

DumpTool Sample

*This sample is compatible with the Microsoft Game Development Kit (June 2020)*

# Description

DumpTool runs in the same OS partition as the Xbox One Title and generates a crash dump for another process that you specify by name as an argument to the tool. You can compile the tool for immediate use, or you can borrow from the source code to add crash dump capabilities to your own tool(s) or your title.

# Building the sample

If using Project Scarlett, you need to add Gaming.Xbox.Scarlett.x64 platform configurations to the project. You can do this via the *Configuration Manager*: Select under "Active solution platform" the option "Configuration Manager" and then select "New...". Set "Type or select the new platform" to Gaming.Xbox.Scarlett.x64 and "Copy settings from" to Gaming.Xbox.XboxOne.x64. Then select OK.

*For more information, see* Running samples*, in the GDK documentation.*

# Using the sample

DumpTool compiles as a Title Mode Console Application (See also on [MSDN Whitepapers](https://developer.xboxlive.com/en-us/platform/development/education/Documents/Title%20Mode%20Console%20Applications.aspx).) Deploying .exe to the console using Visual Studio will shut down any running application, so you will have to build the .exe and then copy to the console and then run it, in multiple steps:

1. Build the tool in Visual Studio to produce DumpTool.exe
2. Launch your title (or e.g. the SimpleTriangle sample)
3. Copy DumpTool.exe to the game OS partition

> xbcp /x/title Gaming.Xbox.x64\Layout\Image\Loose\\*.exe xd:\DumpTool\

> xbcp /x/title Gaming.Xbox.x64\Layout\Image\Loose\\*.dll xd:\DumpTool\

1. Run the tool to collect a triage dump for SimpleTriangle.exe

> xbrun /x/title /O d:\DumpTool\DumpTool.exe -pdt:triage SimpleTriangle.exe

1. Copy the .dmp file back to the development PC for debugging

> xbcp /x/title xd:\SimpleTriangle.dmp

The DumpTool project includes a simple batch file, runCommand.bat, which automates the first four steps and makes it easy to test code changes.

## DumpTool Command Line

DumpTool also supports a rich set of command line options:

Usage: DumpTool [-mdt:<minidump type> ...] [-pdt:<predefined type>] <executable name>

<minidump type>: Normal WithDataSegs WithFullMemory WithHandleData

FilterMemory ScanMemory WithUnloadedModules

WithIndirectlyReferencedMemory FilterModulePaths

WithProcessThreadData WithPrivateReadWriteMemory

WithoutOptionalData WithFullMemoryInfo WithThreadInfo

WithCodeSegs WithoutAuxiliaryState

WithFullAuxiliaryState WithPrivateWriteCopyMemory

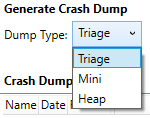
IgnoreInaccessibleMemory WithTokenInformation

WithModuleHeaders FilterTriage

<predefined type>: heap mini micro triage native

<minidump type>s correspond to the values of the MINIDUMP\_TYPE enumeration that you find documented on [GDNP](https://developer.xboxlive.com/en-us/platform/development/documentation/software/Pages/MINIDUMP_TYPE_typedef___dbghelp_Xbox_Microsoft_T_may17.aspx) and [MSDN](https://msdn.microsoft.com/en-us/library/windows/desktop/ms680519(v=vs.85).aspx). Combine different values of MINIDUMP\_TYPE by specifying multiple instances of –mdt: on the command line. Notice that there are a lot of possibilities! To make things simpler, the tool also provides the –pdt option.

The “predefined type” (-pdt) options exist to simplify the MINIDUMP\_TYPE flags that you would normally have to supply individually using the -mdt option. The predefined types correspond to the crash dump types that are supported by xbWatson.exe:



Examples:

> xbrun /x/title /O d:\DumpTool\DumpTool.exe -pdt:triage SimpleTriangle.exe

> xbrun /x/title /O d:\DumpTool\DumpTool.exe -pdt:Mini SimpleTriangle.exe

> xbrun /x/title /O d:\DumpTool\DumpTool.exe -pdt:Heap SimpleTriangle.exe

Notice that the tool also provides “micro” and “native”. Please see the source code for the exact combination of flags that correspond to those values. If you are not familiar with MiniDumpWriteDump() then start with the predefined dump flags and then experiment with additional flags as needed. The tool should easily facilitate this experimentation as it will allow both –pdt: and –mdt at the same time and will combine the flags:

> xbrun /x/title /O d:\DumpTool\DumpTool.exe –pdt:micro –mdt:WithHandleData

–mdt:WithUnloadedModules SimpleTriangle.exe

## Deploying your Tool

If you plan to use DumpTool (or some variation) with your title, then consider adding the tool to your game’s deployment so that you don’t have to copy it to the game OS. The tool then provides a convenient way to generate a crash dump without disrupting the running title in any other way.

# Implementation notes

* It is also possible to call MiniDumpWriteDump() directly from your executable’s code. For example, many developers add this functionality to their unhandled exception filter. Here is a very simple example call to MiniDumpWriteDump.

MiniDumpWriteDump(

GetCurrentProcess(),

GetProcessId(GetCurrentProcess()), hDumpFile, mdt, nullptr, nullptr, nullptr);

* The GSDK also ships with a lightweight tool, called [xbWatson](https://developer.xboxlive.com/en-us/platform/development/documentation/software/Pages/xbwatson_may17.aspx), which can be used to capture a crashdump. The functionality in DumpTool is equivalent to the Crash Dumps feature in xbWatson. Note that you don’t need to perform any additional deployment step to use xbWatson.
* You can use Visual Studio to capture a crash dump as well. Look for the “Save dump as…” option in the Debug menu. Note that this option appears once you have attached to the process and will become active when you pause (“break all”.)

# Known issues

Make sure to open your file with both GENERIC\_WRITE and GENERIC\_READ before calling MiniDumpWriteDump, otherwise the resulting .dmp file may be corrupt.

# Update history

Initial release April 2019.