Title: Record Alignment in Delphi 5.0
Products(s): MCAPI
Keywords: MCAPI, MCMOTION, MCGetMotionConfig( ), Delphi
ID#:   TN1035
Date: June 12, 2001

Summary

Beginning in Version 5.0 of the Delphi programming environment, Borland changed the default packing of records. This change impacts how Delphi uses the MCMOTION record and breaks the MCGetMotionConfig( ) and MCSetMotionConfig( ) Motion Control API (MCAPI) functions, both of which rely on this data structure.

More Information

The MCAPI expects the members of records to be aligned on four byte (32-bit) boundaries. This was the default behavior for previous versions of Delphi. The change only impacts the MCMOTION record because it is the only MCAPI record that is composed of multiple data types. The solution is to change the declaration of the MCMOTION record in the MCAPI.PAS file that ships with the Motion Control API:

```
type MCMOTION = packed record
    Acceleration: Double;
    Deceleration: Double;
    Velocity: Double;
    MinVelocity: Double;
    Direction: SmallInt;
    UnusedPaddingA : array[1..2] of byte;        { padding added }
    Gain: Double;
    Torque: Double;
    Deadband: Double;
    DeadbandDelay: Double;
    StepSize: SmallInt;
    UnusedPaddingB : array[1..2] of byte;        { padding added }
    Current: SmallInt;
    UnusedPaddingC : array[1..2] of byte;        { padding added }
    HardLimitMode: SmallInt;
    UnusedPaddingD : array[1..2] of byte;        { padding added }
    SoftLimitMode: SmallInt;
    UnusedPaddingE : array[1..2] of byte;        { padding added }
    SoftLimitLow: Double;
    SoftLimitHigh: Double;
    EnableAmpFault: SmallInt;
    UnusedPaddingF : array[1..2] of byte;        { padding added }
    Rate: SmallInt;
end;
```

More information may be found at the Borland website:

> http://community.borland.com/article/0,1410,17800,00.html