

Facet XDR Reader/Writer

The Facet Format Reader and Writer modules provide the Feature Manipulation Engine (FME) with the ability to read and write Facet XDR files. The Facet XDR Format (Facet) is a binary format used by tools produced by Facet Decision Systems, Inc. Facet data sets may be in either ASCII or binary (XDR) format. Currently, FME supports only the binary version.

Overview

Facet data sets store objects that are very flexible in nature. Facet XDR files are self-describing and contain two parts: a signature defining the interpretation of the file's structure and a second part containing either coordinates, attribute data, or methods depending on the signature. Facet structures can mix simple data, other structures, and methods nested to any depth. Therefore, Facet may hold either two-dimensional (2D) or three-dimensional (3D) geometric data.

Facet files store both feature geometry and attributions. A logical Facet file consists of one physical file, with the `.xdr` file name extension.

The extension `.xdr` is added to the basename of the Facet file when written.

Facet XDR Quick Facts

Format Type Identifier	FACET
Reader/Writer	Both
Licensing Level	Base
Dependencies	None
Dataset Type	<ul style="list-style-type: none">• File for Reader• Directory for Writer
Feature Type	File base name
Typical File Extensions	<code>.xdr</code>
Automated Translation Support	Yes
User-Defined Attributes	Yes
Coordinate System Support	No
Generic Color Support	No
Spatial Index	Never
Schema Required	Yes
Transaction Support	No
Geometry Type	<code>facet_fme_type</code>

Geometry Support			
Geometry	Supported?	Geometry	Supported?
aggregate	no	point	yes
circles	no	polygon	yes
circular arc	no	raster	no
donut polygon	yes	solid	no
elliptical arc	no	surface	no
ellipses	no	text	yes
line	yes	z values	yes
none	yes		

Reader Overview

The Facet reader opens the input file and immediately starts reading features, returning them to the rest of FME for processing. The reader doesn't have any requirement for explicit instruction on how to decode Facet files, as it automatically identifies the type of file from the signature it contains.

The feature returned by the Facet reader has its feature type set to its file basename.

FME automatically recognizes nine different Facet file structures and imports the coordinates and attributes in a special way. If the Facet file does not conform to any of the following nine known formats, FME will interpret the file as a "database" type, which retains all information it contains but does not perform any special conversion on any fields. The table below lists the nine special Facet file formats.

File Format	Contents and Interpretation
text	Contains text features without attributes.
text and attributes	Contains text features with custom attributes.
geometry	Contains single precision geometric information; for example, line, multipoint, polygon.
double geometry	Contains double precision geometric information; for example, line, multipoint, polygon.
geometry and attributes	Contains single precision geometric information; for example, line, multipoint, polygon, followed by custom attributes for each feature.
double geometry and attributes	Contains double precision geometric information; for example, line, multipoint, polygon, followed by custom attributes for each feature.
interleaved geometry and attributes	Contains single precision geometric information; for example, line, multipoint, polygon, interleaved with custom attributes for each feature.

File Format	Contents and Interpretation
interleaved double geometry and attributes	Contains double precision geometric information; for example, line, multipoint, polygon interleaved with custom attributes for each feature.
database	Contains attribute information only with no coordinates.

Reader Directives

The suffixes listed are prefixed by the current <ReaderKeyword> in a mapping file. By default, the <ReaderKeyword> for the Facet reader is FACET.

DATASET

Required/Optional: *Required*

The value for this keyword is the file name of the Facet XDR file to be read.

Example:

```
FACET_DATASET /usr/data/Canada/roads.xdr
```

Writer Overview

The Facet writer creates and writes feature data to a directory specified by the DATASET keyword. Unlike the reader, this keyword refers to a directory, not a file name. This directory will be created if it does not exist before the translation occurs. Many Facet files may be written to in a single FME session (one translation).

The feature type on each Facet DEF line specifies the basename of the output Facet XDR file.

Each Facet DEF line specifies a single Facet output file. The attributes listed on the DEF line appear within the output Facet file. The special DEF line keyword FACET_GEOMETRY assists the FME in determining the format of the output Facet file. The table below outlines how the FME decides what special format the output Facet file will take.

Output File Format	Conditions
text	The FACET_GEOMETRY on the DEF line is assigned the value <code>facet_text</code> . The DEF line specifies no attributes.
text and attributes	The FACET_GEOMETRY on the DEF line is assigned the value <code>facet_text</code> . The DEF line specifies at least one attribute.
geometry	The COORD_PRECISION keyword is set to <code>Single</code> . The FACET_GEOMETRY on the DEF line is assigned the value <code>facet_line</code> , <code>facet_polygon</code> , or <code>facet_multipoint</code> . The DEF line specifies no attributes.

Output File Format	Conditions
double geometry	The COORD_PRECISION keyword is set to Double. The FACET_GEOMETRY on the DEF line is assigned the value facet_line, facet_polygon, or facet_multipoint. The DEF line specifies no attributes.
interleaved geometry and attributes	The COORD_PRECISION keyword is set to Single. The FACET_GEOMETRY on the DEF line is assigned the value facet_line, facet_polygon, or facet_multipoint. The DEF line specifies at least one attribute.
interleaved double geometry and attributes	The COORD_PRECISION keyword is set to Double. The FACET_GEOMETRY on the DEF line is assigned the value facet_line, facet_polygon, or facet_multipoint. The DEF line specifies at least one attribute.
database	The FACET_GEOMETRY on the DEF line is not assigned any value, or is assigned a value other than facet_text, facet_line, facet_polygon, or facet_multipoint. The DEF line specifies at least one attribute.

Writer Directives

The following table lists the keywords processed by the Facet Writer. The suffixes shown are prefixed by the current <WriterKeyword> in a mapping file. By default, the <WriterKeyword> for the Facet writer is FACET.

DATASET

Required/Optional: *Required*

The value for this directive is the file name of the Facet XDR file to be written.

Example:

```
FACET_DATASET /usr/data/Canada/roads_output.xdr
```

COORD_PRECISION

Required/Optional: *Optional*

Specifies the precision by which the coordinates will be stored.

Values: *Single | Double*

Default Value: *Single*

Workbench Parameter: *Coordinate precision*

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.

Facet features may consist of geometry and attributes. When reading Facet files, several special attributes hold the data from the file. When writing Facet files, the values in these attributes are written out to the file. If the feature does not have these special attributes, appropriate default values will be used.

Special supported Facet format types include: `text`, `line`, `polygon`, `multipoint`, `point`, or `database`. Note that `multipoint` data may contain a single point. Also note that `database` features contain attributes but no geometry.

All Facet features produced by the FME reader contain the `facet_fme_type` attribute, which identifies the geometric type. Depending on the geometric type, the feature contains additional attributes specific to the geometric type. These are described in subsequent sections.

Attribute Name	Contents
<code>facet_fme_type</code>	The Facet geometric type of this entity. Values: <code>facet_multipoint</code> <code>facet_line</code> <code>facet_polyogn</code> <code>facet_text</code> <code>facet_database</code>

Points

facet_fme_type: `facet_multipoint`

A Facet multipoint feature specifies single or multiple 2D or 3D coordinates. There are no special attributes with this type of feature.

Lines

facet_fme_type: `facet_line`

Facet line features contains 2D or 3D linear geometry. There are no special attributes with this type of feature.

Polygons

facet_fme_type: `facet_polygon`

Facet polygon features contains 2D or 3D geometry. Polygons may be either simple or may contain holes, thereby being donuts. There are no special attributes with this type of feature.

Text

facet_fme_type: facet_text

Facet text features contain 2D or 3D coordinates and a text string, along with the text alignment, rotation, and size.

Attribute Name	Contents
facet_text_string	The text string. Range: any length character string Default: NULL string
facet_text_alignment	A numeric code indicating the feature's alignment. Several settings are listed below. These settings may be ANDED together to form a single numeric code: TextAlignLeft 1 TextAlignRight 2 TextAlignCenter 4 TextAlignBase 16 TextAlignHalf 32 TextAlignCap 64 TextAlignTop 128 TextAlignBottom 256 Range: 0 - 511 Default: 0
facet_rotation	The rotation of the text, measured in degrees counterclockwise from the horizon. Range: any real number Default: 0.0
facet_text_size	The size of the text. Range: any real number Default: 1.0

Database

facet_fme_type: facet_database

Facet database features contain no coordinates. These features may contain any number of custom attributes. There are no special attributes with this type of feature.