



2021 R1 ANSYS License Manager Server Hardware and Network Requirements

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Objectives

To provide some performance guidelines and best practices about the server hardware and network where the ANSYS License Manager is deployed. The document should enable the reader to better understand what license server hardware configurations work best.

Supported Platforms

The Release 2021 R1 ANSYS License Manager is supported on the following platforms:

Platform/Architecture	Operating System
Windows (Intel EM64T, AMD64 Opteron)	Microsoft Windows 10 (Professional, Enterprise and Education) Windows Server 2016 Standard Windows Server 2019 Standard



Linux x64 (Intel EM64T, AMD64 Opteron)	Red Hat (RHEL) Version 7.6- 7.8 Red Hat (RHEL) Version 8.1 SuSE Linux ES & Desktop Version 12 (SP3 - SP4) SuSE Linux ES & Desktop Version 15 (SP1) CentOS Version 7.6- 7.8 CentOS Version 8.1
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We publish our supported platforms and future platform support plans on the www.ansys.com web page here:

- <http://ansys.com/Solutions/Solutions-by-Role/IT-Professionals/Platform-Support>

Recommended Hardware Configurations

Please note that the recommended hardware configurations in this section are preliminary. Before making any hardware purchase decisions based on these general recommendations, please discuss your specific requirements with your ANSYS Account Manager. Note that we will update this information periodically as we progress our benchmarking activity.

The **minimum** recommended configuration for an enterprise level deployment is:

64-bit machine

- 8 GByte of RAM
- At least two CPUs (or one CPU with at least two cores)
- 1 GBps Ethernet card
- 1 GBps or better network switch
- Platform/OS: Please see our supported platforms here:

<http://ansys.com/Solutions/Solutions-by-Role/IT-Professionals/Platform-Support>

This recommendation assumes that the server is not additionally running other vendors' license managers or other software, which will reduce the performance of the above configuration.

This configuration should support ~400 concurrent client users. Beyond 400 clients, we recommend additional RAM and progressively higher performance CPUs. Our experience shows that larger accounts in the 400 - 500 concurrent client user range use license manager servers with more than 8 Gb RAM. 16 Gb RAM is a more common configuration at such customer sites.

Please follow these guidelines when selecting license servers:

- All files used in conjunction with the license manager software must be located on a disk that is physically local to the server computer(s).
- The license server(s) must have a high-speed, reliable Ethernet connection.
- Computers that experience extremely high levels of network traffic or processing lags due to high CPU and/or I/O usage are poor candidates for license servers.

- Do not use computers that are frequently rebooted.
- The license server machine(s) must have a static IP address.

Multiple Single-Server versus Redundant-Server Configurations

We recommend that you configure multiple single servers instead of a redundant (triad) configuration. If one of the single servers becomes unavailable, then only a portion of your license become unavailable, rather than all of them. A redundant-server configuration will add additional network communication overhead, resulting in reduced server performance.

When a redundant triad is configured incorrectly, you will lose all of the inherent benefits of redundancy.

If use of a redundant (triad) configuration is unavoidable, then please follow these guidelines:

- Choose three machines that are of the same platform type (that is, three Linux or three Windows machines).
- All three server machines should be on the same subnet in the same physical location.
- Install the license file (as well as the entire licensing directory) locally on each of the three license servers. If you do not, you lose all the advantages of having redundant servers, since the file server holding these files becomes a single point of failure.

Number of Client Licenses Connected to the Server

The maximum number of clients (considering all vendor daemons) that should be served from a single server should not exceed 2000. These limits are directly related to the number of threads a machine can support.

Using server hardware that is underpowered or a network environment with limited bandwidth will result in license failures when the server is exposed to high client loads. As you increase the number of clients, we recommend more powerful CPUs, more CPUs/cores and more memory -- basically the more the better!

If you are considering exceeding 2000 clients, then we recommend splitting the client load amongst multiple servers (each client has a primary, secondary server identified in their path) such that the client load on each server is below the 2000 threshold.

Mixed Vendor Daemons on the Same License Server

The ANSYS License Manager may be used on license servers that host other vendors' FlexNet license daemons. However, please insure that:

- The license server(s) and your network environment have suitable bandwidth appropriate for the total number of product clients being served by all vendor daemons. Please review our "Recommended Hardware Configuration" section above for our guidelines.

- We do not support combining the license files from multiple vendor daemons in order to run a single lmgrd.

For optimal ANSYS License Manager performance, we recommend that you do not host the ANSYS License Manager with other vendors' license daemons on the same server machine.

Flexera Software's 'FlexNet Publisher License Administration Guide' outlines three strategies for running FlexNet-based license managers from multiple vendors. However, of the three, Flexera Software indicates that using multiple machines (with each one running one lmgrd, one vendor daemon, and using one license file) is the better solution, with fewer disadvantages. According to the Flexera Software, the advantages are as follows:

- The license files for each vendor are independent from one another.
- Each server machine can be maintained separately. If one machine goes down, the other machines continue to serve licenses for their vendors.
- Each server has its own debug log.
- Client load is distributed.

The Flexera Software's 'FlexNet Publisher License Administration Guide' is accessible through your ANSYS License Manager installation.

Network Settings

The primary network settings to configure the ANSYS License Manager are the TCP/IP port settings. The default port for the FlexNet License Manager are configured during installation. These settings should only be adjusted in exceptional circumstances, such as to avoid using the same ports as other applications/services on your network.

Virus scanners, firewalls, and WAN optimization software should also be configured to allow the various components of the ANSYS License Manager to run & also communicate on the allocated ports. In our experience, most ANSYS License Manager disconnects are due to virus scanners, firewalls, or WAN optimization software blocking the operation of the ANSYS License Manager. Here's a list of the executables that you will need to add to your firewall exceptions list:

- lmgrd.exe
- ansyslmd.exe
- ansysli_server.exe
- ansysli_monitor.exe

For a standard ANSYS License Manager installation, these files are found in the ANSYS licensing installation directory. An example Windows 64-bit installation would contain the executables in this directory: C:\Program Files\ANSYS Inc\Shared Files\Licensing\winx64\. Keep in mind that some firewall software may require that you update the binary check when a new release of the license manager is installed.

IPv6 is being progressively rolled out globally by Internet service providers & IT departments. IPv6 will ultimately supersede the current global standard IPv4; however, it could be a decade before IPv4 is completely superseded, and during this interim period, both IPv4 and IPv6 will need to be supported. Currently, the ANSYS License Manager supports IPv4 and does not support IPv6. We recommend that you either turn off IPv6 or make IPv4 the default; otherwise, the clients will fail to connect to the license server (network error). We are currently researching supporting IPv6, particularly the timeline, and we would appreciate some advanced notice of your requirements here.

The `lmstat` command is a very useful FlexNet Licensing command used to provide information about the status of the license servers, vendor daemons, license features and users. The command can provide considerable information; therefore, its use is very “expensive.” `lmstat` is intended for periodic updates/spot checks; please don’t overuse it! Don’t use it as a license usage reporting tool. Frequent `lmstat` queries for the support of load balancing software are also problematic. Our recommendation is to use `lmstat` sparingly.

Wide Area Networks

The ANSYS License Manager supports wide area network (WAN), local area network (LAN) and mixed WAN/LAN network configurations. However, our standard software license agreement and license keys only permit LAN use. If you need to expand the scope of your ANSYS license agreement to cover WAN use, please contact your ANSYS Account Manager.

Network latency is a serious concern with larger LANs and with WANs. It is important that a high-speed, reliable ethernet connection is maintained between the license servers & clients across your network. Our approximate guideline is that a network latency of 200ms is the upper limit. However, there are many factors to consider here, such as the hardware and operating system configuration, the number of client applications being served, and what other application and license managers are sharing the network.

WiFi Connections

We do not recommend connecting your license server to your network using a wireless connection. Wireless connections are inherently less robust and less secure than a wired connection. Additionally, even the best wireless technologies have transfer speeds a factor of ten slower than wired ethernet connections.

Using a VPN

We do not recommend connecting your license server to your network using a Virtual Private Network (VPN). The license server should be physically connected to the network for best performance. Although very secure, such remote connections will be less robust and have lower transfer speeds than a physical network connection.



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Virtualization

The ANSYS License Manager does function on virtual machines, although we do not provide technical support for or certify virtual machines. We do allow you to clone license servers for business continuity/disaster recovery reasons. Generally, you need to insure that you adhere to the terms of your ANSYS license agreement when using virtual machines.