III. **Alternative Platform-Level Technologies, Especially Internet Browsers and Java, Threaten Microsoft's Operating System Monopoly**

A. **Middleware technologies have the potential to reduce the applications barrier to entry and facilitate operating system competition**

51. The applications barrier to entry, as explained, is the result of a chicken and egg problem: An operating system cannot attract a sufficiently large set of applications to challenge Windows without a large installed base with which to attract ISVs, and cannot obtain a large installed base without a large and attractive set of applications.

    i.   See supra Part II.B.3; ¶¶ 23-32.

52. Middleware technologies -- principally Internet browsers and Java, which are designed to run on top of an operating system -- threaten to facilitate the creation of competition to Windows by reducing the importance of Windows APIs and thereby eroding the applications barrier to entry.

    i.   Chris Jones described in an August 1995 e-mail: "We are so dominant in all other aspects of the market that we can never be displaced by a full frontal assault. However, when we do leave a hole in our strategy, there are many companies eager to move in and try to leverage this hole to grow into our other businesses. And they have: you only have to browse the Web to realize that NetScape, Sun, Apple, Adobe, and MacroMedia are establishing a presence. The real threat to our business is solutions like Java, which present a different programming model than Windows and take developer and content provider mind share. This platform offering is quickly evolving, with two key players moving forward with their offerings and evangelism. In addition to Java, NetScape has announced an interface for plugging in different document types, while in turn Apple is building a programmable browser using OpenDoc. The Result -- People Aren't Writing to Our Interfaces. The solutions people have implemented today do not benefit Windows uniquely -- they work on all platforms equally well. More importantly, these solutions are being driven by other companies rather than our own -- specifically, NetScape and Sun. Without an alternative to this platform we will lose control of a critical segment of the developer (and customer) market." GX 523, at MS98 0103658.

    ii.   Paul Maritz testified: "If a middleware product provides a set of APIs to software