

Virtual Object Layer

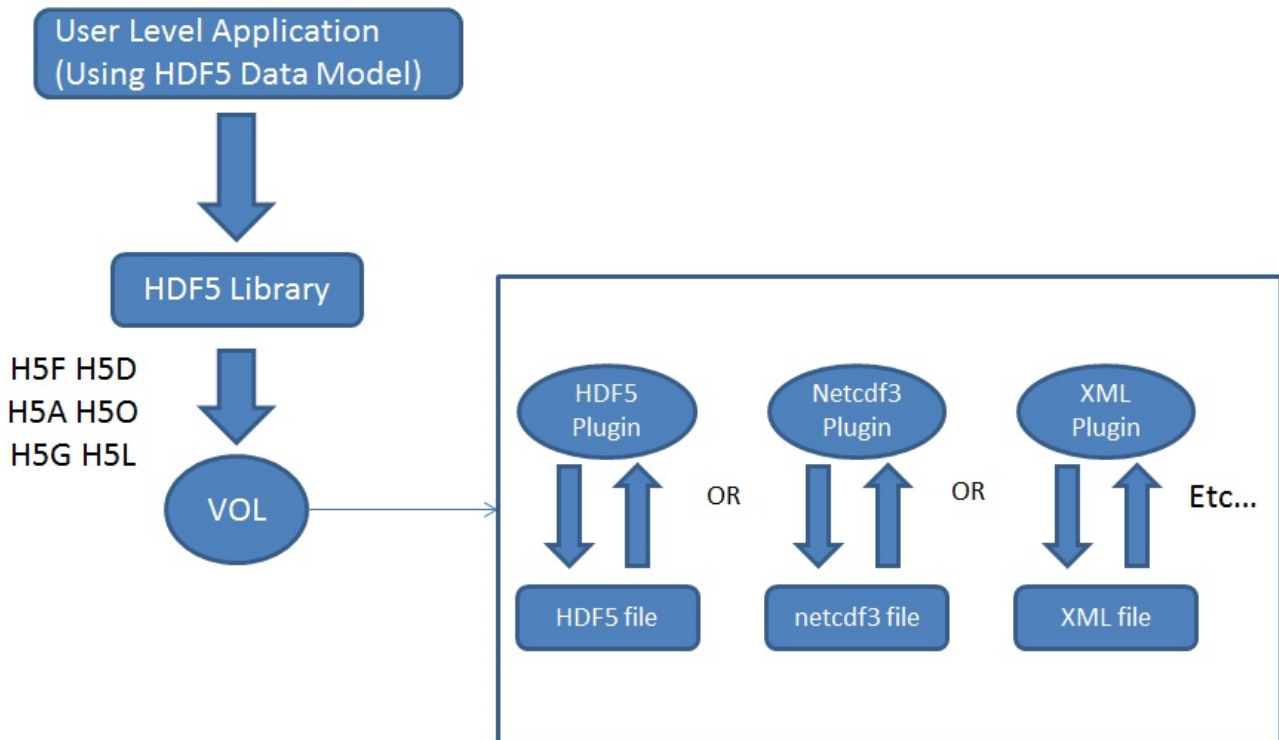
Information on the Virtual Object Layer, a new feature in HDF5-1.12, can be found below.

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Description

The Virtual Object Layer (VOL) is an abstraction layer within the HDF5 library that enables different methods for accessing data and objects that conform to the HDF5 data model.

The VOL intercepts all HDF5 API calls that potentially modify data on disk and forwards those calls to a plugin "object driver". The data on disk can be a different format than the HDF5 format:



The plugins can actually store the objects in variety of ways. A plugin could, for example, have objects be distributed remotely over different platforms, provide a raw mapping of the model to the file system, or even store the data in other file formats (like native netCDF or HDF4 format). The user still gets the same data model where access is done to a single HDF5 "container"; however the plugin object driver translates from what the user sees to how the data is actually stored. Having this abstraction layer maintains the object model of HDF5 and allows better usage of new object storage file systems that are targeted for Exascale systems.

Documentation

The following documentation is available for the VOL feature:

- [HDF5 VOL User's Guide](#)
- [HDF5 VOL Connector Author's Guide](#)
- [Virtual Object Layer \(RFC\)](#)
- [VOL Feature flag/layers RFC](#)
- [Berkeley DB VOL Connector](#)

HDF5 Library APIs

Virtual Object Layer (H5VL) and VOL Property List APIs

New Virtual Object Layer (H5VL) APIs have been introduced for working with the VOL, as well as Property List APIs for working with the VOL:

Function	Description
H5P_GET_VOL_ID	Returns the identifier of the current VOL connector
H5P_GET_VOL_INFO	Returns a copy of the VOL information for a connector
H5P_SET_VOL	Set the file VOL connector for a file access property list
H5VL_GET_CONNECTOR_NAME	Retrieves the connector name for the VOL associated with the object or file identifier
H5VL_IS_CONNECTOR_REGISTERED_BY_NAME	Tests whether a VOL class has been registered or not
H5VL_REGISTER_CONNECTOR	Registers a new VOL connector
H5VL_REGISTER_CONNECTOR_BY_NAME	Registers a new VOL connector by name
H5VL_REGISTER_CONNECTOR_BY_VALUE	Registers a new VOL connector by connector value
H5VL_UNREGISTER_CONNECTOR	Removes a VOL connector identifier from the library

H5Fdelete and Changes to the Virtual File Layer (VFL) (RFC)

With the VOL, HDF5 "files" can map to arbitrary storage schemes such as object stores and relational database tables. The data created by these implementations may be inconvenient for a user to remove without a detailed knowledge of the storage scheme. The H5Fdelete() API was introduced to give VOL connector authors the ability to add connector-specific delete code to their connectors so that users can remove these "files" without detailed knowledge of the storage scheme.

Function	Description
H5F_DELETE	Deletes an HDF5 file

Since HDF5 storage can differ among the virtual file drivers, changes had to be made so that each Virtual File Driver (VFD) could have its own driver-specific cleanup code.