Industry Background

The introduction of x86 servers in the 1980s provided a low-cost alternative to mainframe and proprietary UNIX systems. The broad adoption of Windows and the emergence of Linux as server operating systems in the 1990s established x86 servers as the industry standard.

The growth in x86 server and desktop deployments has introduced new operational risks and IT infrastructure challenges. These challenges include:

Low Infrastructure Utilization

Typical x86 server deployments achieve an average utilization of only 10% to 15% of total capacity, according to International Data Corporation (IDC), a market research firm. Organizations typically run one application per server to avoid the risk of vulnerabilities in one application affecting the availability of another application on the same server. This “one application to one server” approach, combined with the relative inefficiency of most x86-based server applications, has resulted in significant under-utilization of x86-based server resources.

Increasing Physical Infrastructure Costs

The operational costs to support growing physical infrastructure have steadily increased. Most computing infrastructure must remain operational at all times, resulting in power consumption, cooling and facilities costs that do not vary with utilization levels. In some cases, the lack of adequate power supply represents the limiting factor to an organization’s ability to deploy new applications and servers.

Increasing IT Management Costs

As computing environments become more complex, the level of specialized education and experience required for infrastructure management personnel and the associated costs of such personnel have increased. Organizations spend disproportionate time and resources on manual tasks associated with server maintenance, and thus require more personnel to complete these tasks. Furthermore, automation of operational processes is inherently difficult given the complexity and heterogeneity of the environments.

Insufficient Failover and Disaster Protection

Organizations are increasingly affected by the downtime of critical server applications and inaccessibility of critical end user desktops. The threat of security attacks, natural disasters, health pandemics and terrorism has elevated the importance of business continuity planning for both desktops and servers.

Desktop Management and Security

Managing and securing enterprise desktops present numerous challenges. Controlling a distributed desktop environment and enforcing management, access and security policies without impairing users’ ability to work effectively is complex and expensive. Numerous patches and upgrades must be continually applied to desktop environments to eliminate security vulnerabilities.

Virtualization was first introduced in the 1970s to enable multiple business applications to share and fully harness the centralized computing capacity of mainframe systems. Virtualization was effectively abandoned during the 1980s and 1990s when client-server applications and inexpensive x86 servers and desktops established the model of distributed computing. Rather than sharing resources centrally in the mainframe model, organizations used the low cost of distributed systems to build up islands of computing capacity, providing some benefits but also introducing new challenges. In 1999, VMware introduced virtualization to x86 systems as a means to efficiently address many of these challenges and to transform x86 systems into general purpose, shared hardware infrastructure that offers full isolation, mobility and operating system choice for application environments.

VMware believes that the addressable market opportunity for its virtualization solutions is large and expanding. IDC estimates that less than one million of the 24.8 million x86 servers and less than five million of the 489.7 million business client PCs deployed worldwide are running virtualization software. VMware believes industry trends towards more powerful yet under-utilized multi-core servers and the increasing complexity of managing desktop environments will further accelerate the widespread adoption of virtualization for both server and desktop deployments.