

Intermittent sockets performance problem with multiple remote machines

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Hi All,

I've been trying to find a reason for this for a while now and am completely sick of it. I have a test app which uses System.Net.Sockets.Socket to receive large amounts of data (2MBytes total) from several worker processes on remote machines. Most of the time the data is received quickly but about one run in 10 it completes a lot slower. It seems like there's some kind of collision / contention issue.

Example output from the test app:

```
Waiting for results... Got results in 79ms.
Waiting for results... Got results in 79ms.
Waiting for results... Got results in 62ms.
Waiting for results... Got results in 63ms.
Waiting for results... Got results in 47ms.
Waiting for results... Got results in 46ms.
Waiting for results... Got results in 469ms. ! Ten times slower than the
previous identical run !
Waiting for results... Got results in 47ms.
Waiting for results... Got results in 63ms.
Waiting for results... Got results in 79ms.
Waiting for results... Got results in 47ms.
Waiting for results... Got results in 47ms.
Waiting for results... Got results in 47ms.
```

It's a multithreaded app, each thread sends a work request to a process on a remote machine and then waits for the results. The workers do nothing except immediately send dummy data in response to the requests. When it does go slow (e.g. the 469ms run above), it's because one or two of the threads had to wait for all expected data to arrive. Environment is .Net 1.1, Gigabit ethernet through a 1Gb switch, Windows 2000 Advanced Server.

Some observations:

- The above results were with 4 worker machines (all, workers and master, are dual Xeon 2.4GHz, 1GB RAM) sending results to the main test app. When I instead use 4 worker apps on a single remote machine the problem does not

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occur. It's less frequent using 2 processes on each of 2 servers. This supports the collision/contention hypothesis.

– The problem is less likely to occur if I call `Socket.Send()` with smaller chunks. Above results with 64kB chunks. Using 8kB chunks it happens about once every 50 to 100 runs. But presuming it's a collision problem, it will get worse when I connect up many more worker servers, as I intend to do.

Anybody have a suggestion what might be going on here? Could it be a hardware problem? TCP stack in Windows? .NET implementation / wrapper of sockets? I've heard rumour that Win 2k3 server has optimised network handling but have yet to try