
Subject: Re: NaN Magic Bingo!

Posted by [Peter Mason](#) on Thu, 15 Nov 2007 21:16:05 GMT

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Mort Canty wrote:

<...>

> It was the CISCO VPN client! Thank you Peter. That was the best four
> cents I ever got! If you're ever anywhere near the town of Juelich,
> Germany, let me know. I owe you a big, cold, German beer.

>

> Mort

>

> PS. CISCO -> The Cisco Kid (50's radio) -> Mexico -> Coyote ... David
> was right, as usual.

Thanks Mort, I'll keep that beer in mind. I've never actually been to Germany, even though my mother grew up next door (Switzerland). I'm glad it worked out. It's hard to believe that something as mainstream as VPN Client 4.x could have such a glitch in it but there you go. Seems none of us software developers are safe from bugs. In case anyone's curious, here's a simple little test routine that uses brute force to expose the bug. (Sorry it's in C.)

Cheers

Peter

```
// Little FP integrity checker.  MUST be called with VAL=1.
```

```
// Returns 0 if okay and 1 if not.
```

```
#pragma optimize( "", off )  //a smart compiler might see me coming and  
avoid some of my calcs
```

```
static int FPIntegrity(HWND hw, int val)
```

```
{
```

```
register double a=val, b=val, c=val, d=val, e=val, f=val;
```

```
register int i, j, k;
```

```
for( j=1, k=0; j && (k<1000); ++k ) {
```

```
for( i=0x00400000; i&&j; --i ) { //do some simple calcs that shouldn't  
change B, C, D, E or F (they should all remain at 1.0)
```

```
b *= a;
```

```

c += a-b;

d += b-a;

e *= b+c-d;

f -= (a-b+c-d)*e;

if( a-b+c-d+e-f ) {

char tx[256];

j=0;

sprintf( tx, "Floating-point Integrity broke on iteration %d.\nThe following
numbers should all have been 0:\n%f %f %f\n%f %f %f",
k,a-1,b-1,c-1,d-1,e-1,f-1 );

MessageBox( hw, tx, "Warning", MB_ICONWARNING|MB_OK|MB_TOPMOST );

} }

}

return j ? 0 : 1;

}

#pragma optimize( "", on )

```
