

# ENTERPRISE Map Data Reader/Writer

## FORMAT NOTES:

This format requires an extra-cost plug-in. Please contact Safe Software for details.

The AIRCOM ENTERPRISE Map Data Reader/Writer provides the Feature Manipulation Engine (FME) with access to AIRCOM International's ENTERPRISE format.

## Overview

The AIRCOM ENTERPRISE format is a collection of different types of data. These types of data include height, clutter, vector, text, building vector, and population vector. The data is stored in a hierarchy of directories, with each subdirectory containing a different type of data. Each subdirectory will contain an `index.txt` file that will act as a guide to the location and type of data that is in the directory.

There can be an unlimited number of subdirectories under the main directory. These subdirectories can have any name that is legal for that operating system, but each subdirectory can only contain one type of data. The `index.txt` file contained in each subdirectory contains different fields depending upon the type of data contained in that subdirectory.

The type of data that is stored is described below:

## ENTERPRISE Quick Facts

Format Type Identifier	ENTERPRISE
Reader/Writer	Both
Dataset Type	Reader: File, Writer: Directory
Feature Type	Feature Name
Typical File Extensions	.txt
Automated Translation Support	No
User-Defined Attributes	No
Coordinate System Support	No
Generic Color Support	No
Spatial Index	No
Schema Required	No
Transaction Support	No
Geometry Type Attribute	enterprise_type
Geometry Support	

Geometry	Supported?	Geometry	Supported?
aggregate	no	polygon	yes
circles	no	donut polygon	no
circular arc	no	line	yes

Geometry	Supported?	Geometry	Supported?
elliptical arc	no	point	yes
ellipses	no	text	yes
none	no	3D	no
		raster	yes

Band Interpretations	Int16
Palette Key Interpretations	UInt8, UInt16
Palette Value Interpretations	String
Interleave Type	not applicable
Nodata Value	-9999 for height
Cell Origin	0
Multi-Band	No
Multi-Palette	No

## Height Data

The data file name corresponds to a binary file that contains height values for each square on the raster defined by the easting-northing coordinates.

## Clutter Data

The data file name corresponds to a binary file that contains key values for the each square on the raster defined by the easting-northing coordinates. The key values correspond to strings found in the `menu.txt` file.

## Array Data

The data file name corresponds to a binary file that contains array values for the each square on the raster defined by the easting-northing coordinates.

## Vector Data

Each data file listed in the index file contains a set of 2D vectors that all have the same feature name.

## Text Data

Each data file listed in the index file contains a set of text features that all have the same feature name.

## Population Vector

Each data file listed in the index file contains a set of 2D polygons that all have the same feature name.

## Building Vector Data

Each data file listed in the index file contains a set of 2D polygons that all have the same feature name.

For reading, the FME considers an AIRCOM ENTERPRISE dataset to be the location of an `index.txt` file in one of the ENTERPRISE subdirectories. For writing, the dataset is the name of the subdirectory to write a single ENTERPRISE type. The FME reader can automatically determine which type of data is in this subdirectory. The FME writer determines which ENTERPRISE type is being written and creates an appropriate directory structure and `index.txt` file for the destination dataset.

## Reader Overview

The ENTERPRISE reader produces FME features for all feature data held in those files listed in the `index.txt` file. The reader only returns the feature names selected using the `DEF` or `IDs` keywords. If none were specified, then all the features are read. When the `index.txt` file is exhausted, the ENTERPRISE reader is closed.

## Reader Directives

The suffixes shown are prefixed by the current `<ReaderKeyword>` in a mapping file. By default, the `<ReaderKeyword>` for the ENTERPRISE reader is `ENTERPRISE`.

### DATASET

**Required/Optional:** *Required*

The value for this keyword is the path of the input `index.txt` file to be read. This dataset **MUST** be a file called `index.txt`.

#### Example:

```
ENTERPRISE_DATASET /usr/data/aircom/europe/index.txt
```

### MERGE\_FEATURE\_NAMES

**Required/Optional:** *Optional*

Specifies whether or not to group common feature names in the source `index.txt` file. If this directive is set to `YES`, the rows in the index file with common feature names will be grouped as one feature name. If this is changed to `NO`, each row in the index file will be treated as a unique feature name. All feature names will be made unique by adding the filename to the feature name.

**Value:** `YES` | `NO`

**Default Value:** `YES`

#### Example:

The following example shows a generated unique feature name from the filename `myfile.txt` and the feature name `myfeaturename`.

```
myfeaturename<myfile.txt>
```

## Writer Overview

The ENTERPRISE writer creates and writes feature data of a single type (Vector, Clutter, Heights, etc.) into a single directory specified by the `DATASET` directive. The directory need not exist before the translation occurs. Any old files in the directory may be overwritten with the new feature data without warning.

The type of data that will be written by FME is determined by what is selected in the data type drop-down list in the ENTERPRISE settings box. If `first_feature` is selected, the first feature routed to the ENTERPRISE writer by FME determines the type of data that will be written and all subsequent features will be written out as that type, if possible. Each of the other options corresponds to the selected ENTERPRISE feature type being written out.

(Note that types `enterprise_vector`, `enterprise_vector_point`, `enterprise_vector_line`, and `enterprise_vector_polygon` may all be written to the same dataset.)

ENTERPRISE only supports a limited set of coordinate systems. Please consult your ENTERPRISE documentation to ensure that you are writing data using one of the supported coordinate systems.

## Writer Directives

The suffixes shown are prefixed by the current `<WriterKeyword>` in a mapping file. By default, the `<WriterKeyword>` for the ENTERPRISE writer is `ENTERPRISE`.

### DATASET

**Required/Optional:** *Required*

The value for this directive is the path of the output directory where the data will be written.

```
ENTERPRISE_DATASET /usr/data/aircom/europe/vectors
```

### DATA\_TYPE

**Required/Optional:** *Optional*

The optional definition specifies only the type or class of data that the writer will output.

#### Values:

```
first_feature  
height  
clutter  
building_raster  
backdrops  
vector  
population_vector  
building_vector
```

"text"

Note that the ENTERPRISE writer can only output one of these types during a translation, and all features will be attempted to be written out as this type, if possible.

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**TIP:** If you wish to write out several different types at once, you may consider using FME's Multi-Writer, which will direct each of the ENTERPRISE writers being used to write out a different type.

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**Default Value:** `first_feature`

If this keyword is not specified, the default `first_feature` is used. In this case, the data type of the first feature that is passed to the writer determines what type of data the writer will produce.

**Example:**

```
<WriterKeyword>_DATA_TYPE vector
```

## FME Raster Features

FME raster features represent raster data and use several concepts that are unlike those used in the handling of vector data. See *About FME Rasters* on page 11.

## Feature Representation

In addition to the generic FME feature attributes that FME Workbench adds to all features (see *About Feature Attributes* on page 7), this format adds the format-specific attributes described in this section.

The attribute types created by the ENTERPRISE format are listed below.

Field Type	Description
<code>char(&lt;width&gt;)</code>	Character fields store fixed-length strings. The <code>width</code> parameter controls the maximum characters that can be stored by the field. When a character field is written, it is right-padded with blanks, or truncated, to fit the width.
<code>decimal(&lt;width&gt;,&lt;decimals&gt;)</code>	Decimal fields store single and double precision floating point values. The <code>width</code> parameter is the total number of characters allocated to the field, including the decimal point. The <code>decimals</code> parameter controls the precision of the data and is the number of digits to the right of the decimal.

ENTERPRISE features consist of geometry and attribute information. All ENTERPRISE FME features contain the `enterprise_type` attribute that identifies the geometric type.

Depending on the geometric type, the feature may contain additional attributes specific to the geometric type. These are described in subsequent sections.

Attribute Name	Contents
enterprise_type	The ENTERPRISE geometric type of this entity. <b>Range:</b> enterprise_height   enterprise_clutter   enterprise_array   enterprise_vector   enterprise_vector_point   enterprise_vector_line   enterprise_vector_polygon   enterprise_buildpop   enterprise_text <b>Default:</b> No default
enterprise_data_file_name	The filename this feature came from (or should be written to) as listed in the index.txt file. <b>Range:</b> <any filename> <b>Default:</b> <feature Name> or data.txt

## Height Rasters

**enterprise\_type:** enterprise\_height

ENTERPRISE height features represent a raster of 3D values, where the z-coordinate reflects the height value for the raster square whose top-left corner is defined by the (x, y) point. These features have one special attribute associated with them.

Attribute Name	Contents
enterprise_raster_filename	The root filename of the feature that is being represented.

## Clutter Rasters

**enterprise\_type:** enterprise\_clutter

ENTERPRISE height features represent a raster of 2D values, but where the z-coordinate reflects a key value for the raster square whose top-left corner is defined by the (x, y) point. The key value is a classified string value. These features have one special attribute associated with them.

Attribute Name	Contents
enterprise_raster_filename	The root filename of the feature that is being represented.

## Array Rasters

**enterprise\_type:** enterprise\_array

ENTERPRISE array features represent a raster of 2D values, but where the z-coordinate reflects an array field value for the raster square whose top-left corner is defined

by the (x, y) point. The array field value is an integer value. These features have four special attribute associated with them.

Attribute Name	Contents
enterprise_raster_file_type	The raster file type of the raster feature that is being represented. The value can only be "coverage" for now.
enterprise_array_type	The array type of the raster feature that is being represented. This attribute depends on the raster file type. For "coverage" raster file type, this attribute can have one of the following values: best_server_array nth_best_server_array worst_interferer_array total_interference_array worst_connection_array average_connection_array total_received_array
enterprise_array_field	The field name of the array of the raster feature that is being represented. This attribute depends on the array type. This attribute can have one of the following values: number_of_servers cell_key layer_key signal_level ci_level carrier connection level not_used

## Vectors

**enterprise\_type:** enterprise\_vector

**enterprise\_type:** enterprise\_vector\_point

**enterprise\_type:** enterprise\_vector\_line

**enterprise\_type:** enterprise\_vector\_polygon

ENTERPRISE vector features represent linear features and are 2D. These features have the following special attribute associated with them.

Attribute Name	Contents
enterprise_description	The description of the feature as stored in the dataset. Maximum size is 12 characters.
enterprise_feature_name	The name of the feature as stored in the dataset. Maximum size is 254 characters.

## Building Height or Population Polygons

**enterprise\_type:** enterprise\_buildpop

ENTERPRISE buildpop features represent closed polygonal features that are 2D. These features have the following special attributes associated with them.

<b>Attribute Name</b>	<b>Contents</b>
enterprise_description	The description of the feature as stored in the dataset. Maximum size is 12 characters.
enterprise_attribute_file_name	The filename this feature came from (or should be written to) as listed in the index.txt file. <b>Range:</b> <any filename> <b>Default:</b> <feature Name>_att or data_att.txt
enterprise_attribute_value	A numeric value associated with that feature. This is either the height of the building or the population of the area represented by the polygon. <b>Range:</b> Any real number
enterprise_attribute_description	The description of the attribute for the feature as stored in the dataset. Maximum size is 12 characters.
enterprise_feature_name	The name of the feature as stored in the dataset. Maximum size is 254 characters.

## Text

**enterprise\_type:** enterprise\_text

ENTERPRISE text features hold text information. A single 2D position is associated with the text block. Text features may have the following special attributes associated with them.

<b>Attribute Name</b>	<b>Contents</b>
enterprise_text_string	The text string of the feature. Maximum size is 254 characters.
enterprise_text_size	The size of the text string of the feature. This is ignored when writing. When reading, this is initially set to a multiple of the MBR of the file the text is read from. Maximum size is 254 characters.
enterprise_feature_name	The name of the feature as stored in the dataset. Maximum size is 254 characters.