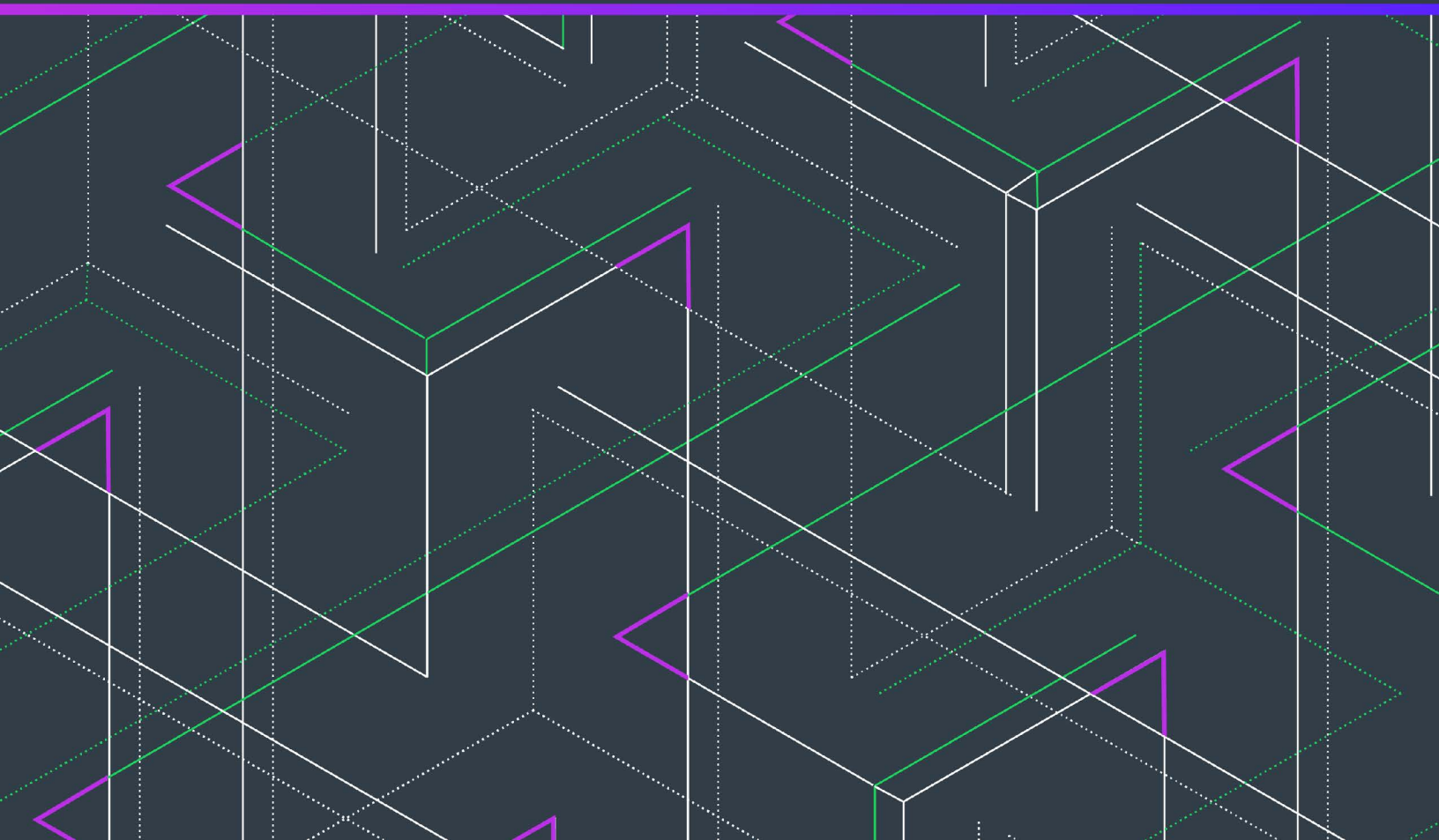
revenera

FlexNet Publisher Enterprise 2026 R2

User Guide



Legal Information

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FlexNet Publisher Enterprise 2026 R2 User Guide

The primary objective of the FlexNet Publisher Enterprise User Guide is to provide an overview and explain the impact on the functionality of a FlexNet Publisher license server resulting from the implementation of the FlexNet Publisher Enterprise.

Table 1-1 ▪ FlexNet Publisher Enterprise User Guide

Topic	Content
Introduction to FlexNet Publisher Enterprise	Provides an overview of the FlexNet Publisher Enterprise, including its purpose, the conditions under which it is required, and benefits it offers.
System Requirements	Explains specific build procedures, hardware requirements, and platform compatibility.
Enterprise Environment Overview	Explains the operational behavior of the FlexNet Publisher Enterprise environment.

Product Support Resources

The following resources are available to assist you:

- Revenera Product Documentation
- Revenera Community
- Revenera Learning Center
- Revenera Support
- FlexNet Publisher Enterprise Demonstration

Revenera Product Documentation

You can find documentation for all Revenera products on the Revenera Product Documentation site:

https://docs.revenera.com

Revenera Community

On the Revenera Community site, you can quickly find answers to your questions by searching content from other customers, product experts, and thought leaders. You can also post questions on discussion forums for experts to answer. For each of Revenera's product solutions, you can access forums, blog posts, and knowledge base articles.

https://community.revenera.com/s/

Revenera Learning Center

The Revenera Learning Center offers free, self-guided, online videos to help you quickly get the most out of your Revenera products. You can find a complete list of these training videos in the Learning Center.

https://learning.revenera.com

Revenera Support

For customers who have purchased a maintenance contract for their product(s), you can submit a support case or check the status of an existing case by first logging into the Revenera Community, clicking **Support** on the navigation menu to open the **Support Hub** page, and then clicking the **Open New Case** or **Case Portal** button.

FlexNet Publisher Enterprise Demonstration

Gain deeper insights into the capabilities of FlexNet Publisher Enterprise by exploring our dedicated demonstration. This resource showcases how the solution is designed to support complex licensing environments with advanced features and scalability.

SWM Office Hours: Early Access to FlexNet Publisher Load Balancer

Contact Us

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Introduction to FlexNet Publisher Enterprise

FlexNet Publisher Enterprise is a solution that extends the capabilities of a FlexNet Publisher license server while reducing the dependency on additional independent license servers. This enhances scalability to meet growing capacity demands.

Information about FlexNet Publisher Enterprise is organized into the following sections:

- Purpose of FlexNet Publisher Enterprise
- Signs That a Producer Needs FlexNet Publisher Enterprise
- Key Benefits of FlexNet Publisher Enterprise

Purpose of FlexNet Publisher Enterprise

The primary purpose of FlexNet Publisher Enterprise is to enhance the performance of a FlexNet Publisher license server by increasing the number of simultaneous client connections it can support and improving the license checkout rate.

The FlexNet Publisher Enterprise functionality allows organizations to efficiently scale their Electronic Design Automation (EDA) and High Performance Computing (HPC) environments by distributing license requests across multiple vendor daemons. This optimizes the computational resources to enhance performance and reliability, and reduces operational costs. The following outlines the primary objectives of FlexNet Publisher Enterprise:

- **Increases the number of simultaneous client connections**—FlexNet Publisher Enterprise enhances the performance of a FlexNet Publisher license server by increasing the number of simultaneous client connections it can support.
- **Distributes clients across multiple publisher vendor daemons**—This capacity enhancement to FlexNet Publisher license servers is achieved by distributing clients across multiple publisher vendor daemons (VDs) instead of focusing on a single vendor daemon, ensuring a balanced load distribution. All client requests are distributed in a controlled manner, with new clients being directed to the least loaded vendor daemon.
- **Optimizing resource utilization and streamlining upgrades**—FlexNet Publisher Enterprise utilizes system resources of single machine effectively, streamlining the upgrade process and emphasizing capacity enhancements for FlexNet Publisher license servers.

- **Capacity: Increasing client connection counts**—An internal testing result has shown that an installation with 16 vendor daemons can boost client connection counts.

Note ▪ *The checkout rate factor may vary depending on the system.*

To obtain access to the FlexNet Publisher Enterprise—in order to support advanced licensing capabilities—please contact your product vendor.

Scaling License Servers to Meet Growing Demand

By consolidating license server infrastructure and enhancing the computational efficiency, FlexNet Publisher Enterprise optimizes license distribution to efficiently handle higher client loads.

As chip production for artificial intelligence (AI) and machine learning (ML) accelerates, FlexNet Publisher Enterprise offers significant value to the semiconductor industry by enabling high-performance license management that scales to meet the increasing demands.

For industries dependent on advanced simulation, automation, animation, and engineering, FlexNet Publisher Enterprise delivers the robust and scalable infrastructure required to support growing workloads while ensuring service continuity.

Example Scenario Benefiting from FlexNet Publisher Enterprise

The driver for the FlexNet Publisher Enterprise add-on to FlexNet Publisher is to meet the growing demands of semiconductor and other software vendors engaged in high performance computing. There is a significant capacity scaling challenge driven by the demands of AI and ML chip advancements.

The following is a typical FlexNet Publisher license server deployment scheme in an end customer enterprise:

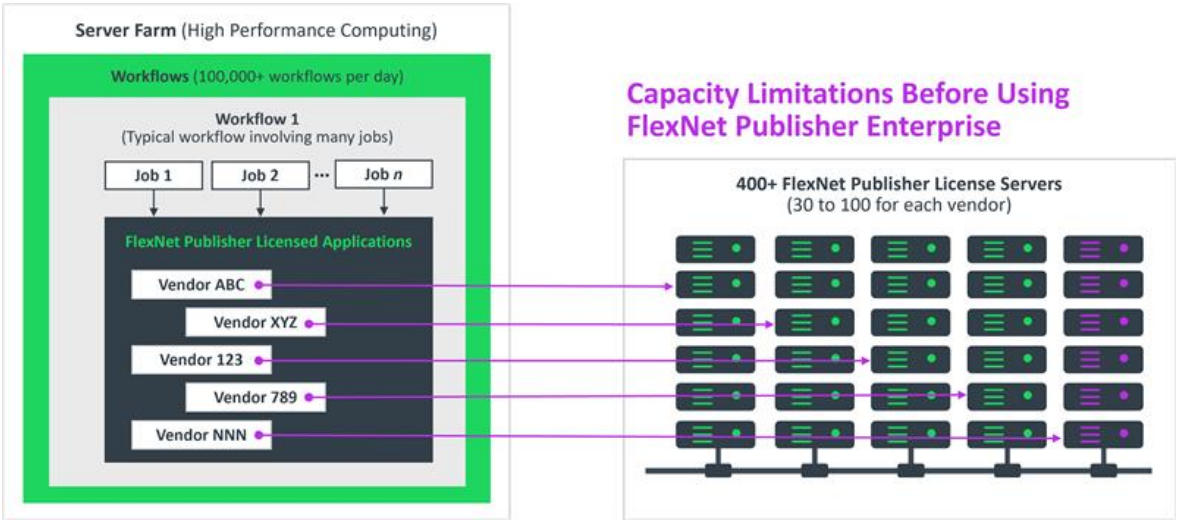


Figure 2-1: License Server Capacity Limitations Before Using FlexNet Publisher Enterprise

This type of high-performance computing results in capacity scaling issues:

- **Testing workflows require thousands of simultaneous license checkouts**—These types of testing requirements need to perform extensive testing using server farms on the chips that they manufacture, requiring many different testing applications to be launched repeatedly (using automated workflows that

kick off thousands of jobs) to test chips. This has caused a bottleneck in license checkouts on standard FlexNet Publisher license servers. Current FlexNet Publisher license server capacity limits are being reached. You currently cannot go beyond 65K connections on Windows machines or 120K connections on Linux machines.

- **Server capacity limits result in the requirement for additional license servers**—In scenarios where capacity needs are beyond these numbers, license administrators have to spin up additional license servers and split the license counts
- **Additional license servers are expensive**—Certain busy deployments typically have 200 to 400 license servers, which have a high operational cost (costing over hundreds of thousands of dollars per year) and have multiple points of failure. For each FlexNet Publisher-licensed software application in use, the customer might need 40-70 license servers to meet their demands.
- **Without FlexNet Publisher Enterprise, FlexNet Publisher license servers cannot leverage multi-core or multiple virtual processors**—The biggest problem encountered with the existing FlexNet Publisher license servers was that it was multi-threaded, so no matter what type of powerful computer you used, because it is not leveraging multi-core or multiple virtual processors in a virtualized environment, it is not able to give you a capacity beyond a certain upper limit.

How FlexNet Publisher Enterprise Increases License Checkout Capacity

FlexNet Publisher Enterprise is able to create many incarnations of vendor daemons in different process IDs. By doing that, it is able to leverage the power of multi-core processors and when the requests come to an `lmgrd` license server, the load balancer will distribute license loads across multiple vendor daemons, increasing the capacity by 8 to 12 times. All load balancing is performed within a single machine.

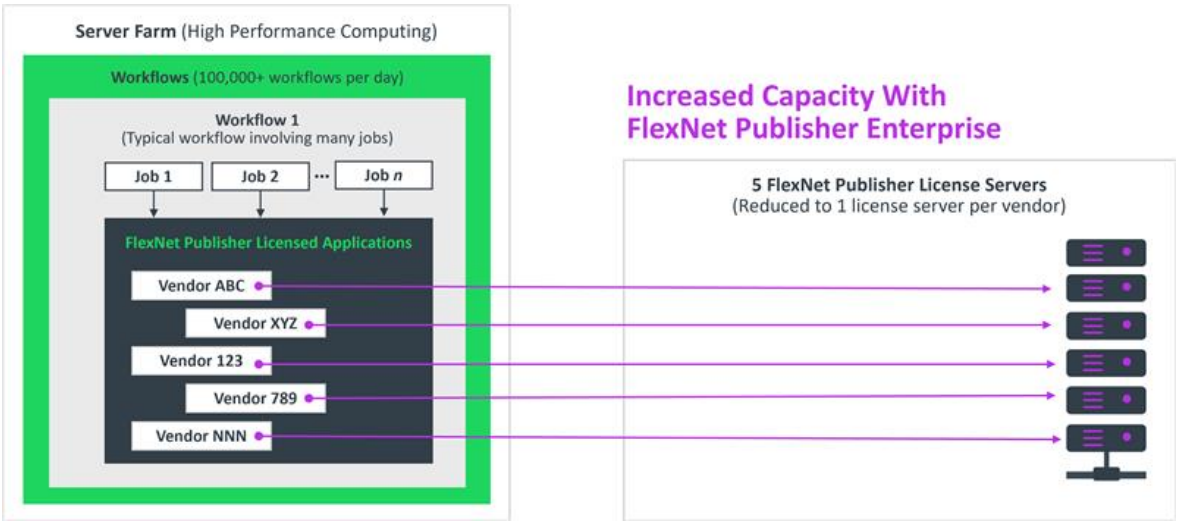


Figure 2-2: Increased License Server Capacity With FlexNet Publisher Enterprise

When using FlexNet Publisher Enterprise, a customer that previously required 200 to 400 license servers would then need only 30 to 40. If the customer previously used 30 to 40 license servers, they might then only need one. This will greatly simplify required IT infrastructure.

Signs That a Producer Needs FlexNet Publisher Enterprise

The following outlines the conditions or circumstances under which producers require FlexNet Publisher Enterprise:

- **License server throughput constraints are affecting renewals**—Renewal discussions are increasingly challenged by performance bottlenecks in existing FlexNet Publisher license server infrastructure, limiting customer satisfaction and perceived value.
- **Customer priorities are shifting toward operational efficiency**—End users are continuously targeting automation, cost optimization, and reduced infrastructure complexity—pressuring producers to deliver more scalable and flexible licensing solutions.
- **Operational overhead of license management is under scrutiny**—Customer interest is to lower the total cost of ownership (TCO) for license management infrastructure, with growing demand for solutions that minimize the number of license servers and simplify deployment.
- **Available FlexNet Publisher license server limits are restricting end-user workflows**—Insufficient license server capacity is resuting to job queuing, license denials, and user dissatisfaction in high-demand environments, particularly in compute-intensive industries.
- **Multiple license server deployments introduce complexity and risk**—Customers are forced to deploy and manage multiple license servers to meet growing capacity needs—resulting in increased maintenance, challenges, and reduced system efficiency.
- **Cloud-native workloads are creating new demands on license infrastructure**—As semiconductor customers migrate compute-heavy workflows (e.g., design simulations, verification) to public cloud environments, traditional on-premise license server models struggle to keep pace with elastic scalability and dynamic resource provisioning.

Key Benefits of FlexNet Publisher Enterprise

The following are the advantages of using FlexNet Publisher Enterprise:

- **Load distribution**—FlexNet Publisher Enterprise distributes incoming clients across multiple publisher vendor daemons (VDs), ensuring that no single vendor daemon bears too much load. This helps in optimizing resource use, maximizing throughput, minimizing response time, and avoiding overload on any single vendor daemon.
- **High availability**—By distributing load across multiple publisher vendor daemons, FlexNet Publisher Enterprise helps ensure that an application remains available even if one or more vendor daemons fail.
- **Scalability**—FlexNet Publisher Enterprise allows for the addition of more vendor daemons to handle increased traffic, making it easier to scale the application horizontally.
- **Streamlined operations**—Simplified infrastructure and enhanced reliability help customers to focus on core business priorities rather than license management.
- **Cost saving**—Reduced infrastructure significantly reduces operational and maintenance costs.
- **Improved end-user satisfaction**—Optimized performance ensures uninterrupted access, boosting end-user satisfaction to ultimately drive higher renewal rates and recurring revenue for producers.

- **Enhanced capacity and resiliency**—Supports up to 8x-12x the current capacity, dramatically reducing the need for large-scale license servers and strengthening resiliency by minimizing potential points of failure.

3

System Requirements

The requirements for FlexNet Publisher Enterprise include build, hardware, and platform specifications.

- Build Requirements
- Hardware Requirements
- Supported Platforms

Build Requirements

Adopting FlexNet Publisher Enterprise should not require any changes to the publishers' build procedures. The only change needed is to the publisher's license file, specifically regarding the VENDOR line. This line should be repeated to correspond with the number of vendor daemons to be spawned in a FlexNet Publisher Enterprise installation. For example, to spawn four vendor daemons, the VENDOR line would appear four times in the license file:

```
SERVER this_host ANY
VENDOR demo
VENDOR demo
VENDOR demo
VENDOR demo
USE_SERVER
#a counted license
FEATURE f1 demo 1.0 permanent 100 SIGN="0079 C848 72F6 4DF1 77ED 2819 \
05CB 7C00 0910 BCA0 E9D9 3A30 D935 8410 5961"
```

All other details in the license file remain unchanged. When using a VENDOR line modifier, such as the location of the option file, it must be specified on the first VENDOR line.

The process and method for using hostids also remains unchanged.

Hardware Requirements

The following table outlines the guidelines for the host running a FlexNet Publisher Enterprise installation:

Table 3-1 ▪ FlexNet Publisher Enterprise Hardware Requirements

Item	Requirement
vCPUs	The number of vCPUs should be at least four times the number of VENDOR lines, with a minimum of 8 vCPUs. In AWS environment, 1 core is equivalent to 2 vCPUs.
RAM	The host should have 2 GB of RAM per VENDOR line, plus an additional 8 GB.
Disk Space	There should be at least 100 GB of disk space available in the `/tmp` partition to facilitate the implementation of the global state dynamically shared between vendor daemons.

For example, Amazon EC2 systems used by Revenera for load-testing the Enterprise server have the following specifications:

- **For 8 VDs**, a c5.9x instance with 18 cores, 36 vCPUs, and 72 GB of RAM.
- **For 16 VDs**, a c5.18x instance with 36 cores, 72 vCPUs, and 144 GB of RAM.



Note ▪ *The above specified configurations are tested and recommended by Revenera. However, you may choose alternative configurations based on suitability and availability.*

Supported Platforms

FlexNet Publisher Enterprise is supported only on Linux 64-bit Intel platforms.

4

Enterprise Environment Overview

This chapter describes the operational behavior of the FlexNet Publisher Enterprise environment. It explains how the license server functions when multiple vendor daemons are configured, outlines server startup behavior, and details utility support, as well as supported and unsupported features.

- License Server-End Execution Flow
- Starting the License Server
- Vendor Daemon Customizations and Callbacks
- Running Utilities
- Features Compatibility in the FlexNet Publisher Enterprise Environment

License Server-End Execution Flow

A key design objective of FlexNet Publisher Enterprise is to maintain full backward compatibility with the existing client applications while enhancing the scalability and performance of the license server environment. To achieve this objective, the server-side implementation of several APIs and utilities has been redesigned. The architectural modifications are transparent to client applications and FlexNet Publisher utilities, which continue to operate without modification and remain unaware of the underlying Enterprise-specific processing.

FlexNet Publisher Enterprise introduces a distributed server architecture that enables multiple vendor daemons to work together while presenting a unified view of licensing data and activity. This architecture is built around three primary components:

- **lmgrd**—The `lmgrd` process acts as the central license server manager. It is responsible for starting, monitoring, and coordinating the vendor daemon processes and the `lmisd` service.
- **Vendor daemons**—Single or multiple vendor daemon processes can run within the FlexNet Publisher Enterprise environment, with a separate vendor daemon instance created for each VENDOR line defined in the license file. Vendor daemons are responsible for managing license rights, processing checkout and check-in requests, and enforcing licensing policies for the features they control.

- **lmisd**—The License Manager Information Service Daemon (`lmisd`) service acts as a centralized data repository for the FlexNet Publisher Enterprise environment. It maintains a consolidated view of licensing information and runtime state across all vendor daemons. By aggregating data from multiple vendor daemons, the License Manager Information Service Daemon service provides a single source of information that can be used by utilities and APIs requiring a unified system-wide perspective, such as `lmstat` and **lc_userlist**.

Starting the License Server

There are no modifications required to the license server startup procedure.

When the license server (`lmgrd`) is running, the process list shows multiple vendor daemon processes, all started by the single `lmgrd` process. For example, if the license file (`counted.lic`) contains four VENDOR demo lines and the `lmgrd` is started using this license file, four demo vendor daemon processes are spawned.

Verifying Running Processes

- To verify that the license server (`lmgrd`) and vendor daemon processes are running, execute the following command:

  ```
  ps -ef | grep lmgrd
  ```

  Example output:

  ```
  1 S stuarts 24339 1 0 80 0 - 1079374 poll_s 11:50 pts/16 00:00:00 ./lmgrd -c c24dem.lic -lc24dem.log
  0 S stuarts 24341 24339 0 80 0 - 1121103 hrtime 11:50 ? 00:00:00 demo -T mh-
  sjs.swmeng.flexdev.com...
  0 S stuarts 24342 24339 0 80 0 - 1121104 hrtime 11:50 ? 00:00:00 demo -T mh-
  sjs.swmeng.flexdev.com...
  0 S stuarts 24343 24339 0 80 0 - 1121107 hrtime 11:50 ? 00:00:00 demo -T mh-
  sjs.swmeng.flexdev.com...
  0 S stuarts 24344 24339 0 80 0 - 1119055 hrtime 11:50 ? 00:00:00 demo -T mh-
  sjs.swmeng.flexdev.com...
  ```

- And, to verify that the `lmisd` service is running, execute the following command:

  ```
  $ ps -ef | grep lmisd
  ```

  Example output:

  ```
  stuarts  24340 24339 0 11:50 pts/16    00:00:00 lmisd -f 5,8,9 -p 27000
  ```

Logging Behavior

The `lmgrd`, `lmisd`, and all vendor daemons write to the common server log file. For example, all log entries may be written to the `c24dem.log` as mentioned under first example output (above section).

To clearly identify the source of each log entry, the publisher name field has been augmented with the process ID (PID) of the corresponding component or source. For example, a vendor daemon log entry that previously appeared as:

```
12:05:51 (demo) Server started on mh-sjs.swmeng.flexdev.com for: f1
```

now appears as:

```
12:05:51 (demo[24341]) Server started on mh-sjs.swmeng.flexdev.com for: f1
```

here, `24341` is the PID of the vendor daemon process.

Similarly, log entries generated by `lmgrd` and `lmisd` include their respective process IDs:

```
12:05:51 (lmgrd[24339]) LMISD using TCP-port 60787
12:05:51 (lmisd[24340]) Running
```

The process IDs in log entries enable administrators to distinguish activity generated by individual vendor daemon instances, `lmgrd`, and `lmisd` while maintaining a single consolidated server log file.

Vendor Daemon Customizations and Callbacks

FlexNet Publisher Enterprise provides additional APIs that allow vendor-defined callback functions to identify and adapt to the Enterprise server environment. These APIs are particularly useful in multi-vendor-daemon deployments, where certain initialization or customization logic should be executed only once, or where callback behavior must differ between Enterprise and Classic FlexNet Publisher environments.

- ls_lb_special_vd
- ls_enterpriseSupport

ls_lb_special_vd

The **ls_lb_special_vd** function, defined in `lsserver.h` header, can be called from any vendor-defined callback implemented in the `lsvendor.c` file. This function enables vendors ensure that initialization or customization routines are executed only once in a multi-vendor-daemon Enterprise environment. For example, callbacks such as **ls_user_initx()** can use this function to avoid performing duplicate initialization operations across multiple vendor daemon instances.

When invoked, **ls_lb_special_vd** returns a non-zero value for the vendor daemon instance that is selected to perform one-time initialization or customization tasks. For all other vendor daemon instances, the function returns `0`. By evaluating the return value, vendor-defined callbacks can determine whether they should execute one-time initialization logic or skip it, thereby preventing duplicate operations across multiple vendor daemons.

ls_enterpriseSupport

The **ls_enterpriseSupport** function can be called from any vendor-defined callback implemented in the `lsvendor.c` file, and enables vendor-defined code to determine at runtime whether the currently executing vendor daemon is running in a FlexNet Publisher Enterprise environment or a classic FlexNet Publisher environment.

The following example demonstrates how to conditionally execute Enterprise-specific or Classic FlexNet Publisher logic:

```
if (ls_enterpriseSupport())

{
/* Enterprise-specific logic */
}
else
{
```

```
/* Classic FlexNet Publisher logic */
}
```

Return values

The following values are returned by **ls_enterpriseSupport**:

Table 4-1 ▪ ls_enterpriseSupport Return Values

Return Value	Dsecription
Non-zero	The vendor daemon was built using a FlexNet Publisher Enterprise kit and is running in an Enterprise environment.
0	The vendor daemon was built using a classic FlexNet Publisher kit and is running in a classic FlexNet Publisher environment.

Running Utilities

FlexNet Publisher Enterprise supports the following utilities:

Table 4-2 ▪ Supported Utilities

Utility	Description
lmdown	`lmdown` should be run as usual to stop the license server.
lmstat	`lmstat` will show the aggregated count of licenses across all vendor daemons, as if there were only one vendor daemon.
lmread	`lmread` is not currently supported. Meanwhile, updating the license file will require a server restart.
lmremove	In the FlexNet Publisher Enterprise environment, `lmstat` displays license handles as 5-digit client IDs. The last two digits of the client ID identify the vendor daemon associated with the license checkout. Vendor daemon identifiers start at 00 for the first vendor daemon and increment sequentially for additional vendor daemons. These client IDs can be used with `lmremove` to identify and remove specific license checkouts.

Features Compatibility in the FlexNet Publisher Enterprise Environment

This section summarizes features support in the FlexNet Publisher Enterprise environment:

- Supported Features
- Unsupported Features

Supported Features

The following features have been explicitly tested in the FlexNet Publisher Enterprise environment:

Table 4-3 ▪ Supported Features

Features	Details
License file keywords	AUTH (CVD)
	DUP_GROUP
	HOST_BASED
	OVERDRAFT
	SN
	SUPERSEDE
	USER_BASED
	VENDOR_STRING
	PACKAGE with or without SUITE, and including DUP_GROUP and SUITE_DUP_GROUP
Options file keywords	AUTOMATIC_REREAD
	AUTO_ROLLOVER
	DEBUGLOG
	DAEMON_SELECT_TIMEOUT
	EXCLUDE
	EXCLUDEALL
	FQDN_MATCHING
	GROUP
	GROUPCASEINSENSITIVE
	HOST_GROUP
	INCLUDE
	INCLUDEALL
	MAX
	NOLOG
	RESERVE
	TIMEOUT
	TIMEOUTALL

Table 4-3 ▪ Supported Features

Features	Details
Server customization attributes	LM_SA_COMPARE_VENDOR_ON_INCREMENT LM_SA_COMPARE_VENDOR_ON_UPGRADE LM_SA_DISABLE_MAXQUEUE
lc_checkout options	LM_CO_NOWAIT LM_CO_QUEUE LM_DUP_* and the usual dup grouping combinations
API attributes	lc_remove lc_userlist lc_vsend lc_vsend_ex
Flexible API attributes (set via lc_set_attr)	LM_A_CHECKOUT_DATA LM_A_DISPLAY_OVERRIDE LM_A_HOST_OVERRIDE LM_A_INTERNET_OVERRIDE LM_A_PLATFORM_OVERRIDE LM_A_PORT_HOST_PLUS LM_A_TCP_TIMEOUT LM_A_USE_FQDN LM_A_USER_OVERRIDE LM_A_VD_FEATURE_INFO LM_A_VD_GENERIC_INFO LM_A_VSEND_NOWAIT
Environment Variable	LB_LISTEN_BACKLOG

Unsupported Features

The following is a list of features known to be currently broken in the FlexNet Publisher Enterprise environment:

- BORROW, LM_A_BORROW* and lmborrow
- PACKAGE with SUITE_RESERVED
- UPGRADE license file keyword
- MAX_OVERDRAFT
- The uncounted keyword on the FEATURE line