Under-powered server, average workstation.

In this situation I have seen up to a 5-fold increase in NFS reading speed between a non cached mount and a second read of a cached mount. It is only when the NFS server is considerably underpowered that the first cached NFS read is not slowed down by writing to the cache.

The faster the local machine and its disk is compared to the server, the greater the speed difference between the second read and a normal NFS read.

Fast Server, slow workstation.

Little or no performance gain is seen. Indeed, the writing of the cache slows things down on the first cached read.

Consistent advantages.

In all cases with the experiment I set up, a considerable reduction in NFS calls (around 75%) and network traffic was recorded between the second and first cached read. By running caching on larger numbers of clients it would allow an overloaded server and network configuration to last that bit longer without upgrade.

Gotchas.

A small cache has problems. In the experiment a collection of files were read. If the total size of the files was bigger than the cache then the cache had little positive effect.

A single read of a cached file has no positive effect. Cacheing a file system that is written more often than it is read will have no positive effect, as the cache will always be out of date.

Overall Impression.

Good, however which machines cache and what is cached must be chosen with care.

Supplement to
Solaris 2, What is our "transition" plan and why are we not where we should be?

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The paper in the printed and bound proceedings indicates that an extra handout may be given with the talk. The reason for this is that a full release of the Solaris 2.3 Operating system was not available at the time of paper submission. This is that handout.

Is CacheFS Worth Having?

Like most performance improving technologies the technology is worse than useless in the wrong environment. Below I describe what we have done, and what results some fairly basic tests have given us. I also outline some considerations as to whether you would find cacheing benificial.

What we have done?

At machine installation time the administrator decides if the machine will have a cache space. We have altered the boot up scripts to detect the cache space, and if it is there to use it. We have altered our automount maps in such a way that only read-only mount points are cached if a caching space exists. CacheFS like AutoFS is virtually invisible to the user.

Briefly, what happens with CacheFS is that as files are read a copy of the file is written to the cache space. When the file is read a second time all that needs to happen is to ensure the master copy of the file has not changed and then read the remains of the from the cache (local disk).

So what performance gain do we get

.I have compared three types of NFS reading:-

Reading files via a non cached NFS mount

Reading files via a cached NFS mount, the first read

Reading files via a cached NFS mount, subsequent reads

I will describe two extreme situations, but a huge amount of other possibilities exist.