

Other problems traced to violating COM single-threaded apartment rules in the shell

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Probably the biggest category of problems that can be traced to violating COM single-threaded apartment rules in the shell is using an object from the wrong thread. Of course, nobody admits to doing this up front, They just report that the shell is broken.

We can't enumerate the items on the desktop any more. We take the pointer returned by `SHGetDesktopFolder` and call `IShellFolder::EnumObjects` , but no objects come out. This code used to work on Windows XP.

There isn't enough information to diagnose the problem, and if you just do what they claim doesn't work, you find that it works:

```

#include <windows.h>
#include <ole2.h>
#include <shlobj.h>
#include <shlwapi.h>
#include <stdio.h>
#include <tchar.h>
INT __cdecl
_tmain(
    INT iArgc,
    __in_ecount(iArgc) PTSTR ppszArgv[]
)
{
    if (SUCCEEDED(CoInitialize(NULL))) {
        IShellFolder *psf;
        if (SUCCEEDED(SHGetDesktopFolder(&psf))) {
            IEnumIDList *peidl;
            if (SUCCEEDED(psf->EnumObjects(NULL, SHCONTF_FOLDERS |
                SHCONTF_NONFOLDERS, &peidl)) && peidl) {
                LPITEMIDLIST pidl;
                while (peidl->Next(1, &pidl, NULL) == S_OK) {
                    STRRET str;
                    if (SUCCEEDED(psf->GetDisplayNameOf(pidl,
                        SHGDN_NORMAL, &str))) {
                        TCHAR sz[MAX_PATH];
                        if (SUCCEEDED(StrRetToBuf(&str, pidl, sz, MAX_PATH))) {
                            _tprintf(TEXT("%s\n"), sz);
                        }
                    }
                }
                ILFree(pidl);
            }
        }
        psf->Release();
    }
    CoUninitialize();
}
return 0;
}

```

When given this simple program that does what they claim doesn't work, the customer explained that they cache the desktop folder. It works for a while, and then stops working. The code is complicated, so they haven't been able to isolate the problem yet. They did find that if they didn't cache the pointer and just called `SHGetDesktopFolder` each time they needed it, then they didn't have the problem.

I never got a confirmation, but I'm pretty sure that they are violating COM apartment threading model rules and obtaining the desktop folder obtained on one thread, then using it on another. Apartment model rules specify that you must use an object on the same thread that created it. If you want to use it on another thread, you have to use a helper function like

`CoMarshalInterThreadInterfaceInStream` . If you just dive in and use it on another thread (known informally as “smuggling”), then all sorts of strange things happen. In this case, the folder can’t enumerate objects any more.

Moral of the story: Stick to the rules for COM objects. If you don’t, you may get away with it for a little while, but someday your sins may catch up to you.

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