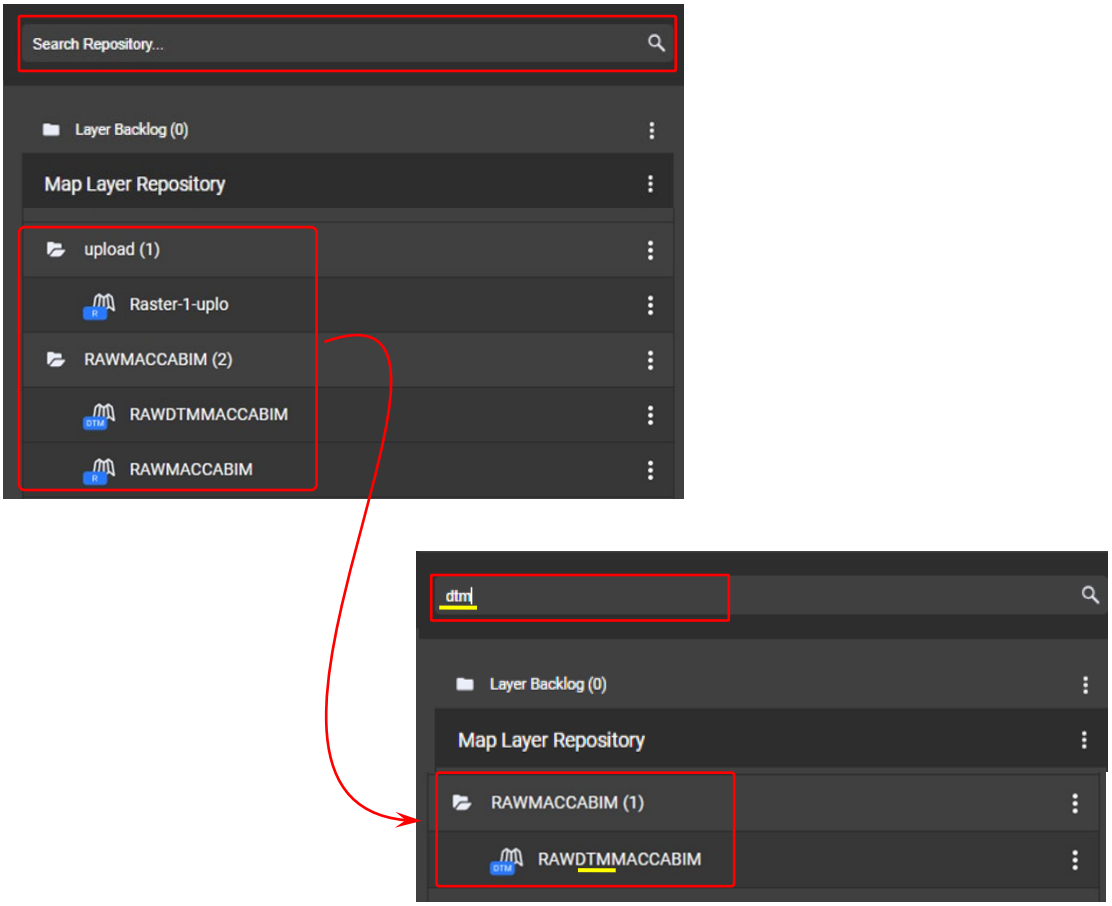

Figure 4-2 Layers and their groups displayed as per searched string

4.3.2. Preview Perspective

Preview controls are only displayed when the Preview area is active.

Figure 4-3 Preview controls

The preview controls are used to toggle between different preview perspective modes: **map**, **3D**, and **DTM**.

Where:

- **Map** displays a 2D perspective of the previewed map.
- **3D** displays a 3D perspective of the previewed map.
- **DTM** displays DTM information terrain altitudes in colors (from blue for the lowest values through green, yellow, and orange to brown for the highest values). Available for both 2D and 3D previews but only when the group contains 3D information.

4.3.3. Content Repository

The **Content Repository** is a tree-like formation of all groups and layers present on the server. It is divided into two separate parts: the **Layers Backlog** and the **Map Layer Repository**, both of which are always present in the **Content Repository** display. The layer backlog contains only layers and no groups. In the Map Layer Repository, layers must be associated with a group. The hierarchical formation holds the following elements, which are further detailed below:

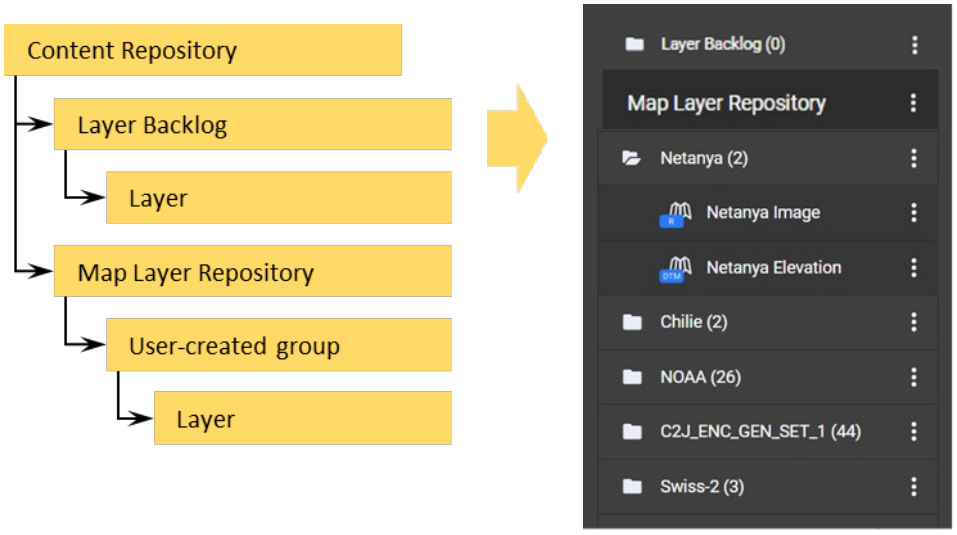

Figure 4-4 Hierarchical view of the Content Repository area

Where:

- The number next to each group's name represent the number of layers associated with that group

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- The **More Options** (three dots) menu at the end of each row allows access specific actions relevant for that type of entity.

4.3.3.1. Layer Backlog

The first group displayed in the **Map Layer Repository** is always the Layer Backlog group. This group contains layers that will not be visible to client applications but exist in the server's repository and can be managed by an operator. The Layer Backlog group can contain layers of any type. Deleting a layer from this group permanently removes the layer from the server.

Refer to the Section *1.5.8 Layer Backlog* for a detailed explanation of the layer backlog.

Refer to Section *4.4.2 Layer Backlog Controls* for further details on controls available for this group.

Refer to Section *4.7 Layer Backlog Actions* for detailed instruction how to perform operations related to this group.

4.3.3.2. Map Layer Repository Bar

This is the top hierarchy in the tree-like formation of the Content Repository area. It allows access to server-related operations.

Refer to Section *4.4.1 Server Controls* for further details on controls available in this section of the GUI display.

Refer to Section *4.6 Server-related Actions* for detailed instruction how to perform server-related operations.

4.3.3.3. User-created layer groups

A group is a container of layers managed by the server and reflected in client applications. Groups are used to organize layers and preview grouped layers, so layers should be grouped based on shared characteristics such as geographic location. For grouped layers to be previewed properly together, all layers in the group must share a common area of interest, their target coordinate system, and their tiling scheme.

Refer to Section *1.5.7 Group* for a detailed explanation of groups.

Refer to Section *1.5.12 Coordinate System* for detailed information on the layer's coordinate system.

Refer to Section *1.5.11 Tiling Scheme* for detailed information on the tiling scheme and its relationship to the layer's coordinate system.

Refer to Sections *4.4.3 Group Controls* and *4.4.5 Group and Layer Preview Controls* for further details on controls available to groups and their preview option.

Refer to Section *4.8 Group-related Actions* for detailed instruction on how to perform operations related to groups.

4.3.3.4. Layers

Layers are the building blocks of all maps and must be associated with a layer group. As such, layers can only be added via the user-created group actions. When a group is removed, layers of that group are moved to the Layer Backlog group.

Refer to the Section *1.5 Basic Concepts* for a detailed explanation of layers and their different types.

Refer to Sections *4.4.4 Layer Controls* and *4.4.5 Group and Layer Preview Controls* for further details on controls available to groups and their preview option.

Refer to Section *4.9 Layer-related Actions* for detailed instruction on how to perform operations related to individual layers.

4.3.4. Action Display

The Action Display area displays two different functions, as detailed below:

- Running processes
- Map preview

4.3.4.1. Running processes

Used to display process status and counters when processes are run.

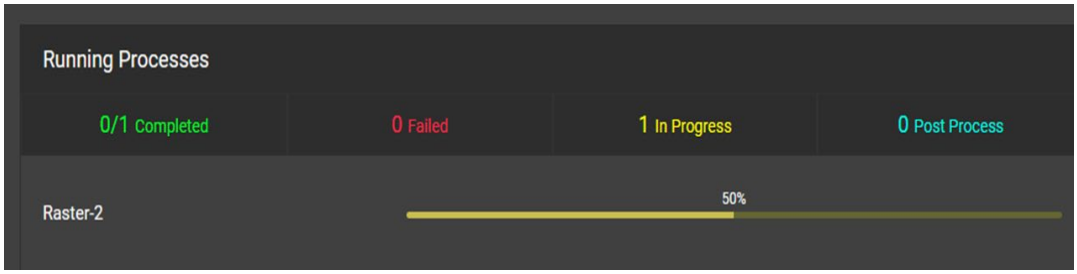

Figure 4-5 Running processes display

The layer progress bars show the upload progression of the specified layer. Each status of the progress bar triggers a different counter in matching color as detailed in the following table:

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Table 4-1 Layer upload progress bar and counters

Color	Progress bar	Counter	Description
Yellow	Upload in progress	In Progress	Shows the number of layers that are currently being added to the server.
Green	Upload successfully completed	Completed	Shows the number of successfully added layers out of the total number of upload attempts since the last counter reset.
Red	Upload failed	Failed	Shows the number of layers that had failed to upload since the last counter reset.
Post process	Raw layer post-processing in progress	Post process	Shows the number of post-upload processes in progress, such as raw to native layer conversion in progress.

All past uploads are displayed in the **Action Display** area and the counters until counter reset. Refer to Section *4.5.1 Reset Upload Counters* for detailed instructions on resetting the counters. Process-related activities are documented in the MapCore™ Map Layer Server's log file, which is displayed on the graphic user interface for convenience. Refer Section to for detailed information.

4.3.4.2. Map preview

Used to display single layers or the combined image of the grouped layers being previewed. Refer to Section *4.9.3 Preview Layer* on preview actions.

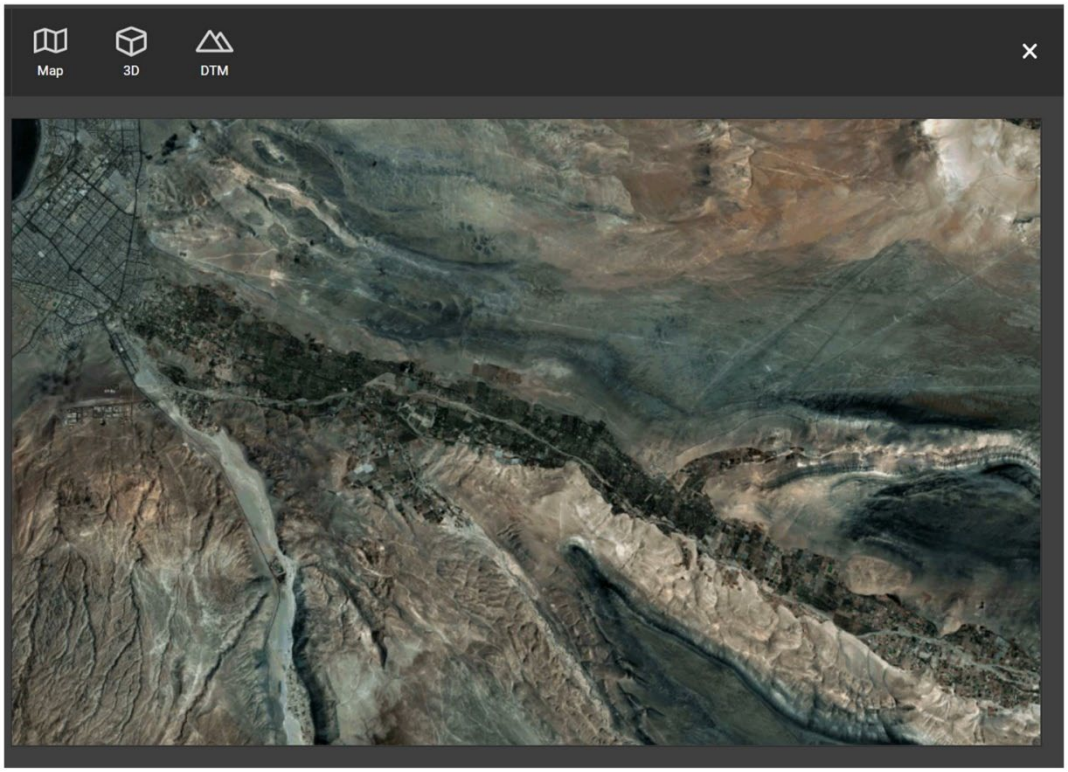

Figure 4-6 Map preview

4.3.5. Log Display

Highlights of activities that are performed through the **Action Display** are recorded in the **Log Display** area, capturing the following information:

- Layer-related actions successfully completed, such as successful upload or successful deletion.
- Warning messages reflecting partial process failure (such as partial import of multiple layers).
- Error messages reflecting essential process failure such as missing critical data.

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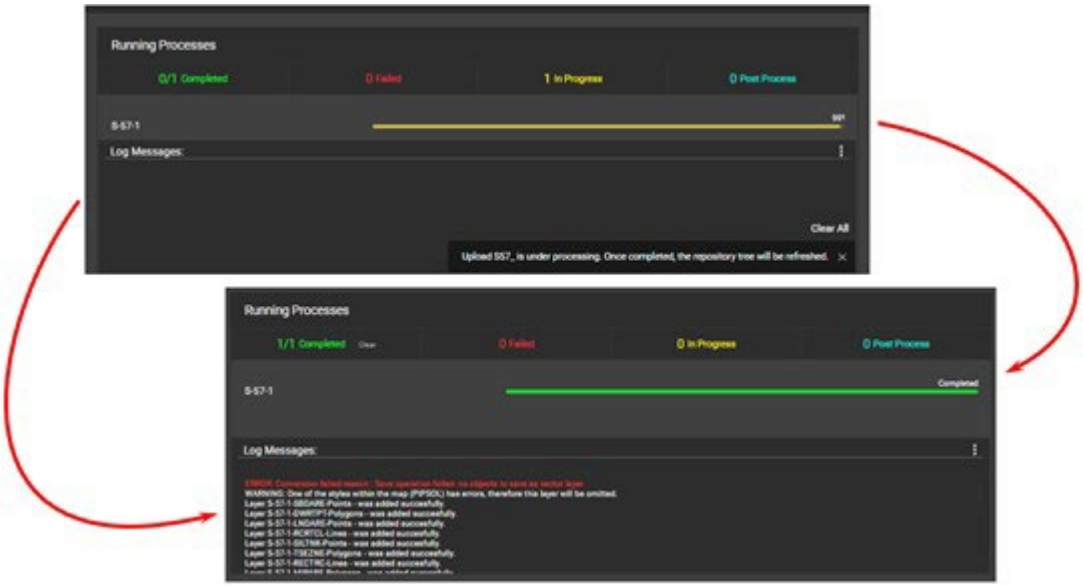

Figure 4-7 When activity is complete, log is displayed

The GUI log may be exported into a text file via the **Log Display**. The exported file will capture all log messages currently displayed in the **Log Display**. Log files exported through the GUI are found in your browser's download folder and are saved with the file name: `logs_<timestamp>.txt` where timestamp is presented in this format: `YYYY_MM_DD_HH_MM_SS` (such as: `logs_2023_11_21_09_34_28.txt`).

> NOTE
>
> The GUI log file is a concise version of the full server log file and does not affect the server session log file. Refer to Section *2.3.3 Server Log File* for details on the server log file.

Refer to Section *4.10 Log Display Actions* for detailed instructions regarding all actions available for the **Log Display**.

4.4. User Interface Controls

Below are described controls and menu options available in the different contexts of the MapCore™ Map Layer Server:

- *Server Controls*
- *Layer Backlog Controls*
- *Group Controls*
- *Layer Controls*

- *Group and Layer Preview Controls*
- *Layer and Server Parameter Controls*
- *Log Display Controls*

4.4.1. Server Controls

The **More options** menu on the **Map Layer Repository** allows access to the server as detailed in the table below.

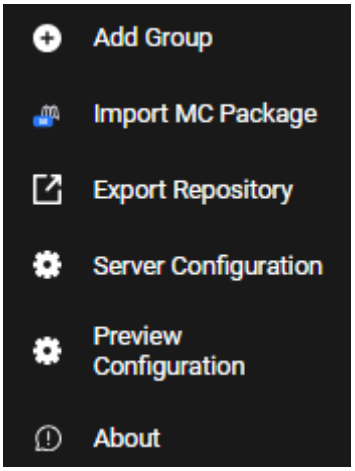

*Figure 4-8 Map Layer Repository **More options** menu*

Where:

*Table 4-2 Map Layer Repository **More options** menu elements*

Element	Allows you to….
Add Group	Add a new group to Layer Map Repository. Refer to Section *4.6.1 Add New Group* for detailed instructions.
Import MC Package	Allows to import a group of layers or any type of individual layer that had been previously exported from MapCore™. Refer to Section *4.6.2 Import MC Package* for detailed instructions.
Export Repository	Export entire contents of the Map Layer Repository as an MC Package. Refer to Sections *4.8.5 Export Group* and *4.9.5 Export Layer* for instructions on exporting only some groups and layers. Refer to Section *4.6.3 Export Repository* for detailed instructions.

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Element	Allows you to….
Server Configuration	Display and edit key server configuration data. Refer to Section *4.6.4 Change Server Configuration* for detailed instructions.
Preview Configuration	Configure preview options. for current browser on current device. Refer to Section *4.6.5 Configure Preview Options* for detailed instructions.
About	Display software versions of both: • MapCore Map Layer Server • MapCore viewer Refer to Section *4.6.6 View MapCoreTM Server Version Number* for detailed instructions.

4.4.2. Layer Backlog Controls

The only option available from the Layer Backlog **More options** menu is to clear the backlog as detailed in the table below.

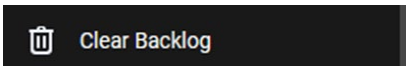

*Figure 4-9 **More options** menu for Layer Backlog*

The Layers Backlog group contains only layers and no groups. The **More options** menu for layers within the Layers Backlog group allows access to management and preview options as detailed in the table below. Options in this menu vary depending on whether the operation applies to a single layer or a selection of multiple layers.

NOTE

It is impossible to export layers that have been moved to the Layer Backlog. To export such layers, it would first be necessary to associate them with a group, after which they may be exported via the **Group** or **Layer** bars.

Refer to Section *4.7.2 Move to Groups* for instructions on associating backlog layers with groups.

Refer to Section *4.8.5 Export Group* and *4.9.5 Export Layer* for instructions on exporting layers.

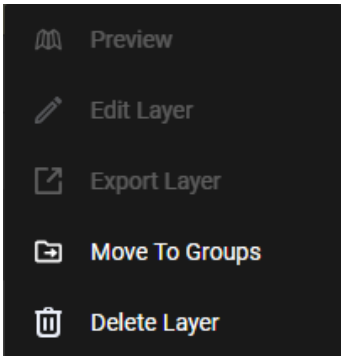

*Figure 4-10 **More options** menu for layers in the Layer Backlog group*

Where:

*Table 4-3 Layer Backlog and backlog layer **More options** menu options*

Element	Allows you to….
Clear Backlog	Remove all unused layers from the server. WARNING This action deletes all backlog layers from the server and cannot be undone. Refer to Section *4.7.1 Delete All Layers* for detailed instructions.
Move to Groups	Attach layers to one or more groups. Refer to Section *4.7.2 Move to Groups* for detailed instructions.
Delete Layers	Remove layers from the server. WARNING This action deletes the specified layer from the server and cannot be undone. Refer to Section *4.7.3 Delete Layers* for detailed instructions.

Refer to Section *4.7 Layer Backlog Actions* for detailed instructions regarding all actions available for the Layers Backlog.

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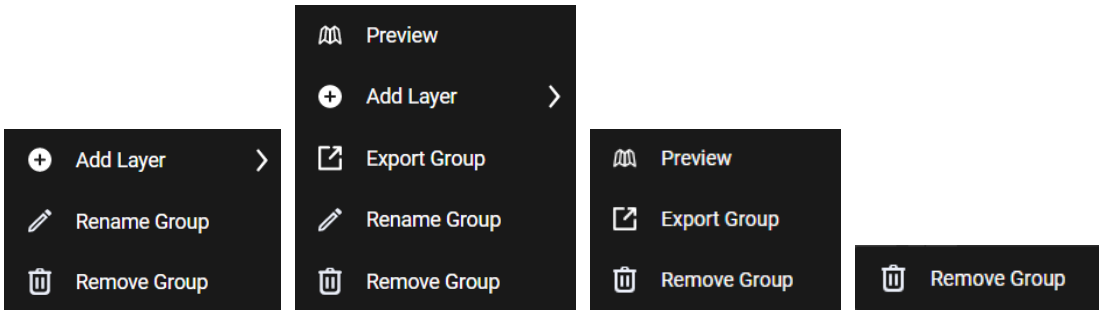
4.4.3. Group Controls

The group **More options** menu allows access to group management and preview options as detailed in the table below. Options in this menu vary depending on whether the group is empty or already has associated layers.



(a) **More options** menu of an empty group

(b) **More options** menu of a populated group

(c) **More options** menu of populated group in multi-group selection

(d) **More options** menu of non-populated group in multi-group selection

*Figure 4-11 **More options** menu for group*

> NOTE
>
> Groups can only be added through the **Map Layer Repository** bar. Refer to Section *4.6.1 Add New Group* for detailed instructions.

*Table 4-4 Group **More options** menu options*

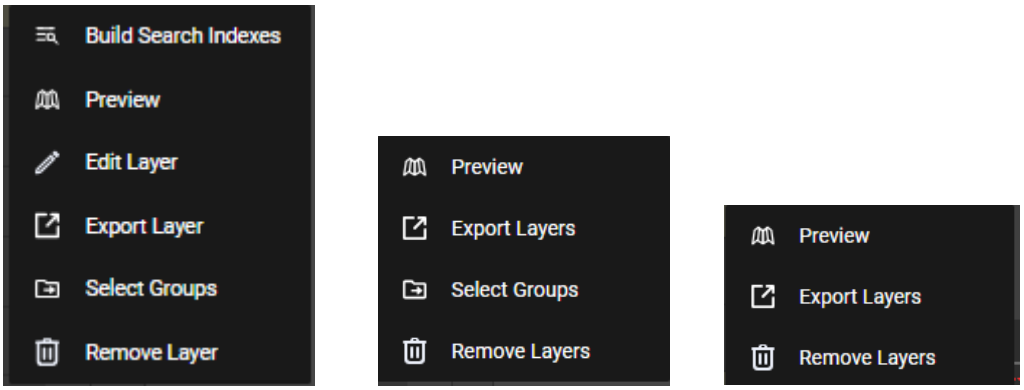
Menu option	Allows you to….
Preview	Preview all the layers in the group together. Refer to Section *4.8.4 Preview Group Content* for detailed instructions.
Add Layer	Add a new layer to the group. Refer to Section *4.8.2 Add New Layer* for detailed instructions.
Export Group	Export the group layers. Refer to Section *4.8.5 Export Group* for detailed instructions.
Rename Group	Change the group's name. Refer to Section *4.8.6 Rename Group* for detailed instructions.

Menu option	Allows you to….
Remove Group	Remove group(s) from the Map Layer Repository. All group layers, including those that are associated with other groups, will be moved to the Layer Backlog group and will not be available to the client applications. Refer to Section *4.8.7 Remove Group* for detailed instructions.

Refer to Section *4.8 Group-related Actions* for detailed instructions on all actions available for user-created groups.

4.4.4. Layer Controls

The layer More options menu allows access to layer management and preview options as detailed in the table below. Options in this menu vary depending on whether the operation applies to a single layer or a selection of multiple layers. The layer controls for the Layer Backlog group are described in Section *4.4.2 Layer Backlog Controls*.



(a) More options menu of a single layer (options may vary based on layer type)

(b) More options menu of layer in a selection of multiple layers

(c) More options menu of layer in a mixed selection of groups and layers

Figure 4-12 More options menu for layer

NOTE

Layers can only be added through the group bar to which they appended. Refer to Section *4.8.2 Add New Layer*.

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*Table 4-5 Layer **More options** menu options*

Menu option	Allows you to….
Build search indexes	Relevant for vector layer types only (i.e., raw vector, raw S-57), Refer to Section *4.9.2 Build Search Indexes* for detailed instructions.
Preview	Preview selected layer(s). Refer to Section *4.9.3 Preview Layer* for detailed instructions. To preview all layers of a selected group(s), refer to Section *4.8.4 Preview Group Content* for detailed instructions.
Edit Layer	Edit editing-enabled layer information. Refer to Section *4.9.4 Edit Layer Parameters* for detailed instructions.
Export Layer	Export the layer into a package. Refer to Section *4.9.5 Export Layer* for detailed instructions. This action may be applied to a selection of multiple layers. Refer to Section *4.9.1 Select Multiple Layers*.
Select Groups	Attach the layer to one or more groups, including the option to disattach from current group. Refer to Section *4.9.6 Attach Layer to Different Group(s)* for detailed instructions.
Remove Layer	Move the layer to Layer Backlog. Refer to Section *4.9.7 Remove Layer from user-created group* for detailed instructions. This action may be applied to a selection of multiple layers. Refer to Section *4.9.1 Select Multiple Layers*.

4.4.5. Group and Layer Preview Controls

A map preview may be manipulated at two different levels as detailed below:

- Preview mode.
- Preview content.

4.4.5.1. Preview mode

Four preview options are available for previewed maps as detailed below.

Figure 4-13 Preview controls

Where:

Table 4-6 Preview controls

Menu option	Allows you to….
Map	Display 2D map. In this mode, the observer is always looking down at the terrain.
3D	Display 3D map. In this mode, the topographical details are displayed.
DTM	Display DTM information overlay where present.
×	Close preview.

The **Preview Perspective** display will alter according to the chosen preview mode.

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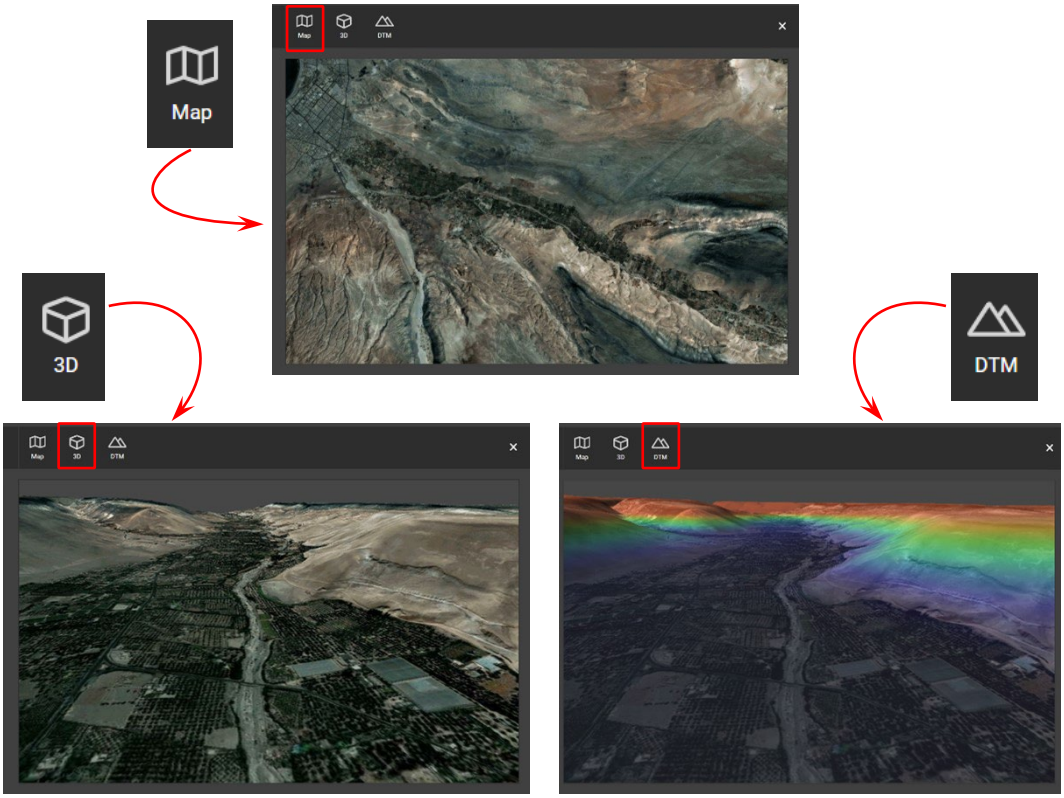

Figure 4-14 Preview Perspective display per perspective mode

4.4.5.2. Preview content

The observer's perspective of the previewed content may be controlled using the mouse and keyboard as described in the following table.

Table 4-7 Image controls

Mouse control	Action in 2D mode	Action in 3D mode
Wheel scroll	Turn wheel forward and backward to respectively zoom in and out.	Turn wheel forward and back to respectively move the observer forward and backward.
Shift + wheel scroll	Turn wheel forward and back to respectively zoom in and out in big strides.	Turn wheel forward and backwards to respectively move the observer forward and backward in big strides.

Mouse control	Action in 2D mode	Action in 3D mode
Ctrl + wheel scroll	As wheel scroll above.	Turn wheel forward and back to respectively decrease or increase the observer's altitude.
Wheel click and drag	Drag left and right to rotate the map around the clicking point.	Drag to rotate the observer around the clicking point.
Left button click and drag	Move the map.	Drag to change the observer's orientation: right and left rotate yaw (around y axis); up and down rotate pitch (around z axis).
Ctrl + left button click and drag	Rotate the map around the center of the viewport (preview window)	Drag left or right to respectively move the observer in those directions; drag up or down to respectively move the observer forward and backward.

4.4.6. Layer and Server Parameter Controls

The following table details different field types in the layer and server parameter forms and how they may be handled.

Table 4-8 Image controls

Visual	Field type	How to enter data
	Mandatory	Fields marked with a red asterisk (*) are required and cannot be left empty.
	Information	Click the ⓘ icon by the field name to display the field's description.
	String (empty)	Click the empty field and type the new value.

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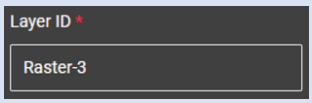
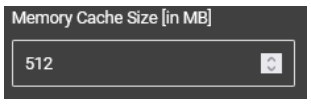
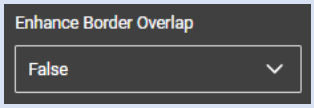
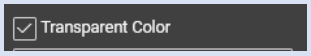
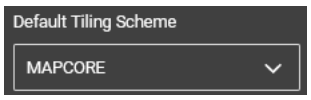
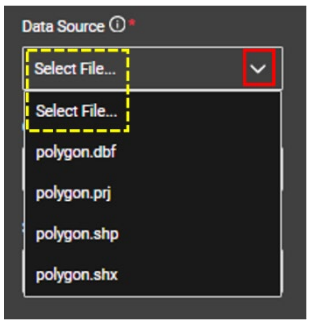
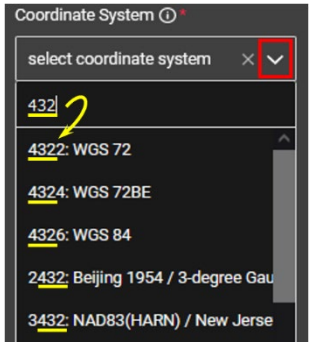
Visual	Field type	How to enter data
	String (suggested value)	Use the auto-populated value as an example of the value expected in the field. To override the default value, select the text and type the new value. Unless deleted, the default value is used.
	Number	Type the number or use the up and down arrows to navigate to the desired number.
	Boolean	Use the dropdown arrow to open the list of valid values, which are either `True` or `False`.
	More...	Click the sideways arrow to open more options related to this parameter.
	Checkbox	Click the checkbox to toggle between checked (selected) and unchecked (unselected) states.

Visual	Field type	How to enter data
	List	Use the dropdown arrow to open the list of valid values. Some list fields have a descriptive title within the list:  *Figure 4-15 List field with title* Some lists allow you to type a value while filtering list entries:  *Figure 4-16 List field entries filtered by entered string* Lists in which a multiple selection of values is permitted have a built-in option to clear all selected value by clicking on the **x** option: *Figure 4-17 Multiple-selection list field with option to clear value(s)*

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4.4.7. Log Display Controls

The Log Display **More options** menu allows access to log management options as detailed in the table below.

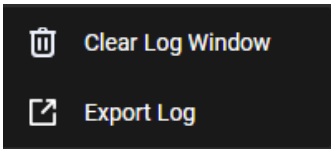

*Figure 4-18 **More options** menu for Log Display*

*Table 4-9 Log Messages **More options** menu options*

Menu option	Allows you to….
Clear Log Window	Clear log window display. This does not affect the server log file. Refer to Section *4.10.1 Clear Log Window* for detailed instructions.
Export Log	Export information in log window display. More robust information, however, is found in the log file. Refer to Section *4.10.2 Export Log* for detailed instructions. Refer to Section *4.3.5 Log* Display for information on the log file and its location.

Refer to Section *4.10 Log Display Actions* for detailed instructions on all actions available for the Log Display.

Section II. GUI OPERATION

This section provides detailed instructions for achieving all tasks that may be completed using the MapCore™ Map Layer Server graphic interface.

Refer to Section *4.4 User Interface Controls* for more information on control purpose and behavior.

Any action may be aborted without completion. Refer to Section *4.5.2 Aborting GUI Actions* for detailed instructions.

4.5. Display-related Actions

4.5.1. Reset Upload Counters

Upload counters are aggregated in each session of the MapCore™ Map Layer Server as is the display of past upload progress bars. To reset the counters and the display within the current MapCore™ Map Layer Server session, click the **Clear** option next to the counter. Refer to Section *4.3.4 Action Display* for a detailed explanation about the **Running Process** display and colors.

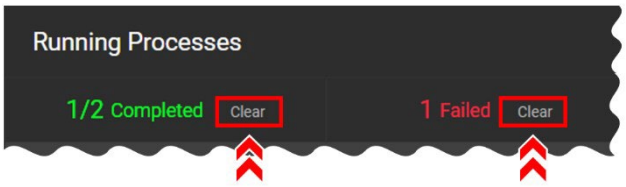

Figure 4-19 Resetting upload counters

4.5.2. Aborting GUI Actions

Process may be aborted without completion in of two ways:

- Clicking the **Cancel** button.

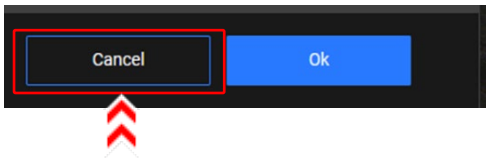

*Figure 4-20 The **Cancel** button*

- Clicking the × at the top right corner of the window.

> NOTE
>
> Some process terminations may prompt a warning message to confirm process termination without completion (click the **OK** button to confirm).

4.6. Server-related Actions

The following actions are available for the MapCore™ server and are detailed below:

- *Add New Group*
- *Import MC Package*

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- *Export Repository*
- *Change Server Configuration*
- *Configure Preview Options*
- *View MapCoreTM Server Version Number*

4.6.1. Add New Group

1. On the **Map Layer Repository** bar, click the **More options** menu icon ⋮, and then click the **Add Group** option. The **Add Group** window is displayed.
2. Enter the group name in the **New group name** field.

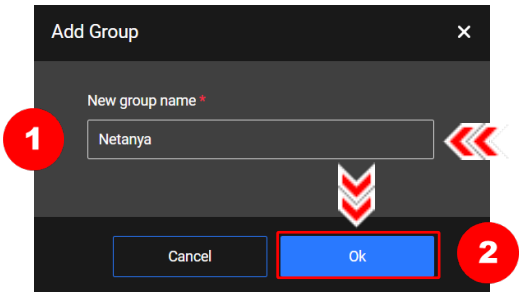

*Figure 4-21 **Add Group** window*

> NOTE
>
> The group name must be unique, comprising any of the following: uppercase and lowercase letters (a to Z), numbers (0 to 9), dash (-), and underscore (_).

3. Click the **OK** button to create the new group.

4.6.2. Import MC Package

The MC package is the packaging of data exported from the MapCore™ Map Layer Server using its export options. Once exported, the MC package can then be imported on the same server from which it was exported or on another server. The import process restores group and layer hierarchy, including the creation of any groups that are missing in the server during import. In the event of imported data that already exists on the server, a warning will be displayed in the Log Display during the import process, and data will not be imported.

WARNING

Remove from Layer Backlog any layer that is about to be imported. A layer with same ID as a layer found in the Layer Backlog will not be imported.

4.6.2.1. File location

In order to import the package, you must be able to locate the exported `mcpkg` file. By default, this file was originally exported to your browser's download folder.

4.6.2.2. File name

By default, the exported `mcpkg` file name follows either of these formats:

`<Layer name>_<timestamp>.mcpkg` for a single exported layer, or

`McPackage_<number>layers _<timestamp>.mcpkg` for multiple exported layers, where:

`<Layer name>` is the layer's name, `<number>layers` is the number of exported layers, and `<timestamp>` has the following structure: `YYYY_MM_DD_HH_MM_SS`, for example:

`Raster-7_2023_11_29_14_53_45.mcpkg`

Or

`McPackage_2layers__2023_11_29_22_42_56.mcpkg`

4.6.2.3. Import process

To import data:

1. On the **Map Layer Repository** bar, click the **More options** menu icon ⋮, and then click the **Import MC package** option. The **Import MC Package** window is displayed.
2. Drag the folder containing the desired layer and drop it over this window or click the upload cloud icon at the center of the window to open the file browser and navigate to the target folder where the MC Package is located. The **Import MC Package** window file name prompt is displayed.

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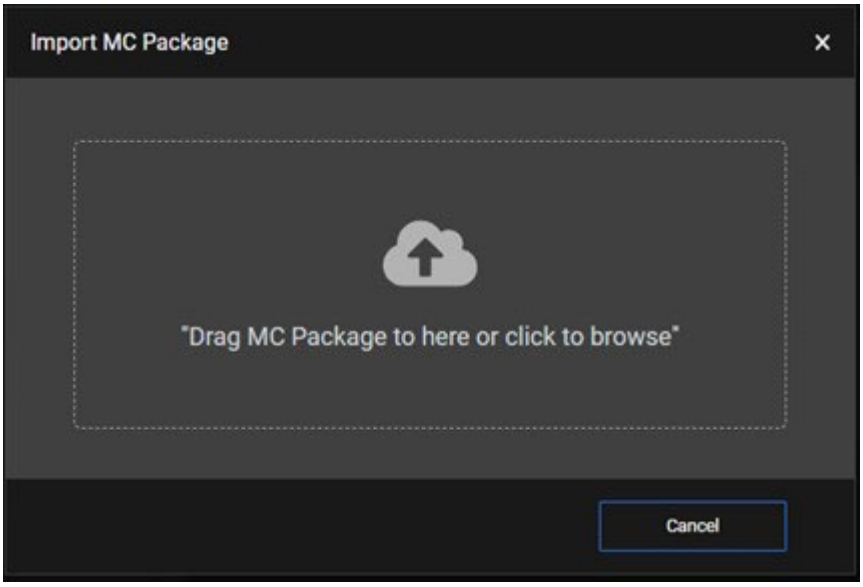
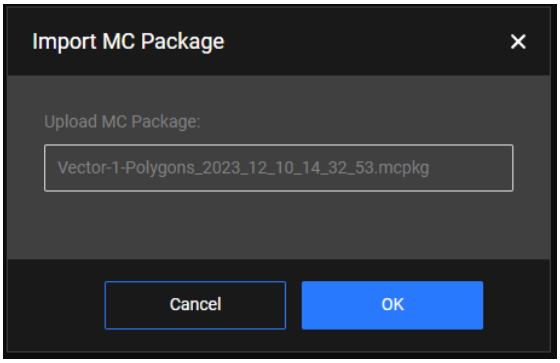


Figure 4-22 Import MC Package upload window

3. Click the **OK** button on the file name prompt. The upload process is displayed in the **Action Display** and the import process prompt is displayed at the bottom right corner of the screen.



4. If desired, monitor the import process in the Process Preview area. Refer to Section 4.3.4.1 Running processes for details on options available in this area of the MapCoreTM Map Layer Server GUI.

5. If desired, dismiss the export preparation prompt by clicking the X option. If no action is taken, the prompt will disappear when the preparation process is complete.

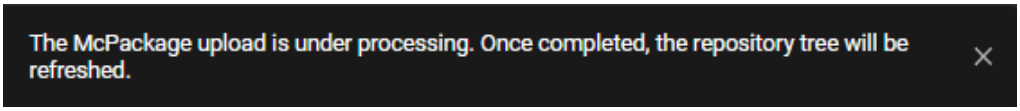


Figure 4-23 Example of MC Package import message

4.6.3. Export Repository

> NOTE
>
> This option exports the entire Map Layer Repository. Refer to Sections *4.8.5 Export Group* and *4.9.5 Export Layer* for instructions on exporting only some groups and layers.

Exports entire Map Layer Repository as an `mcpkg` file for backup purposes or future import. Group hierarchy is maintained in the exported file and will be recreated upon import. Refer to Section *4.6.2 Import MC Package* for detailed instructions on importing the exported file.

> NOTE
>
> Depending on the size of exported data and the number of layers, the export process may be a lengthy one.

Importing this file on another server will organize the exported layers back in group formation. If groups specified in the `mcpkg` file do not already exist in the server, they will be created upon import.

To export entire Map Layer Repository:

1. On the Map Layer Repository bar, click the More options menu icon ⋮, and then click the Export Repository option. The Export Repository window is displayed.
2. Click the **Export** button

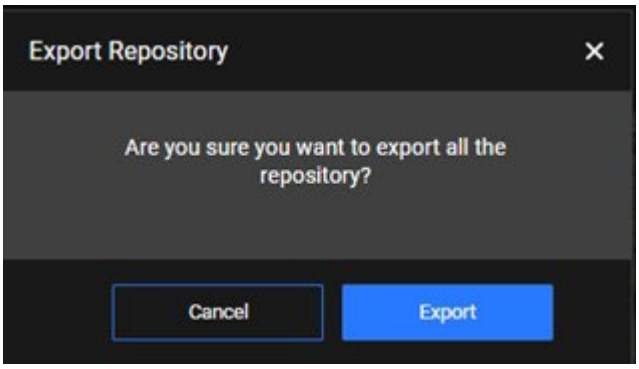


Figure 4-24 Example of MC Package import message

3. Click the **Export** button to complete the export. The export preparation prompt is displayed at the bottom right corner of the screen.

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4. If desired, dismiss the export preparation prompt by clicking the **X** option. If no action is taken, the prompt will disappear when the preparation process is complete.

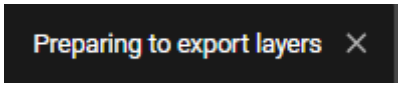

Figure 4-25 Example of Map Layer Repository export preparation message

> NOTE
>
> During the export process, temporary files are saved in the `Export` folder which is located under the server data repository folder. Refer to Section *2.3 System Folders* for detailed information on MapCore™ Map Layer Server folders and their locations. When the import process is complete, the export file is moved to the downloads folder.

4. Locate the `mcpkg` file in your download folder in order to transfer it to another location.

> NOTE
>
> Refer to Section *4.6.2 Import MC Package* for details on file location and naming convention of the exported `mcpkg` file.

4.6.4. Change Server Configuration

> WARNING
>
> Changing server configuration parameters may hinder the proper function of the server.

1. On the **Map Layer Repository** bar, click the **More options** menu icon ⋮, and then click the **Server Configuration** option. The **Server Configuration** window is displayed.
2. If not visible, scroll down and click the **Enable Edit** options

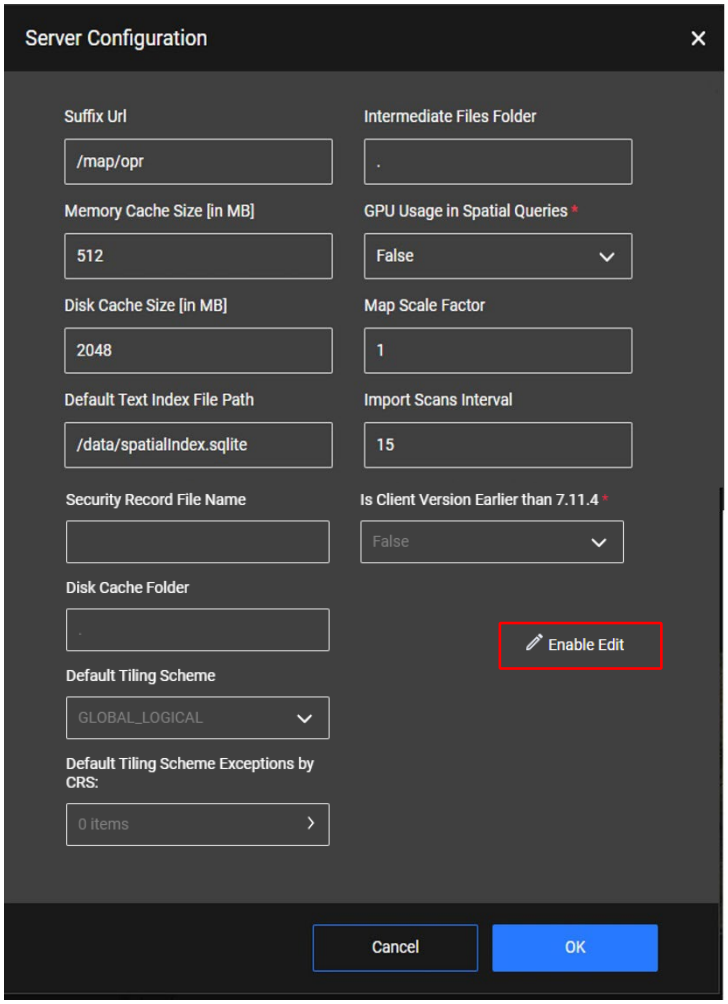

Figure 4-26 Server Configuration window

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3. Click the **OK** button on the warning message that is prompted to continue.

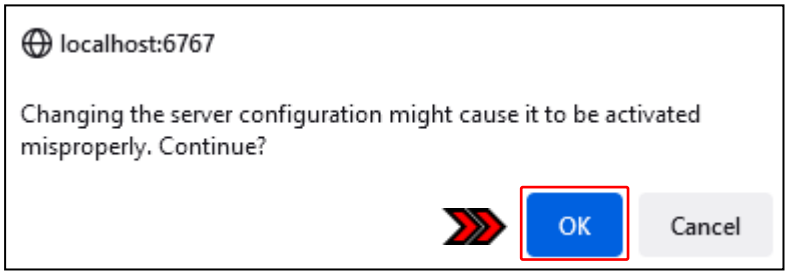

Figure 4-27 Server configuration warning message

4. Change any of the configuration parameters. Refer to Section *3.2 Server Parameters* for a detailed description of each parameter.

Table 4-10 Server configuration parameters

Parameter (GUI name)	Description in configuration parameter….
Suffix URL	*SuffixUrl*
Memory Cache Size [in MB]	*MemoryCacheSize*
Disk Cache Size [in MB]	*DiskCacheSize*
Default Text Index File Path	*DefaultTextIndexFilePath*
Security Record File Name	*SecurityRecordFileName*
Disk Cache Folder	*DiskCacheFolder*
Default Tiling Scheme	*DefaultTilingScheme*
Tiling Schemes Exceptions By CRS	*TilingSchemesByCRS* Refer additionally to Section *4.6.4.1 Change or Add Tiling Scheme* below for detailed instructions.
Intermediate Files Folder	*IntermediateFilesFolder*
GPU Usage in Spatial Queries	*GpuUsageInSpatialQueries*
Map Scale Factor	*DefaultMaxScale Factor*
Import Scans Interval	*ImportScanInterval*

Parameter (GUI name)	Description in configuration parameter….
Is Client Version Earlier than 7.11.4	*IsClientVerPre_7_11_4*

5. Click the **OK** button to submit your changes and exit the window.

4.6.4.1. Change or Add Tiling Scheme

> WARNING
>
> Multiple layers will not be simultaneously previewed if their tiling schemes are different.
>
> Refer to Section *1.5.11 Tiling Scheme* for detailed information on the tiling scheme and its relationship to the layer's coordinate system.
>
> Refer to Section *1.5.12 Coordinate System* for detailed information on the layer's coordinate system.

1. Within the configuration settings, in the field, **Tiling Schemes By CRS**, click the sideways arrow to open the **Tiling Scheme** window.
2. **OPTIONAL**: Add a new entry as follows –
   a. Click the **+** icon. The **Tilting Scheme Table** is displayed.
   b. From the dropdown list, select a tiling scheme.
   c. From the dropdown list, select a coordinate system.

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d. Click the **OK** button to submit the change and close the window.

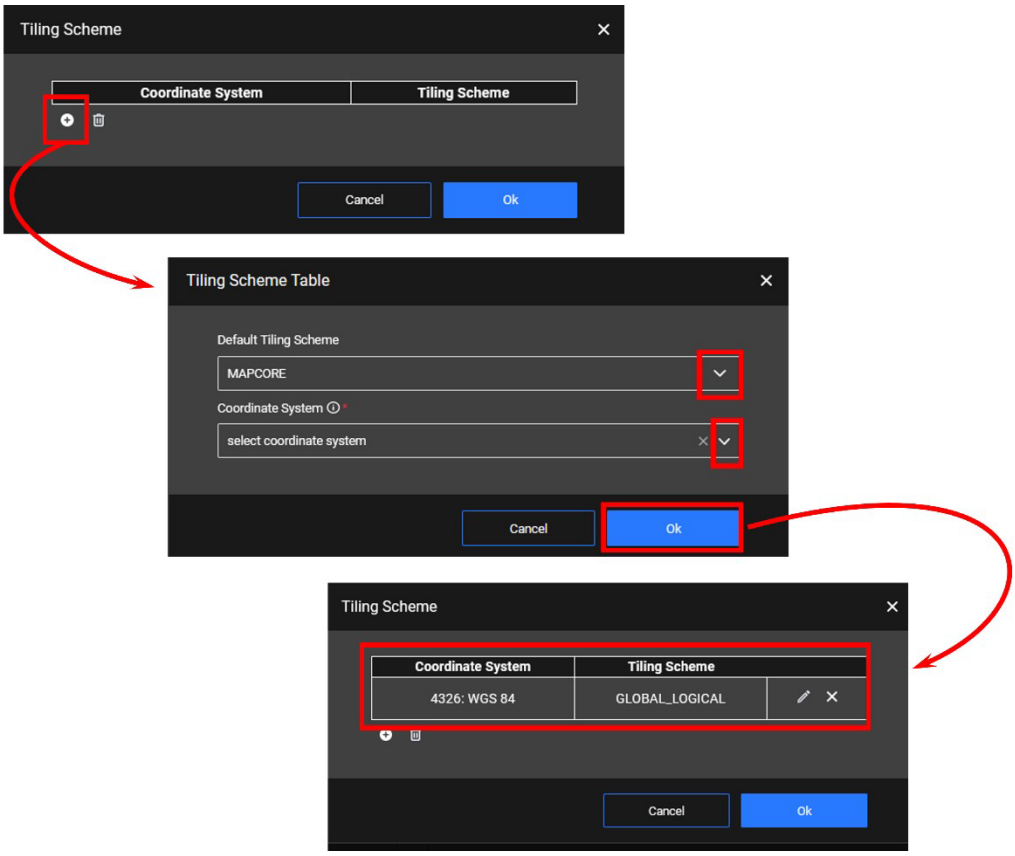

Figure 4-28 Adding tiling scheme exceptions

Where:

Table 4-11 Tiling scheme parameters

Parameter (GUI name)	Click on parameter name to jump to description
Default Tiling Scheme	*DefaultTilingScheme*
Coordinate System	*CoordinateSystem*

3. **OPTIONAL**: To remove existing entries, click the **Trash** icon.
4. Click the **OK** button to submit the change(s) and close the **Tiling Scheme** window.

> NOTE
>
> Changes will only take effect after the next server reboot.

5. Click the **OK** button to dismiss the confirmation message.

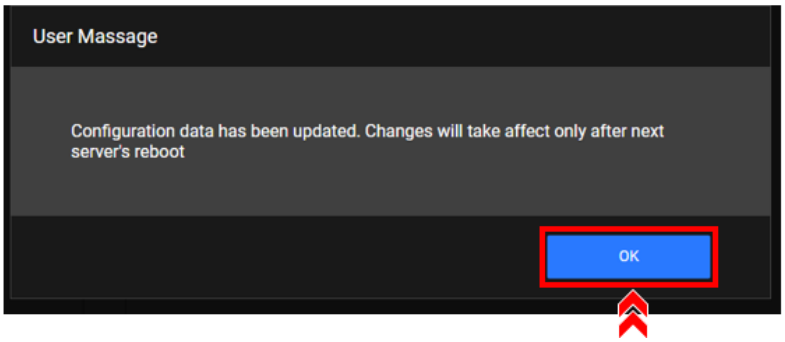

Figure 4-29 Confirmation message for server configuration parameter changes

4.6.5. Configure Preview Options

> NOTE
>
> Note that this parameter differs from the `Map Scale Factor` that appears under the **Server Configuration** as it saved locally (and not to the server) and therefore pertains only to previews within the current browser on the current device.

1. On the Map Layer Repository bar, click the More options menu icon ⋮, and then click the Preview Configuration option. The Preview Configuration window is displayed.
2. If desired, change the Map Scale Factor parameter. Refer to DefaultMaxScale Factor in Section 3.2 Server Parameters for a detailed description of this parameter.
3. Click the **OK** button to submit your change.

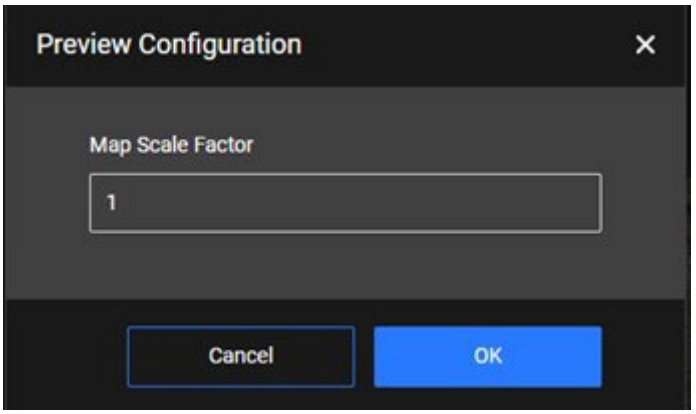

Figure 4-30 Preview configuration parameter change

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4.6.6. View MapCore™ Server Version Number

On the **Map Layer Repository** bar, click the **More options** menu icon ⋮, and then click the **About** option. The **About** window is displayed.

4.7. Layer Backlog Actions

The following actions are available for the backlog group and its layers, which are detailed below:

- *Delete All Layers*.
- *Move to Groups*.
- *Delete Layers*.

4.7.1. Delete All Layers

> WARNING
>
> This action deletes all backlog layers from the server and cannot be undone.

1. On the **Layer Backlog** bar, click the **More options** menu icon ⋮, and then click the **Clear Backlog** option.
2. Depending on whether data has been silently imported or not:
   - If no silently imported data exists among deleted layers the repository, the **Delete Layer** window is prompted. Click the **OK** button to complete this action.

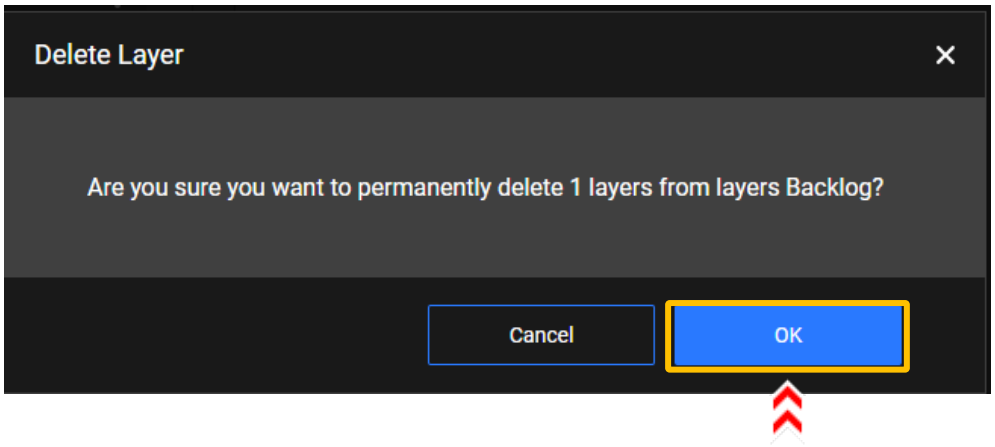

Figure 4-31 Delete Layer prompt (for entire repository)

- If silently imported data exists among deleted layers the repository, the **Clear Backlog** window is prompted. Next:

  (a) If relevant, check the box to delete original data of silently imported layers.

> NOTE
>
> Since silently imported data is not copied to a new location, it might be used by some other application. Check this option only if you are certain that this data is not used by any other application other than MapCore™ Map Layer Server applications. When left unchecked, the layer will be removed from the MapCore™ Map Layer Server database but the original data will remain intact.

  (b) Click the **OK** button to complete this action and permanently delete all backlog layer(s) from the server.

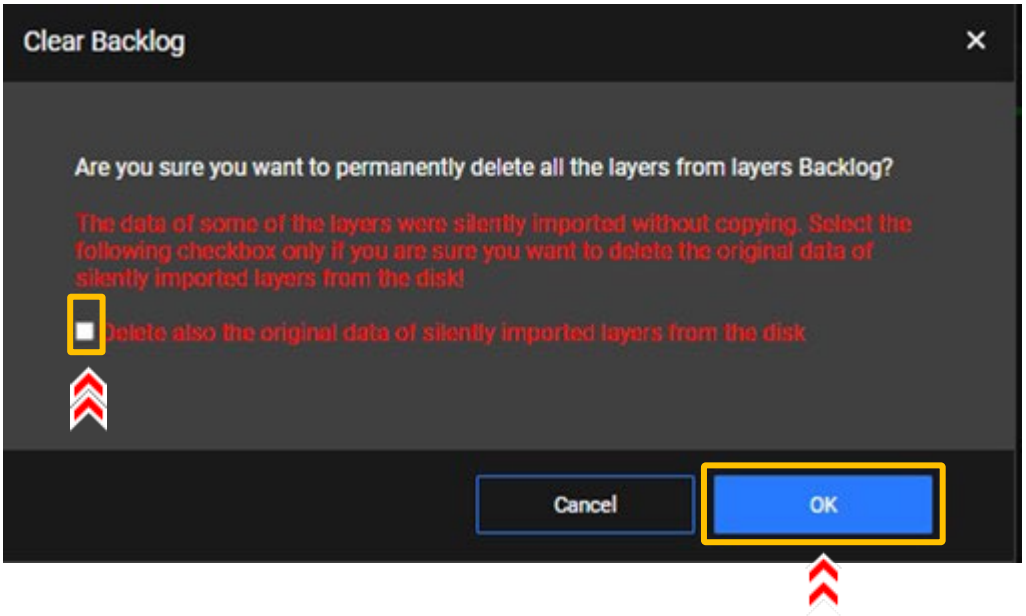

Figure 4-32 Clear Backlog prompt

4.7.2. Move to Groups

To attach the specified layer(s) to a group (thereby removing them from the Backlog Group), a target user-created group must exist in the server to which the layer(s) will be attached.

To move backlog layer to specified group(s):

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1. Do either of the following:
   - To move a single layer: on the layer bar, click the **More options** menu icon ⋮.
   - To move multiple layers together: select multiple layers (Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions), and then on any of the selected layer bars, click the **More options** menu icon ⋮.
2. Click the **Move to Groups** option. The **Move to Groups** window is displayed.
3. Open the dropdown list of available user-created groups and click on groups in the list to add or remove them from the selection of groups to which the layer is to be attached. When done, click the dropdown arrow to close the dropdown list.

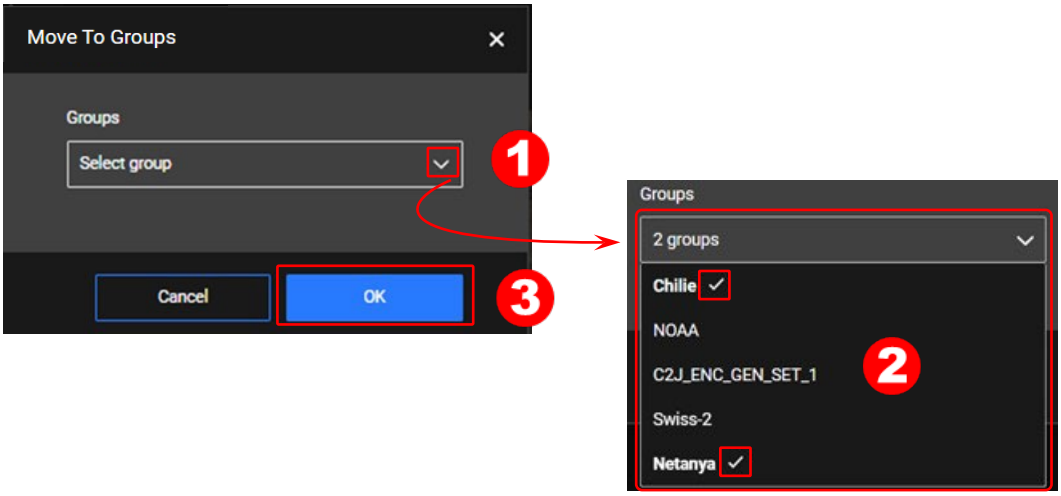

*Figure 4-33 **Select Groups** window*

4. Click the **OK** button.

4.7.3. Delete Layers

> WARNING
>
> This action deletes the selected backlog layers from the server and cannot be undone.

1. Do either of the following:
   - To delete a single layer: on the layer bar, click the **More options** menu icon ⋮.
   - To delete multiple layers together: select multiple layers (Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions), and then on any of the selected layer bars, click the **More options** menu icon ⋮.

2. Click the **Delete Layer** option.
3. Depending on whether data has been silently imported or not:
   - If no silently imported data exists among deleted layers the repository, the **Delete Layer** window is prompted depending on layer type. Click the **OK** button to complete this action:
     - DTM layer:

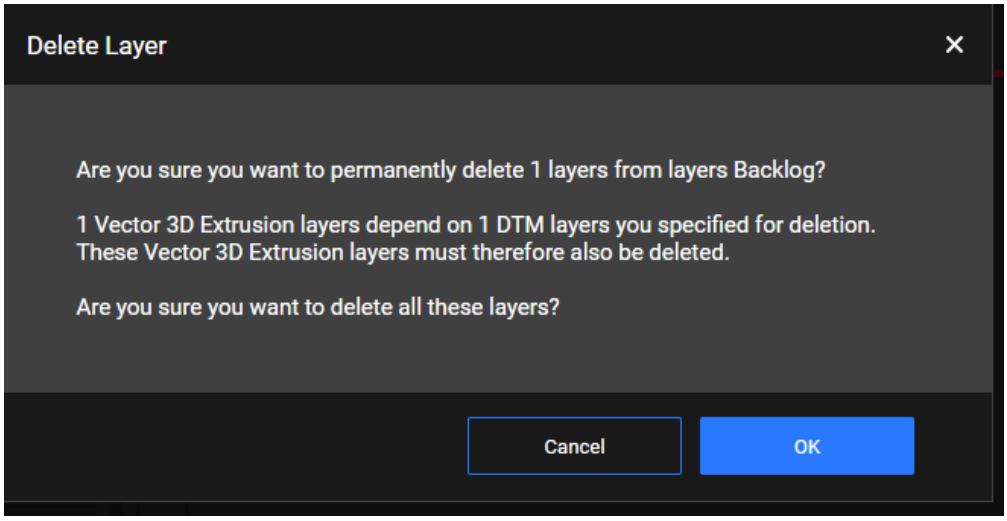

Figure 4-34 Delete Layer prompt [for single DTM layer(s)]

Note that if any Vector 3D Extrusion layers point to the DTM layer being deleted, the DTM layer cannot be deleted without additionally deleting the dependent Vector 3D Extrusion layers.

     - All other layers:

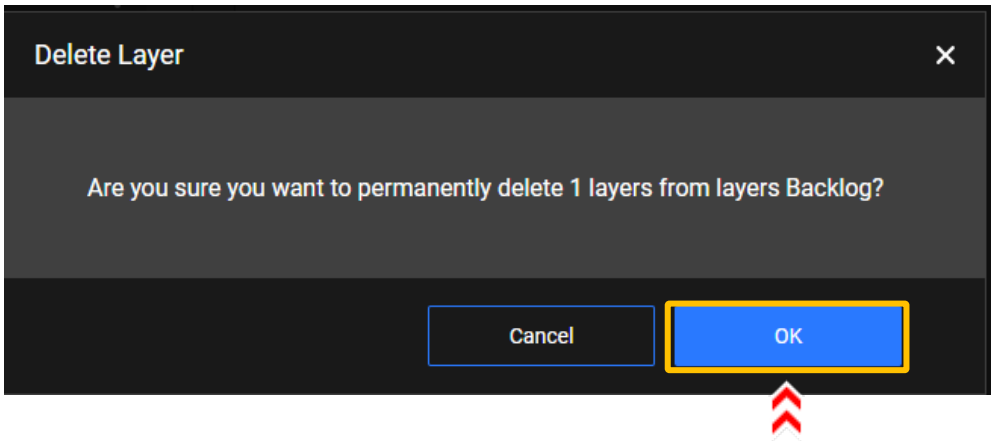

Figure 4-35 Delete Layer prompt [for single non-DTM layer(s)]

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- If silently imported data exists among deleted layers the repository, the **Delete Layer** window is prompted with a warning message. Next:

  (a) If relevant, check the box to delete original data of silently imported layers.

> NOTE
>
> Since silently imported data is not copied to a new location, it might be used by some other application. Check this option only if you are certain that this data is not used by any other application other than MapCore™ Map Layer Server applications. When left unchecked, the layer will be removed from the MapCore™ Map Layer Server database but the original data will remain intact.

  (b) Click the **OK** button to complete this action and permanently delete the selected backlog layer(s) from the server.

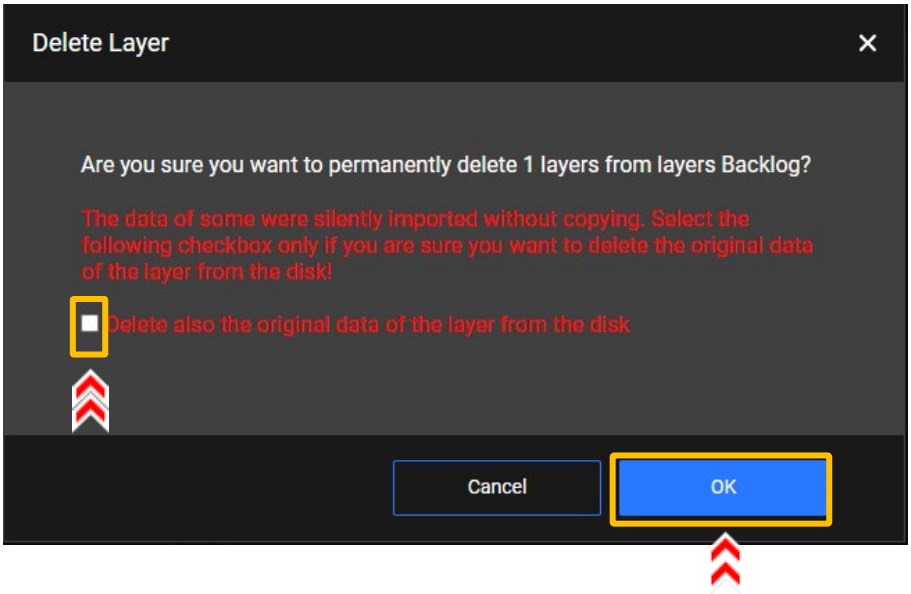

Figure 4-36 Delete Layer prompt with warning message regarding silently imported data

4.8. Group-related Actions

The following actions are available for user-created groups:

- *Select Multiple Groups*.
- *Add New Layer*.
- *View Layers in Group*.

- *Preview Group Content*.
- *Export Group*.
- *Rename Group*.
- *Remove Group*.

4.8.1. Select Multiple Groups

To select multiple groups, do either of the following:

- Press the **Shift** key while clicking on two group bars to select the range of groups between the two selected groups.
- Press the **Ctrl** key while clicking on group bars to select non-adjacent groups.

It is possible to combine these two modes of multiple group selection. Once any two or more groups have been selected, press both the **Ctrl** and **Shift** keys while clicking on groups to additionally select a range of adjacent groups.

To deselect groups, do either of the followng:

- Press the **Ctrl** key while clicking on groups bars to deselect individual groups.
- Click on any item in the **Content Repository** to deselect all selected groups.

NOTE

When a mix of groups and layers is selected, fewer options are available on the **More options** menu. Refer to *Figure 4-12 More options menu for layer* for details.

NOTE

When selecting one or more groups, all layers of those groups are also marked as selected. Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions on selecting and deselecting layers.

4.8.2. Add New Layer

The following information must be supplied for every new layer being added:

- Existing user-created group through which the layer will be imported.

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- Layer source files including geographical mapping information.
- EPSG code of the layer's coordinate system for those layer types that do not have the coordinate system embedded within their data.
- Desired tiling scheme (the method used to attach map tiles to a geo-positioned, scale-sensitive grid).

Refer to Section *1.5.11 Tiling Scheme* for detailed information on the tiling scheme and its relationship to the layer's coordinate system.

Refer to Section *1.5.12 Coordinate System* for detailed information on the layer's coordinate system.

For all layer types, the process of adding a new layer is identical as detailed in Section *4.8.2.1 Upload Layer Content from Folder*. The process differs only in the parameters required when defining a new layer. Refer to Section *4.8.2.2 Define layer parameters per layer type* for details pertaining to each type of layer.

4.8.2.1. Upload Layer Content from Folder

1. On the group bar to which you wish to append the layer, click the **More options** menu icon ⋮, and hover over the **Add Layer** option to show its submenu.

> NOTE
>
> Clicking the **Add Layer** option rather than hovering over it will close the menu.

2. From the **Add Layer** submenu, click the desired layer type to open the **Add Layer** upload window. The **Add Layer** window is displayed.

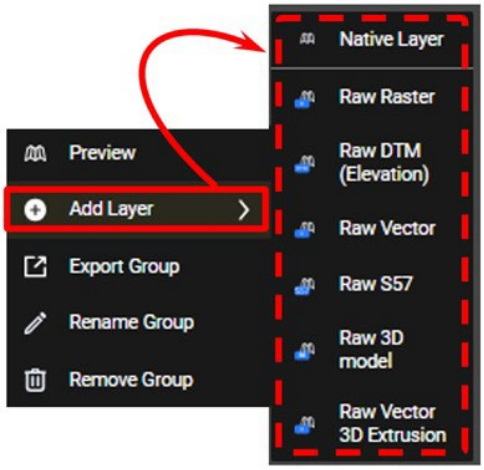

Figure 4-37 Layer types submenu

3. Drag the folder containing the desired layer and drop it over this window or click the upload cloud icon at the center of the window to open the file browser and navigate to the target folder. Once a folder is selected, the prompt will change per specific layer type.

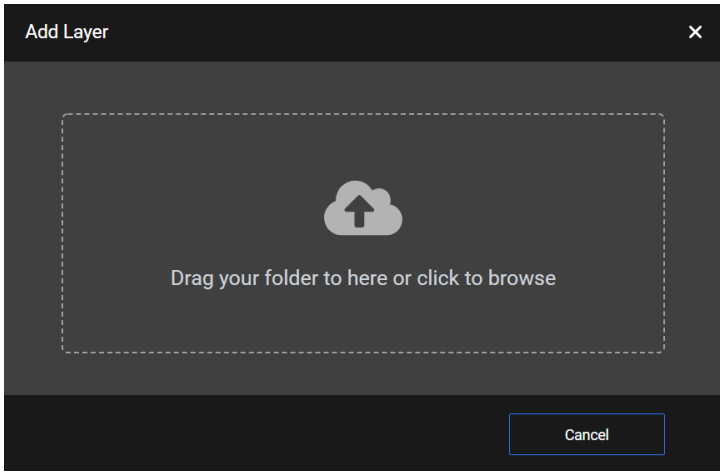

Figure 4-38 Add Layer upload window

4. Define layer parameters according to layer type. Refer to Section *4.8.2.2 Define layer parameters per layer type* for detailed description of parameters available for each layer type. When done, click the **OK** button to start the upload process. The upload status and progress are shown in the **Action Display** area of the screen.

   Refer to Section *4.3.4 Action Display* for a detailed explanation about the **Running Process** display and colors. Refer to Section *4.5.1 Reset Upload Counters* for detailed instructions on resetting the counters.

   When completed, the result is documented in the **Log Display** area of the screen.

> CAUTION
>
> The upload process will fail with the lack of required data (fields marked by a red asterisk: *).

4.8.2.2. Define layer parameters per layer type

Once a folder has been dropped over the upload window or selected through the browser, the relevant window as per the selected layer type is displayed. Enter data on both the main screen and the advanced screen where available. Mandatory fields are marked by a red asterisk (*). Use the following table to refer to details on layer-specific parameters.

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Table 4-12 Layer parameter index

Layer type	Section in which parameters are described
Native	*4.8.2.2.1* Native Layer
Raw Raster	*4.8.2.2.2 Raw Raster* Layer
Raw DTM (Elevation)	*4.8.2.2.3 Raw DTM (Elevation)*
Raw Vector	*4.8.2.2.4 Raw Vector Layer*
Raw S-57	*4.8.2.2.5 Raw S-57 Layer*
Raw 3D model	*4.8.2.2.6 Raw 3D Model Layer*
Raw Vector 3D Extrusion	*4.8.2.2.7 Raw 3D Vector Extrusion Layer*

It is recommended that you enter as much data as possible, however, you may access this information later through the **Edit Layer** option (refer to Section *4.9.4 Edit Layer* for detailed instructions).

4.8.2.2.1. Native Layer

Because native layers are native to MapCore™ Map Layer Server, there is no need to supply any layer-specific information. MapCore™ Map Layer Server recognizes the type of layer being uploaded and presents the appropriate dialog box. Depending on layer type, parameters available or required for this type of layer are accessible through the parameter form. A detailed explanation of layer parameters is found in Section *Table 3-6 `MapLayerConfig` parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the table below.

Refer to section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

Table 4-13 Native layer parameters, pool of possible parameters

Field	Click on parameter name to jump to description
`Layer ID`	*LayerId*
`Title`	*Title*
`Group Name`	*Group*
`Draw Priority`	*DrawPriority*

Refer to section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

4.8.2.2.2. Raw Raster Layer

Parameters available or required for this type of layer are accessible through both the main and advanced parameter forms. A detailed explanation of layer parameters is found in Section *3.3.1 `RawLayerInfo` Parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the tables below.

Refer to section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

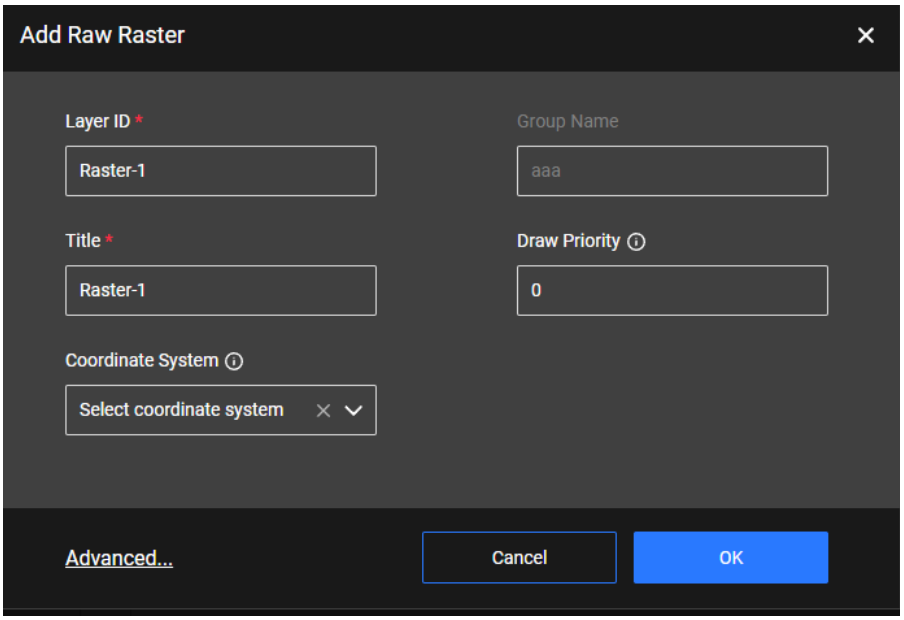

Figure 4-39 Raster layer parameters, main form

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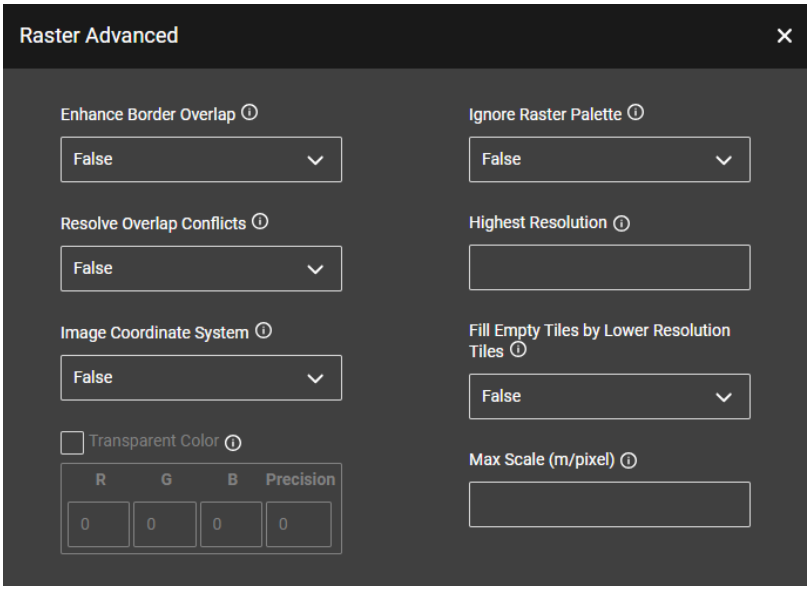

Figure 4-40 Raw raster layer parameters, advanced form

Where:

Table 4-14 Raw raster layer parameters, main form

Field	Click on parameter name to jump to description
Main form	
Layer ID	*LayerId*
Title	*Title*
Group Name	*Group*
Coordinate System	Since conversion between coordinate systems is prohibited for this layer type, coordinate system supplied in this field is used to override information embedded in the layer's data or supply information if none exists in the layer's data. Refer to Section *1.5.12 Coordinate System* for details on coordinate system.
Draw Priority	*DrawPriority*
Advanced form	
Enhance Border Overlap	*EnhancedBorderOverlap*
Resolve Overlap Conflicts	*ResolveOverlapConflicts*

Field	Click on parameter name to jump to description
Image Coordinate System	*IsImageCoordSys*
Transparent Color	Check to use this option and enable its `R`, `G`, `B` and `Precision` parameters. Refer to *TransparentColor* for details on this option and its parameters (the next four parameters).
Ignore Raster Palette	*IgnoreRasterPalette*
Highest Resolution	*HighestResolution*
Fill Empty Tiles by Lower Resolution Tiles	*FillEmptyTilesByLowerResolutionTiles*
Max Scale (m/pixel)	*MaxScale* NOTE: This parameter differs from the `MaxScale` parameter contained in the Vector layer information.

4.8.2.2.3. Raw DTM (Elevation)

Parameters available or required for this type of layer are accessible through the parameter form. A detailed explanation of layer parameters is found in Section *3.3.1 `RawLayerInfo` Parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the tables below.

Refer to section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

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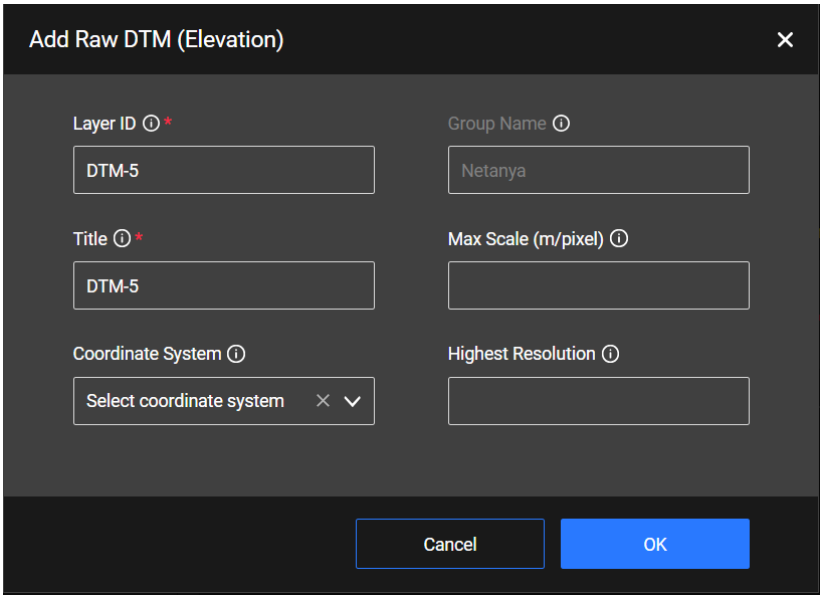

Figure 4-41 Raw DTM (elevation) parameters form

Where:

Table 4-15 Raw DTM (elevation) parameters

Field	Click on parameter name to jump to description
Layer ID	*LayerId*
Title	*Title*
Group Name	*Group*
Coordinate System	Since conversion between coordinate systems is prohibited for this layer type, coordinate system supplied in this field is used to override information embedded in the layer's data or supply information if none exists in the layer's data. Refer to Section *1.5.12 Coordinate System* for details on coordinate system.
Draw Priority	*DrawPriority*
Max Scale (m/pixel)	*MaxScale* NOTE: This parameter differs from the `MaxScale` parameter contained in the Vector layer information.

4.8.2.2.4. Raw Vector Layer

Parameters available or required for this type of layer are accessible through both the main and advanced parameter forms. A detailed explanation of layer parameters is found in Section *3.3.1 `RawLayerInfo` Parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the tables below.

Refer to Section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

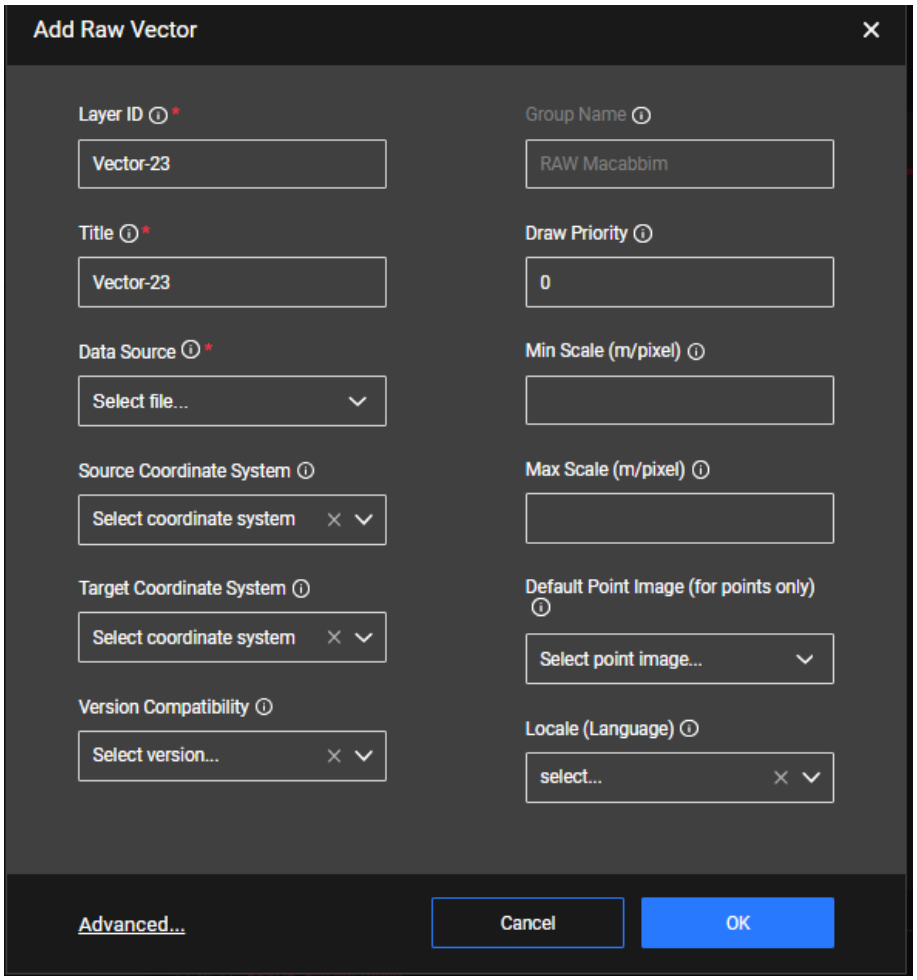

Figure 4-42 Raw vector layer parameters, main form

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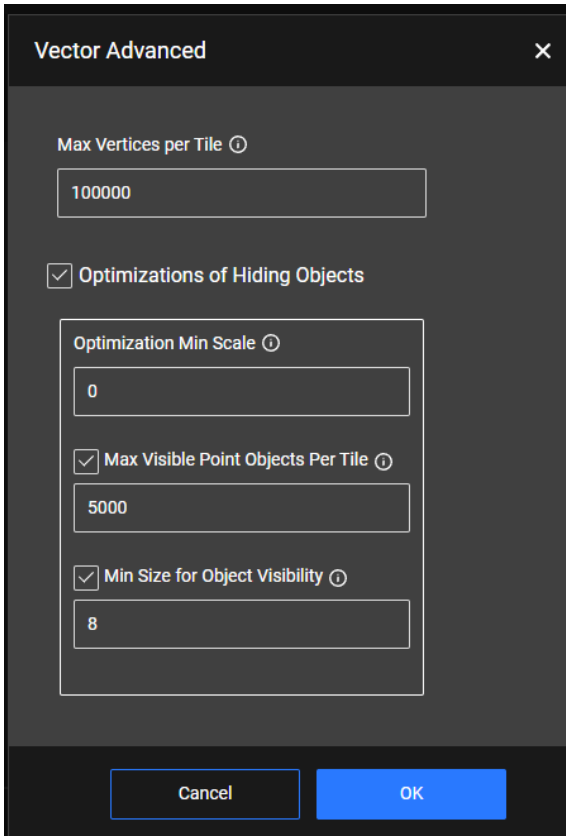

Figure 4-43 Raw vector layer parameters, advanced form

Where:

Table 4-16 Raw vector layer parameters

Field	Click on parameter name to jump to description…
Main form	
`Layer ID`	*LayerId* NOTE: The OK button is only enabled if the value entered in the field is indeed unique.
`Title`	*Title*
`Group Name`	*Group* NOTE: in the GUI, this is a read-only field.
`Draw Priority`	*DrawPriority*
`Data Source`	*DataSource*

Field	Click on parameter name to jump to description…
Source Coordinate System	Coordinate system supplied in this field is used to override information embedded in the layer's data or supply information if none exists in the layer's data. Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system.
Target Coordinate System	Coordinate system supplied in this field is the final coordinate system for the layer and is used for conversion from the `Source Coordinate System` specified in this form (see above). This is an optional parameter. Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system.
Min Scale (m/pixel)	*MinScale*
Max Scale (m/pixel)	*MaxScale* NOTE: This parameter differs from the `MaxScale` parameter specified in the Raster layer information.
Default Point Image	*PointTextureFile*
Version compatibility	*VersionCompatibility*
Locale (Language)	*Locale*
Advanced form	
Max Vertices per Tile	*MaxVerticesPerTile*
Optimization of Hiding Objects	Enable or disable the following three parameters.
Optimization Min Scale	*OptimizationMinScale*
Max Visible Points per Tile	*MaxVisiblePointsPerTile*
Min Size for Object Visibility	*MinSizeForObjVisability*

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4.8.2.2.5. Raw S-57 Layer

Parameters available or required for this type of layer are accessible through both the main and advanced parameter forms. A detailed explanation of layer parameters is found in Section *3.3.1 `RawLayerInfo` Parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the tables below.

Refer to Section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

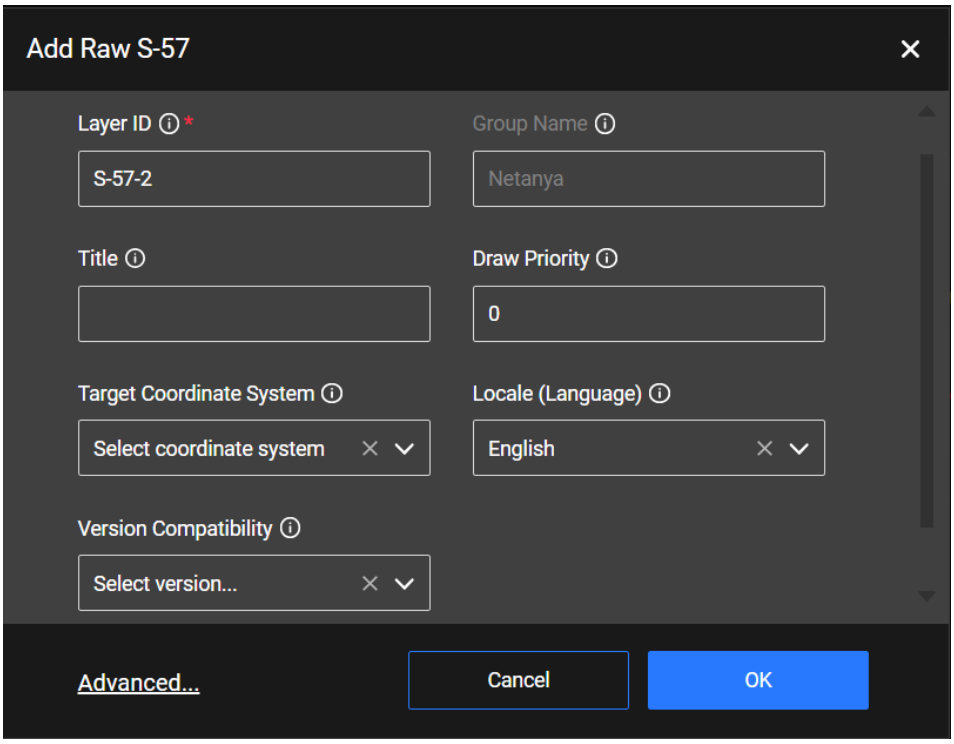

Figure 4-44 Raw S-57 layer parameters form

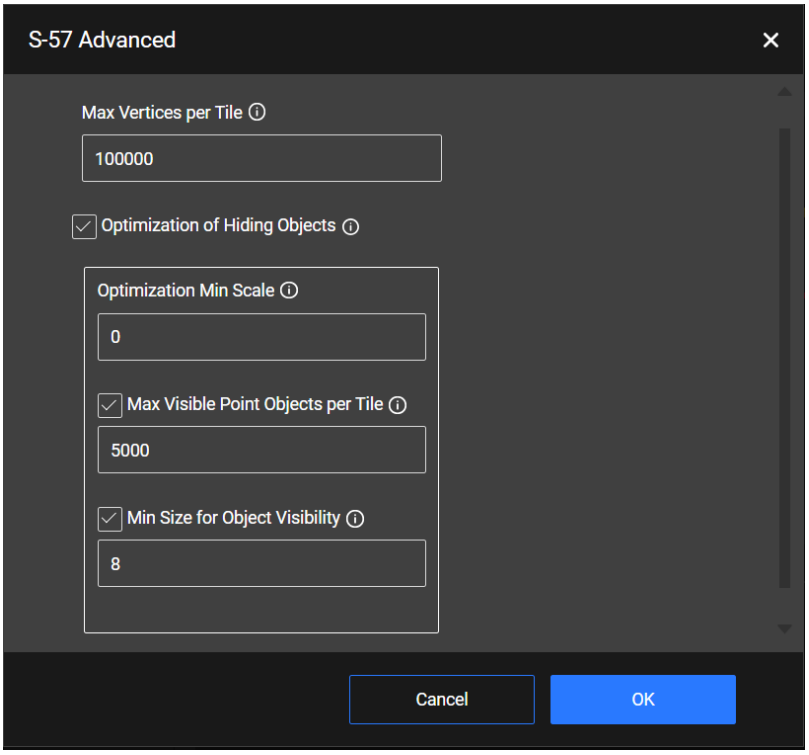

Figure 4-45 Raw S-57 layer parameters advanced form

Where:

Table 4-17 Raw S-57 layer parameters

Field	Click on parameter name to jump to description
Main form	
Layer ID	*LayerId*
Title	*Title*
Group Name	*Group*
Draw Priority	*DrawPriority*
Locale (Language)	*Locale*

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Field	Click on parameter name to jump to description
`Target Coordinate System`	Coordinate system supplied in this field is the final coordinate system for the layer and is used for conversion from the `Source Coordinate System` which is always the default for this layer type (and hence not specified in the form). This is an optional parameter. Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system.
`Version compatibility`	*VersionCompatibility*
Advanced form	
`Max Vertices per Tile`	*MaxVerticesPerTile*
`Max Visible Points per Tile`	*MaxVisiblePointsPerTile*
`Min Size for Object Visibility`	*MinSizeForObjVisability*
`Optimization Min Scale`	*OptimizationMinScale*

4.8.2.2.6. Raw 3D Model Layer

Parameters available or required for this type of layer are accessible through the parameter form. A detailed explanation of layer parameters is found in Section *3.3.1 `RawLayerInfo` Parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the tables below.

Refer to Section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

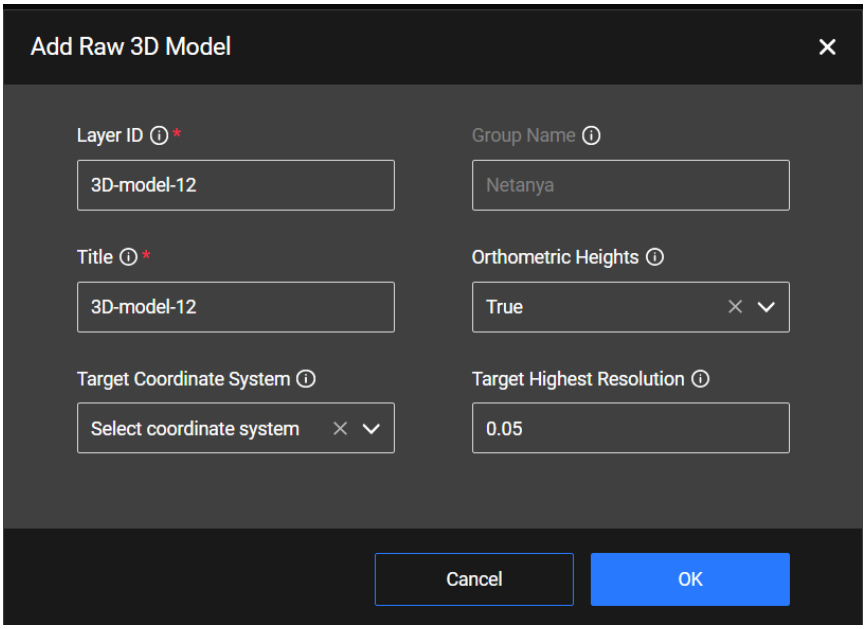

Figure 4-46 3D model layer parameter form

Where:

Table 4-18 3D model layer parameters

Field	Click on parameter name to jump to description
Layer ID	*LayerId*
Title	*Title*
Group Name	*Group*
Target Coordinate System	Coordinate system supplied in this field is the final coordinate system for the layer, used for conversion from the `Source Coordinate System` which is always defined in the source data (and hence not specified in the form). This is a mandatory parameter for 3D Tiles based layers but otherwise optional. Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system.
Orthometric Heights	*OrthometricHeights*
Target Highest Resolution	*TargetHighestResolution*

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4.8.2.2.7. Raw 3D Vector Extrusion Layer

Parameters available or required for this type of layer are accessible through the parameter form. A detailed explanation of layer parameters is found in Section *3.3.1 `RawLayerInfo` Parameters* unless otherwise specified. The exact location for the description of each parameter is referenced in the tables below.

Refer to Section *4.4.6 Layer and Server Parameter Controls* for instructions on entering data in parameter fields.

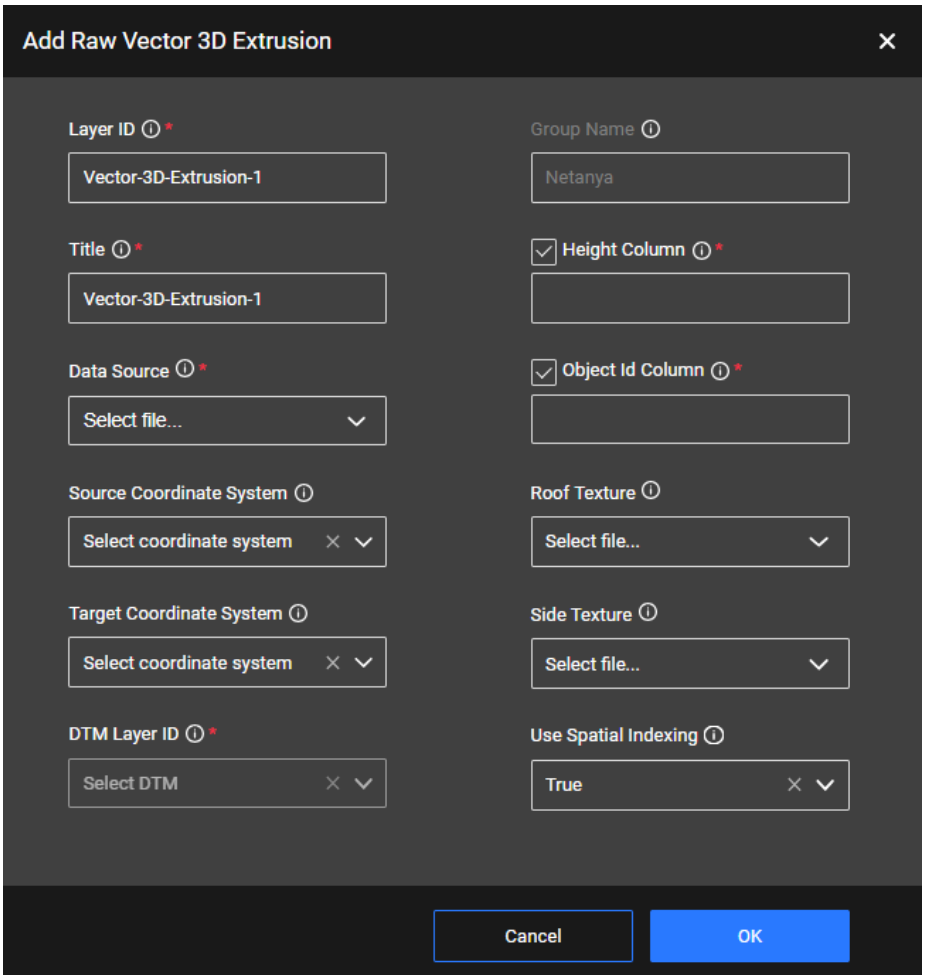

Figure 4-47 Raw 3D vector extrusion layer parameters

Table 4-19 Raw 3D vector extrusion layer parameters

Field	Click on parameter name to jump to description
`Layer ID`	*LayerId*
`Title`	*Title*

Field	Click on parameter name to jump to description
Group Name	*Group*
Data Source	*DataSource*
Source Coordinate System	Coordinate system supplied in this field is used to override information embedded in the layer's data or supply information if none exists in the layer's data. Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system.
Target Coordinate System	Coordinate system supplied in this field is the final coordinate system for the layer and is used for conversion from the `Source Coordinate System` specified in this form (see above). Refer to Section *1.5.12 Coordinate System* for details on source and target coordinate system.
DTM Layer ID	*DtmLayerId*
Height Column	Check the checkmark in order to provide database column for this field. Refer to *HeightColumn* for assumptions.
Object ID Column	*ObjectIDColumn*
Roof Texture	File containing image used as texture for rendering building tops.
Side Texture	File containing image used as texture for rendering building walls.
Use Spatial Indexing	*UseSpatialIndexing*

4.8.3. View Layers in Group

- Double-click a closed layer group to expand the display and show the layers in that group.
- Double-click an open layer group to collapse the display and hide the layers in that group.

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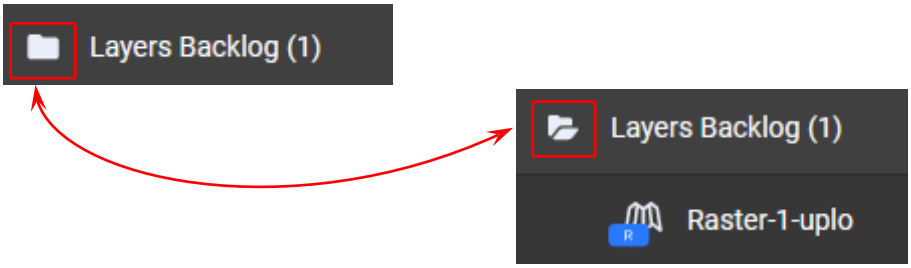

Figure 4-48 Expanded vs. collapsed group in the Content Repository area

4.8.4. Preview Group Content

When previewing group content, all group layers are previewed simultaneously.

> WARNING
>
> For the proper function of the group preview, all layers in the group must share a common area of interest, their coordinate system, and their tiling scheme.
>
> Refer to Section *1.5.11 Tiling Scheme* for detailed information on the tiling scheme and its relationship to the layer's coordinate system.
>
> Refer to Section *1.5.12 Coordinate System* for detailed information on the layer's coordinate system.

> WARNING
>
> For the proper function of the group preview, only one DTM (Elevation) layer may be included in a group when previewing the group.

Three actions are available when previewing group content, all of which are detailed below:

- Activate the preview display.
- Toggle between 2D, 3D, and DTM preview modes.
- Manipulate preview perspective.

4.8.4.1. Activate the preview display

1. On the group bar, click the **More options** menu icon ⋮, and then click the **Preview** option.
2. The combined group preview is displayed in **Map** (2D) perspective.

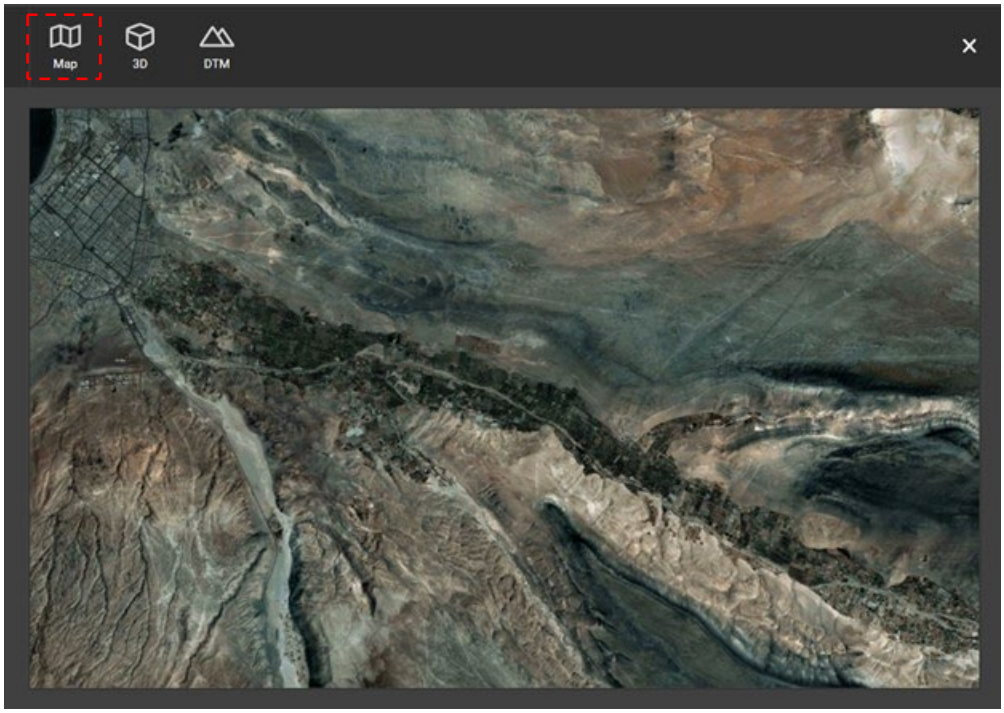

Figure 4-49 Default Preview Perspective display

4.8.4.2. Toggle between Map (2D), 3D, and DTM preview perspective

Refer to Section *4.4.5.1 Preview mode* for detailed instructions.

4.8.4.3. Manipulate preview perspective

Refer to Section *4.4.5.2 Preview content* for detailed instructions.

4.8.5. Export Group

Exports all layers of selected group(s) as an `mcpkg` file for backup purposes or future import. Group hierarchy is maintained in the exported file and will be recreated upon import. Refer to Section *4.6.2 Import MC Package* for detailed instructions on importing the exported file.

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> **NOTE**
>
> Depending on the size of exported data and the number of layers, the export process may be a lengthy one.

To export group(s) in their entirety:

1. Do either of the following:
   - To export a single group: on the group bar, click the **More options** menu icon ⋮.
   - To export multiple groups together: select multiple groups (Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions), and then on any of the selected group bars, click the **More options** menu icon ⋮.
2. Click the **Export Group** option. The export window will be displayed, showing the total number of layers that are about to be exported.

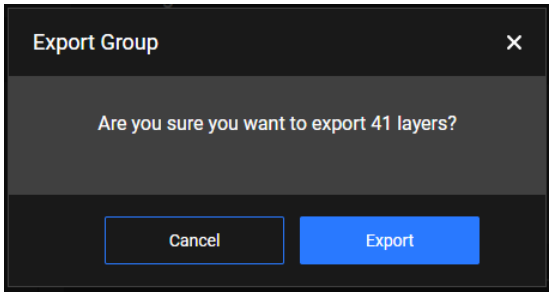

Figure 4-50 Export window

3. Click the **Export** button to complete the export. The export preparation prompt is displayed at the bottom right corner of the screen.
4. If desired, dismiss the export preparation prompt by clicking the **X** option. If no action is taken, the prompt will disappear when the preparation process is complete.

> **NOTE**
>
> During the export process, temporary files are saved in the `Export` folder which is located under the server data repository folder. Refer to Section *2.3 System Folders* for detailed information on MapCore™ Map Layer Server folders and their locations. When the import process is complete, the export file is moved to the downloads folder.

5. Locate the `mcpkg` file that was just created in your download folder in order to transfer it to another location.

> NOTE
>
> Refer to Section *4.6.2 Import MC Package* for details on file location and naming convention of the exported `mcpkg` file.

4.8.6. Rename Group

1. On the group bar, click the **More options** menu icon ⋮, and then click the **Rename Group** option. The rename group window is displayed.
2. Enter the new group name in the field **New group name** and click the **OK** button.

> NOTE
>
> The **OK** button will only be enabled if the name is indeed changed.

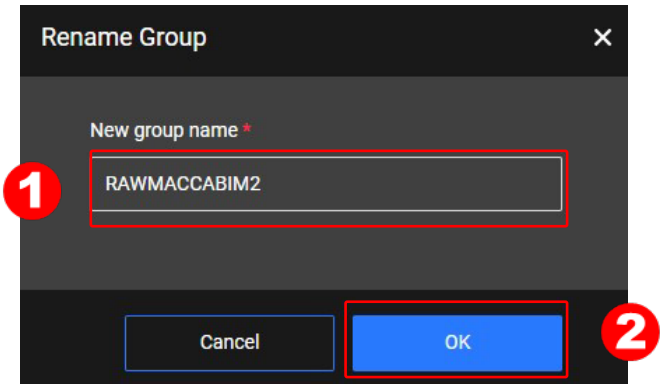

Figure 4-51 Rename group window

> CAUTION
>
> Group names must be unique for the **OK** button to be enabled.

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4.8.7. Remove Group

1. Do either of the following:
   - To remove a single group: on the group bar, click the **More options** menu icon ⋮.
   - To remove multiple groups together: select multiple groups (Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions), and then on any of the selected group bars, click the **More options** menu icon ⋮.
2. Click the **Remove Group** option. The **Remove Group** warning message is displayed.
3. Click the **OK** button to confirm group removal.

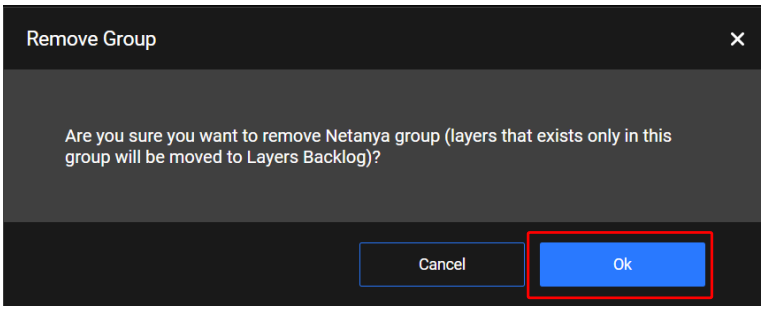

Figure 4-52 Remove group window

> NOTE
>
> All layers attached to a removed group are removed from any groups to which they were attached and moved to the **Layer Backlog** group. These layers will no longer be available for client applications.

4.9. Layer-related Actions

The following actions are available for user-created groups:

- *Select Multiple Layers*
- *Build Search Indexes*
- *Preview Layer*
- *Edit Layer Parameters*
- *Export Layer*

- *Attach Layer to Different Group(s)*
- *Remove Layer from user-created group*

Refer to *4.8.3 View Layers in Group* for instructions on how to display all layers of a group.

4.9.1. Select Multiple Layers

To select multiple layers:

- Press the **Shift** key while clicking on two layer bars to select the range of layers between the two selected layers.
- Press the **Ctrl** key while clicking on layer bars to select non-adjacent layers.

It is possible to combine these two modes of multiple layer selection. Once any two or more layers have been selected, press both the **Ctrl** and **Shift** keys while clicking on layers to additionally select a range of adjacent layers.

To deselect layers:

- Press the **Ctrl** key while clicking on layer bars to deselect individual layers.
- Click on any item in the **Content Repository** to deselect all selected layers.

NOTE

When layers are selected, fewer options are available on the **More options** menu. Refer to *Figure 4-12 More options menu for layer* for details.

NOTE

When selecting one or more groups, all layers of those groups are also marked as selected. Refer to Section *4.8.1 Select Multiple Groups* for detailed instructions on selecting and deselecting groups.

4.9.2. Build Search Indexes

The **Build Search Indexes** layer menu option is available only in the context of vector-based layer types, that is: raw vector and raw S-57. In these contexts, up to three indexes may be created for layer data in order to expedite searches within the layer

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data. The search index is defined via the MapCore™ Map Layer Server as infrastructure for other applications to use.

> **NOTE**
>
> MapCore™ Map Layer Server currently does not support the application of layer search indexes.

To define and build a search index:

1. On the layer bar, click the **More options** menu icon ⋮, and then click the **Build Search Index** option. The **Build Search Index** window is displayed.
2. Using the dropdown list of the first search index parameter, select the 1st Search Index parameter. The dropdown is populated with parameter names as found in Input data DB column names.

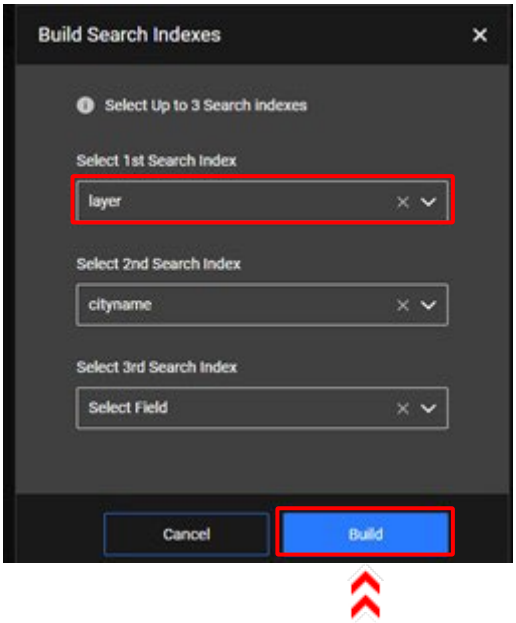

Figure 4-53 Build Search Indexes window

3. If desired, repeat Step #2 above for the remaining search index parameters.
4. Click the **Build** button.

4.9.3. Preview Layer

Three actions are available when previewing layer content, all detailed below:

- Activate the preview display.
- Toggle between 2D, 3D, and DTM preview modes.
- Manipulate preview perspective.

4.9.3.1. Activate the preview display

1. On the layer bar, click the **More options** menu icon ⋮, and then click the **Preview** option. The previewed content is displayed in **Map** (2D) perspective.

> NOTE
>
> To display DTM overlay, click the **DTM** preview control.

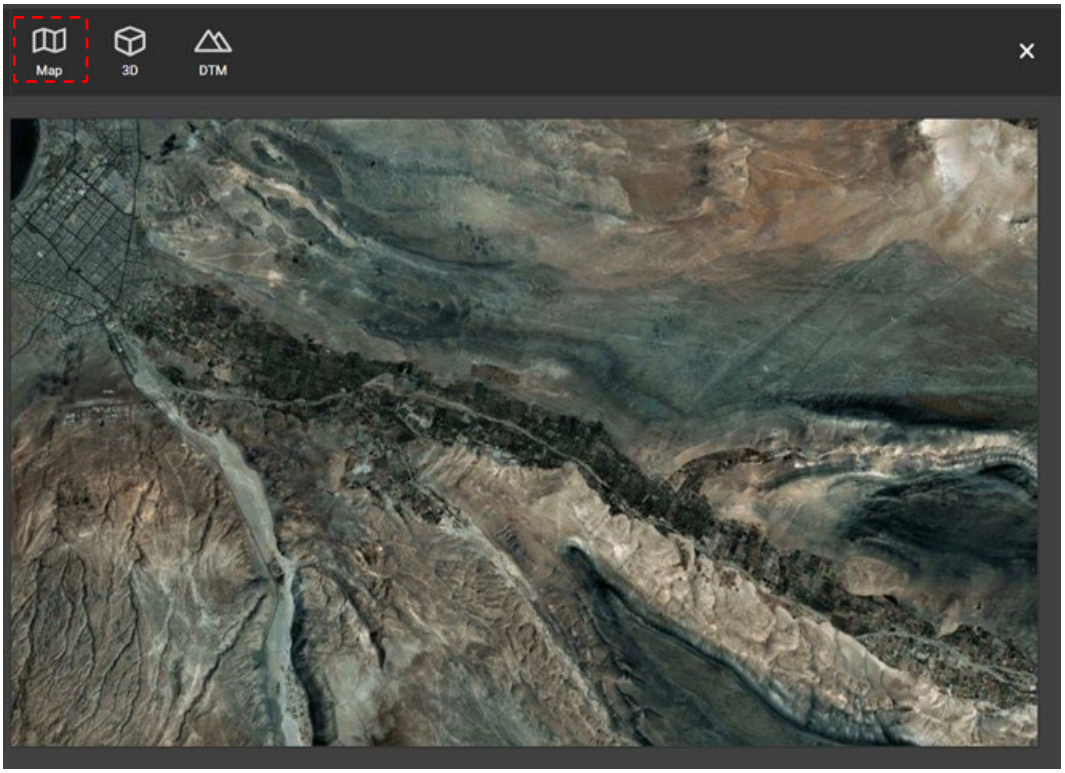

Figure 4-54 Default Preview Perspective display

4.9.3.2. Toggle between Map (2D), 3D, and DTM preview perspective

Refer to Section *4.4.5.1 Preview mode* for detailed instructions.

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4.9.3.3. Manipulate preview perspective

Refer to Section *4.4.5.2 Preview content* for detailed instructions.

4.9.4. Edit Layer Parameters

1. On the layer bar, click the **More options** menu icon ⋮, and then click the **Edit Layer** option. The edit layer window is displayed.
2. Change any enabled parameters as desired.

Figure 4-55 Editable vs. non editable parameters

Refer to Section *4.4.6 Layer and Server Parameter Controls* for detailed instructions on how to handle each field.

Refer to Section *4.8.2.2 Define layer parameters per layer type* for the actual description of layer parameters per layer type.

3. Click the **OK** button.

4.9.5. Export Layer

Exports selected layer(s) as an `mcpkg` file for backup purposes or future import. Group hierarchy is maintained in the exported file and will be recreated upon import. Refer to Section *4.6.2 Import MC Package* for detailed instructions on importing the exported file.

> NOTE
>
> Depending on the size of exported data and the number of layers, the export process may be a lengthy one.

> **NOTE**
>
> When exporting raw 3D extrusion layer(s), DTM layer(s) on which the exported layers are based are also exported. If several exported layers reference the same DTM, only one DTM is exported.

Importing this file on another server will organize the exported layers back in group formation.

To export layer(s):

1. Do either of the following:
   - To export a single layer: on the layer bar, click the **More options** menu icon ⋮.
   - To export multiple layers together: select multiple layers (Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions), and then on any of the selected layer bars, click the **More options** menu icon ⋮.
2. Click the **Export Layer** option. The export window will be displayed, showing the total number of layers that are about to be exported.
3. Click the **Export** button to complete the export. The export preparation prompt is displayed at the bottom right corner of the screen.
4. If desired, dismiss the export preparation prompt by clicking the **X** option. If no action is taken, the prompt will disappear when the preparation process is complete.

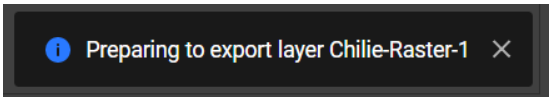

Figure 4-56 Example of export preparation message

> **NOTE**
>
> During the export process, temporary files are saved in the `Export` folder which is located under the server data repository folder. Refer to Section *2.3 System Folders* for detailed information on MapCore™ Map Layer Server folders and their locations. When the import process is complete, the export file is moved to the downloads folder.

5. Locate the `mcpkg` file in your download folder in order to transfer it to another location.

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NOTE

Refer to Section *4.6.2 Import MC Package* for details on file location and naming convention of the exported `mcpkg` file.

4.9.6. Attach Layer to Different Group(s)

To attach layer(s) to another group, a target user-created group must exist in the server to which the layer will be attached.

Refer to Section *4.7.2 Move to Groups* for instruction on attaching backlog layers to group(s).

To control group attachment of layer(s):

1. Do either of the following:
   - To attach a single layer: on the layer bar, click the **More options** menu icon ⋮.
   - To attach multiple layers together: select multiple layers (Refer to Section *4.9.1 Select Multiple Layers* for detailed instructions), and then on any of the selected layer bars, click the **More options** menu icon ⋮.
2. Click the **Select Groups** option. The **Select Groups** window is displayed.
3. Open the dropdown list of available user-created groups and click on groups in the list to add or remove them from the selection of groups to which the layer is to be attached. Click on the dropdown arrow to close the list when done.

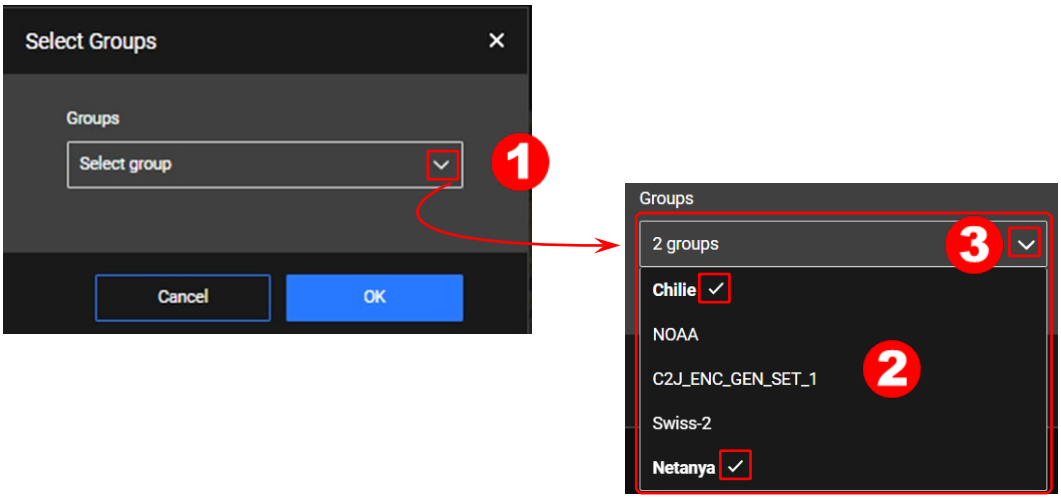

*Figure 4-57 **Select Groups** window*

4. Click the **OK** button.

4.9.7. Remove Layer from user-created group

This action may be applied to a selection of multiple layers. Refer to Section *4.9.1 Select Multiple Layers*.

> CAUTION
>
> A layer removed from a user-created group is removed from all groups with which it is associated and placed in the **Layer Backlog** group. Layers in the **Layer Backlog** group are no longer available for client applications; however, they may be attached to one or more group(s) again, thereby removing them from the **Layer Backlog** group. Refer to Section *4.7 Layer Backlog Actions* for instruction on removing layers from the **Layer Backlog** group.

1. Do either of the following:
   - To remove a single layer: on the layer bar, click the **More options** menu icon ⋮.
   - To remove multiple layers simultaneously: select multiple layers, and then on any of the selected layer bars, click the **More options** menu icon ⋮.
2. Click the **Remove Layer** option. The **Remove Layer** warning message is displayed.
3. Click the **OK** button to move the layer to backlog.

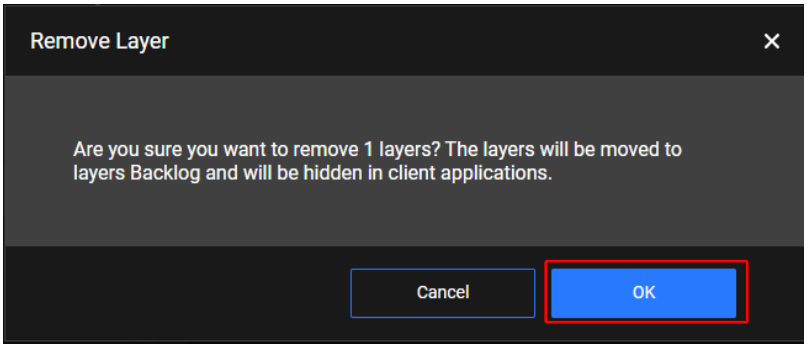

*Figure 4-58 **Remove Layer** window*

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4.10. Log Display Actions

The following actions are available for the Log Display:

- *Clear Log Window*
- *Export Log*

4.10.1. Clear Log Window

On the **Log Display** bar, click the **More options** menu icon ⋮, and then click the **Clear Log Window** option. All data will be deleted from the log display. This does not affect the server log file. Refer to Section *4.3.5 Log* Display for detailed information about the log file and its location.

4.10.2. Export Log

On the **Log Display** bar, click the **More options** menu icon ⋮, and then click the **Export Log** option. All current data in the log display will be exported into a new log file found under your browser's downloads folder. This does not affect the server log file. Refer to Section *4.3.5 Log* Display for detailed information about the log file and its naming convention.

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Chapter 5 | SERVER OPERATION WITHOUT MAPCORE™ GUI (Silent Import)

5.1. Scope

This chapter is intended for operators who are authorized to manage the MapCore™ Map Layer Server.

This chapter presents information required to add layers to MapCore™ Map Layer Server without using the MapCore™ GUI, a process known as *silent import*. The silent import procedure requires that operators directly access server folders, and therefore it cannot be implemented remotely.

> CAUTION
>
> Operator mistakes during silent import will prevent the import of data to the server. Refer to Section *5.2 Silent Import Mechanism Pros and Cons* to fully understand the advantages and disadvantages of the silent import vs. GUI import of layers.

Silent import allows the operator to add layers without the use of a GUI by manually creating an import package comprising layer data (see Section *5.5 Layer data*) and a package descriptor (see Section *5.6 Package Descriptor*) where these materials are referenced and layer parameters are defined. The import package is saved to a folder accessible by the MapCore™ Map Layer Server (see Section *5.3 Silently Import New Layer*) and then automatically added to the map repository, as the server periodically scans the folders containing packages for additions or updates. Refer to Section *5.3 Silently Import New Layer* for detailed instructions.

5.2. Silent Import Mechanism Pros and Cons

The table below describes the pros and the cons of using the silent import mechanism.

Table 5-1 Silent import mechanism pros and cons

Issue	Pros	Cons
Data	The files are not duplicated, thereby saving time and disk space. When adding layers using the GUI, files are transferred from the client machine to the server (even if it is the same machine).	The operator manually copies data to folders that are used by the server. A misuse might cause harm to other mapping material and data.
Accuracy	The operator can use more options to set unusual materials (e.g., special textures and additional parameters that are usually not considered).	Without a GUI process that guides the operator, complexity and probability of human error increase.
Time	When the original dataset is particularly large (e.g., 3D model comprising tens of GBs and possibly thousands of files), the GUI upload process may take days. Silently importing the data, the operator may zip all data to a single file which is then copied to the server and unzip there, there by shortening to several hours.	As above, increased risk for human error.

5.3. Silently Import New Layer

Before starting the silently import procedure, consult Section *5.4 Silent Import Folder Layout* for recommended structure and location of silently imported data. This will bear on your choice of file locations, file names, and use of relative and absolute path names in the package descriptor.

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1. Copy layer data (see Section *5.5 Layer data*) to a target folder that is accessible by the server.
2. Create a package descriptor as described and named in Section *5.6 Package Descriptor*. Pay particular attention to the use of relative and absolute path names in the package descriptor.
3. Save the package descriptor to the silent import package folder located under the `ExternalLayers` folder (see Section *5.4 Silent Import Folder Layout*). Upon its next scan of the `ExternalLayers` folder, the MapCore™ Map Layer Server will upload the layer to the map repository.

5.4. Silent Import Folder Layout

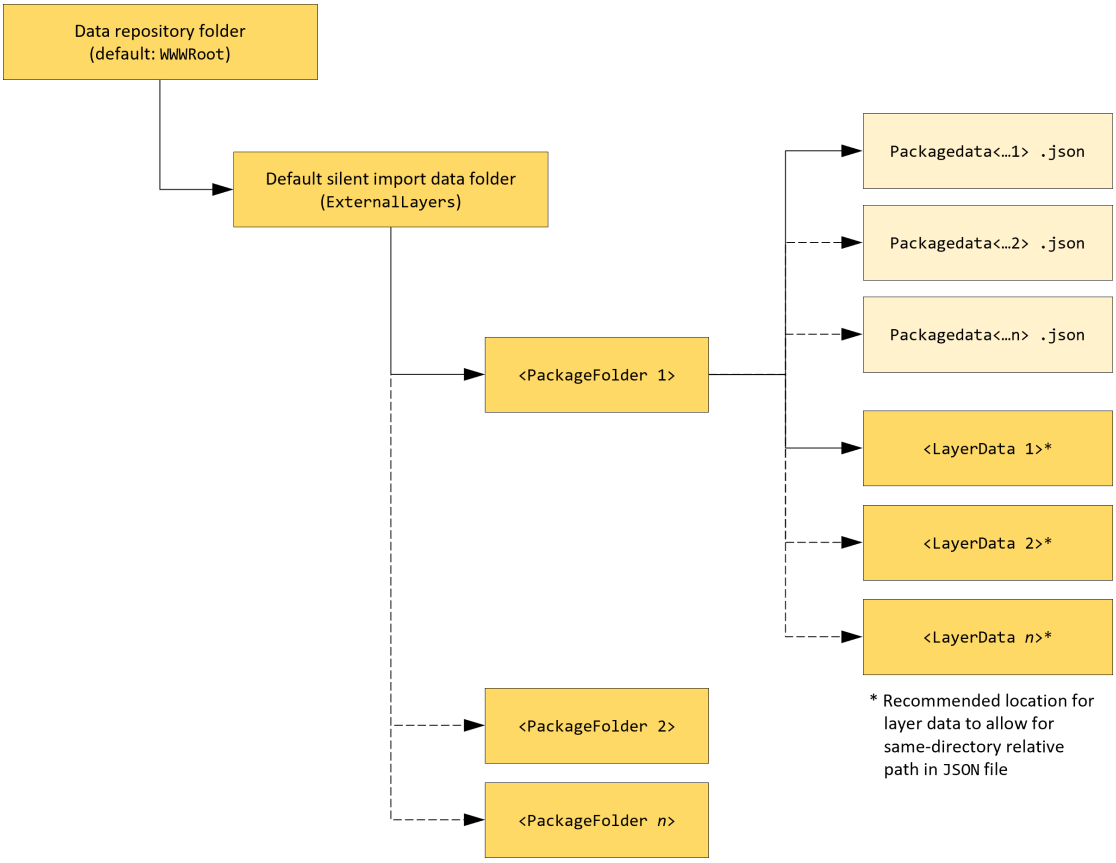

Figure 5-1 Silent import folder and file structure

A silent import package comprises two logical entities: layer data and package descriptor. For MapCore™ Map Layer Server to import data, the import package must be placed under the silent import data folder, which, in turn, is always located under the data repository folder. The silent import data folder must be named `ExternalLayers`. Refer to Section *2.3 System Folders and Configuration Files* for

details on MapCore™ Map Layer Server directory structure and recommendations for customizing it to prevent data loss in the event of server update.

There are no limitations on the structure of the `ExternalLayers` folder. However, it is recommended that both the layer data and the package descriptor of the import package reside in a single folder. The following structure is highly recommended for ease of use and maintenance:

It is recommended that data be organized in a meaningful way, such as geographic locality, under the `ExternalLayers` folder (e.g., `<PackageFolder 1>` in *Figure 5-1* above). Within the `ExternalLayers/<PackageFolder 1>` folder, it is recommended to store all layers pertaining to the subject of `<PackageFolder 1>`. While each subfolder of the `ExternalLayers` folder may contain several layers, each layer can have only one corresponding package descriptor. Thus, within each `<Subfolder n>`, it is recommended to store as many `<LayerData>` subfolders as necessary, each with its corresponding package descriptor file (e.g., `<LayerData 1>` with its corresponding package descriptor file `<PackageData 1.json>`, in *Figure 5-1* above). There are no limitations on folder names within the `ExternalLayers`. However, the package descriptor `JSON` file name must start with the string `Packagedata` (e.g., `PackageData_Netanya.json`).

When this recommended structure is implemented and maintained, it is possible to point within the `PackageData<*>.json` at the data folder using the relative path signifier `.` regardless of the absolute location of the `ExternalLayers` folder. This may be helpful in preventing potential errors folder names or folder locations are changed. In the event that layer data and the package descriptor of the import package reside in different folders, it is advisable to use absolute data paths where relevant.

5.5. Layer data

A layer's data can reside in any folder as long as it is referenced correctly by the package descriptor `JSON` file. Refer to Section *5.4 Silent Import Folder Layout* for details on recommended data structure.

5.6. Package Descriptor

The package descriptor is a `JSON` file, the name of which must start with the string `PackageData` (e.g., `PackageData_Netanya.json`).

The package descriptor has two main parameters as detailed in the following table.

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Table 5-2 Package descriptor parameters

Parameter	Description
`ExportingServerHostName`	When creating the package manually leave this field empty. Its value will auto-populate when the package is created by a special tool.
`MapLayerConfig`	Block of information describing layer-specific parameters following the schema detailed in Section *3.3 User-specific Layer Parameters*. See below for detailed examples per layer types. An exact description of parameters of all layer types may be found in the file `ServerConfig.xsd` file that is located in same folder as McMapLayerServer executable. Refer to Section *2.3 System Folders* for further information.

It is recommended to use relative paths for the layer data along these lines: `ExternalLayers/Data/RAWDTM/DTM`. Absolute paths can be recognized as follows:

- In Linux, an absolute path begins with `/`
- In Windows, an absolute path begins with `<disk letter>:\` such as `C:\`

Examples per layer type are presented in the following sections.

5.6.1. Native Layer

Native layer package descriptors are fairly simple in form since all parameters have been converted into native MapCore™ format, so there is no need to define parameters separately as done for raw layers. Below is an example for a native layer package descriptor file.

Example file name: `PackageDataDTM-Israel1.json`

Example file content:

```
{
    "ExportingServerHostName": "",
    "MapLayerConfig": {
        "LayerId": "Netanya-group",
        "Title": "IsraelDTM-1",
        "LayerType": "NATIVE_DTM",
        "Group": "Netanya-group",
        "NativeLayerPath": "C:\\maps\\IsraelDTM-GW-Streaming"
    }
}
```

5.6.2. Raw Raster Layer

Example file name: `PackageDataRawRaster.json`

Example file content:

```
{
    "ExportingServerHostName": "",
    "MapLayerConfig": {
        "LayerId": "RAWMACCABIM",
        "Title": "RAWMACCABIM",
        "LayerType": "RAW_RASTER",
        "LayerUUID": "05aca8c5-b65f-458c-bf79-59e512a56f17",
        "Group": "RAWMACCABIM",
        "RawLayerInfo": {
            "TilingScheme": "GLOBAL_LOGICAL",
            "CoordinateSystem": {
                "SRIDType": "EPSG",
                "Code": 4326
            },
            "Raster": {
                "Location": [
                    {
                        "LocationType": "FOLDER",
                        "Path": "ExternalLayers/Data/RAWRASTER/Raster"
                    }
                ]
            }
        }
    }
}
```

5.6.3. Raw Vector Layer

Example file name: `PackageData_RawVector.json`

Example file content:

```
{
    "ExportingServerHostName": "",
    "MapLayerConfig": {
        "LayerId": "PolyVector",
        "Title": "PolyVector",
        "LayerType": "RAW_VECTOR",
        "Group": "PolyVector",
        "RawLayerInfo": {
            "CoordinateSystem": {
                "SRIDType": "EPSG",
                "Code": 4326
            },
```


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```
            "Vector": {
                "DataSource": "ExternalLayers/Data/RawVector/Polygon/polygon.shp",
                "SourceCoordinateSystem": {
                    "SRIDType": "EPSG",
                    "Code": 4326
                },
                "MinScale": 0.0,
                "MaxScale": 50.0,
                "MaxScaleFactor": 0.0003499999875202775
            }
        }
    }
}
```

5.6.4. Raw 3D Model Layer

Example file name: `PackageDataRAW_3D_MODEL.json`

Example file content:

```
{
    "ExportingServerHostName": "",
    "MapLayerConfig": {
        "LayerId": "ElbitCampus",
        "Title": "Elbit Campus - Hamachshev 2, Netanya",
        "LayerType": "RAW_3D_MODEL",
        "LayerUUID": "857d38a3-925f-4bda-a67a-1fe9392205c5",
        "Group": "ELBIT",
        "RawLayerInfo": {
            "TilingScheme": "GLOBAL_LOGICAL",
            "CoordinateSystem": {
                "SRIDType": "EPSG",
                "Code": 4326
            },
            "Model3D": {
                "DataSourceDirectory": "ExternalLayers/Data/RAW_3D_MODEL/Elbit_OSGB",
                "IndexingFolder": "Index",
                "TargetHighestResolution": 0.10000000149011612
            }
        }
    }
```

5.6.5. Raw Vector 3D Extrusion Layer

Example file name: `PackageDataRAW_3D_MODEL.json`

Example file content:


```
{
    "ExportingServerHostName": "",
    "MapLayerConfig": {
        "LayerId": "Natanya-buildings",
        "Title": "Natanya-buildings",
        "LayerType": "RAW_VECTOR_3D_EXTRUSION",
        "LayerUUID": "063d7c6e-3a2c-4f4f-969f-cbbe0cfe19f7",
        "Group": "Netanya-group",
        "RawLayerInfo": {
            "TilingScheme": "GLOBAL_LOGICAL",
            "CoordinateSystem": {
                "SRIDType": "EPSG",
                "Code": 4326
            },
            "Vector3DExt": {
                "DataSource": "ExternalLayers/Data/net/net/net.shp",
                "DtmLayerId": "Netanya-group",
                "SideDefaultTexture": {
                    "TextureFile": "ExternalLayers/Data/net/Asphalt_01.png",
                    "Scale": {
                        "X": 512.0,
                        "Y": 1920.0
                    },
                    "PlacementFlags": {
                        "X": [
                            "NONE"
                        ],
                        "Y": [
                            "NONE"
                        ]
                    }
                },
                "RoofDefaultTexture": {
                    "TextureFile": "ExternalLayers/Data/net/Asphalt_02.png",
                    "Scale": {
                        "X": 512.0,
                        "Y": 512.0
                    },
                    "PlacementFlags": {
                        "X": [
                            "NONE"
                        ],
                        "Y": [
                            "NONE"
```


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```
                        ]
                    }
                },
                "HeightColumn": "height"
            }
        }
    }
}
```

5.6.6. Raw Vector S-57 Layer

Example file name: `PackageDataS57.json`

Example file content:

```
{
  "ExportingServerHostName": "",
  "MapLayerConfig": {
    "LayerId": "allS57",
    "Title": "allS57",
    "LayerType": "RAW_VECTOR",
    "Group": "Vector4",
    "RawLayerInfo": {
      "CoordinateSystem": {
        "SRIDType": "EPSG",
        "Code": 3006
      },
      "Vector": {
        "DataSource": "ExternalLayers/Data/S57",
        "StylingFormat": "S52",
        "Locale": "SV",
               "SourceCoordinateSystem": {
                       "SRIDType": "EPSG",
                       "Code": 4326
                 }
      }
    },
    "ClientMetadata": {
      "AutoLoad": 1,
      "AutoView": 1,
      "MinScale": 0,
      "MaxScale": 50000000,
      "FillEmptyTilesByLowerResolutionTiles": 0,
      "IsPhotoRealistic": 0,
      "MapType": "RASTER",
      "MapSubType": "WMTS"
    }
  }
}
```

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Chapter 6 | RESTFUL APIs

6.1. Scope

This chapter is intended for developers who are authorized to manage the MapCore™ Map Layer Server.

This chapter describes the RESTful API requests sent via HTTP protocol required to manage the MapCore™ Map Layer Server and retrieve information when not using MapCore™ GUI.

The following APIs are available for developers:

Table 6-1 Available REST APIs

Name	Method	Function
`GetCapabilities`	`GET`	Returns a list of key map data in XML format.
`remove-layer`	`POST`	Remove layer from indexing database.

6.2. General Request Information

6.2.1. Request path

Requests are sent to the following URL:

`http://<server>:<port>/`

Where `<server>` is the name or address of the server, such as `my_server`, and `<port>` is as described in Section *2.4 Server Execution Parameters*.

6.2.2. Request header

POST requests have the following header:

`X-CALLING-APP management`

6.3. `GET GetCapabilities` Request (WMTS Compatible)

6.3.1. Use case

Returns a list in XML format of all MapCore™ Map Layer Server's capabilities (layers). See below for the option to produce a list that is compatible with OGC WMTS standard.[1] Note, however, that WMTS supports fewer capabilities than the MapCore™ Map Layer Client and therefore the response to the WMTS compliant GET GetCapalities request is not as rich as the MapCore™ compliant response.

> WARNING
>
> For the GetCpabilities list to be compatible with WMTS, it must not have a `MAPCORE` tiling scheme.

> NOTE
>
> Data stored in the Backlog layer is not retrieved by the `GetCapabilities` request.

6.3.2. Request

Method

GET

URL

Use either of the following options:

- MapCore™ compliant: `/map/opr`
- WMTS compliant: `OGC/WMTS/1.0.0/`

[1] See OpenGIS Web Map Tile Service Implementation Standard | OGC for more details.

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Request Parameters

Parameter	Mandatory	Description	Value
`Request`	Yes	Receive a list in XML format of all MapCore™ Map Layer Server's capabilities	`GetCapabilities`
`service`	Optional	Limits the `GetCapabilities` response to those layers that comply with the wmts standard formatted in accordance with that standards (not that all 3D models are not included in this format)	`wmts`

Example

MapCore™ compliant:
`http://my_server:6767/map/opr?request=getCapabilities&service=wmts`

WMTS compliant:

`http://my_server:6767/OGC/WMTS/1.0.0?service=WMTS&request=GetCapabilities`

6.3.3. Response

An XML report of active map layers in the MapCore™ Map Layer Server. Depending on the method for requesting it, this list may be WMTS compliant in format.

Refer to Chapter 3 | SERVER CONFIGURATON for detailed information about each parameter in this file.

> NOTE
>
> The MapCore™ client is able to parse the response to this request.

Response mime type

`application/xml`

Example for MapCore™ compliant response


```
<Capabilities version="1.0.0" xsi:schemaLocation=http://www.opengis.net/wmts/1.0 http://schemas.opengis.net/wmts/1.0/wmtsGetCapabilities_response.xsd xmlns:gml=http://www.opengis.net/gml xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance xmlns:xlink=http://www.w3.org/1999/xlink xmlns:ows=http://www.opengis.net/ows/1.1 xmlns=http://www.opengis.net/wmts/1.0>
    <ows:ServiceIdentification>
        <ows:Title>MapCore Map Layer Service</ows:Title>
    </ows:ServiceIdentification>
    <ows:ServiceProvider>
        <ows:ProviderName>MapCore Map Layer Server 7.11.11.0-alpha7</ows:ProviderName>
        <ows:ProviderSite xlink:href=http://www.elbitsystems.com />
        <ows:ServiceContact>
            <ows:IndividualName>MapCore&apos;s WMTS client</ows:IndividualName>
        </ows:ServiceContact>
    </ows:ServiceProvider>
    <Contents>
        <Layer>
            <ows:Identifier>aaa</ows:Identifier>
            <ows:Title>Vector 3D Exrusion-1</ows:Title>
            <Format>MapCoreServerVector3DExtrusion</Format>
            <DrawPriority>0</DrawPriority>
            <Group>Netanya-group</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>34.899622 32.309430</ows:LowerCorner>
                <ows:UpperCorner>35.000349 32.350264</ows:UpperCorner>
                <ows:crs>urn:ogc:def:crs:EPSG::4326</ows:crs>
            </ows:BoundingBox>
        </Layer>
        <Layer>
            <ows:Identifier>DTM-1</ows:Identifier>
            <ows:Title>DTM-1</ows:Title>
            <Format>MapCoreServerDTM</Format>
            <DrawPriority>0</DrawPriority>
            <Group>Netanya-group</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>6.969170 35.339500</ows:LowerCorner>
                <ows:UpperCorner>7.028920 35.399250</ows:UpperCorner>
                <ows:crs>urn:ogc:def:crs:EPSG::4326</ows:crs>
            </ows:BoundingBox>
        </Layer>
        <Layer>
            <ows:Identifier>Natanya_GL_DTM</ows:Identifier>
            <ows:Title>Netanya GLOBAL_LOGIC</ows:Title>
            <Format>MapCoreServerDTM</Format>
            <DrawPriority>0</DrawPriority>
```


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```
            <Group>Netanya-group</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>33.609470 29.307590</ows:LowerCorner>
                <ows:UpperCorner>36.861460 34.496000</ows:UpperCorner>
                <ows:crs>urn:ogc:def:crs:EPSG::4326</ows:crs>
            </ows:BoundingBox>
        </Layer>
        <Layer>
            <ows:Identifier>RAWDTMMACCABIM</ows:Identifier>
            <ows:Title>RAWDTMMACCABIM</ows:Title>
            <Format>MapCoreServerDTM</Format>
            <DrawPriority>0</DrawPriority>
            <Group>Netanya-group</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>6.969170 35.339500</ows:LowerCorner>
                <ows:UpperCorner>7.028920 35.399250</ows:UpperCorner>
                <ows:crs>urn:ogc:def:crs:EPSG::4326</ows:crs>
            </ows:BoundingBox>
        </Layer>
        <Layer>
            <ows:Identifier>PolyVector-Polygons</ows:Identifier>
            <ows:Title>PolyVector</ows:Title>
            <Format>MapCoreServerVector</Format>
            <DrawPriority>0</DrawPriority>
            <Group>Netanya-group</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>6.950150 35.106258</ows:LowerCorner>
                <ows:UpperCorner>6.960474 35.117092</ows:UpperCorner>
                <ows:crs>urn:ogc:def:crs:EPSG::4326</ows:crs>
            </ows:BoundingBox>
            <McSubLayerName></McSubLayerName>
            <McSubLayerGeometry>Polygons</McSubLayerGeometry>
        </Layer>
        <Layer>
            <ows:Identifier>Raster-2</ows:Identifier>
            <ows:Title>Raster-2</ows:Title>
            <Format>MapCoreServerRaster</Format>
            <DrawPriority>0</DrawPriority>
            <Group>bbb</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>696900.000000 3533950.000000</ows:LowerCorner>
                <ows:UpperCorner>702900.000000 3539950.000000</ows:UpperCorner>
                <ows:crs>urn:ogc:def:nil:OGC:unknown</ows:crs>
            </ows:BoundingBox>
        </Layer>
    </Contents>
    <ServiceMetadataURL xlink:href=http://localhost:6767/?service=WMTS&amp;request=Get
Capabilities />
</Capabilities>
```

Example for WMTS compliant response

```
<Capabilities version="1.0.0" xsi:schemaLocation=http://www.opengis.net/wmts/1.0 http:
//schemas.opengis.net/wmts/1.0/wmtsGetCapabilities_response.xsd xmlns:gml=http://www.o
pengis.net/gml xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance xmlns:xlink=http://
www.w3.org/1999/xlink xmlns:ows=http://www.opengis.net/ows/1.1 xmlns=http://www.opengi
s.net/wmts/1.0>
    <ows:ServiceIdentification>
        <ows:Title>MapCore Map Layer Service</ows:Title>
    </ows:ServiceIdentification>
    <ows:ServiceProvider>
        <ows:ProviderName>MapCore Map Layer Server 7.11.11.0-alpha7</ows:ProviderName>
        <ows:ProviderSite xlink:href=http://www.elbitsystems.com />
        <ows:ServiceContact>
            <ows:IndividualName>MapCore&apos;s WMTS client</ows:IndividualName>
        </ows:ServiceContact>
    </ows:ServiceProvider>
    <Contents>
        <Layer>
            <ows:Identifier>DTM-1</ows:Identifier>
            <ows:Title>DTM-1</ows:Title>
            <Format>MapCoreServerDTM</Format>
            <DrawPriority>0</DrawPriority>
            <Group>aaa</Group>
            <ows:BoundingBox>
                <ows:LowerCorner>6.969170 35.339500</ows:LowerCorner>
                <ows:UpperCorner>7.028920 35.399250</ows:UpperCorner>
                <ows:crs>urn:ogc:def:crs:EPSG::4326</ows:crs>
            </ows:BoundingBox>
        </Layer>
    </Contents>
    <ServiceMetadataURL xlink:href=http://localhost:6767/map/opr?request=getCapabiliti
es&amp;service=wmts />
</Capabilities>
```

6.4. `POST remove-layer` Request

6.4.1. Use case

Remove a layer from the database. Data created via the MapCore™ Map Layer Server GUI will be removed from the disk where data imported silently may be optionally saved on the disk even when the layer is removed from the server database.

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6.4.2. Request

Method

POST

URL

`map/opr/index-ops`

Request parameters

Table 6-2 `remove-layer` request fields

Field	Mandatory	Value
`operation`	Yes	`remove-layer`
`layerId`	Yes	Identifier of the layer to be removed from indexing database.
`deleteFromDisk`	No	Relevant only for data that was silently imported. Specify **`yes`** to remove the data from the disk or **`no`** (default) to leave the data on the disk.
`DeleteDependencies`	No	Relevant for DTM layers only. Specify **`yes`** to delete DTM layers as well as any Raw 3D Extrusion layers dependent on the DTM layer that is to be deleted. Specify **`no`** to leave DTM layer (deletion will fail) if any Raw 3D Extrusion layers are dependent on it.

POST Request Payload Example

```
{
    "operation":"remove-layer",
    "layerId": "RAWDTMMACCABIM",
    "deleteFromDisk": "yes",
    "DeleteDependencies" : "yes"
}
```

6.4.3. Response

Response data

The response includes the data present in both MapCore™ Map Layer Server configuration files in JSON format:

- McMapLayersServerConfig.xml
- McLayersDataConfig.xml

Refer to Sections *2.3.1 Server Configuration File* and *2.3.2 Layer Configuration File* for more details about these two files.

Table 6-3 `remove-layer` response fields

Field	Value
`operation`	`remove-layer`
`comment`	Success or failure message

Example


```
“SuffixUrl”: “/map/opr”,
    “MemoryCacheSize”: 125,
    “DiskCacheSize”: 2048,
    “DiskCacheFolder”: “.”,
    “IntermediateFilesFolder”: “.”,
    “GpuUsageInSpatialQueries”: false,
    “SSLUsage”: false,
    “ImportScansInterval”: 15,
    “IsClientVerPre_7_11_4”: false,
    “DefaultTextIndexFilePath”: “/data/spatialIndex.sqlite”,
    “TilingSchemePolicy”: {
        “DefaultTilingScheme”: “GLOBAL_LOGICAL”,
        “TilingSchemesByCRS”: []
    },
    “DefaultMaxScaleFactor”: 1.0,
    “MapLayerConfig”: [
        {
            “LayerId”: “aaa”,
            “Title”: “Vector 3D Exrusion-1”,
            “LayerType”: “RAW_VECTOR_3D_EXTRUSION”,
            “LayerUUID”: “f8737d19-a46a-4924-9bf1-906b441d83f2”,
            “Group”: “Netanya-group”,
```


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```
            "RawLayerInfo": {
                "TilingScheme": "GLOBAL_LOGICAL",
                "TargetCoordinateSystem": {
                    "SRIDType": "EPSG",
                    "Code": 4326
                },
                "Vector3DExt": {
                    "DataSource": "./data/maps/aaa/net/net.shp",
                    "DtmLayerId": "Natanya_GL_DTM",
                    "HeightColumn": "height",
                    "UseSpatialIndexing": true
                }
            },
            "LayerImportType": "UPLOADED"
        },
        {
            "LayerId": "DTM-1",
            "Title": "DTM-1",
            "LayerType": "RAW_DTM",
            "LayerUUID": "199cd12c-1003-48e1-8d8f-32f9e04a3bc0",
            "Group": "Netanya-group",
            "RawLayerInfo": {
                "TilingScheme": "GLOBAL_LOGICAL",
                "TargetCoordinateSystem": {
                    "SRIDType": "EPSG",
                    "Code": 4326
                },
                "Dtm": {
                    "Location": [
                        {
                            "LocationType": "FOLDER",
                            "Path": "./data/maps/DTM-1"
                        }
                    ]
                }
            },
            "LayerImportType": "UPLOADED"
        },
        {
            "LayerId": "Natanya_GL_DTM",
            "Title": "Netanya GLOBAL_LOGIC",
            "LayerType": "NATIVE_DTM",
            "LayerUUID": "1a93d9df-ad64-4493-8fda-22be075d02a0",
            "Group": "Netanya-group",
            "NativeLayerPath": "../MappingMaterials/Israel/DTM/DtmWgs10-Web",
            "LayerImportType": "SILENTLY_IMPORTED",
            "OriginalPackageDataFile": "./ExternalLayers/DTM_GL_GEO/PackageDataDTMGL_G
EO.json.imported"
        },
```

```
        {
            “LayerId”: “RAWDTMMACCABIM”,
            “Title”: “RAWDTMMACCABIM”,
            “LayerType”: “RAW_DTM”,
            “LayerUUID”: “3c56cd89-2f42-490a-937a-0f3f83df2616”,
            “Group”: “Netanya-group”,
            “RawLayerInfo”: {
                “TilingScheme”: “GLOBAL_LOGICAL”,
                “TargetCoordinateSystem”: {
                    “SRIDType”: “EPSG”,
                    “Code”: 4326
                },
                “Dtm”: {
                    “Location”: [
                        {
                            “LocationType”: “FOLDER”,
                            “Path”: “./ExternalLayers/DTM/RAWDTM/DTM”
                        }
                    ]
                }
            },
            “LayerImportType”: “SILENTLY_IMPORTED”,
            “OriginalPackageDataFile”: “./ExternalLayers/DTM/PackageDataRawDTM.json.im
ported”
        },

        {
            "LayerId": "PolyVector-Polygons",
            "Title": "PolyVector",
            "LayerType": "NATIVE_VECTOR",
            "LayerUUID": "68fc2323-e264-4384-99f2-405172b69488",
            "Group": "Netanya-group",
            "NativeLayerPath": "./ExternalLayers/RawVector/Polygon/Native/PolyVector-P
olygons",
            "ClientMetadata": {
                "McSubLayerName": "",
                "McSubLayerGeometry": "Polygons"
            },
            "LayerImportType": "SILENTLY_IMPORTED",
            "OriginalPackageDataFile": "./ExternalLayers/RawVector/PackageData.json.im
ported"
        },
        {
            "LayerId": "Raster-2",
            "Title": "Raster-2",
            "LayerType": "RAW_RASTER",
            "LayerUUID": "3f1c00e3-0764-4a5a-8576-868f9b56834e",
            "Group": "bbb",
            "RawLayerInfo": {
                "TilingScheme": "GLOBAL_LOGICAL",
```


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```
                "Raster": {
                    "Location": [
                        {
                            "LocationType": "FOLDER",
                            "Path": "./data/maps/Raster-2"
                        }
                    ],
                    "ResolveOverlapConflicts": false,
                    "EnhanceBorderOverlap": false,
                    "FillEmptyTilesByLowerResolutionTiles": false,
                    "IgnoreRasterPalette": false,
                    "HighestResolution": 0.0
                }
            },
            "LayerImportType": "UPLOADED"
        }
    ]
}
```

If the layer ID is not found in the database, then the response is the following error message:

```
{
    "errorMessage": "The specified layer is not found"
}
```