

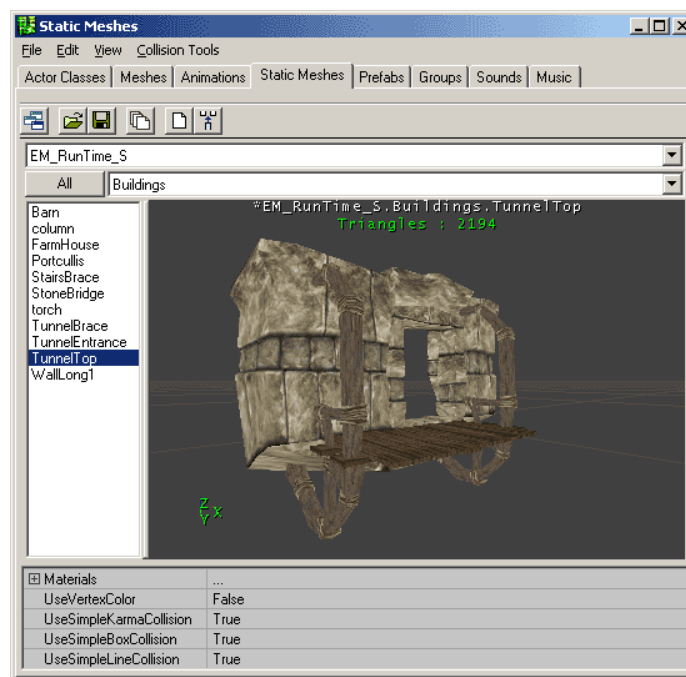
# The Abstract File System

## Video

[http://www.leadwerks.com/files/Tutorials/CPP/Abstract\\_File\\_System.wmv](http://www.leadwerks.com/files/Tutorials/CPP/Abstract_File_System.wmv)

## Files

[http://developer.leadwerks.com/Tutorials/CPP/Abstract\\_File\\_System\\_Files.zip](http://developer.leadwerks.com/Tutorials/CPP/Abstract_File_System_Files.zip)



The Unreal Engine stores all media in Unreal package files.

## Introduction

Computer games can require thousands of files for meshes, textures, materials, shaders, and other assets. Organizing these files can be very challenging without a good file management system. Most game engines allow the user to load files without specifying their exact location. It is also common to store files in compressed packages, since game data can consist of hundreds or even thousands of megabytes.

Valve's Source engine uses GCF packages, the Doom 3 Engine uses pk4 packages, and Unreal Engine uses Unreal packages. Fortunately, Leadwerks Engine provides a simple mechanism for loading files without

knowing their exact paths, and can load files from compressed packages. Our implementation works uniformly with any file type.

### **Abstract Paths**

When the engine starts up, all files in the application folder and all subfolders are stored in a searchable binary tree for quick retrieval. You can load a file without knowing its exact path by specifying the “abstract:” protocol in the file path:

```
LoadTexture("abstract::brickwall106.dds");
```

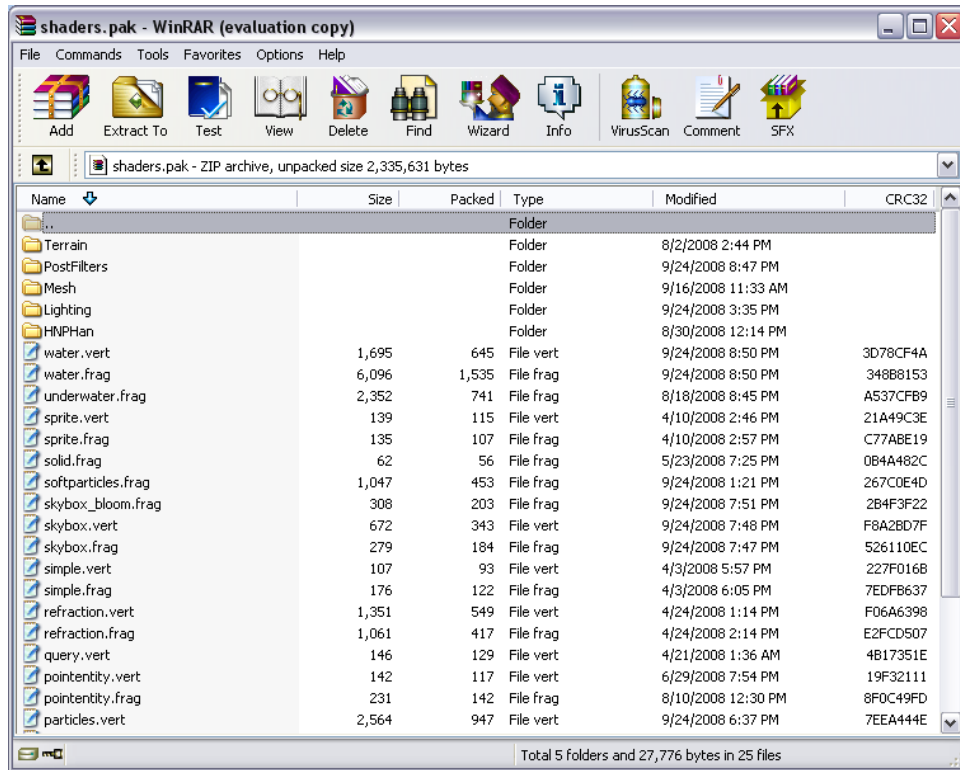
This will load the texture “brick.dds” if it is found anywhere in your application’s directory, or in any subdirectories. If you have two files with the name “brick.dds” in different folders, there is no way of knowing which copy of the file the engine will load. Therefore, redundant file names should be avoided. If the exact path is known, you can still specify the file to load with the complete path, as follows:

```
LoadTexture("Textures/brickwall106.dds");
```

The abstract protocol will work with any file you load, so you can use it with meshes, sounds, shaders, materials, etc.

### **Compressed Packages**

Leadwerks Engine can load files directly from compressed packages. To make a compressed package, create a new zip file with a zip file program. Rename the package file with the “.pak” extension. The files can now be loaded using the “abstract” protocol.



The “shaders.pak” file is a compressed package containing all the shaders the engine uses.

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