PE File Browser

by

Software Verify

Software Verify

Troubleshoot your software

PE File Browser

PE File contents inspector

by Software Verify Limited

Welcome to the PE File Browser software tool.

PE File Browser is a software tool that allows you to inspect the contents of PE files (.exe and .dll files).

We hope you will find this document useful.

DbgHelp Browser Help

Printed: March 2025 in United Kingdom.

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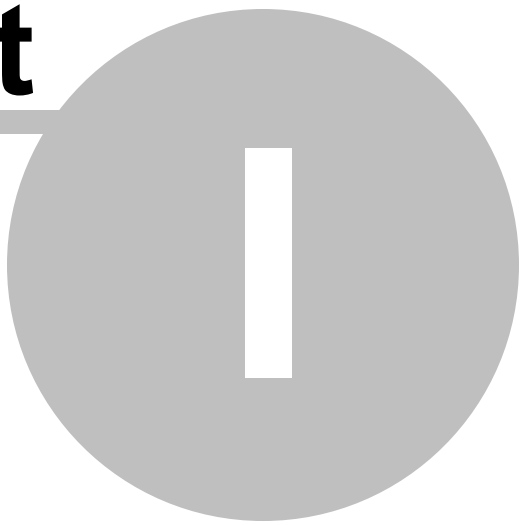
Part



1 How to get PE File Browser

PE File Browser is free for commercial use. PE File Browser can be downloaded for Software Verify's website at https://www.softwareverify.com/product/pe-file-browser/.

This help manual is available in Compiled HTML Help (Windows Help files), PDF, and online.

Windows Help	https://www.softwareverify.com/documentation/chm/peFileBrowser.chm
PDF	https://www.softwareverify.com/documentation/pdfs/peFileBrowser.pdf
Online	https://www.softwareverify.com/documentation/html/peFileBrowser/index.html

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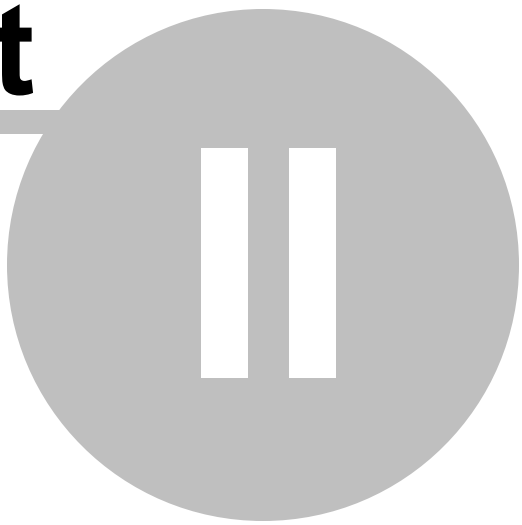
Part



2 What does PE File Browser do?

PE File Browser allows you to inspect the contents of a PE format file (.exe or .dll).

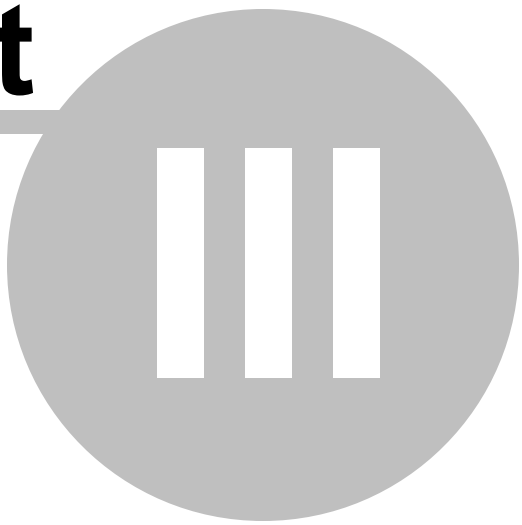
32 bit and 64 bit

PDB files created by 32 bit and 64 bit software are supported. On 64 bit Operating systems if a 64 bit PDB file is opened the 64 bit version PE File Browser is automatically started.

History

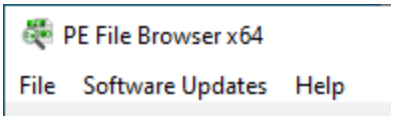
PE File Browser has been an internal tool at Software Verify for many years. We recently decided to make it a bit more user friendly and to make it available for public use.

Part



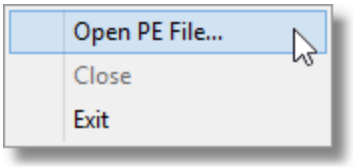
3 Menu

The main menu contains three menus, File, Software Updates and Help.



3.1 File

The File menu controls loading of PE files, clearing the display and exiting the program.



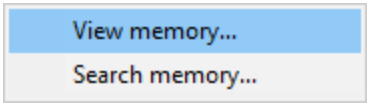
File menu › **Open PE File...** › loads a PE File (exe or dll) and displays information about the PE file.

File menu › **Close** › clear all results, unloads the PE file.

File menu › **Exit** › closes PE File Browser.

3.2 Inspect

The Inspect menu allows you to view arbitrary memory, or to search for memory.



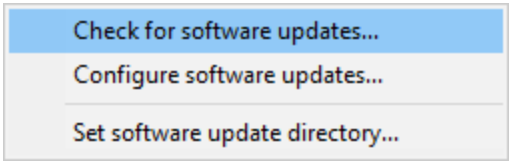
Inspect menu › **View memory...** › view memory at an arbitrary address. The View Memory Dialog is displayed.

Inspect menu › **Search memory...** › search for a text string or a sequence of bytes. The Search Memory Dialog is displayed.

3.3 Software Updates

The Software Updates menu controls how often software updates are downloaded.

If you've been notified of a new software release to PE File Browser or just want to see if there's a new version, this feature makes it easy to update.

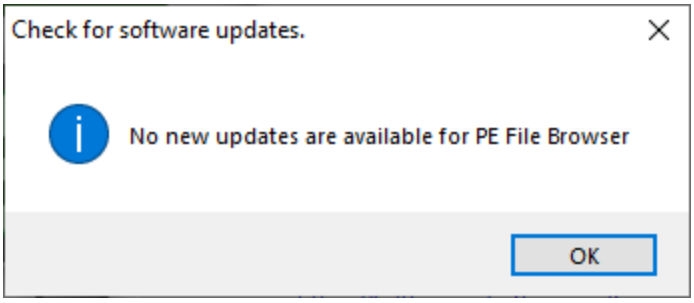


Software Updates menu › **Check for software updates** › checks for updates and shows the software update dialog if any exist

An internet connection is needed to be able to make contact with our servers.

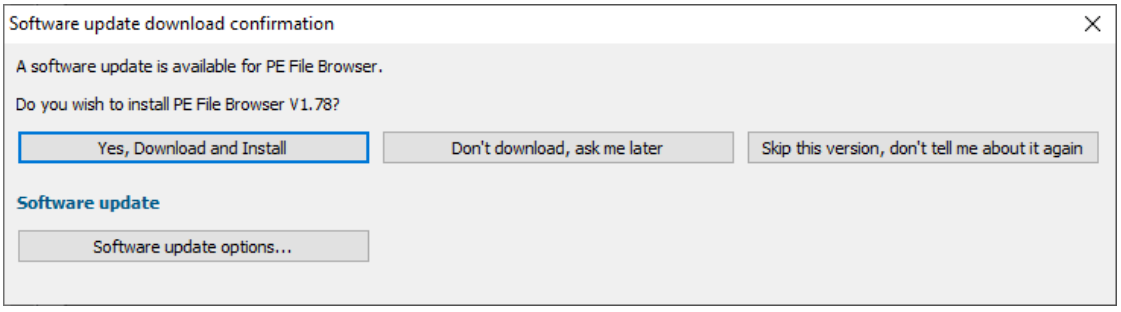
Before updating the software, close the help manual, and end any active session by closing target programs.

If no updates are available, you'll just see this message:

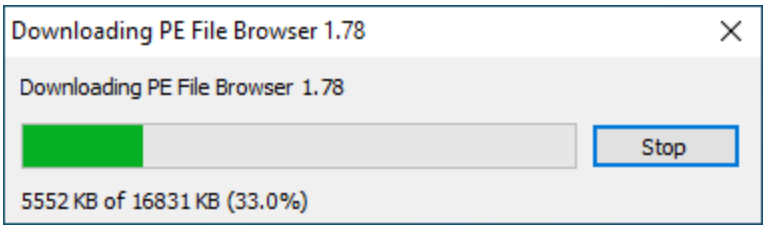


Software Update dialog

If a software update is available for PE File Browser you'll see the software update dialog.



- **Download and install** › downloads the update, showing progress



Once the update has downloaded, PE File Browser will close, run the installer, and restart.

You can stop the download at any time, if necessary.

- **Don't download...** › Doesn't download, but you'll be prompted for it again next time you start PE File Browser
- **Skip this version...** › Doesn't download the update and doesn't bother you again until there's an even newer update
- **Software update options...** › edit the software update schedule

Problems downloading or installing?

If for whatever reason, automatic download and installation fails to complete:

- Download the latest installer manually from the software verify website.

Make some checks for possible scenarios where files may be locked by PE File Browser as follows:

- Ensure PE File Browser and its help manual is also closed
- Ensure any error dialogs from the previous installation are closed

You should now be ready to run the new version.

Software update schedule

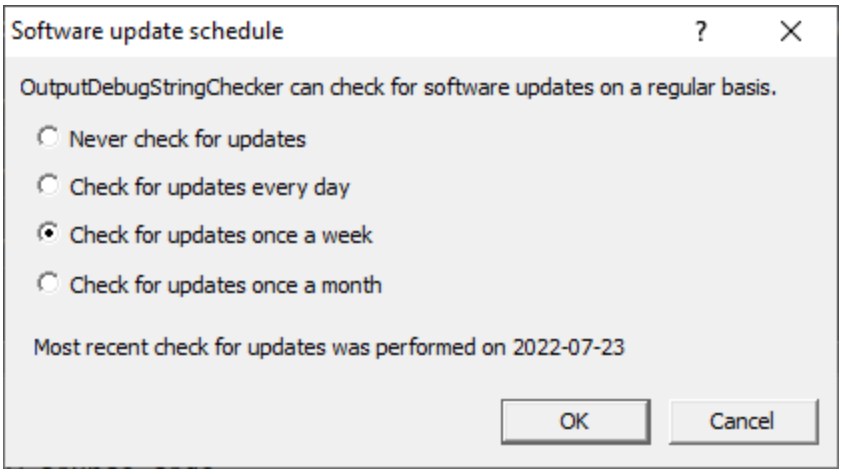
PE File Browser can automatically check to see if a new version of PE File Browser is available for downloading.

Software Updates menu › **Configure software updates** › shows the software update schedule dialog

The update options are:

- never check for updates
- check daily (the default)
- check weekly
- check monthly

The most recent check for updates is shown at the bottom.

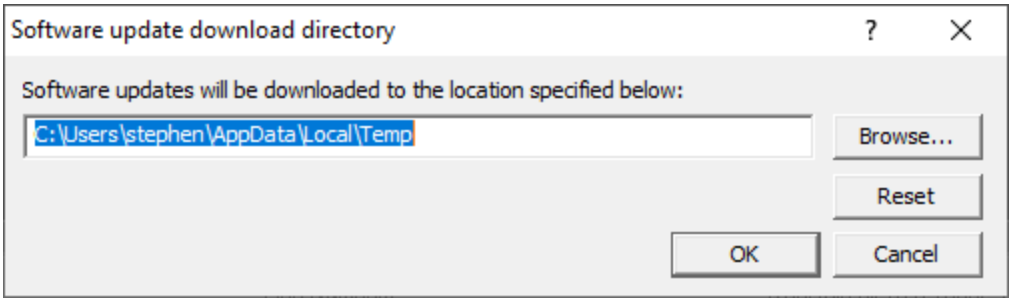


Software update directory

It's important to be able to specify where software updates are downloaded to because of potential security risks that may arise from allowing the `TMP` directory to be executable. For example, to counteract security threats it's possible that account ownership permissions or antivirus software blocks program execution directly from the `TMP` directory.

The `TMP` directory is the default location but if for whatever reason you're not comfortable with that, you can specify your preferred download directory. This allows you to set permissions for `TMP` to deny execute privileges if you wish.

Software Updates menu › **Set software update directory** › shows the Software update download directory dialog



An invalid directory will show the path in red and will not be accepted until a valid folder is entered.

Example reasons for invalid directories include:

- the directory doesn't exist
- the directory doesn't have write privilege (update can't be downloaded)
- the directory doesn't have execute privilege (downloaded update can't be run)

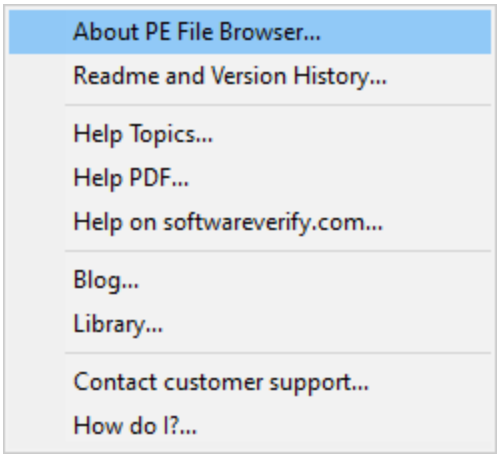
When modifying the download directory, you should ensure the directory will continue to be valid. Updates may no longer occur if the download location is later invalidated.

- **Reset** › reverts the download location to the user's `TMP` directory

  The default location is `c:\users\[username]\AppData\Local\Temp`

3.4 Help

The Help menu controls displaying this help document and displaying information about PE File Browser.



Help menu › **About PE File Browser...** › displays information about PE File Browser.

Help menu › **Readme and Version History...** › displays the readme and version history.

Help menu › **Help Topics...** › displays this help file.

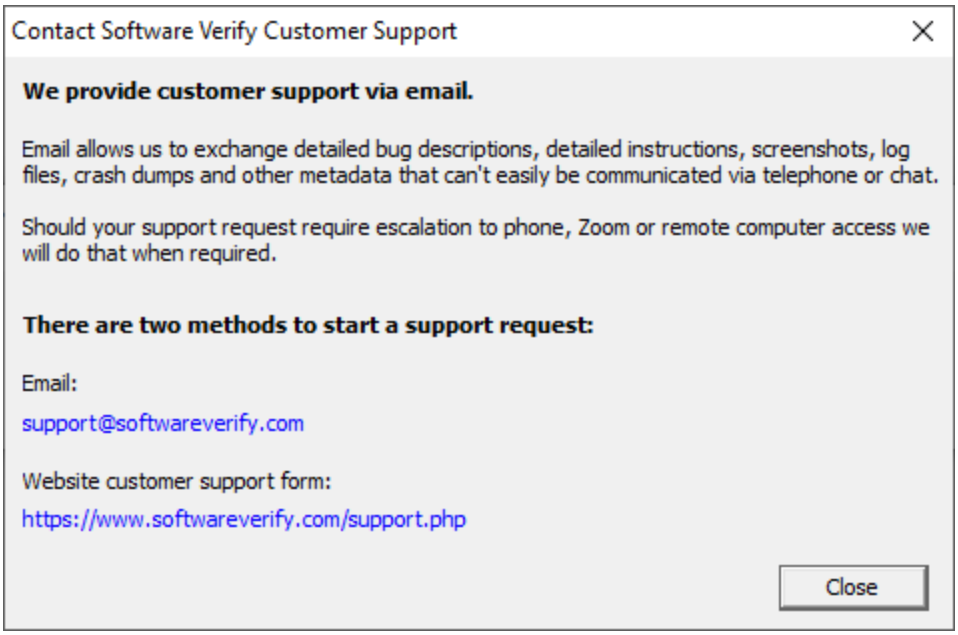
Help menu › **Help PDF...** › displays this help file in PDF format.

Help menu › **Help on softwareverify.com...** › display the Software Verify documentation web page where you can view online documentation or download compiled HTML Help and PDF help documents.

Help menu › **Blog...** › display the Software Verify blog.

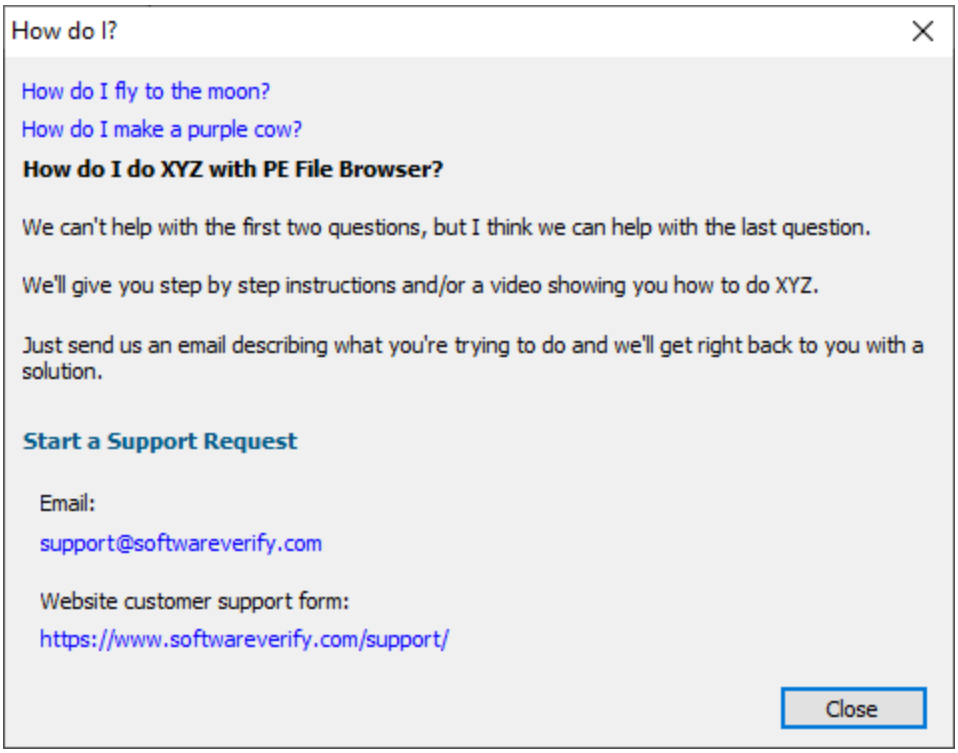
Help menu › **Library...** › display the Software Verify library - our best blog articles grouped by related topics.

Help menu › **Contact customer support...** › displays the options for contacting customer support.



Click a link to contact customer support.

Help menu › **How do I?...** › displays the options for asking us how to do a particular task.



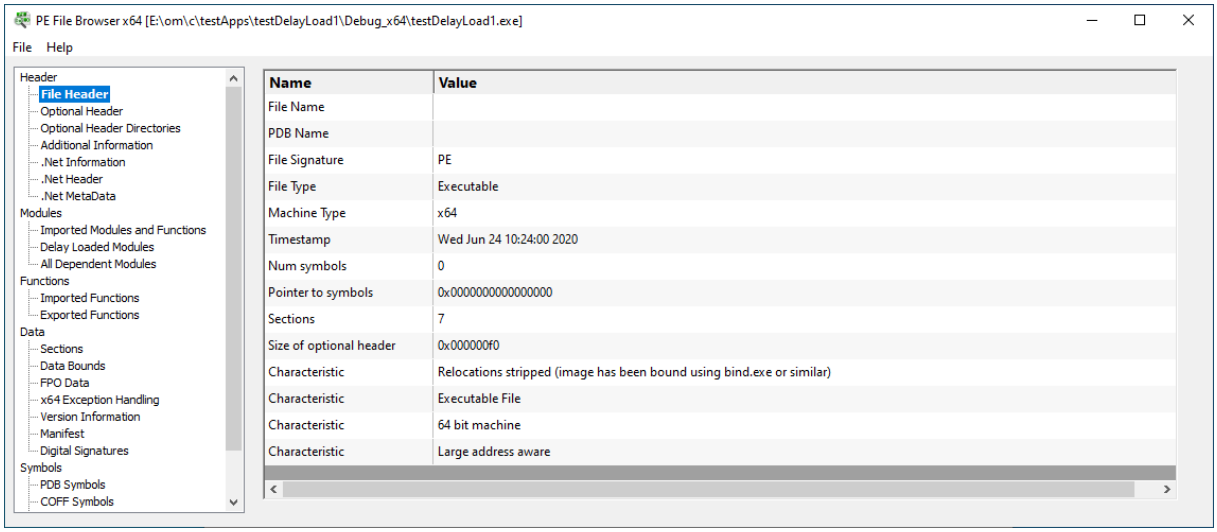
Part

4 The user interface

Enter topic text here.

4.1 The data display

The PE File Browser user interface is shown below.



The general principle guiding what data we choose to display and how we group the data is as follows:

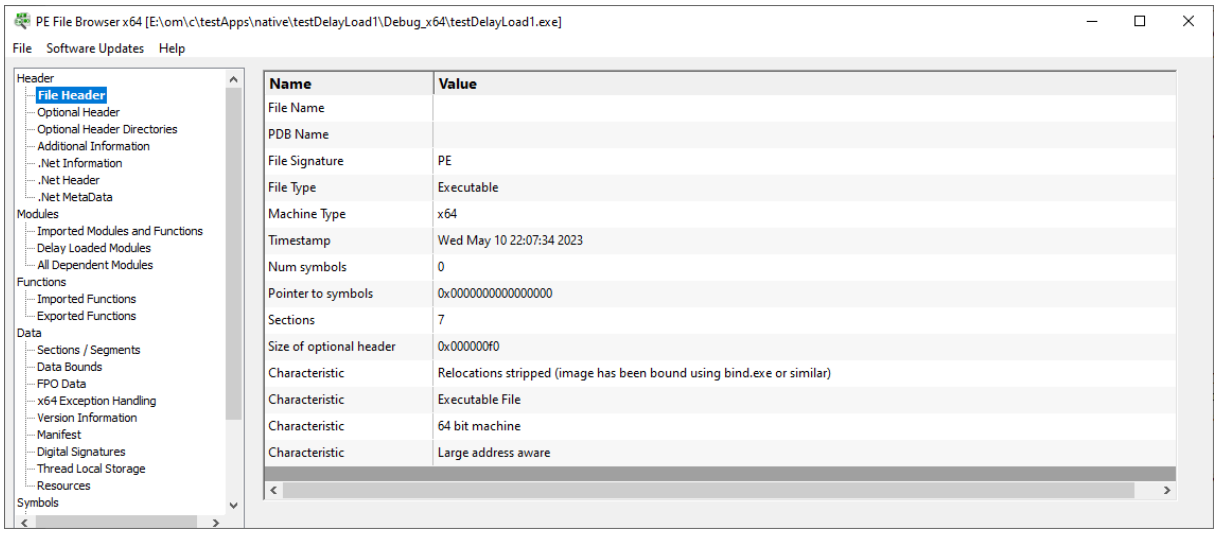
- Is the data logically grouped inside the PE file?
  This covers data that is in the structure of the PE file, such as File Headers, Optional Headers, Sections, etc.

- Is the data logically grouped from the perspective of the user of the software?
  This covers data such as debugging symbols.

There have been a few areas where we've blended data together to either compress the display (the File Header section has a few additional entries) or to synthesize extra information not expressly provided by the PE file format but which can be determined from the data in the PE file (the Additional Information section is an example of this).

4.1.1 File Header

The File Header display shows the contents of the PE file File Header.



File Name
The name of the PE file. This is often blank.

PDB Name
The name of the corresponding PDB file. This is often blank.

File Signature
This can be many values, but for a PE file, will be the value "PE".

File Type
This can be one of three values:
- DLL. A loadable module.
- Executable. An executable program.
- System. A system file.

Machine Type
This can be one of many values, although we typically only expect "i386" and "x64".
Valid values are:
- Unknown
- i386
- x64
- MIPS R3000
- MIPS R4000
- MIPS R10000
- Alpha
- Power PC
- Hitatchi SH3
- Hitatchi SH4
- ARM
- MIPS WinCE v2
- Hitatchi SH3E
- Thumb
- IA64 (Merced/Itanium)
- MIPS 16
- MIPS FPU

- MIPS FPU 16
- ALPHA64

Timestamp
This is the time the PE file was created. This is often not set.

Num Symbols
The number of symbols embedded in the PE file.

Pointer to Symbols
Pointer to any symbols embedded in the PE file.

Sections
The number of different named sections in the PE file.

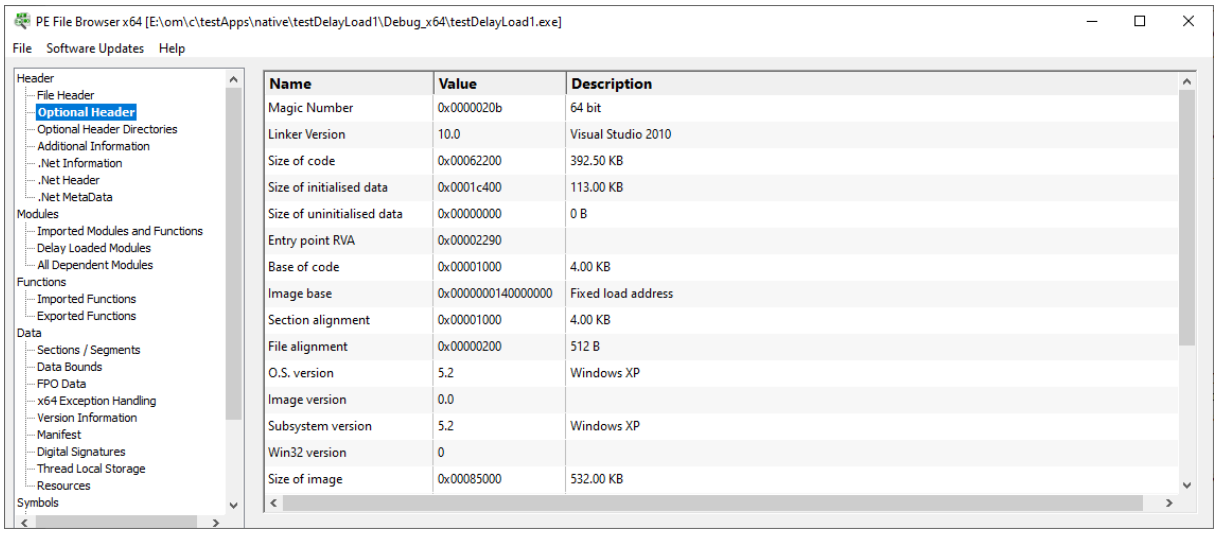
Size of optional header
The size of the optional header in the PE file.

Characteristics
A PE file can have many characteristics. The remainder of the File Header lists only the characteristics that have been set, one per line.
The following characteristics can be set. Many values can apply at the same time. Many of these characteristics are obsolete.

- Relocations stripped (image has been bound using bind.exe or similar)
- Executable File
- DLL
- System File
- UniProcessor systems only
- 32 bit machine
- 64 bit machine
- Line numbers stripped
- Local symbols stripped
- Debug info stripped (held in separate .DBG file)
- Aggressive working set trim
- Large address aware
- Machine is LSB precedes MSB
- Run from swap if image is on removable media
- Run from swap if image is on the network
- Machine is MSB precedes LSB

4.1.2 Optional Header

The Optional Header display shows the contents of the PE file Optional Header.



Magic Number
This is the magic number stored in the PE file to identify the file type.
Valid values are:

- 0x0107 ROM
- 0x010B 32 bit
- 0x020B 64 bit

Linker Version
This is the version of the linker used to build the image.

The description field indicates which version of Visual Studio may have been used to build this file.

If Visual Studio 2012 is set to build using Visual Studio 2010 libraries this field will indicate Visual Studio 2010.

If a different compiler/linker is used (Embarcadero, Delphi, MingW) the description field will be incorrect.

Size of code
Size of the executable code in the PE file.

Size of initialised data
Size of the initialised data in the PE file.

Size of uninitialised data
Size of the uninitialised data in the PE file.

Entry point RVA
The relative virtual address of the entry point to the executable. This is an offset from the start of the PE file.

This is DllMain for a DLL, or the start of the program for an EXE.

Base of code
This is the relative virtual address of the start of the code in the PE file.

Base of data
This is the relative virtual address of the start of the data in the PE file.

Section alignment
Sections are aligned at boundaries that are a multiple of this value after the PE file is mapped into memory.

File alignment
Sections are aligned at boundaries that are a multiple of this value before the PE file is mapped into memory.

O.S. version
The minimum version of the Windows operating system that this software can execute.

Image version
A user definable version number.

Subsystem version
The windows subsystem version number.

Win32 version
The Win32 version number

Size of image
The size of the parts of the PE file that the DLL loader needs to be concerned with.

Size of headers
The size of the PE header and the section (object) table.

Subsystem
The Windows subsystem.
Valid values are:
- Unknown
- Native
- Windows GUI
- Windows Character UI
- OS2 Character UI
- Posix Character UI
- Windows 95/98 Driver
- Windows CE GUI
- EFI Application
- EFI Boot Service Driver
- EFI Runtime Driver
- EFI ROM
- XBox
- Windows Boot Application

Characteristics
These are characteristics that affect how the PE file is treated. This is a bitmask. Many values can apply at the same time.
Valid characteristics are:
- Call when DLL is first loaded into a process's address space
- Call when a thread terminates

- Call when a thread starts up
- Call when DLL exits
- Unknown(0x0010)
- Unknown(0x0020)
- Relocatable
- Fixed load address
- Force code integrity check
- Data execution prevention compatible
- No isolation
- No SEH
- Do not bind
- WDM driver
- Reserved(0x4000)
- Terminal server aware

Stack reserve
This is the amount of memory reserved for the first thread's stack.

Stack commit
This is the amount of memory committed for the first thread's stack.

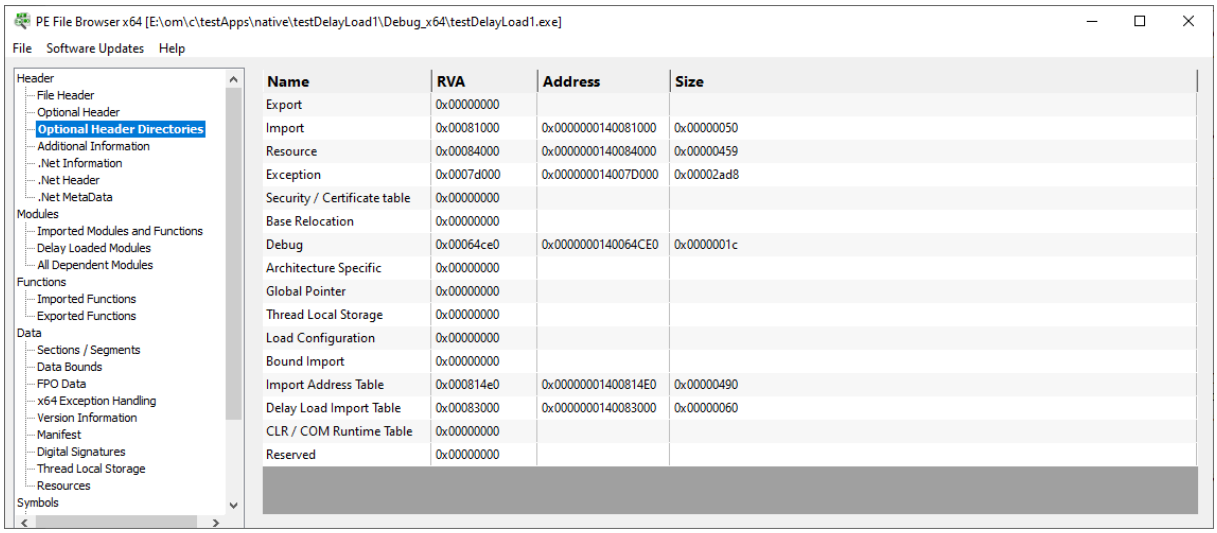
Heap reserve
This is the amount of memory reserved for the process heap.

Heap commit
This is the amount of memory committed for the process heap.

Loader flags
The Loader flags value is obsolete. This value is normally set to 0.
Known values appear to be related to debugging support.
1. Invoke a breakpoint instruction before starting the process
2. Invoke a debugger on the process after it's been loaded

4.1.3 Optional Header Directories

The Optional Header Directories display shows the contents of the PE file Optional Header Directories.



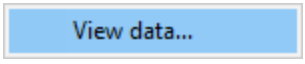
Each optional header directory is listed, with the RVA, the actual address and size. Address and Size are only displayed if the RVA is valid (non-zero).

The following header directories are displayed.

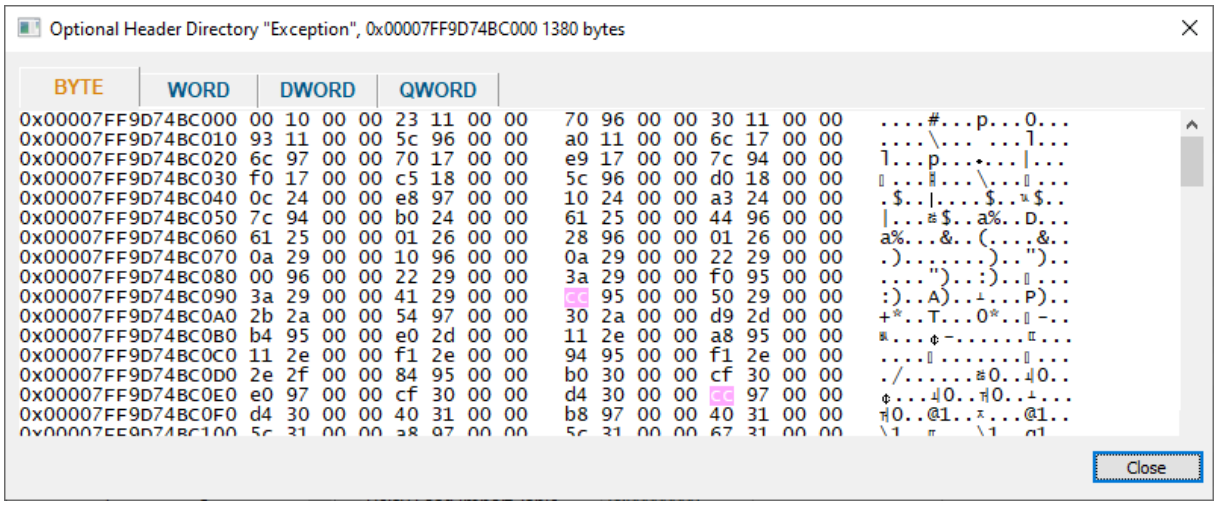
- Export
- Import
- Resource
- Exception
- Security
- Base Relocation
- Debug
- Architecture Specific
- Global Pointer
- Thread Local Storage
- Load Configuration
- Bound Import
- Import Address Table
- Delay Load Import Table
- COM Runtime Table
- Reserved

Context Menu

A context menu provides a single option:

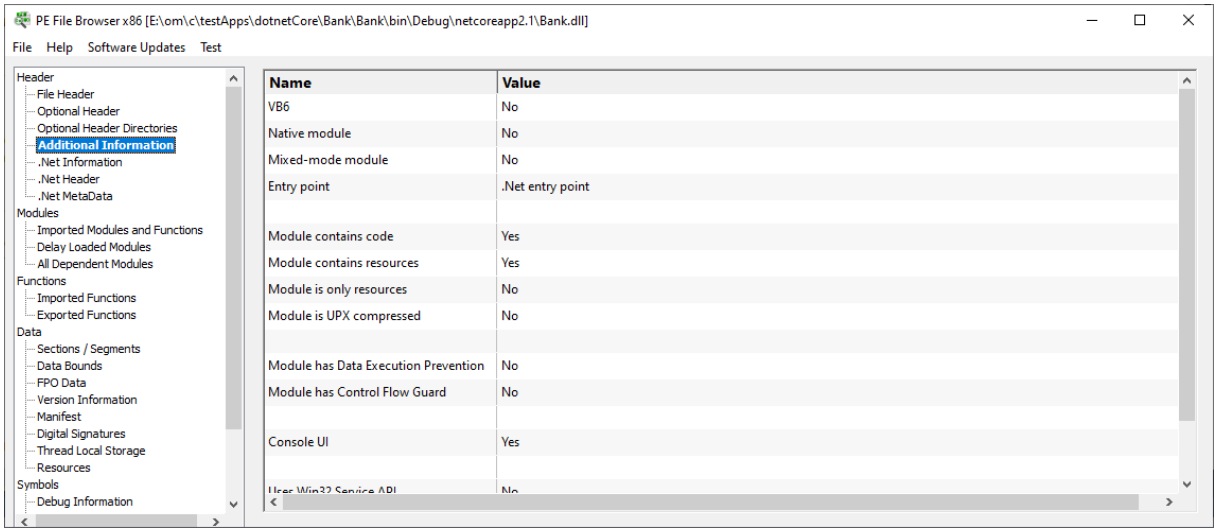


Clicking **View data...** opens a memory inspection dialog, allowing you to view the memory as BYTEs, WORDs, DWORDs or QWORDs.



4.1.4 Additional Information

The Additional Information displays some additional information about a PE that can be determined from a PE file, but which is not an obvious value in the PE file.



VB6
Is this module a Visual Basic 6 application?

Native module
Is this a native executable?

Mixed-mode module
Is this a mixed mode executable (contains native code and .Net code)?

Entry point
The entry point field describes the type of entry point for the DLL.

Valid values are:
- No entry point
- .Net entry point
- Native entry point
- Unknown entry point type

Module contains code
Does this module contain executable code?

Module contains resources
Does this module contain resources?

Module is only resources
Does this module only contain resources?

Module is UPX compressed
This module has been compressed using the UPX compression algorithm.

Module has Data Execution Prevention
This module implements data execution prevention security measures.

Module has Control Flow Guard
This module implements control flow guard security measures.

Console UI
Is this module a console application?

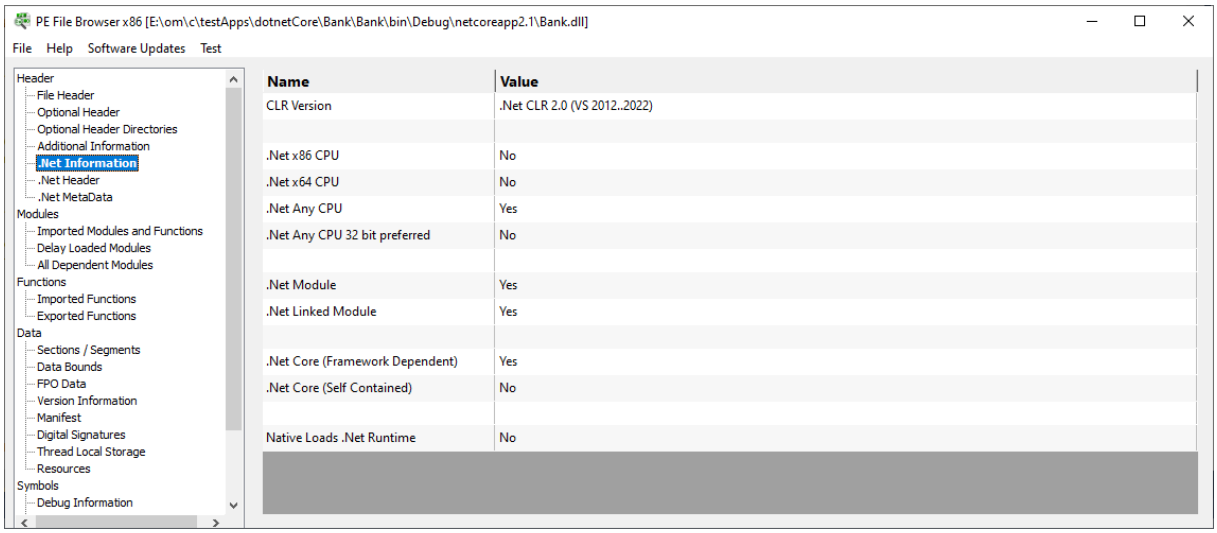
Uses Win32 Service API
This EXE/DLL uses functions in the Win32 Service API. This EXE/DLL may be part of a service.

Uses Visual Leak Detector
This EXE/DLL uses Visual Leak Detector.

Uses Address Sanitizer
This EXE/DLL uses Address Sanitizer.

4.1.5 .Net Information

The .Net Information displays some .Net specific information about a PE that can be determined from a PE file, but which is not an obvious value in the PE file.



CLR Version
If this module uses the .Net runtime, this entry displays which version of the CLR is required.
Valid values are:

- .Net CLR 1.0 (VS 2002)
- .Net CLR 1.1 (VS 2003)
- .Net CLR 2.0 (VS 2005..2010)
- .Net CLR 2.0 (VS 2012..2017)
- .Net CLR 2.0 or later

The last value will be displayed if a CLR version that is not recognised is encountered.

.Net x86 CPU
Is this module a .Net module that is compiled for use on x86 processors?

.Net x64 CPU
Is this module a .Net module that is compiled for use on x86 processors?

.Net Any CPU
Is this module a .Net module that is compiled for use on any CPU?

.Net Any CPU 32 bit preferred
Is this module a .Net module that is compiled for use on any CPU but prefers 32 bit processors?

.Net Module
Is this module a pure .Net module (contains no native code)?

.Net Linked Module
Is this module linked to the .Net runtime?

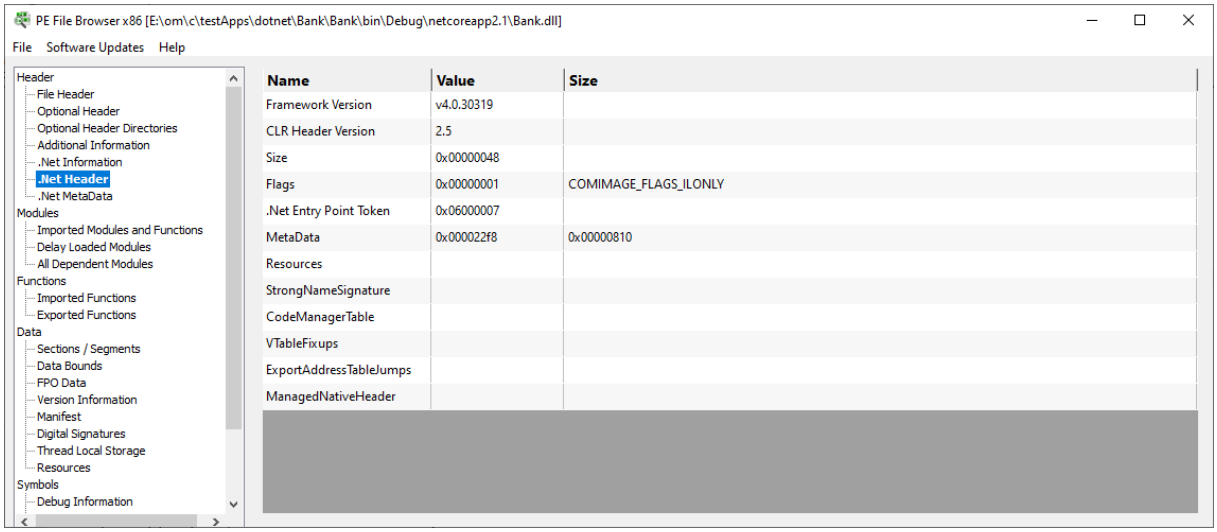
.Net Core (Framework Dependent)
Is this module built for use with .Net Core as a framework dependent DLL?

.Net Core (Self Contained)
Is this module built for use with .Net Core as a self contained executable?

Native Loads .Net Runtime
Is this a native module that loads the .Net runtime to executable .Net code?

4.1.6 .Net Header

The .Net Header displays some information the .Net Header (if any) that is present in the PE file.



Framework version
The .Net Framework version

MetaData Version
The .Net Metadata version.

MetaData Flags
The .Net Metadata flags.

Size
Size of the .Net Header

Flags
CLR flags. As specified by **.corflags** directive in ILASM or **/FLAGS** with ILASM compiler.

.Net Entry Point RVA
The relative virtual address that defines the native entry point for this .Net application.
This is not displayed if a .Net Entry Point Token is defined.

.Net Entry Point Token
The .Net method token that identifies the startup function for this application.
This is not displayed if a .Net Entry Point RVA is defined.

MetaData
Relative virtual address (RVA) of the .Net Metadata inside the PE file.

Resources
Relative virtual address (RVA) of the managed resources inside the PE file.

StrongNameSignature
Relative virtual address (RVA) of the strong name signature for this PE file.

CodeManagerTable
Relative virtual address (RVA) of the Code Manager table.

VTableFixups
Relative virtual address (RVA) of the virtual fixup table.

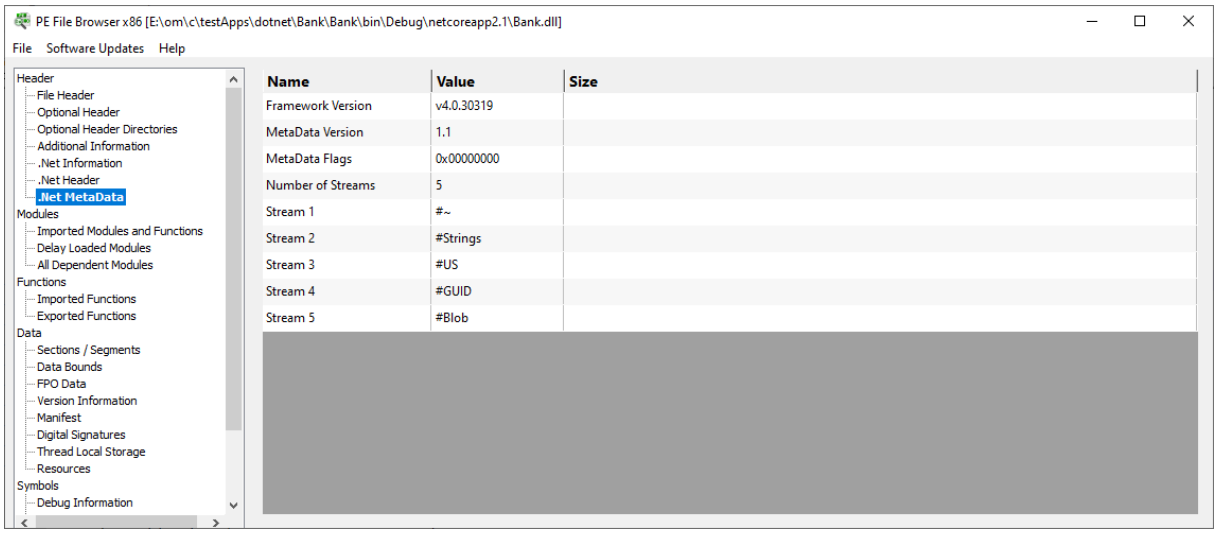
ExportAddressTableJumps
Relative virtual address (RVA) of jump thunks.

ManagedNativeHeader
Relative virtual address (RVA) of the managed native header. Reserved for precompiled images.

For a more detailed explanation of the fields mentioned in this topic see Table 4-6, Chapter 4 of Expert .Net 2.0 Assembler by Serge Lidin.

4.1.7 .Net MetaData

The .Net MetaData displays some information the .Net MetaData (if any) that is present in the PE file.



Framework version
The .Net Framework version

MetaData Version
The .Net Metadata version.

MetaData Flags
The .Net Metadata flags.

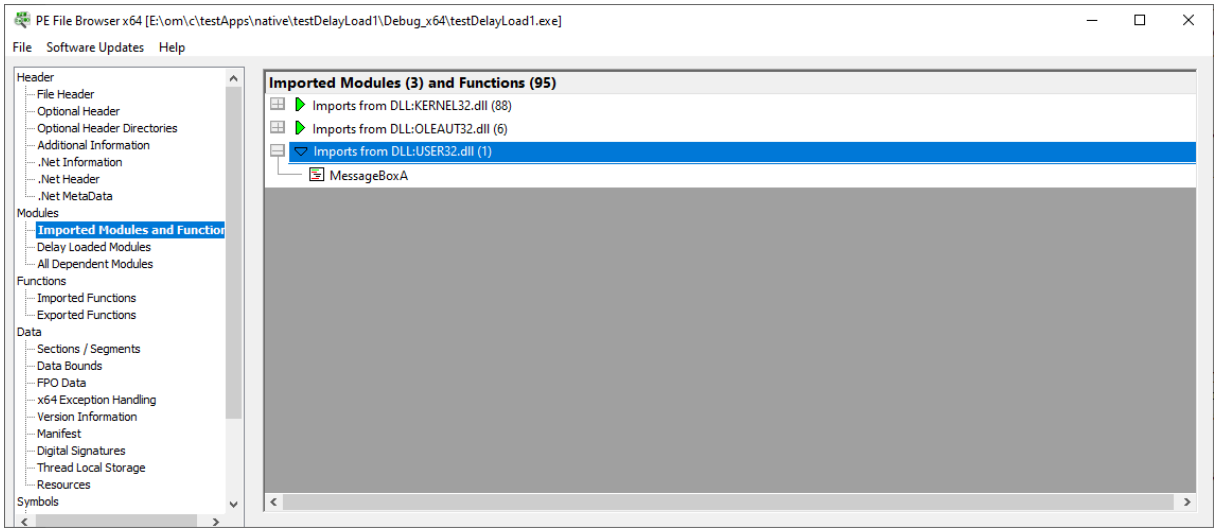
Number of Streams
How many streams are in the .Net MetaData.

Stream ??
For each metadata stream present the name of the metadata stream is shown.

There are typically no more than 5 streams. The expected names are #~, #Strings, #US, #GUID, #Blob.

4.1.8 Imported Modules and Functions

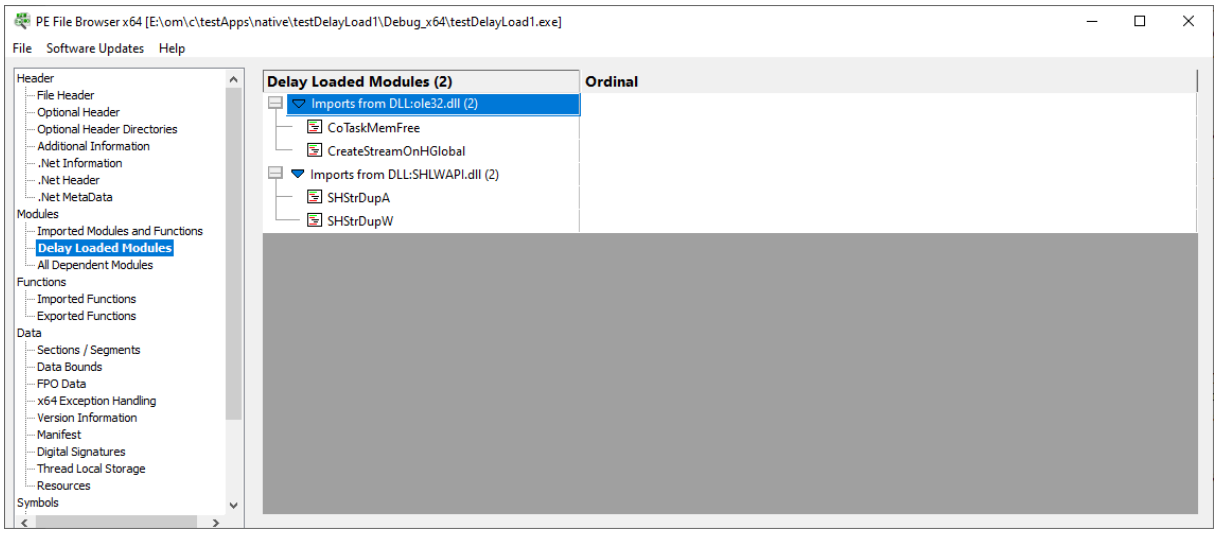
The Imported Modules and Functions display shows the modules that are linked to the PE file. The display also shows the functions imported from each module.



In the image above you can see that this PE file imports functions from 3 DLLs. The first DLL in the list, KERNEL32.DLL imports 88 functions to the PE file.

4.1.9 Delay Loaded Modules

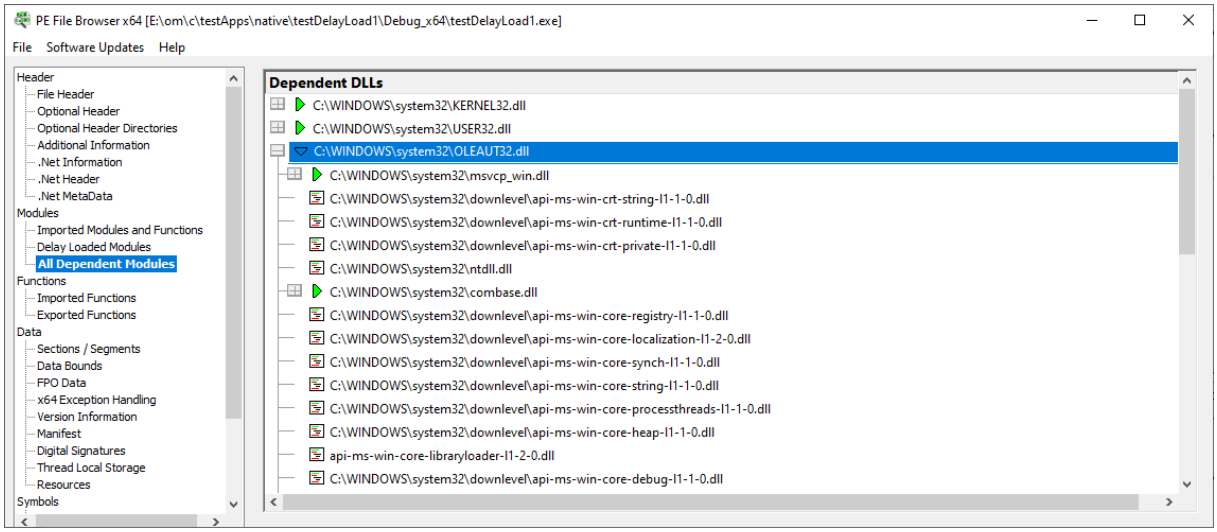
The Delay Loaded Modules display shows the modules that are linked to the PE file but which are delay loaded (they load when the a delay loaded function is called).



In the image above you can see that this PE file delay loads two DLLs, ole32.dll and shlwapi.dll. Each DLL in this example imports 2 functions.

4.1.10 All Dependent Modules

The All Dependent Modules display shows the all the modules that the PE file depends on.

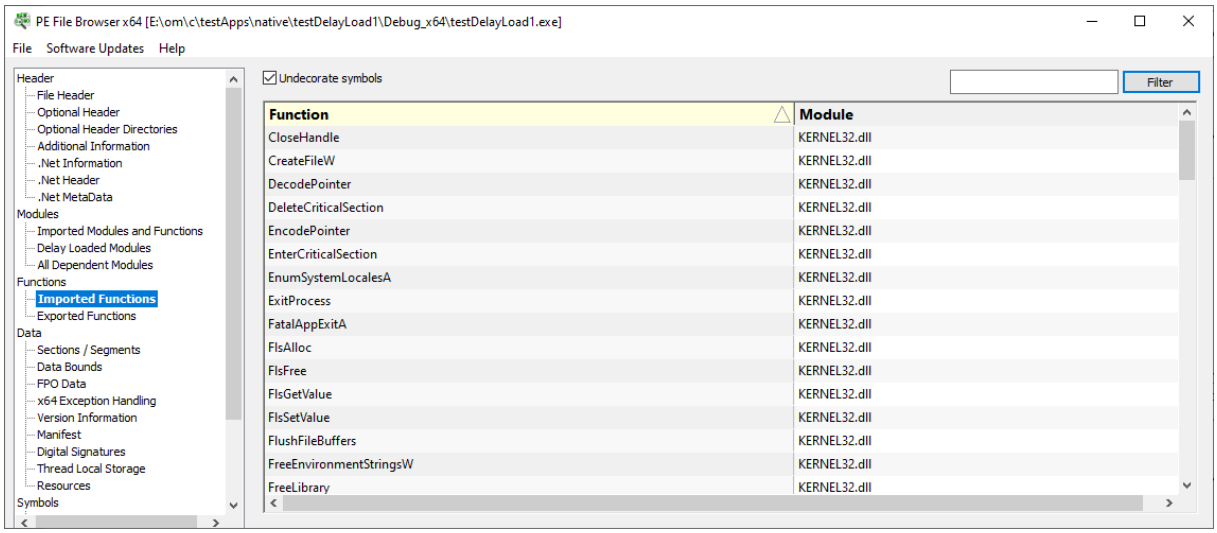


If you expand the entries you can see which DLLs those DLLs depend on.

Any DLLs that can't be found on the $PATH or in the same folder as the main PE file will be displayed in red and marked as a "Missing DLL".

4.1.11 Imported Functions

The Imported Functions display shows the all the functions imported to the PE file.



Function
The name of the imported function.

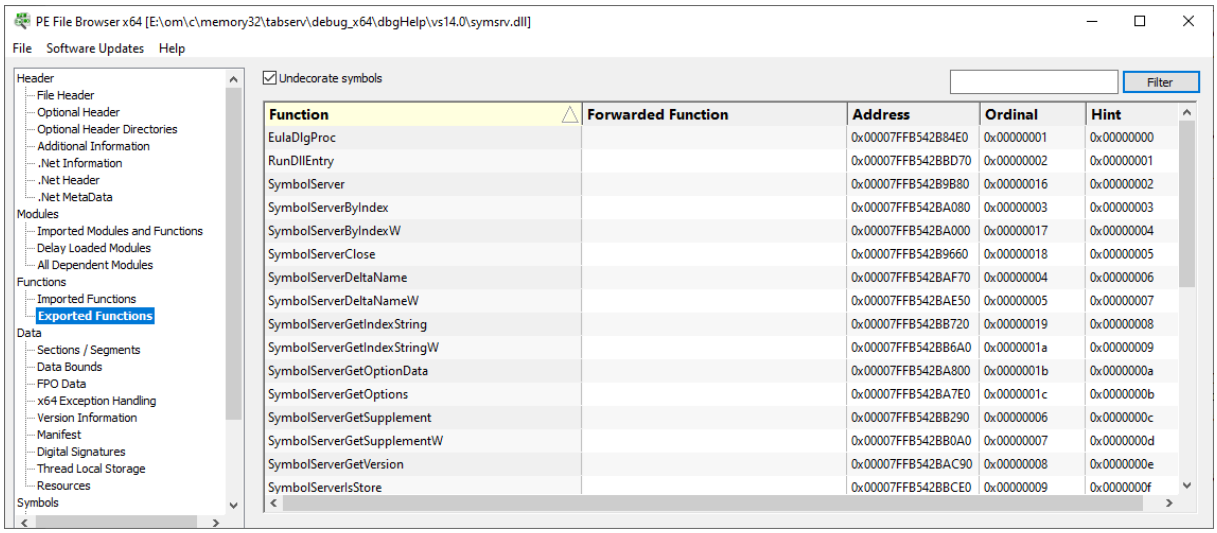
Module
The name of the module the function is imported from.

Sorting
The data can be sorted by Function or Module. Click the column header to select sorting by Function or Module. Click the same header to reverse the sort direction.

Filter
If a filter string is typed into the edit field and the **Filter** button is clicked the display shows on functions that contain the filter string. The search is case sensitive.

4.1.12 Exported Functions

The Exported Functions display shows the all the functions exported from the PE file.



Function
The name of the exported function.

Forwarded Function
If function is being forwarded from another DLL, it is listed in this column.

Address
The address of the exported function.

Ordinal
The ordinal of the exported function.

Hint
The ordinal hint of the exported function.

Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

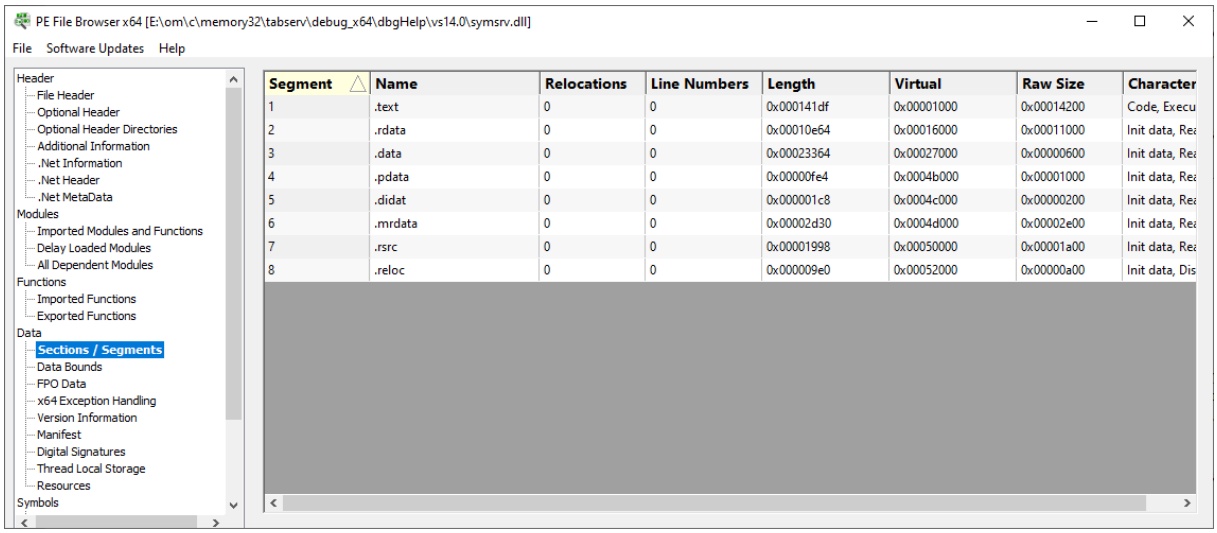
Filter
If a filter string is typed into the edit field and the **Filter** button is clicked the display shows on functions that contain the filter string. The search is case sensitive.

4.1.13 Sections / Segments

The Sections display shows the all the sections in the PE file.

Sections are also known as segments, often mentioned in MAP files and in the context of debugging information.

Symbol information is often provided as an offset and a segment. The symbol address is the module load address + the segment offset inside the dll, plus the symbol offset inside the segment.



Segment
The segment identifier.

Name
The section name.

Relocations
The number of relocations in this section.

Line Numbers
The number of line numbers in this section.

Physical
The physical address of this section.

Virtual
The virtual address of this section.

Size
The size of this section.

Characteristics
The characteristics of this section. This is a bitmask. Many values can apply at the same time. Some of these values are obsolete.

- Code
- Init data
- Uninit data
- Comments/info
- Not part of image
- COMDAT
- Reset speculative exception
- GP relative data
- FAR data
- Purgeable data
- 16 bit data

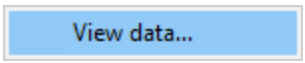
- Locked data
- Preloadable data
- Extended relocations
- Discardable
- Not cacheable
- Not pageable
- Shareable
- Executable
- Readable
- Writeable
- Alignment:1
- Alignment:2
- Alignment:4
- Alignment:8
- Alignment:16
- Alignment:32
- Alignment:64
- Alignment:128
- Alignment:256
- Alignment:512
- Alignment:1024
- Alignment:2048
- Alignment:4096
- Alignment:8192

The alignment values are exclusive. Only one alignment value can be applied.

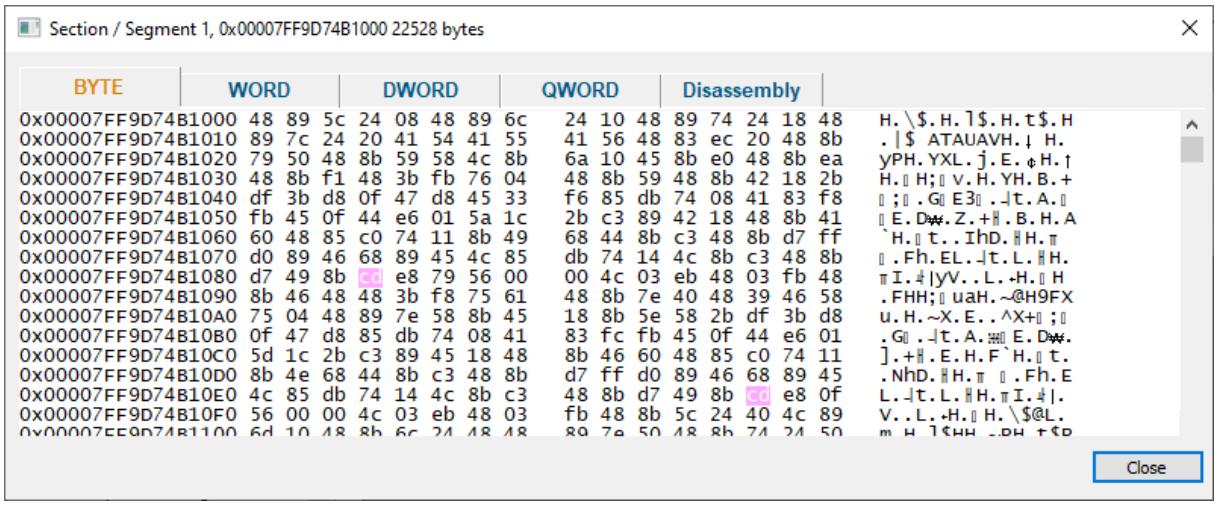
Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

Context Menu

A context menu provides a single option:

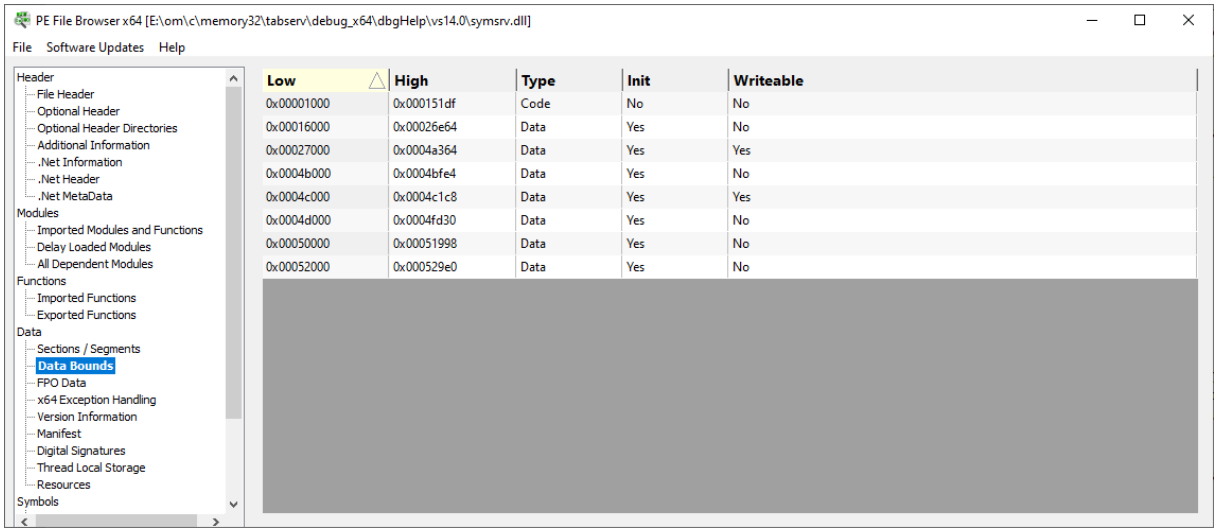


Clicking **View data...** opens a memory inspection dialog, allowing you to view the memory as BYTEs, WORDs, DWORDs or QWORDs. For executable code a disassembly view is provided.



4.1.14 Data Bounds

The Data Bounds display shows the all the different data and code area in the PE file.



Low
The low RVA (offset from the start of the PE file) of the data bound.

High
The high RVA (offset from the start of the PE file) of the data bound.

Type
This indicates if this area of memory is code or data.

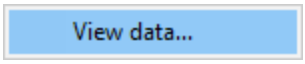
Init
Is this area of memory initialised?

Writeable
Is this area of memory writeable?

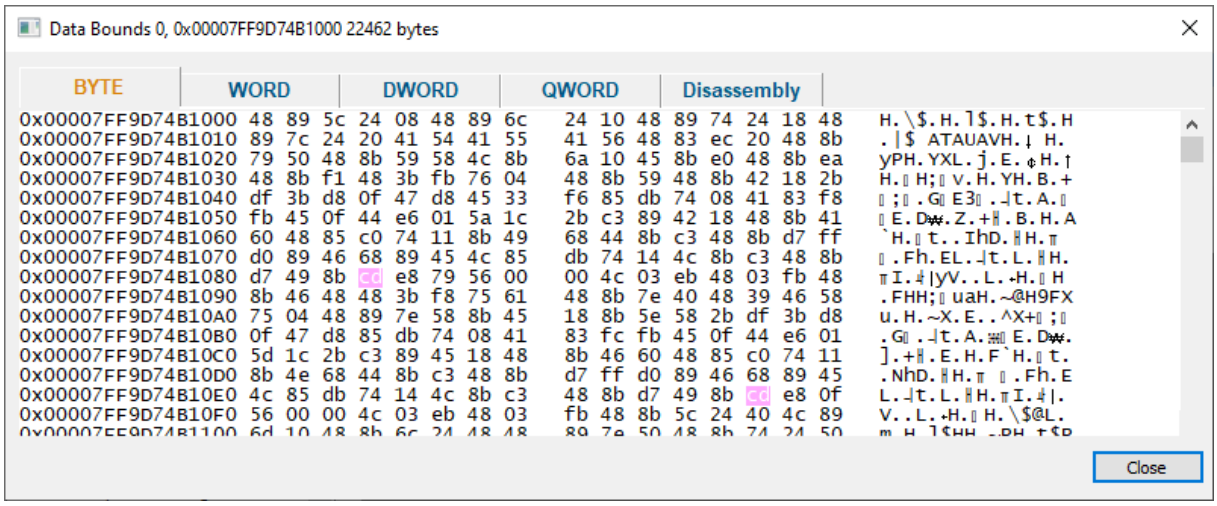
Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

Context Menu

A context menu provides a single option:



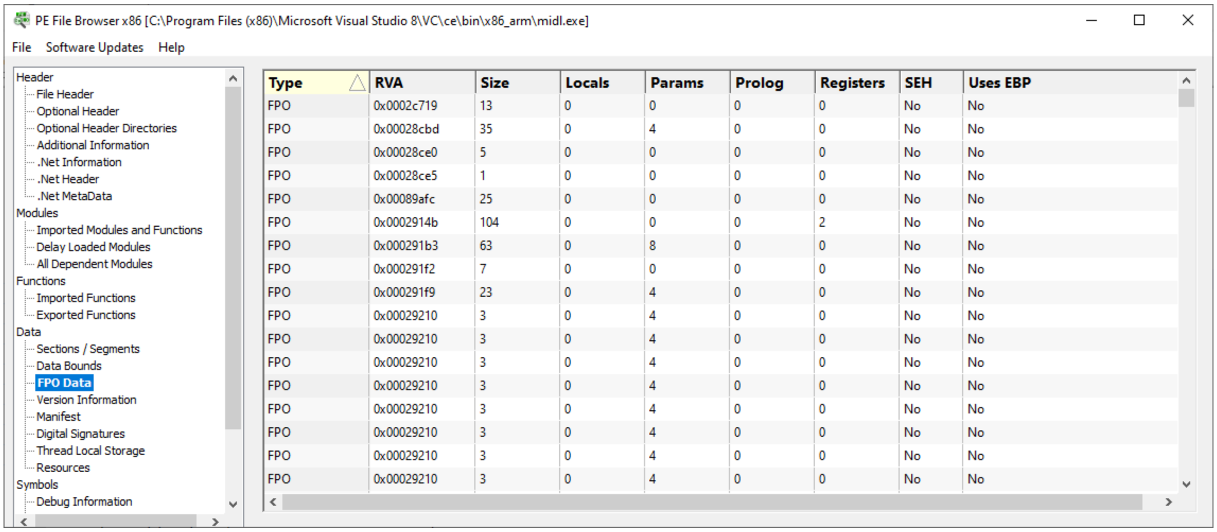
Clicking **View data...** opens a memory inspection dialog, allowing you to view the memory as BYTEs, WORDs, DWORDs or QWORDs. For executable code a disassembly view is provided.



4.1.15 FPO Data

The FPO display shows the all the Frame Pointer Omission data in the PE file.

Frame Pointer Omission data is largely obsolete these days. Since Windows Vista, no Windows binaries have been shipped that use Frame Pointer Omission. However the option to use Frame Pointer Omission remains in the compiler.



Type
The type of frame.
Valid values are:
- FPO
- Trap
- TSS
- Non FPO

RVA
The relative virtual offset of the function that has Frame Pointer Omission data

Size
This is the size of the function that has Frame Pointer Omission data.

Locals
The number of DWORD local variables this function has.

Params
The number of DWORD parameters this function has.

Prolog
The number of bytes in the function prolog.

Registers
How many registers are saved.

SEH
Does the function use Structured Exception Handling?

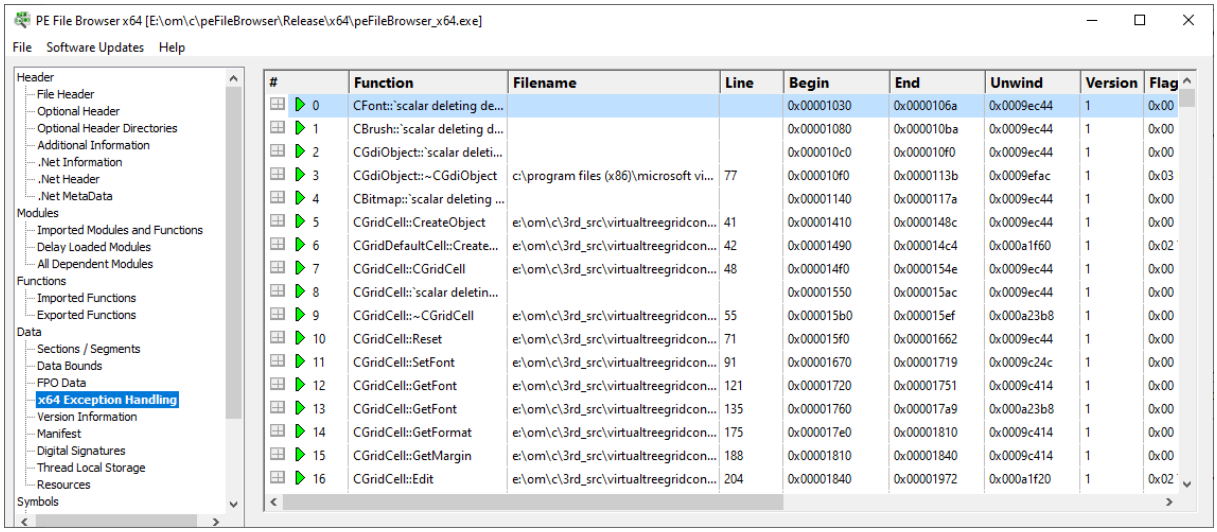
Uses EBP
Does the function use the EBP register?

Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

4.1.16 x64 Exception Handling

The x64 Exception Handling display shows the all the exception handling data in the x64 PE file. These are RUNTIME_FUNCTION records.

x86 PE files handle exceptions using a different technique, as such there is no corresponding data in an x86 PE file. This display is not available when working with a 32 bit (x86) PE file.



Each line of the grid displays the following information. If you expand the entry you can see the codes used for that exception handler.

#
The index of the RUNTIME_FUNCTION in the PE file.

Function
The name of the function this RUNTIME_FUNCTION relates to
This value is only populated if debug information can be read for this PE file.

Filename
The filename of the function this RUNTIME_FUNCTION relates to
This value is only populated if debug information can be read for this PE file.

Line
The line number of the function this RUNTIME_FUNCTION relates to
This value is only populated if debug information can be read for this PE file.

Begin
The relative virtual address of the start of the area affected by the exception handler.

End
The relative virtual address of the end of the area affected by the exception handler.

Unwind

The relative virtual address of the unwind data for the exception handler.

Version
The version format of the exception handling data

Flags
Flags that indicate how what this exception handler is.
Valid values are:
- Exception Handler
- Termination Handler
- Chained unwind info

Prolog
Size of the function prologue.

Frame Reg
The name of frame register.

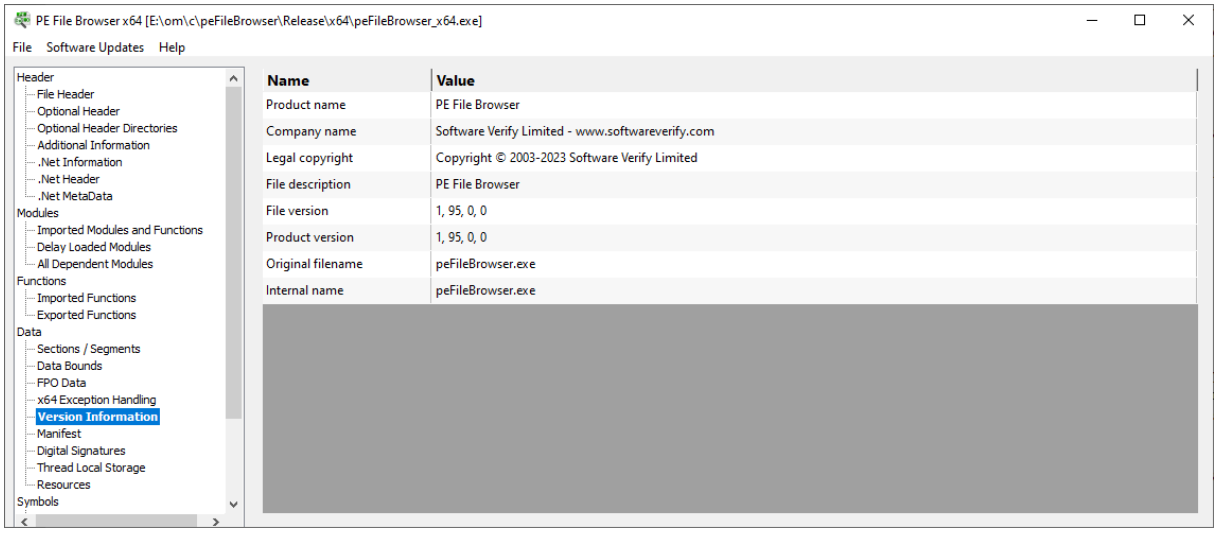
Frame Offset
The offset for the frame.

Codes
The number of codes used by this exception handler.

Except RVA
The relative virtual address of the exception handler.

4.1.17 Version Information

The Version Information display shows the all the version information strings in the PE file.

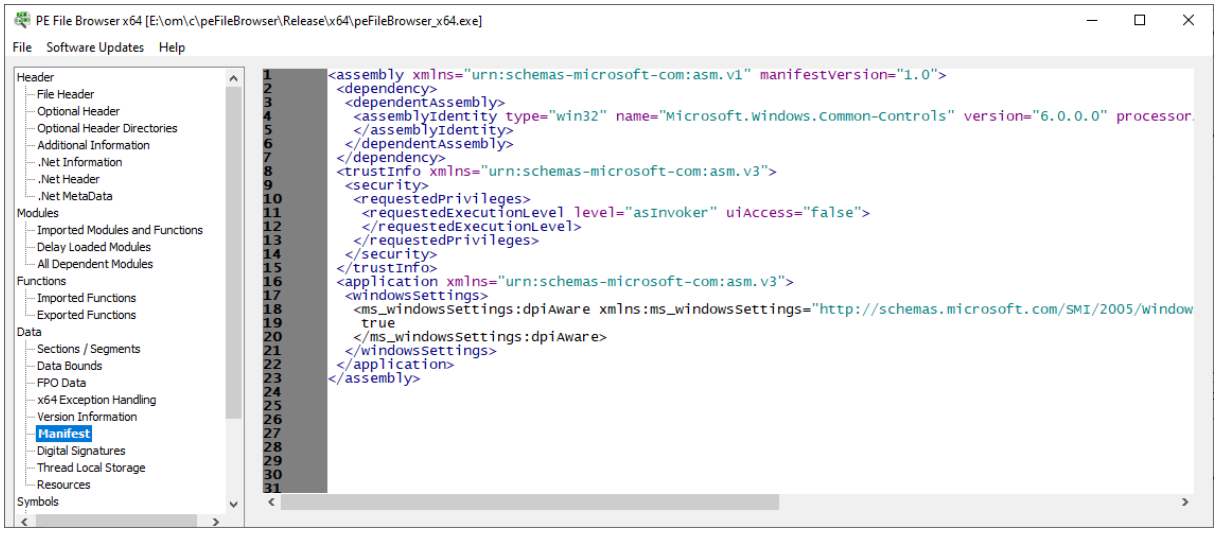


The following version strings are queried to see if they are present in the PE file. Only values that are present are displayed.

- Product name
- Company name
- Legal copyright
- Legal Trademarks
- File description
- File version
- Product version
- Original filename
- Internal name
- Private build
- Special build
- Comments

4.1.18 Manifest

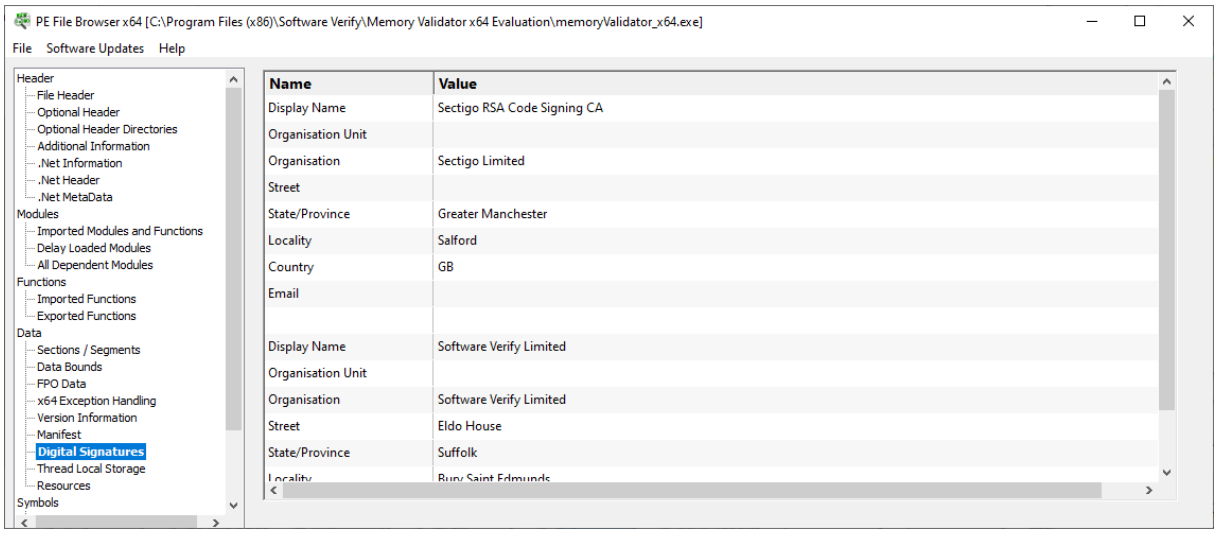
The Manifest display shows the manifest that is used by the PE file.



The manifest will be reformatted to make it more readable if required. Embedded manifests have no formatting and are thus quite hard to read.

4.1.19 Digital Signatures

The Digital Signatures display shows the digital signature information in the PE file.

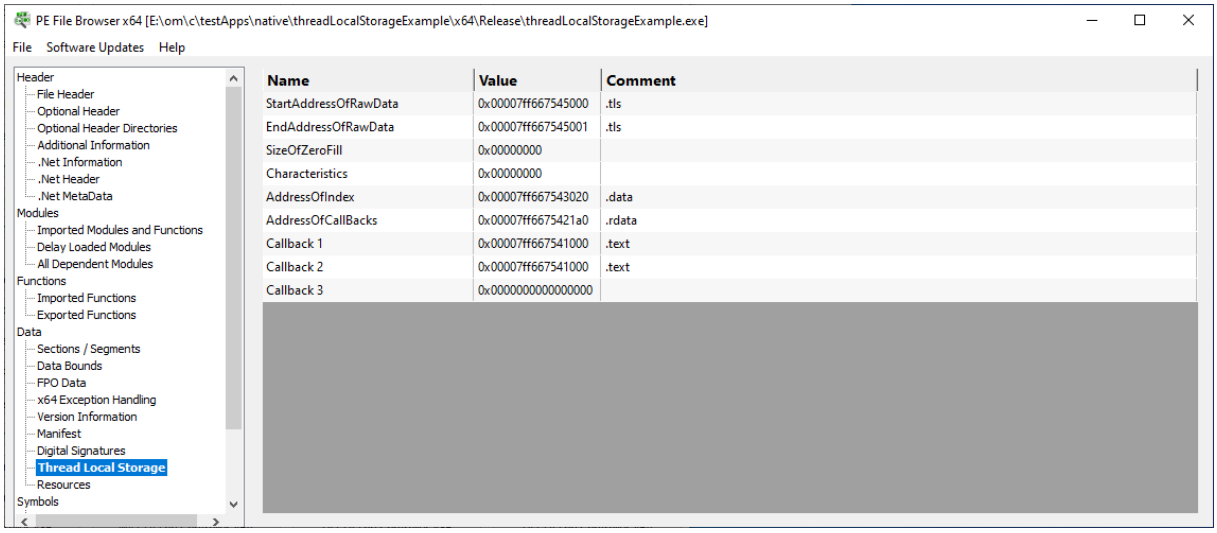


The digital signature is queried for the following information. Any queries that provide a result are displayed here.

- Display Name
- Organisation Unit
- Organisation
- Street
- State/Province
- Locality
- Country
- Email

4.1.20 Thread Local Storage

The Thread Local Storage display shows the thread local storage in the PE file.

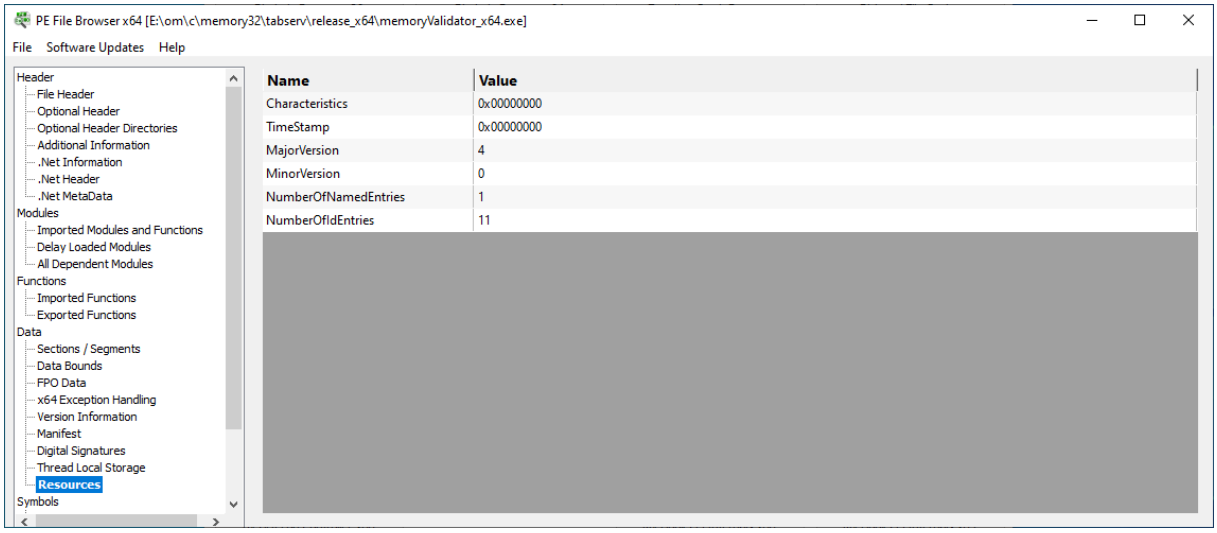


The thread local storage is queried for the following information. Any queries that provide a result are displayed here.

- StartAddressOfRawData
- EndAddressOfRawData
- SizeOfZeroFill
- Characteristics
- AddressOfIndex
- AddressOfCallBacks
- Callback 1
- Callback 2
- Callback 3

4.1.21 Resources

The Resources display shows the resources section in the PE file.

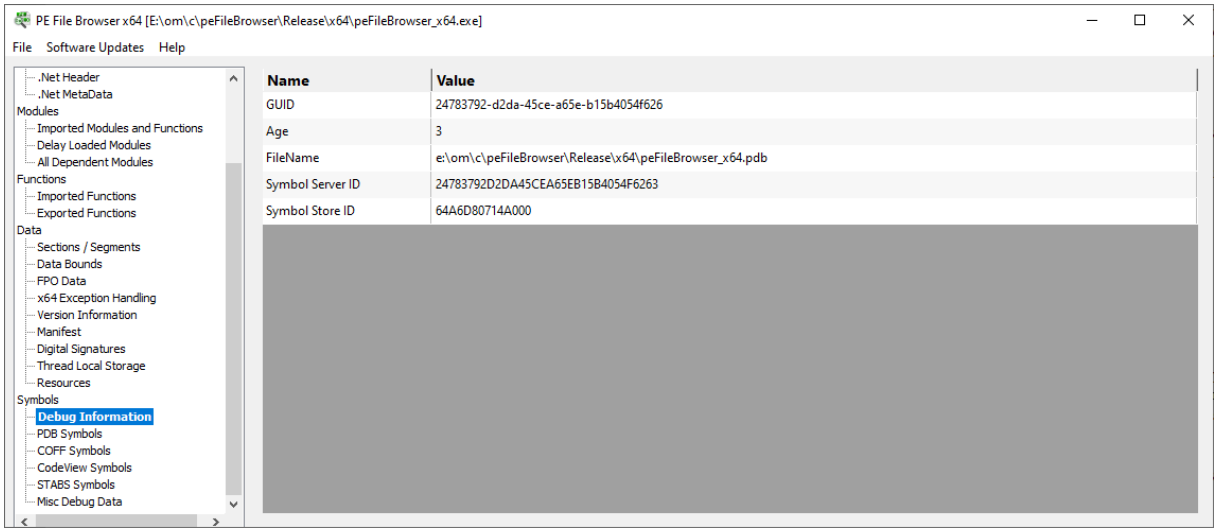


The resources header is queried for the following information. Any queries that provide a result are displayed here.

- Characteristics
- TimeStamp
- MajorVersion
- MinorVersion
- NumberOfNamedEntries
- NumberOfIdEntries

4.1.22 Debug Information

The Debug Information display shows the CV record for the module plus the symbol server id and local symbol store id.

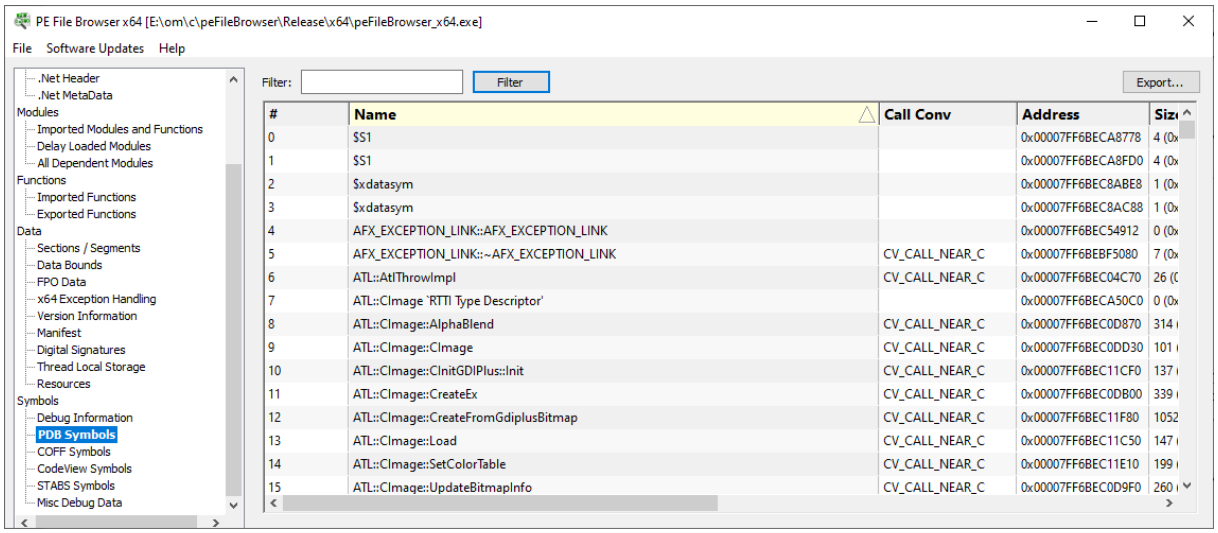


If the module contains a CV record the data in that record is shown here.

GUID	The globally unique identifier that identifies the module.
Age	The age of the module - this is the number of times the module has been linked after a clean or full rebuild.
Filename	The name of the PDB file at the time the module was built.
Symbol server id	The id that identifies a PDB file.
Symbol store id	The id that identifies a module.

4.1.23 PDB Symbols

The PDB Symbols display shows the all the PDB format symbols for the PE file.



Columns

#
The ordinal of the symbol in the symbol data.

Name
The name of the symbol.

Call Conv
The calling convention for the symbol.

Address
The symbol address.

Size
The symbol size.

Type
The type of debug data.
Valid values are:
- SymTagNull
- SymTagExe
- SymTagCompiland
- SymTagCompilandDetails
- SymTagCompilandEnv
- SymTagFunction
- SymTagBlock
- SymTagData
- SymTagAnnotation
- SymTagLabel
- SymTagPublicSymbol
- SymTagUDT
- SymTagEnum
- SymTagFunctionType
- SymTagPointerType
- SymTagArrayType
- SymTagBaseType
- SymTagTypedef
- SymTagBaseClass
- SymTagFriend
- SymTagFunctionArgType
- SymTagFuncDebugStart
- SymTagFuncDebugEnd
- SymTagUsingNamespace
- SymTagVTableShape
- SymTagVTable
- SymTagCustom
- SymTagThunk
- SymTagCustomType
- SymTagManagedType
- SymTagDimension

Flags
Any flags that related to this debug information

Line Number
The line number for the symbol, if any.

Filename
The filename for the symbol, if any.

Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

Filtering

To restrict the display to just symbols that match the filter, or symbols with a filename that matches the filter, enter your filter specification into the filter field then click **Filter**.

The filter can include the * wildcard to match any sequence of characters.

Example filters:

Get*
test
*.cpp

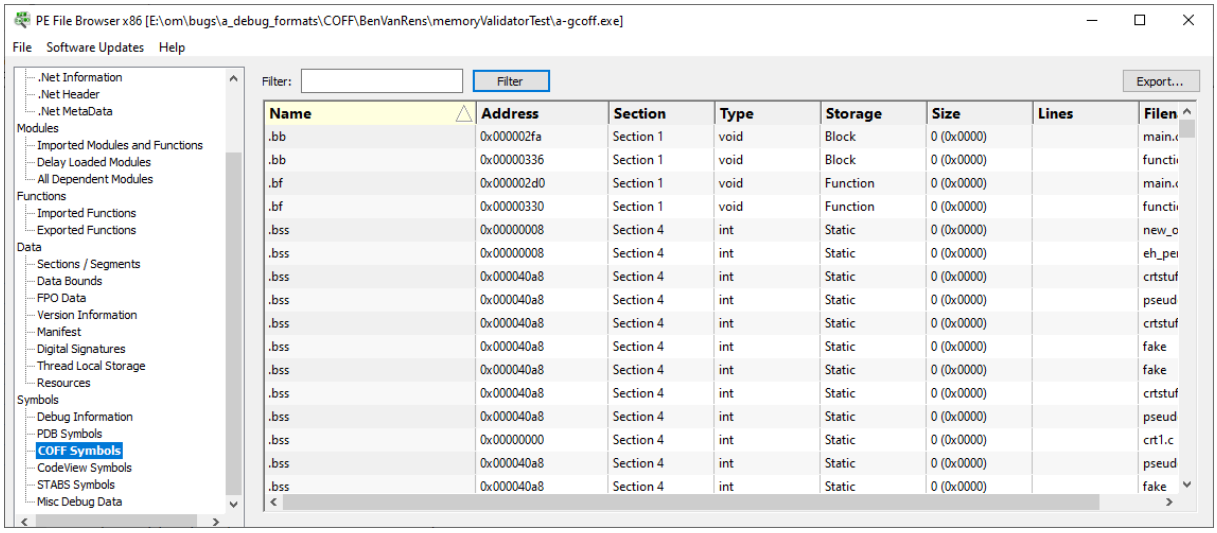
To reset the filter, delete all text from the filter field then click **Filter**.

Exporting Data

To export the contents of the grid to a comma separated text file, click the **Export...** button then enter the name of the file you would like the data saved in.

4.1.24 COFF Symbols

The COFF Symbols display shows the all the COFF format symbols for the PE file.



Columns

Name
The name of the symbol.

Address
The relative virtual address of the symbol.

Section
The symbol section number.

Type
The datatype for the symbol.

Storage
The storage class for the symbol.

Size
The size of the symbol.

Lines
Number of lines for this function (blank if not available)

Filename
The symbol filename.

Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

Filtering

To restrict the display to just symbols that match the filter, or symbols with a filename that matches the filter, enter your filter specification into the filter field then click **Filter**.

The filter can include the * wildcard to match any sequence of characters.

Example filters:

```
Get*
*test*
*.cpp
```

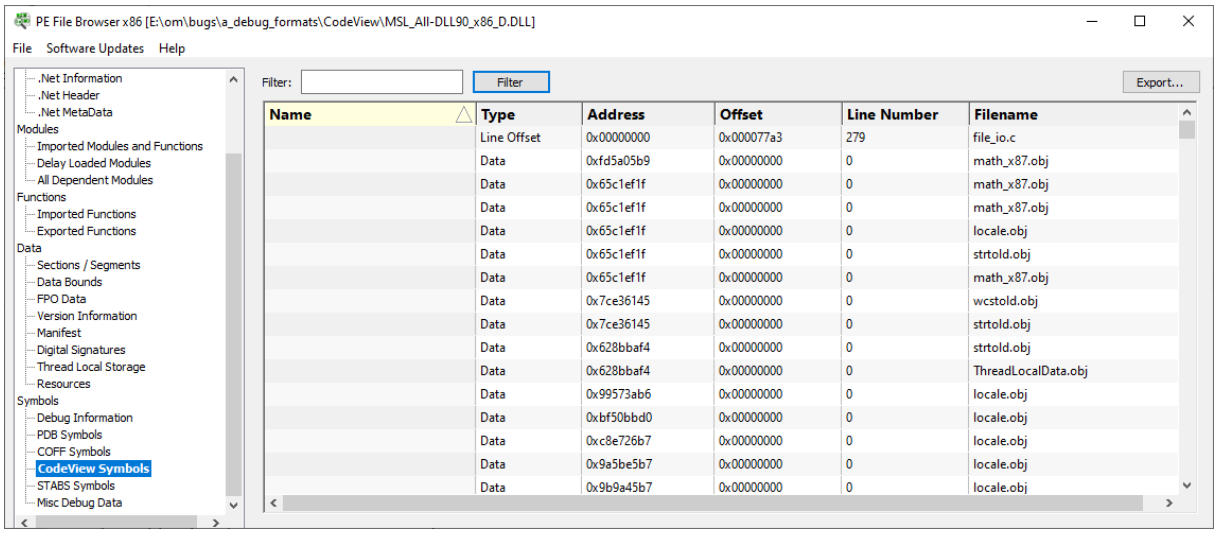
To reset the filter, delete all text from the filter field then click **Filter**.

Exporting Data

To export the contents of the grid to a comma separated text file, click the **Export...** button then enter the name of the file you would like the data saved in.

4.1.25 CodeView Symbols

The CodeView Symbols display shows the all the CodeView format symbols for the PE file.



Columns

Name
The name of the symbol.

Type
The type of the symbol.

Address
The relative virtual address of the symbol.

Offset
The symbol offset.

Line Number
The line number, if any, of the symbol.

Filename
The filename of the symbol.

Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

Filtering

To restrict the display to just symbols that match the filter, or symbols with a filename that matches the filter, enter your filter specification into the filter field then click **Filter**.

The filter can include the * wildcard to match any sequence of characters.

Example filters:

Get*
test

*.cpp

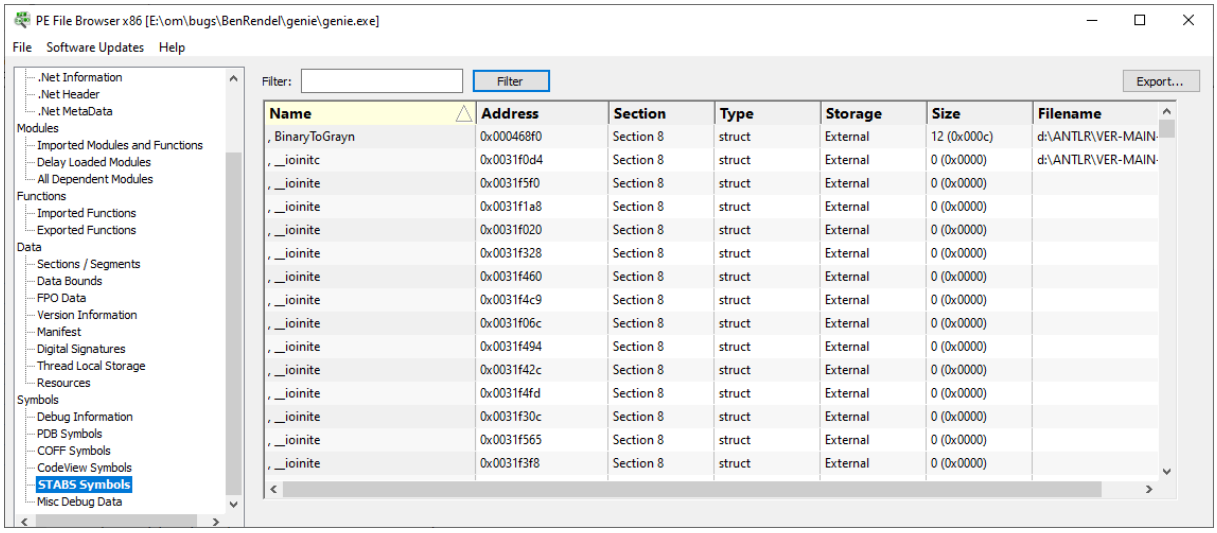
To reset the filter, delete all text from the filter field then click **Filter**.

Exporting Data

To export the contents of the grid to a comma separated text file, click the **Export...** button then enter the name of the file you would like the data saved in.

4.1.26 STABS Symbols

The STABS Symbols display shows the all the STABS format symbols for the PE file.



Columns

Name
The name of the symbol.

Address
The relative virtual address of the symbol.

Section
The symbol section number.

Type
The datatype for the symbol.

Storage
The storage class for the symbol.

Size
The size of the symbol.

Filename

The symbol filename.

Sorting
The data can be sorted by any column. Click the column header to select sorting by that column. Click the same header to reverse the sort direction.

Filtering

To restrict the display to just symbols that match the filter, or symbols with a filename that matches the filter, enter your filter specification into the filter field then click **Filter**.

The filter can include the * wildcard to match any sequence of characters.

Example filters:

```
Get*
*test*
*.cpp
```

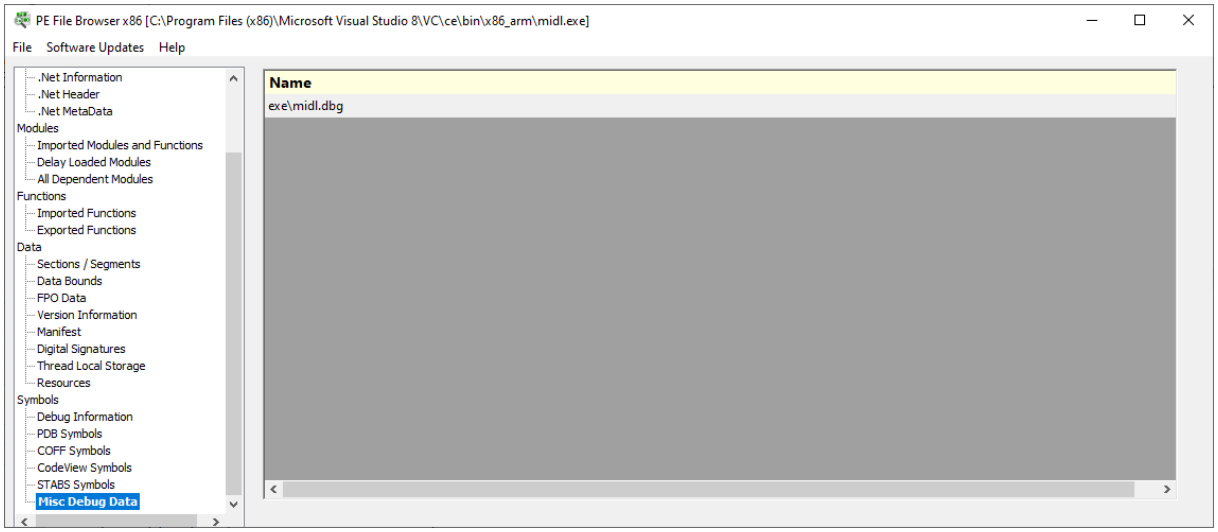
To reset the filter, delete all text from the filter field then click **Filter**.

Exporting Data

To export the contents of the grid to a comma separated text file, click the **Export...** button then enter the name of the file you would like the data saved in.

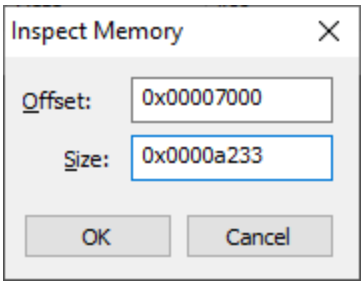
4.1.27 Misc Debug Data

The Misc Debug Data display shows the all the Miscellaneous debug symbols for the PE file.



4.2 View Memory Dialog

The Inspect Memory dialog is shown below.



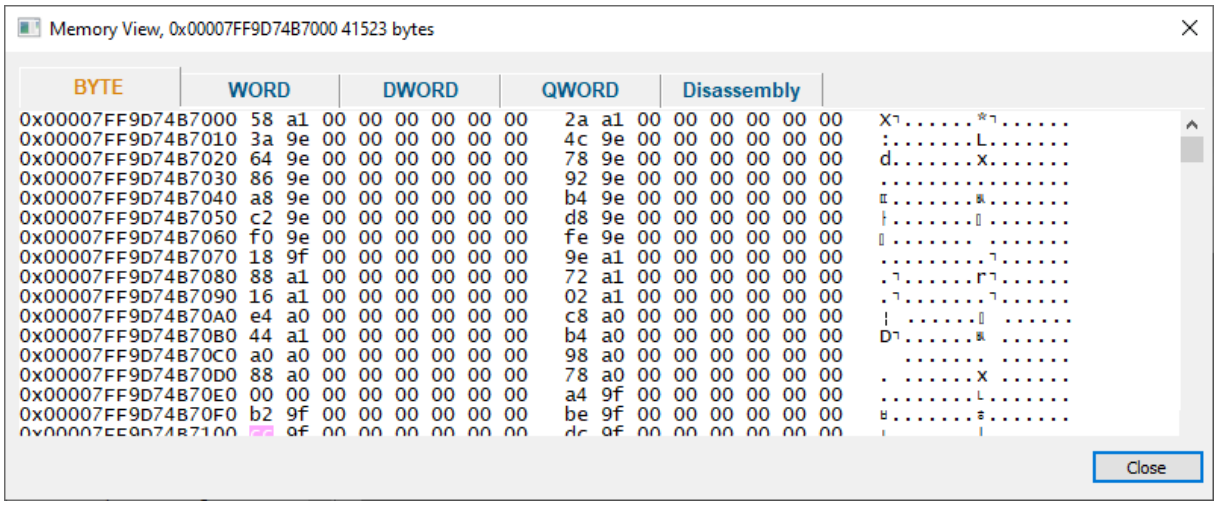
Offset › an offset inside the DLL to start viewing memory

Size › how many bytes to view

Specify an offset inside the DLL and the number of bytes to view.

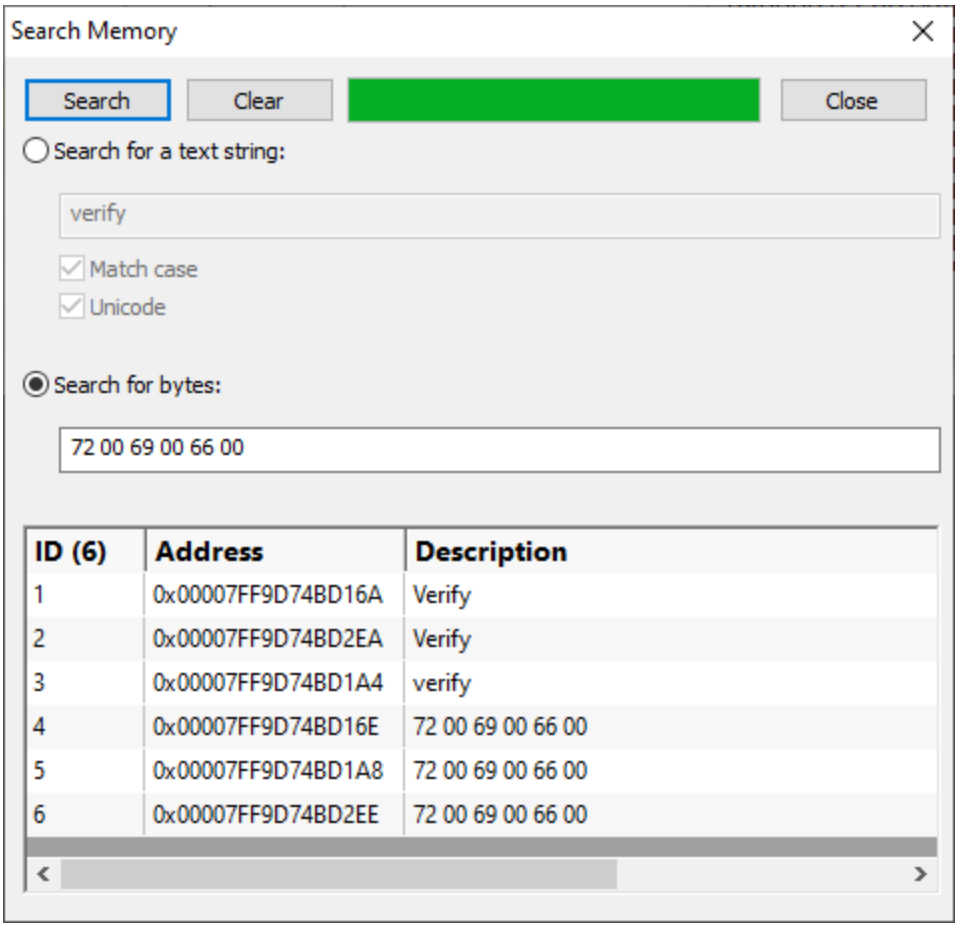
If the memory is readable, the memory will be displayed.

If the memory is executable, a disassembly view is also availble.



4.3 Search Memory Dialog

The Search Memory dialog is shown below.



You can search for text strings or you can search for byte sequences.

Search for a text string › type the string you wish to search for into the text box

Match case › select the check box if the string match should be case sensitive

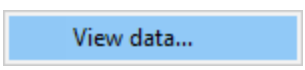
Unicode › select the check box if the string match should be Unicode. If the check box is not selected the string match is ANSI

Search for bytes › type the bytes you wish to search for into the text box. A byte should be specified as a two digit hex value. Separate bytes with spaces

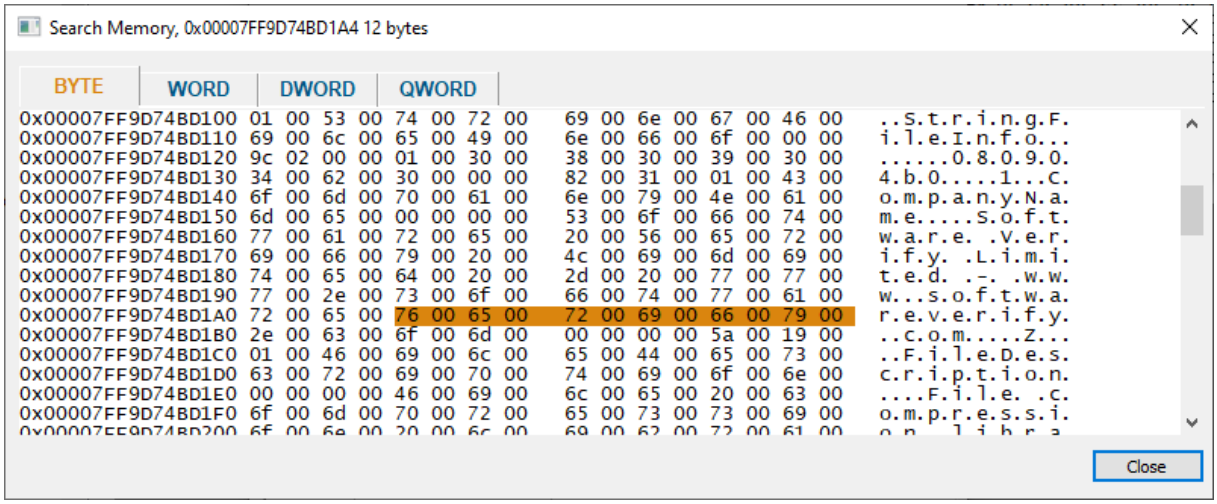
Search › perform the search. The progress of the search is shown on the progress bar, any matching search results are shown in the list.

Clear › clear the search results

A context menu on the search results provides a single option:



Clicking **View data...** opens a memory inspection dialog, allowing you to view the search results memory as BYTEs, WORDs, DWORDs or QWORDs.



Part V

5 Command Line Interface

PE File Browser can be used from the command line as well as with the GUI.

The command line options allow you to launch PE File Browser from another an application so that you can display PE file internals for a specific DLL.

5.1 Alphabetic Reference

/dll

Specifies the PE File that will be displayed

/dll path-to-executable

Example: /dll e:\om\c\test\release\test.dll

/exit

Causes PE File Browser to exit after exporting modules

/exportModules

Specifies the filename to export the list of dependent modules to

/exportModules path-to-export-filename

Example: /exportModules e:\om\export\dependentModules.txt

/exportModulesAndFunctions

Specifies the filename to export the list of dependent modules and functions to

/exportModulesAndFunctions path-to-export-filename

Example: /exportModulesAndFunctions e:\om\export\dependentModules.txt

/exportModulesTopLevel

Specifies the filename to export the list of dependent modules to. Only the immediate dependent modules are exported. No descendant dependencies are exported.

/exportModulesTopLevel path-to-export-filename

Example: /exportModulesTopLevel e:\om\export\dependentModules.txt

5.2 Usage Reference

Displaying a DLL

/dll

Specifies the PE File that will be displayed

/dll path-to-executable

Example: /dll e:\om\c\test\release\test.dll

Export the modules that are dependent on the DLL

Specifies the filename to export the list of dependent modules to

/exportModulesTopLevel path-to-export-filename

Example: /exportModulesTopLevel e:\om\export\dependentModules.txt

Export the modules (and their dependent modules) that are dependent on the DLL

Specifies the filename to export the list of dependent modules to

/exportModules path-to-export-filename

Example: /exportModules e:\om\export\dependentModules.txt

Export the modules (and their dependent modules) and functions that are dependent on the DLL

Specifies the filename to export the list of dependent modules and functions to

/exportModulesAndFunctions path-to-export-filename

Example: /exportModulesAndFunctions e:\om\export\dependentModules.txt

Close PE File Browser after exporting

/exit