Chronos .NET Profiler

1.Overview

Chronos .NET Profiler is fast and convenient tool for .NET performance profiling and exceptions monitoring.

Chronos is a line-by-line profiler. Line-by-line profiling is most detailed profiling type - it allows to catch every method call with high resolution (1 ms). At the same time this profiling type is the slowest - performance overhead is about 400-500%. But even with this overhead, Chronos is faster that other profilers.

Chronos .NET Profiler is not only performance profiler. Chronos also collects information about created application domains, loaded assemblies, modules, classes, functions, created threads and thrown exceptions. This information allows you effectively track program performance and execution.

2. Profiling overhead

Test#1

Sample application: Demo.RayTracer.exe (included into DotTrace and JustTrace packages)

Profiling type: line-by-line

Filter (exclusions): none (profile all methods including .NET Framework)

Test machine: OS - Windows7x64, CPU - AMD Turion II P520 (2cores, 2.3GHz), RAM: DDR3 5Gb

Total methods calls: 130 000 000

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Profiler | Rendering time | Absolute overhead | Overhead on 1kk calls | Relative overhead |
| Without profiler | 8.7 sec | - | - | - |
| Chronos .NET Profiler | 50.7 sec | 42 sec | 323 ms | 483% (in 5.8 times slower) |
| JetBrainsDotTrace | 62.6 sec | 54.6 sec | 420 ms | 619% (in 7.2 times slower) |
| TelerikJustTrace | 136.4 sec | 127.7 sec | 1049 ms | 1468% (in 15.6 times slower) |
| RedGate ANTS Performance Profiler | 374.6 sec | 356.9 sec | 2882 ms | 4205% (in 45 times slower) |

Test#2

Sample application: Demo.RayTracer.exe (included into DotTrace and JustTrace packages)

Profiling type: line-by-line

Filter (exclusions): none (profile all methods including .NET Framework)

Test machine: OS - Windows7x64, CPU –Intel Core i5-2500 (4 cores, 3.3GHz), RAM: DDR3 8Gb

Total methods calls: 130 000 000

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Profiler | Rendering time | Absolute overhead | Overhead on 1kk calls | Relative overhead |
| Without profiler | 2.0 sec | - | - | - |
| Chronos .NET Profiler | 9.7 sec | 7.7 sec | 59ms | 385% (in 4.8 times slower) |
| JetBrainsDotTrace |  |  |  |  |
| TelerikJustTrace |  |  |  |  |
| RedGate ANTS Performance Profiler |  |  |  |  |

2.Components

Chronos consists of 4 physical parts:

1. Host Server

Possible physical placement:

- Windows Client process

-Windows Server (Chronos Host Service)

- Standalone process (hidden) (Chronos.Host.EntryPoint.Application.exe)

Responsibility:

- Manage profiling sessions - start session, close session, provide session information

1. Daemon

Possible physical placement:

- Windows Client process

- Standalone process (hidden) (Chronos.Daemon.EntryPoint.exe)

Responsibility:

-Cache information about appdomains, assemblies, modules, classes, functions, threads and exceptions provided by Agent

- Process callstacks send by Agent

- Provide cached information by request to Client

1. Agent

Possible physical placement:

- Profiled process

Responsibility:

- Collect information about appdomains, assemblies, modules, classes, functions, threads and exceptions created in profiled process

- Log callstacks

1. Windows Client

Possible physical placement:

- Standalone process (Chronos.Client.Win.EntryPoint.exe)

Responsibility: