

# vSpace L-6.5 Guidelines for Scaling Deployments

## Scope

One of the principal advantages of deploying multiple users on a single host—be it a PC, server or virtual machine—is that you can readily scale the size of your deployment as your users’ needs grow. Rather than being forced to purchase expensive new computing resources for each new user, you can simply expand the capacity of your host system. Now, with vSpace L-6.5 you can extend the number of users per server up to 100 users depending on your user workload and host system performance.

The number of users, intended application suite and overall performance expectation determine how powerful a host system must be in order to deliver the desired end-user experience. This document provides high-level guidelines for determining the system requirements for various numbers of L-series users with various computing workloads. This document can be used as a starting point for sizing your deployment – but your own in-house testing should be used for the final determination of your host systems’ configurations.

## Understanding Use Cases and Workloads

Prior to deploying vSpace, you should develop use cases for the users you expect to connect to a host. An important consideration in developing use cases involves determining the number and types of applications users will need to operate. These requirements help you identify and measure the users’ standard workloads. For example, you should measure the CPU, memory and storage utilization for a typical user workload in your environment. This workload data and the total expected number of users will help you determine the system requirements for your host system.

Workloads can be divided into three typical categories: low, medium and high. For your reference, we have provided the definitions below, which describe the workloads used to characterize the example systems in the following table. Note that for these examples, the workloads involved sequentially cycling through tasks in the listed applications.

### **Low Workload**

- Microsoft Office® applications: one instance of Word and Excel® per user
- Adobe® Reader 10 — opening and viewing a PDF file
- Internet Explorer®, with two windows/tabs active

### **Medium Workload**

- Microsoft Office applications: one instance of Word, Excel and PowerPoint® per user
- Adobe Reader 10 — opening and viewing a PDF file
- Internet Explorer, with three windows/tabs active

### **High Workload**

- Microsoft Office applications: one instance of Word, Excel and PowerPoint per user
- Adobe Reader 10 — opening and viewing a PDF file
- Internet Explorer, with four windows/tabs active
- Video file (played in Windows Media Player) in a half-screen size window at 480p resolution

## Typical Maximum Number of L-series Users by Workload/Host Configuration

Max. Number of Users			
	Entry-Level Host	Mid-Range Host	High-End Host
	Intel™ Core2 Quad Q8300 @ 2.5 GHz 8 GB RAM DDR2/DDR3 Standard SATA or SSD Drive Server 2008 R2 SP1 (64-bit)	Intel Core™ i7 2600 Quad-Core @ 3.4 Ghz 16 GB RAM DDR3 10K RPM SATA or SSD Drive Server 2008 R2 SP1 (64-bit)	Dual Xeon™ E5660, 6 Cores @ 2.8 GHz 24 GB RAM DDR3 4x 15,000 RPM SAS drives (RAID 10) Server 2008 R2 SP1 (64-bit)
Low Workload	20	60	100
Medium Workload	15	45	80
High Workload	12	35	60

### Conclusion

The above guidelines represent conservative estimates of required system configurations that are generally expected to result in a satisfactory user experience for the workloads as defined. ***The number of users that your installation will support depends upon the host's configuration and your end-users' performance expectations.*** Performance results are highly dependent upon the individual host hardware, memory, applications being used, operating system and network conditions within any LAN. ***Host requirements will vary, please test your multi-user environment before deployment.***

For large vSpace deployments, you also need to consider other factors that affect the user experience, including network bandwidth, whether or not virtual machines/hypervisors are used and host capacity and performance, including the number of available IOPS, and available host memory and server cores. For information about additional system configuration requirements, deployment guidelines and system tuning, please see the "[NComputing L-Series Deployment Checklist](http://www.ncomputing.com/kb/)" in the NComputing Knowledge Base ([www.ncomputing.com/kb/](http://www.ncomputing.com/kb/)).