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Advanced Debugging Stories .NET

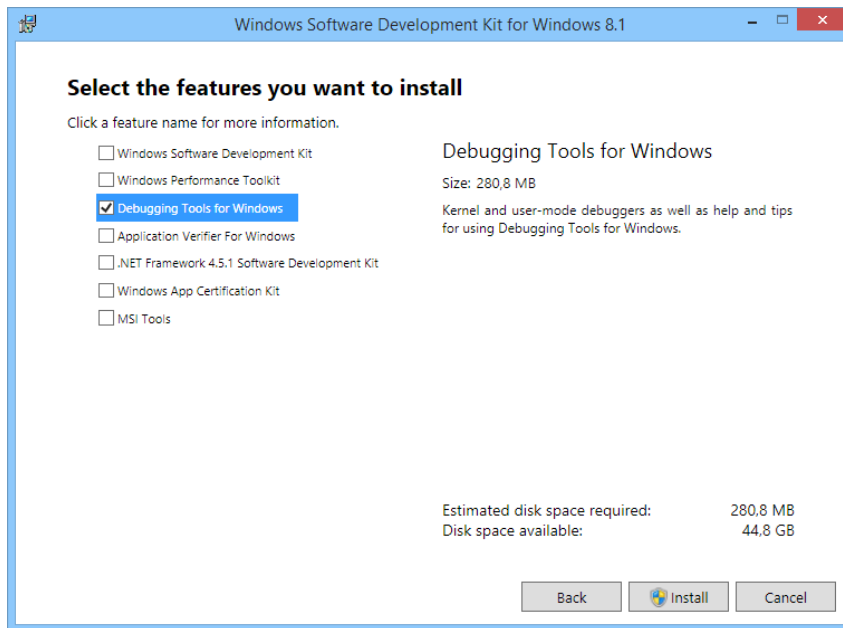
StackOverflow – DebugDiag, WinDbg

DEMO

<http://tinyurl.com/havit-job>



Debugging Tools for Windows



- WinDbg – „GUI“
- NTSD – new console
- CSD – classic console

- DebugDiag - samostatné

součást Windows SDK
www.windbg.org

<http://tinyurl.com/havit-job>



Debugger Extensions pro .NET

`.load C:\path\to\extension.dll`

SOS.dll – Son of Strike, součást .NET

`.loadby sos mscorwks` (.NET < 4)

`.loadby sos clr` (.NET >= 4)

PSSCOR2/PSSCOR4 – širší SOS (web)

SOSEX, NetEx – 3rd party

`!help [<command>]`



Záludnosti použití Debuggeru

Platform - x86 vs. x64

Symbols

`.symfix` (MSFT Symbols Server), `.sympath`, `.sympath+`

`.reload`

.NET Data Access Layer (mscordacwks.dll)

`.cordll -ve -u -l`

stejná verze, jako na laděném stroji (dtto SOS)



Režimy práce s Debuggerem

Open Executable... (**g** pro Run)

Attach to a Process...

Open Crash Dump...

Task Manager / Create Dump File (!!32-bit vs. x64 stroj)

- DebugDiag / ADPLUS
- Windows Error Reporting
- Windows Crash Dump
- WIN32 API (extern v .NET)



DebugDiag

- „user“-friendly UI
- připravené analýzy
- sběr dat/dumpů
- pod pokličkou debugger services
- voláno např. i z Azure Web Apps KUDU



WinDbg Reference



Stack Examination

!ClrStack [-i] [-a] [-l] [-p]

!DumpStack [-EE]

!EEStack [-EE] (all threads)

!DumpStackObjects (typy)



Heap Examination

```
!DumpHeap [-stat] [-type <name>]  
          [-mt <MTaddr>] [-live|dead]
```

```
!HeapStat [-inclUnrooted]
```

```
!GCRoot <ObjAddr>           !GCHandles
```

```
!EEHeap -gc
```

```
!FinalizationQueue [-allReady]
```

```
!FindAppDomain <ObjAddr>
```



Object Inspection

!DumpObject <ObjAddr>

!DumpArray <ObjAddr>

!DumpVC <MTaddr> <ObjAddr>

dd <addr>

dq <addr>

!ObjSize <ObjAddr>



Error Diagnostics

`!PrintException [ObjAddr] [-nested]`

`!DumpAllExceptions` (PSSCOR4)

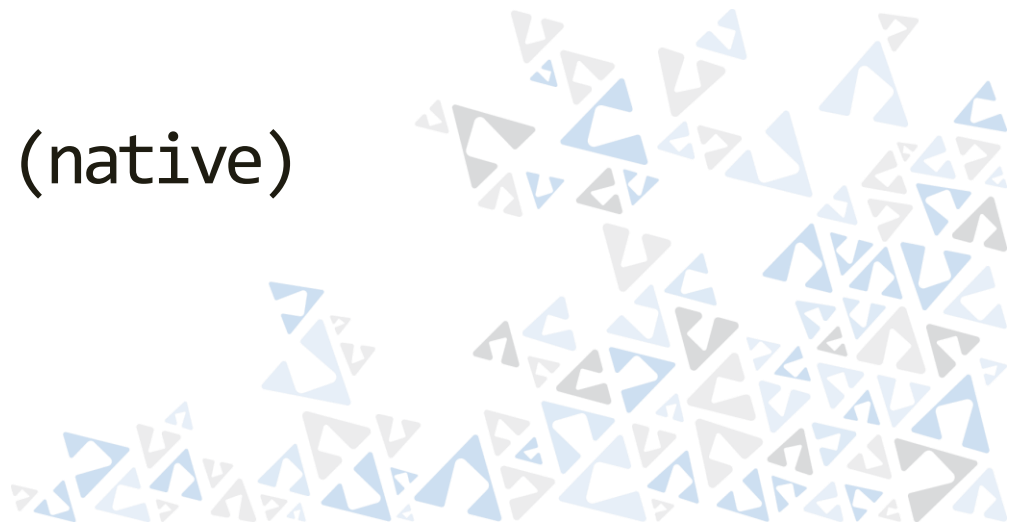
`!wdae` (NETEXT)

`!wpe` (NETEXT)

`!VerifyHeap`

`!VerifyObj <ObjAddr>`

`!analyze -v` (native)



Threads

!Threads

~123s

!ThreadPool

!ThreadState <state>



DEMO, DEMO, DEMO



Q & A

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