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Subject: MT anomaly...

Posted by [mirek](#) on Wed, 16 Apr 2008 10:29:09 GMT

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I am now working on some advanced "MT topics" and have encountered this anomaly:

```
#include <Core/Core.h>
```

```
using namespace Upp;
```

```
#ifdef PLATFORM_POSIX
```

```
__thread int threadid;
```

```
#else
```

```
__declspec(thread) int threadid;
```

```
#endif
```

```
#define LLOG(x) LOG((threadid) << " " << x << ", count " << count)
```

```
RWMutex      rwlock;
```

```
VectorMap<int, String> cache;
```

```
String Fn(int x)
```

```
{  
    return AsString(sin(sqrt((double)x)));  
}
```

```
void CheckResult(int x, const String& r)
```

```
{  
    if(r != Fn(x)) {  
        DUMP(r);  
        DUMP(Fn(x));  
        Panic("Failure! " + AsString(threadid));  
    }  
}
```

```
int writes, removes;
```

```
void WorkThread(int id)
```

```
{  
    threadid = id;  
    for(int i = 0; i < 200000000; i++) {  
        if(i % 10000 == 0)  
            INTERLOCKED  
            Cout() << id << ": " << i << ", writes: " << writes << ", removes: " << removes << "\n";  
        int x = rand() & 0x7fff;  
        rwlock.EnterRead();  
        int q = cache.Find(x);
```

```

if(q >= 0) {
    String r = cache[q];
    CheckResult(x, r);
    for(int i = 0; i < 100; i++)
        Fn(x);
    rwlock.LeaveRead();
}
else {
    rwlock.LeaveRead();
    rwlock.EnterWrite();
    q = cache.Find(x);
    if(q >= 0)
        CheckResult(x, cache[q]);
    else {
        writes++;
        if(cache.GetCount() >= 0x7000) {
            removes++;
            cache.Remove(0, 100);
        }
        cache.Add(x, Fn(x));
    }
    rwlock.LeaveWrite();
}
}
}

```

CONSOLE\_APP\_MAIN

```

{
    Thread t[20];
    for(int i = 0; i < 9; i++)
        t[i].Run(callback1(WorkThread, i + 1));
    WorkThread(0);
    for(int i = 0; i < 9; i++)
        t[i].Wait();
}

```

This is basically a code to test RWMutex doing something reasonable - simulating cache.

This works as expected in Win32, fully utilizing both of my cores, but in Linux I am unable to get more than 60% CPU utilization. Obviously, some weird contention is involved, if only I would know why....

Any ideas?

Mirek