FlexNet Publisher 2022 (11.19.0) Release Notes

March 2022
Revision 00

Enhancements

This release includes the following enhancement:

- Secure Communication
- New Environment Variable for flexlm Diagnostics Log's Path
- Safe Login System for FlexNet License Administrator

Secure Communication

The default communication between the client and vendor daemon using FlexNet Publisher protocol over TCP is with plaintext. Now, FlexNet Publisher introduces the functionality to facilitate TLS-based encrypted communication between client and vendor daemon. Clients built with this latest FlexNet Publisher release have the choice to avail themselves of this new ciphertext communication or continue to use the default plaintext communication. The new feature is fully backwards compatible with existing clients. Vendor daemon enabled with secure communication can also communicate with the existing client on plaintext communication.

The secure communication is fully supported on Linux and an experimental feature on Windows.

New Environment Variable for flexlm Diagnostics Log's Path

A new environment variable 'FLEXLM_DIAGNOSTICS_PATH' has been introduced to provide the path for the flexlm diagnostics logs. It provides the end user to set its own path. The new environment variable can only be applied if related environment variable FLEXLM_DIAGNOSTICS is also set.

(FNP-23082)

Safe Login System for FlexNet License Administrator

The vulnerability under the class Brute Force was observed in lmadmin. lmadmin does not restrict login attempts with wrong passwords. Now, login functionality of lmadmin is updated to allow only 3 unsuccessful login attempts and wait for 10 minutes to allow re-login after all attempts are used.

(FNP-22496)

Security Updates

This release includes the following security updates:

- Third Party Library Updates

Third Party Library Updates

Xerces-C

The Xerces-C Library has been upgraded from v3.2.2 to v3.2.3.

(FNP-26129)

Xalan-C

The Xalan-C has been upgraded from v1.11.0 to v1.12.0.

(FNP-26128)

Crypto++

The Crypto++ has been upgraded from v8.5 to v8.6.

(FNP-26119)

Apache

The Apache server has been upgraded from v2.4.481 to v2.4.52.

(FNP-26455, FNP-26011)

OpenLDAP

The OpenLDAP software has been upgraded from v2.5.7 to v2.6.0.

(FNP-26118)

ModSecurity

The ModSecurity has been upgraded from V2.9.2 to v2.9.5.

(FNP-26456)

Dongle Updates

This release includes the following dongle updates:

- The Wibu dongle drivers have been upgraded from v6.51 to v6.60. The upgradation will break backward compatibility. The latest drivers cannot be used with existing clients.
  (FNP-26134)

Platform Updates

This section lists platform updates for the following releases:

- 11.19.0 Updates
- 11.18.3 Updates
- 11.18.2 Updates

11.19.0 Updates

The 11.19.0 updates include the following:

Integrated Products and Tested Versions

The following table lists the integrated products and tested versions for this release.

Product	Tested Version
FlexNet Operations	FlexNet Operations 2020.01 (20.1.0)
FlexNet Manager for Engineering Applications	FlexNet Manager for Engineering Applications 2021 R1 (15.12.0)
FlexNet Operations Cloud	FlexNet Operations Cloud 2022.1 (22.1.29)

Windows OS

Support for Windows 11 OS

In this release, FlexNet Publisher supports Windows 11 (x64_n6, i86_n3).

Support for Visual Studio 2022

In this release, FlexNet Publisher supports Visual Studio 2022.

macOS

Support for macOS 12.0 Monterey

In this release, FlexNet Publisher supports Universal2 kit for macOS 12.0 Monterey (x86_64, ARM64).

(FNP-25505)

11.18.3 Updates

The 11.18.3 updates include the following:

- Windows OS
- macOS

Integrated Products and Tested Versions

The following table lists the integrated products and tested versions for this release.

Product	Tested Version
FlexNet Operations	FlexNet Operations 2020.01 (20.1.0)
FlexNet Manager for Engineering Applications	FlexNet Manager for Engineering Applications 2020 R1 (15.11.0)
FlexNet Operations Cloud	FlexNet Operations Cloud 2021.11 (21.11.58)

Windows OS

Support for Windows Server 2022 OS

In this release, FlexNet Publisher supports Windows Server 2022 (x64_n6, i86_n3).

macOS

Support for macOS 12.0 beta Monterey

In this release, FlexNet Publisher supports Universal2 kit for macOS 12.0 beta Monterey (x86_64, ARM64).

(FNP-25505)

11.18.2 Updates

The 11.18.2 updates include the following:

- Integrated Products and Tested Versions

Integrated Products and Tested Versions

The following table lists the integrated products and tested versions for this release.

Product	Tested Version
FlexNet Operations	FlexNet Operations 2021.07 (21.7.43)

Product	Tested Version
FlexNet Manager for Engineering Applications	FlexNet Manager for Engineering Applications 2020 R1 (15.11.0)
FlexNet Operations Cloud	FlexNet Operations Cloud 2021 R1 (21.4.0)

11.18.1 Updates

The 11.18.1 updates include the following:

- Integrated Products and Tested Versions
- macOS

Integrated Products and Tested Versions

The following table lists the integrated products and tested versions for this release.

Product	Tested Version
FlexNet Operations	FlexNet Operations 2020 R1 (20.1.0)
FlexNet Manager for Engineering Applications	FlexNet Manager for Engineering Applications 2020 R1 (15.11.0)
FlexNet Operations Cloud	FlexNet Operations Cloud 2021 R1 (21.4.0)

macOS

Support for macOS 11.0 Big Sur

In this release, FlexNet Publisher supports Universal2 kit for macOS 11.0 Big Sur (x86_64 + ARM64).

(FNP-23847)

Resolved Issues

This release of the FlexNet Publisher Licensing Toolkit resolves the following issues. (Numbers in parentheses indicate the Flexera issue reference number as well as the Salesforce reference number, if applicable.)

- Resolved Issue Specific to License File-Based Licensing
- Resolved lmadmin, lmgrd, Vendor daemon, and Utility Issue

Resolved Issue Specific to License File-Based Licensing

Limitation for Buffered Licenses

In the license file entries for buffered license, when the characters “@” and “\\” (double backward slashes) were mentioned in the license search path, the license search path is disqualified. This issue has been fixed by documenting it as limitation in the Programming Reference for License File–Based Licensing guide under section License in a Buffer.

(FNP-22516)

Resolved lmadmin, lmgrd, Vendor daemon, and Utility Issue

Display of Incorrect Linger Value After Vendor Daemon Restart

lmstat output does not display the remaining linger value for the checked out feature once vendor daemon is restarted. After restart, the linger duration again resets to original linger value. This issue was observed with borrow functionality and also while setting linger value through the attributes. This issue has been fixed.

(FNP-24333)

Fix for Incorrect Feature Checkout Error

lc_status returns different error code as -35 instead of expected error code as -41 while querying for queued license that was attempted for checkout with certain LM_A_CHECKOUT_DATA value. This issue has been fixed.

(FNP-25628)

Known Issues

This release includes known issues in the following categories:

- Known Dongle Issues
- Known lmadmin Issues
- Known Issue between Client and License Server
- Known Issues Specific to License File–Based Licensing
- Known Issues Specific to Trusted Storage–Based Licensing
- Known Java Issues
- Known Issues Specific to Secured Communication

Known Dongle Issues

Backward Compatibility Issue Due to the New Signer

As the dongle drivers are upgraded for Wibu from v6.51 to v6.60., the dll signature issuer name is changed from "Symantec" to "DigiCert" on Windows. The same is fixed in FlexNet Publisher's code to handle the new signer. Due to this change, backward compatibility is not possible. If you install latest drivers, old clients will not be able to retrieve the dongle ID.

(FNP-26594)

Flexid10 Dongle Driver Issue

FLEXID10 dongles may not work correctly with the latest v6.50 driver on VMware hypervisors. This issue has been identified on both Windows and Linux platforms with a dongle connected using a USB passthrough on VMware ESXi and on VMware Workstation. The problem has been reported to Wibu. As a temporary workaround, use the previous version v6.32 driver on VMware hypervisors.

(FNP-17284, FNP-16819)

Wibu Dongle Driver Issue

An error occurs on SUSE 11 SP4 Linux machine while installing a new Wibu dongle driver (V6.50). The problem has been reported to Wibu. As a temporary workaround, use the previous version v6.40 driver.

(FNP-20298)

Dongles in Universal2 Kit

Dongles are not supported in the Universal2 Kit.

(FNP-24876)

Known lmadmin Issues

Lmadmin Silent Installer not Displaying Required Error Message

When a non-root user attempts to install `lmadmin` in the default location, the installer may hang.

(FNP-6942)

Unable to Start Lmadmin Services Using CLI in Windows Server 2022

The lmadmin services created on Windows 2022 machine is unable to start using command prompt.

(FNP-26481)

Lmadmin Login Error Observed in Windows Server 2022

While logging in to lmadmin in Windows Server 2022 the error "Old password is incorrect" is seen.

(FNP-26482)

Known Issue between Client and License Server

Log File Created Only in Working Directory

On Linux, when the vendor daemon did not exist in working directory and the server was started by appending the path variable where the vendor daemon exists, the log file is created in the working directory rather than the directory specified in the path. The workaround has been provided for this issue and it will be fixed in the subsequent FlexNet Publisher release.

Workaround

For this issue, mention the location of the vendor daemon in the VENDOR line of the license file as VENDOR demo <directory name>/demo. If you have created sub directory, mention the vendor daemon location as VENDOR demo <directory name>/<sub directory name>/demo.

(FNP-25708)

Error in Using LM_A_PORT_HOST_PLUS with Batch Checkout

The use of LM_A_PORT_HOST_PLUS attribute with batch checkout results in error. It is recommended not to use them together. This will be fixed in the subsequent release of FlexNet Publisher.

(FNP-25777)

Known Issues Specific to License File–Based Licensing

lmdiag Displaying Incorrect Output when Multiple Vendors are Served by a Single License Server Manager

If multiple vendor daemons are served by a single license server manager (such as lmgrd), lmdiag shows an incorrect error message “No such feature exists” for features that are served by one of the valid daemons.

(FNP-19617; Salesforce case 01202287)

"MAX_CONNECTIONS" Option File Keyword

If a software publisher upgrades only lmgrd and vendor daemon to version 11.16.3 or above, but not the client, the error code that would be received by an older version (version < 11.16.3) client, when MAX_CONNECTIONS limit is exceeded is as follows:

“LM_BADCOMMAND” Error code: “-140” - “A bad command was found in a message”.

(FNP-20537)

Known Issues Specific to Trusted Storage–Based Licensing

Error Observation in macOS Big Sur ARM Platform

While building the FNP universal2 kit on macOS Big Sur ARM platform, the following error has been observed:

dyld: Library not loaded: libresponsegen.dylib

Referenced from: /Users/nightly/<user>/universal2/unchanged/universal2_mac11/publisher/./responsegenapi

Reason: unsafe use of relative <user> libresponsegen.dylib in /Users/nightly/<user>/universal2/unchanged/universal2_mac11/publisher/./responsegenapi with restricted binary

Abort trap: 6 running the responsegenapi, the error has been observed. Suggesting to rebuild the utility with the makefile.act provided in the kit on ARM platform for macOS Big Sur machine.

When you get this error on running the responsegenapi, rebuild the responsegenapi executable using the makefile.act provided in the FlexNet Publisher kit.

(FNP-23847)

Known Java Issues

Error Observation with JDK 17.0.1 During lmadmin Installation

Error is observed while installing lmadmin installer in Windows with and without "Run as service" option with JDK 17.0.1. This issue is observed on all windows OS's.

(FNP-26351)

Issue in lmadmin Installation with JDK 17.0.2 and OpenJDK 17.0.2

With JDK 17.0.2 and OpenJDK 17.0.2, lmadmin installer exits with error "This Application has Unexpectedly Quit". This issue is observed on Windows 11 and Windows Server 2022.

(FNP-26476)

Known Issues Specific to Secured Communication

The following issues observed when secure communication has been enabled in between FlexEnabled client and vendor daemon. These issues will be resolved in the future releases of FlexNet Publisher.

- On the Vendor daemon, borrow licensed cannot be returned early. The functionality is required to be enhanced to support secure communication.

(FNP-26436)

- The feature license cannot be queued. Instead of queuing the checkout request, the vendor daemon will return the error with "License number of users already reached(-4)". The checkout should be successfully queued if performed with queuing enabled.

(FNP-26437)

- License server rejects the checkout request for the feature that are node locked. The client machine that fulfills node lock criteria of FEATURE line should be allowed to perform the checkout.

(FNP-26438)

- On Windows, the checkout performance has decreased substantially. New checkout request takes approximately 20 seconds to complete.

(FNP-26588)

- On Windows, the client can perform checkout without establishing secure channel with vendor daemon. The checkout should be rejected if secure channel is not established between client and license server.

(FNP-26610)

- Vendor daemon establishes extra connections than mandated with MAX_CONNECTIONS options file keyword. The issue is only observed when client establishes connection on the secure channel.

(FNP-26611)

System Requirements

The System Requirements include the following:

- Tested Platforms
- System Requirements for lmadmin

Tested Platforms

The following sections describe the platforms tested with the FlexNet Publisher 2022 (11.19.0) Licensing Toolkits.

- C/C++ Toolkits
- Java Toolkits
- Detailed Platform Information
- Toolkits that Support Prepped Trusted Configuration
- Virtualization
- Tested Cloud Environments

A list of supported platforms can be found here:
https://docs.revenera.com/eol/

C/C++ Toolkits

The following platforms are tested. See the Detailed Platform Information section for more information about each platform.

Table 1 ▪ Tested Platforms—C/C++ Toolkits

Platform Type	Hardware Type	Operating System
AIX 32-bit	PowerPC	AIX 7.1 and 7.2
AIX 64-bit	PowerPC	AIX 7.1 and 7.2
HP-UX 64-bit	Intel Itanium	HP-UX B.11.31 U ia64
Linux 32-bit	x64	RHEL 8 RHEL 7 SLES 11 SP4 SLES 12 SP5
Linux 64-bit	x64	RHEL 7 and 8 SLES 11 SP4, * SLES 12 SP3, SLES 12 SP4 and SLES 15 SP1, SLES 12 SP5, * SLES 15, SLES 15 SP1, SLES 15 SP2, and SLES 15 SP3 Ubuntu 16.04, 18.04, and 20.4
Linux 64-bit	ARMv8-A (AArch64)	RHEL 8 SLES 15
macOS/OS X 64-bit	x64	macOS 10.15 macOS 10.14 macOS 11.1 macOS 12.0
macOS ARM 64-bit	ARM-64	macOS 11.4 macOS 12.1
Microsoft Windows 32-bit	x86	Windows 10 Windows 7 SP1 ESU (Extended Security Updates) It is a best practice to run license servers on a server-based OS.

Table 1 ▪ Tested Platforms—C/C++ Toolkits

Platform Type	Hardware Type	Operating System
Microsoft Windows 32-bit	x64	Windows Server 2019 Windows Server 2016 Windows Server 2022 Windows 10 Windrows 11
Microsoft Windows 64-bit	x64	Windows 10 Windows 11 Windows 7 SP1 ESU (Extended Security Updates) Windows Server 2019 Windows Server 2016 Windows Server 2022 It is a best practice to run license servers on a server-based OS.
Solaris 32-bit	SPARC 32-bit x86	Solaris 10 and 11
Solaris 64-bit	SPARC 64-bit x86-x64	Solaris 10 and 11

Note ▪ *The asterisk (*) symbol indicates that the version of the operating system is supported and not tested in the current release.*

Java Toolkits

The following platforms have been tested. See Java Standard Edition in Detailed Platform Information for more information about this platform.

Table 2 ▪ Tested Platforms—Java Toolkits

Platform Type	Hardware Type	Version
Oracle Java Development Kit	• Solaris x86 • Solaris x64	Java Standard Edition 1.8
	• Solaris SPARC 32-bit • Solaris SPARC 64-bit • Windows x86 • Windows x64 • Linux x86 • Linux x64 • macOS x64	Java Standard Edition 1.8 and 1.11 JDK 17

Detailed Platform Information

The following sections list the operating systems and their associated hardware platforms tested with FlexNet Publisher 2022 (11.19.0). Each platform entry contains the following information:

- **Platform name**—The name that identifies this platform when used with the PLATFORMS keyword in a license file.
- **Package identifier**—The name of the toolkit package on Flexera's download site.
- **Tested compiler**—The compiler and version with which this package was tested. Choose a compiler for your development and build environment that is compatible with the one listed.
- **Notes**—Additional platform-specific notes that are useful for developing your FlexEnabled product.
- **Security functionality**—Denotes the level of security functionality your toolkit supports. This information is useful when you implement trusted storage-based licensing in your product. See *Programming Reference for Trusted Storage–Based Licensing* for details.

Click a link to access platform details:

- Microsoft Windows 32-bit
- Microsoft Windows 64-bit
- Linux 32-bit
- Linux 64-bit
- ARMv8-A (AArch64)

- macOS/OS X 64-bit
- macOS ARM 64-bit
- Solaris 32-bit
- Solaris 64-bit
- AIX 32-bit
- AIX 64-bit
- Java Standard Edition
- HP-UX 64-bit

Microsoft Windows 32-bit

The following table lists information about the Microsoft Windows 32-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	i86_n
Package Identifier	i86_n3
Tested Compiler	• Visual Studio 2019 (16.8.3) • Visual Studio 2017 (15.9.36) • Visual Studio 2015 Update 3 • Visual Studio 2013 Update 5 • Visual Studio 2022 (17.0.4)

Item	Description
Notes	• `lmadmin` is supported in this toolkit. • Multiple Ethernet hostids are supported. • Short-code transactions are supported. • Prepped Trusted Configuration is supported. • Tested virtual machine platforms include: VMware Workstation 16.1.0 VMware ESXi 6.5 and 6.7 Microsoft Windows Server 2019 Hyper-V Microsoft Windows 10 Hyper-V Citrix XenServer 8.0 Oracle Virtual Box 6.1 Parallels Desktop 15.1.2 for macOS 10.15.4 everRun 7.8 QEMU-KVM (Host OS: CentOS 8) • Hypervisor: qemu-kvm-ev-4.2.0 • Hypervisor Services: libvirt-daemon-kvm-6.0.0 • Virtual Machine Manager: vmm v2.2.1
Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

Microsoft Windows 64-bit

The following table lists information about the Microsoft Windows 64-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	x64_n
Package Identifier	x64_n6

Item	Description
Tested Compiler	• Visual Studio 2019 (16.8.3) • Visual Studio 2017 (15.9.36) • Visual Studio 2015 Update 3 • Visual Studio 2013 Update 5 • Visual Studio 2022 (17.0.4)

Notes	• `lmadmin` is supported using its 64-bit binary. While the 32-bit `lmadmin` binary (contained in the x86_n3 toolkit) continues to be supported on 64-bit systems, Flexera recommends using the 64-bit binary on 64-bit systems.
	• Multiple Ethernet hostids are supported.
	• Short-code transactions are supported.
	• Prepped Trusted Configuration is supported.
	• The `lmtools` utility cannot interact with the license server manager (`lmgrd`) when `lmgrd` is run as a service.
	• Tested virtual machine platforms include:
	VMware Workstation 16.1.0
	VMware ESXi 6.5 and 6.7
	Microsoft Windows Server 2019 Hyper-V
	Microsoft Windows 10 Hyper-V
	Citrix XenServer 8.0
	Oracle Virtual Box 6.1
	Parallels Desktop 15.1.2 for macOS 10.15.4
	everRun 7.8
	QEMU-KVM (Host OS: CentOS 8)
	  • Hypervisor: qemu-kvm-ev-4.2.0
	  • Hypervisor Services: libvirt-daemon-kvm-6.0.0
	  • Virtual Machine Manager: vmm v2.2.1

Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

Linux 32-bit

The following table lists information about the Linux 32-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	i86_lsb
Package Identifier	i86_lsb
Tested Compiler	For x86: • gcc 8.2.1 (RHEL 8) • gcc 4.8.5 (RHEL 7) • gcc 4.3.4 (SLES 11 SP4)
GLIBC Version	v2.12
Notes	• Customers can use any GCC that meets FlexNet Publisher's GLIBC version requirement. • FlexNet Publisher qualifies the default GCC version that comes with the OS. • `lmadmin` is supported using its 32-bit binary. • Multiple Ethernet hostids are supported. • Short-code transactions are supported. • Prepped Trusted Configuration is supported. • Tested virtual machine platforms include: VMware ESXi 6.5 and 6.7 VMware Workstation 16.1.0 Microsoft Windows Server 2019 Hyper-V Microsoft Windows 10 Hyper-V Citrix XenServer 8.0 Oracle Virtual Box 6.1 Parallels Desktop 15.1.2 for macOS 10.15.4 everRun 7.8 QEMU-KVM (Host OS: CentOS 8) • Hypervisor: qemu-kvm-ev-4.2.0 • Hypervisor Services: libvirt-daemon-kvm-6.0.0 • Virtual Machine Manager: vmm v2.2.1
Toolkit Functionality	Licensing based on license files or trusted storage.

Item	Description
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

Linux 64-bit

The following table lists information about the Linux 64-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	x64_lsb
Package Identifier	x64_lsb
Tested Compiler	For x64: • gcc 4.8.5 (RHEL 7) • gcc 8.2.1 (RHEL 8) • gcc 7.3.1 (SLES 15) • gcc 7.4.1 (SLES 15 SP1) • gcc 7.5.0 (SLES 15 SP2) • gcc 7.5.0 (SLES 15 SP3) • gcc 4.8.5 (SLES 12 SP4) • gcc 4.3.4 (SLES 11 SP4) • gcc 7.3.0 (Ubuntu 18.04) • gcc 5.4.0 (Ubuntu 16.04) • gcc 9.3.0 (Ubuntu 20.04)
GLIBC Version	v2.12

Item	Description

Notes	• Customers can use any GCC that meets FlexNet Publisher's GLIBC version requirement.
	• `lmadmin` is supported using its 64-bit binary.
	• Multiple Ethernet hostids are supported.
	• Short-code transactions are supported.
	• Prepped Trusted Configuration is supported (x64_lsb only).
	• No dongle support on SLES 15
	• Tested virtual machine platforms include:
	VMware ESXi 6.5 and 6.7
	VMware Workstation 16.1.0
	Microsoft Windows Server 2019 Hyper-V
	Microsoft Windows 10 Hyper-V
	Citrix XenServer 8.0
	Oracle Virtual Box 6.1
	Parallels Desktop 15.1.2 for macOS 10.15.4
	everRun 7.8
	QEMU-KVM (Host OS: CentOS 8)
	  • Hypervisor: qemu-kvm-ev-4.2.0
	  • Hypervisor Services: libvirt-daemon-kvm-6.0.0
	  • Virtual Machine Manager: vmm v2.2.1

Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

ARMv8-A (AArch64)

The following table lists information about the ARMv8-A (AArch64) systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	arm64_linux
Package Identifier	arm64_linux
Tested Compiler	• gcc 8.2.1 (RHEL 8) • gcc 7.3.1 (SLES 15)

Item	Description
GLIBC Version	v2.17
Notes	• Customers can use any GCC that meets FlexNet Publisher's GLIBC version requirement. • `lmadmin` is not supported in this toolkit • No VM detection or VMID hostid support • No dongle support • No trusted storage support
Toolkit Functionality	Licensing based on license files.
Security Functionality	No support for tamper-resistant applications. The toolkit is labeled as *notr*.

macOS/OS X 64-bit

The following table lists information about the macOS/OS 64-bit system tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	• x64_mac
Package Identifier	• x64_mac10
Tested Compiler	• Xcode 12.3 • Xcode 11.0 • Xcode 10.3 • Apple clang version 12.0.0 (clang-1200.0.32.28) • Apple clang version 11.0.0 (clang-1100.0.33.5) • Apple LLVM version 10.0.1 (clang-1001.0.46.4)
Notes	• Multiple Ethernet hostids are not supported. • Short-code transactions are supported. • Prepped Trusted Configuration is supported. • For building requirements, see Requirements for Building the macOS/OS X Licensing Toolkit.
Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

Requirements for Building the macOS/OS X Licensing Toolkit

When building the FlexNet Publisher Licensing Toolkit on macOS/OS X platforms, use an appropriate Apple development environment:

- For macOS 10.15, use Xcode 12.3
- For macOS 10.14, use Xcode 10.3
- For macOS 11.4, use Xcode 12.4
- For macOS 12.0, use Xcode 13.0

The supplied makefiles build a universal Licensing Toolkit that can be used to produce FlexEnabled applications of the following types (all contained within a single FAT binary):

- 64-bit Intel—Runs on OS X 10.14 Intel 64-bit platforms

Required macOS/OS X SDKs

An SDK appropriate to the macOS/OS X version must be available on the machine where you are building the Licensing Toolkit:

- For macOS 10.15, use **`xcode-select --print-path`** to obtain the correct path and choose 10.15 SDK path.
- For macOS 10.14, use **`xcode-select --print-path`** to obtain the correct path and choose 10.14 SDK path.

macOS ARM 64-bit

The following table lists information about the macOS ARM64-bit system tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	• universal2_mac
Package Identifier	• universal2_mac11
Tested Compiler	• Xcode 13 • Apple clang version 13.0.0 (clang-1300.0.29.3)
Notes	• Prepped Trusted Configuration is supported. • For building requirements, see Requirements for Building the macOS/OS X Licensing Toolkit.
Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications.

Requirements for Building the macOS ARM64 Licensing Toolkit

When building the FlexNet Publisher Licensing Toolkit on macOS ARM64 platform, use an appropriate Apple development environment:

- For macOS 11.4, use Xcode 13.0
- For macOS 12.1, use Xcode 12.5.1

Required macOS ARM64 SDKs

An SDK appropriate to the macOS ARM64 version must be available on the machine where you are building the Licensing Toolkit:

- For macOS 11.4, use xcode-select --print-path to obtain the correct path and choose 11.4 SDK path.
- For macOS 12.1, use xcode-select --print-path to obtain the correct path and choose 12.0 SDK path.

Solaris 32-bit

The following table lists information about the Solaris 32-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	• x86_sol (on x86) • sun4_u (on SPARC 32-bit)
Package Identifier	• x86_sol10 (on x86) • sun4_u10 (on SPARC 32-bit)
Tested Compiler	For x86: • cc (Sun C) 5.11 • cc (Sun C) 5.15 For SPARC 32-bit: • cc (Sun C) 5.14 • cc (Sun C) 5.15

Item	Description
Notes	• `lmadmin` is supported in this toolkit. • Synchronous I/O multiplexing, via select, is supported for up to 65,535 file descriptors. • The number of system semaphore arrays can become exhausted. • Shared objects might not run when compiled with gcc on SPARC 32-bit. • Multiple Ethernet hostids are not supported. • Prepped Trusted Configuration is supported.
Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

Solaris 64-bit

The following table lists information about the Solaris 64-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	• x64_sun (on x64) • sun64_u (on SPARC 64-bit)
Package Identifier	• x64_sun10 (on x64) • sun64_u10 (on SPARC 64-bit)
Tested Compiler	For x64: • cc (Sun C) 5.11 • cc (Sun C) 5.15 For SPARC 64-bit: • cc (Sun C) 5.14 • cc (Sun C) 5.15

Item	Description
Notes	• `lmadmin` is supported using its 64-bit binary. While the 32-bit `lmadmin` binary (contained in the x86_sun and sun64_u toolkits) continues to be supported on 64-bit systems, Flexera recommends using the 64-bit binary on 64-bit systems. • Shared objects might not run when compiled with gcc on SPARC 64-bit. • Multiple Ethernet hostids are not supported. • Prepped Trusted Configuration is supported.
Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	Support for tamper-resistant applications. The toolkit is labeled as *standard*.

AIX 32-bit

The following table lists information about the AIX 32-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	ppc_u
Package Identifier	ppc_u5 (on PowerPC™)
Tested Compiler	PowerPC cc (IBM XLC): 11.1 (AIX 7.1) and 13.1.3 (AIX 7.2)
Notes	• `lmadmin` is supported in this toolkit. • The AIX FlexNet Publisher client libraries are PIC by default; therefore, only one version of these libraries is provided in the toolkit. • Java SDK is not supported.
Toolkit Functionality	Licensing based on license files.
Security Functionality	No support for tamper-resistant applications. The toolkit is labeled as *notr*.

AIX 64-bit

The following table lists information about the AIX 64-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	rs64_u
Package Identifier	rs64_u5 (on PowerPC™)
Tested Compiler	PowerPC cc (IBM XLC): 11.1 (AIX 7.1) and 13.1.3 (AIX 7.2)
Notes	• `lmadmin` is supported using its 64-bit binary. While the 32-bit `lmadmin` binary (contained in the ppc_u toolkit) continues to be supported on 64-bit systems, Flexera recommends using the 64-bit binary on 64-bit systems. • You must use ar -X64 and strip -X64 on this platform. • The AIX FlexNet Publisher client libraries are PIC by default; therefore only one version of these libraries is provided in the toolkit. • Java SDK is not supported.
Toolkit Functionality	Licensing based on license files.
Security Functionality	No support for tamper-resistant applications. The toolkit is labeled as *notr*.

Java Standard Edition

The following table lists information about the Java Standard Edition systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	java
Package Identifier	Not applicable
Tested Compiler	• JDK 8 • JDK 11 (JDK 11 is not supported on Solaris x86 and x64) • JDK 17 (JDK 17 is not supported on Solaris x86 and x64) • OpenJDK 17 (in macOS lmadmin installer will not work as mentioned in FNP-24247)

Item	Description
Notes	• Implements the FlexNet Licensing for Java client library only. • Requires a C development environment. • Requires tamper-resistant licenses (TRL) to be enabled.
Toolkit Functionality	Licensing based on license files or trusted storage.
Security Functionality	No support for tamper-resistant applications. The toolkit is labeled as *notr*.

HP-UX 64-bit

The following table lists information about the HP-UX 64-bit systems tested with the FlexNet Publisher Licensing Toolkit:

Item	Description
Platform Name	it64_hp (on Intel Itanium)
Package Identifier	it64_hp11i (on Intel Itanium)
Tested Compiler	Intel Itanium HP C/aC++ B3910B A.06.12

Notes	• `lmadmin` has not been tested in this toolkit.
	• On Intel Itanium, use the `lmhostid` utility to determine the hostid. This returns the machine identification and is equivalent to the identification returned by the HP_UX command `getconf CS_PARTITION_IDENT`. For example:
	`>lmhostid`
	`>The FlexNet Licensing host ID of this machine is “ID_STRING=9c788319-db72-d411-af62-0060b05e4c05”`
	Older methods of obtaining the hostid that return the Ethernet address are still supported, but may fail on some systems. The older methods include:
	`>uname -i (returns decimal hostid)`
	`>lmhostid -long (returns hexidecimal hostid)`
	• Multi-threaded licensing libraries are available on Intel Itanium.

Toolkit Functionality	Licensing based on license files.

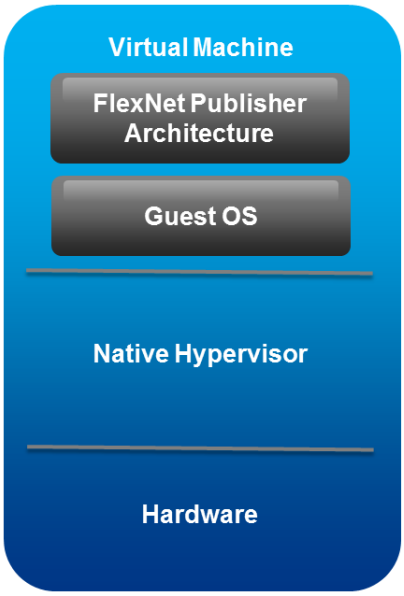
Toolkits that Support Prepped Trusted Configuration

Toolkit platforms that support prepped Trusted Configuration (and therefore server-side local trial ASRs) include the following:

- i86_lsb (32-bit Linux)
- x64_lsb (64-bit Linux)
- i86_n3 (32-bit Windows)
- x64_n6 (64-bit Windows)
- sun4_u10 (32-bit Solaris SPARC)
- sun64_u10 (64-bit Solaris SPARC)
- x86_sol10 (32-bit Solaris Intel)
- x64_sun10 (64-bit Solaris Intel)
- x64_mac10 (Universal macOS)
- universal2_mac11 (Universal macOS)

Virtualization

The following picture illustrates how the FlexNet licensing server or a FlexEnabled application operates within a Virtualization stack. The table below the picture lists the Virtualization stacks that have been tested with FlexNet Publisher.



Use the following table to determine the tested Virtualization stacks.

Table 3 ▪ Tested Virtualization Stacks

FlexNet Publisher Architecture	Guest OS	Hypervisor
i86_n, x64_n	Windows 7 SP1 ESU	VMware ESXi 6.5 and 6.7 VMware Workstation 16.1.0 Oracle VirtualBox 6.1
	Windows 10	VMware ESXi 6.5 and 6.7 Citrix XenServer 8.0 VMware Workstation 16.1.0 Oracle Virtual Box 6.1 QEMU-KVM PARALLELS everRun 7.8
i86_n, x64_n	Windows Server 2016	everRun 7.8
i86_n, x64_n	Windows 10 Windows 7 SP1 ESU Windows Server 2019	Microsoft Hyper-V from Windows Server 2019 Microsoft Hyper-V from Windows 10 Pro
	Windows Server 2016 Windows Server 2019	VMware ESXi 6.5 and 6.7 Citrix XenServer 8.0 QEMU-KVM PARALLELS everRun 7.8
	Windows Server 2022	VMware QEMU-KVM everRun 7.8

Table 3 ▪ Tested Virtualization Stacks

FlexNet Publisher Architecture	Guest OS	Hypervisor
i86_lsb	RHEL 7, and 8 SLES 11 SP4 SLES 15 SP3	VMware ESXi 6.5 and 6.7 VMware Workstation 16.1.0 Citrix XenServer 8.0 QEMU-KVM PARALLELS Microsoft Hyper-V from Windows Server 2019 Microsoft Hyper-V from Windows 10 Pro Oracle Virtual Box 6.1
x64 _lsb	RHEL 7, and 8 SLES 11 SP4, * SLES 12 SP3, SLES 12 SP4, * SLES 15, SLES 15 SP1, SLES 15 SP2, and SLES 15 SP3	VMware ESXi 6.5 and 6.7 VMware Workstation 16.1.0 Citrix XenServer 8.0 PARALLELS Microsoft Hyper-V from Windows 10 Pro Oracle Virtual Box 6.1
i86_lsb,x64_lsb	RHEL 8	everRun 7.8 QEMU-KVM

Note ▪

- *Supported hostids in guest operating systems are `ETHER` (server and client) and, for all hypervisors other than Hyper-V, `VM_UUID` (server only). See the white paper, "Understanding Virtualization Features in FlexNet Publisher", for more information.*
- *It is a best practice to run license servers on a server-based OS.*
- *For Windows and Linux certificate applications, the FlexNet Licensing Service needs to be installed for VM_UUID hostid to be extracted.*
- *The asterisk (*) symbol indicates that the version of the operating system is supported and not tested in the current release.*

Tested Cloud Environments

Use the following table to determine guest operating systems and hostids that have been tested with FlexNet Publisher in the specified cloud environment.

Table 4 ▪ Tested Cloud Environments

FlexNet Publisher Architecture	Tested OS	Cloud Platform	Host ID

i86_n, x64_n	• Windows Server 2016
	• Windows 10
	• Windows Server 2019
		Google Cloud
		Microsoft Azure
			License servers:
			`VM_UUID`
			FlexEnabled clients:
			`ETHER`

i86_n, x64_n	• Windows Server 2016
	• Windows Server 2019
	• Windows Server 2022
		Amazon EC2	License servers:
			`VM UUID` (previously `AMZN_IID`)
			`AMZN_EIP`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

i86_lsb, x64_lsb	• RHEL 7* and RHEL 8
	• SLES 11 SP4* and SLES 15 SP2
		Google Cloud	License servers:
			`VM_UUID`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

i86_lsb, x64_lsb	• RHEL 8
	• SUSE 15 SP3
		Microsoft Azure	License servers:
			`VM_UUID`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

i86_lsb, x64_lsb	• RHEL 7* and 8
	• SLES 11 SP4* and SUSE 15 SP3
		Amazon EC2	License servers:
			`AMZN_EIP` or `VM_UUID`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

Table 4 ▪ Tested Cloud Environments

FlexNet Publisher Architecture	Tested OS	Cloud Platform	Host ID

Note ▪

- *Google Cloud, Amazon EC2 and Microsoft Azure can all use VM_UUID. VM_UUID is equivalent to AMZN_IID on EC2, Google Instance ID on Google and SMBIOS UUID on Azure*
- *AMZN_IID is superseded by VM_UUID for server-line hostid, but unlike VM_UUID is supported for feature-line hostid.*
- *For Windows and Linux certificate applications, the FlexNet Licensing Service needs to be installed for cloud hostids (VM_UUID, AMZN_EIP, AMZN_IID) to be extracted.*

System Requirements for lmadmin

The following sections describe tested platforms and requirements for `lmadmin`:

- Tested Platforms
- Additional System Requirements
- Tested Browsers

Note ▪ *lmadmin installers are no longer packaged within FlexNet Publisher kit archives, and must be downloaded separately.*

Tested Platforms

`lmadmin` has been tested on the following platforms.

Table 5 ▪ Tested `lmadmin` Platforms

Platform Architecture	Processor Type	Operating System
AIX 32-bit	PowerPC	AIX 7.1 and 7.2
AIX 64-bit	PowerPC	AIX 7.1 and 7.2
Linux 32-bit	x64	RHEL 7 and 8 SLES 11 SP4

Table 5 ▪ Tested `lmadmin` Platforms

Platform Architecture	Processor Type	Operating System
Linux 64-bit	x64	RHEL 7 and 8
		SLES 11 SP4, * SLES 12 SP3, SLES 12 SP4, * SLES 15, SLES 15 SP1, SLES 15 SP2, and SLES 15 SP3
		Ubuntu 16.04, 18.04, and 20.4
macOS/OS X 64-bit	x64	macOS 10.15
		macOS 10.14
		macOS 11.1
		macOS 12.0
macOS ARM 64-bit	ARM-64	macOS 11.2
		macOS 11.4
		macOS 12.0
Microsoft Windows 32-bit	x86	Windows 10
		Windows 7 SP1 ESU
		It is a best practice to run license servers on a server-based OS.
Microsoft Windows 32-bit	x64	Windows Server 2019
		Windows Server 2016
		Windows Server 2022
Microsoft Windows 64-bit	x64	Windows 10
		Windows 11
		Windows 7 SP1 ESU
		Windows Server 2019
		Windows Server 2016
		Windows Server 2022
		It is a best practice to run license servers on a server-based OS.
Solaris 32-bit	SPARC 32-bit	Solaris 10 and 11
	x86	

Table 5 ▪ Tested `lmadmin` Platforms

Platform Architecture	Processor Type	Operating System
Solaris 64-bit	SPARC 64-bit	Solaris 10 and 11
	x86-x64	

Note ▪

- *The FlexNet Publisher Licensing Toolkits for 64-bit platforms supply 64-bit lmadmin binaries. Flexera recommends their use on 64-bit platforms. Separate 32-bit lmadmin installers and binary archives are also available and can be used on 64-bit platforms if necessary.*
- *The asterisk (*) symbol indicates that the version of the operating system is supported and not tested in the current release.*

Additional System Requirements

`lmadmin` has these additional requirements:

- To use `lmadmin` on Windows platforms, the relevant Microsoft Visual C++ 2013 Redistributable Package must be installed.
- The `lmadmin` installer requires that JRE 1.6 or later (for macOS/OS X: JRE 1.7 or later) is installed. If the JRE is not already present on the machine, it must be installed separately, because it is not bundled with the `lmadmin` installer.

Tested Browsers

`lmadmin` is tested on the following Web browsers:

- **Red Hat Linux**—Mozilla Firefox 46.x, Google Chrome 87.x
- **Windows**—Microsoft Internet Explorer 11, Microsoft Edge
- **macOS/OS X**—Apple Safari 6.x and 11

Deprecated Features and Commands

The following table lists deprecated features and commands.

Table 6 ▪ Deprecated Features and Commands

Deprecated Features and Commands	Comments
Console mode on `lmadmin` installation on macOS/OS X	On macOS/OS X, the `lmadmin` installer no longer supports Console mode.

Table 6 ▪ Deprecated Features and Commands

Deprecated Features and Commands	Comments
Non-multithreaded libraries	The following UNIX client libraries used with applications that do not use native multithreaded libraries have been deprecated: • `liblmgr_nomt_pic.a` • `liblmgr_nomt_pic_trl.a` • `liblmgr_nomt.a` • `liblmgr_nomt_trl.a`
License Generator toolkit	License Generator toolkit is end-of-life. Instead, the responsegen shared object API has been exposed; see the example `.\examples\activation\responsegen\ResponseGenApi.c`.
AMZN_IID, HPV_UUID, VMW_UUID	Replaced by VM_UUID
lmbind & LMB_* hostids	lmbind is no longer packaged with FlexNet Publisher archives. lmbind sections have been removed from documentation
VMW_* and HPV_* hostids	It is better to have a hostid that is effective in both physical and virtual systems. As an example, we would recommend ETHER instead of VMW_ETHER (on VMware guests) or HPV_ETHER (on Hyper-V guests)
Non trial-id trial ASRs	ASRs which do not use a trial-id are subject to an issue where deleting trusted storage means no further (non trial-id) ASRs can be loaded. Trial-id ASRs were invented to solve this issue.
License keys and default strength signatures	License keys have been documented as obsolete for several years. Signatures of type LM_STRENGTH_LICENSE_KEY and LM_STRENGTH_LICENSE_DEFAULT are easily cracked. Flexera strongly recommends that new license files use TRL-strength signatures and that updated clients link with the 'trl-only' (lmgr_trl.lib) library.
Decimal licenses and lc_convert API	Decimal licenses are deprecated. Consequently sections on decimal licenses and the **lc_convert** API have been removed from documentation.

Table 6 ▪ Deprecated Features and Commands

Deprecated Features and Commands	Comments
Trusted Storage on AIX	Trusted storage is no longer supported on AIX.

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