FlexNet Publisher 2021 (11.18.1) Release Notes

May 2021
Revision 00

Enhancements

This release includes the following enhancements:

- New Universal2 Toolkits for MacOS/OSX Big Sur
- Batch Checkout Enhancements
- Efficient Method of Checking Duplicate Checkout

New Universal2 Toolkits for MacOS/OSX Big Sur

FNP introduces new Universal2 toolkits for MacOS/OSX Big Sur(x86_64 + ARM64).

(FNP-23847)

Universal2 Kit Limitations

- Dongles are not supported.
- Universal2 kit does not contain lmadmin.
- The universal2_mac is not supported in PLATFORMS keyword.

(FNP-25109)

Following are the limitations when you build the Universal2 kit on Intel platform in FNP 11.18.1 release:

- When you build a Universal2 kit on an Intel machine the kit will work fine on the Intel. Whereas, the kit will not run on the ARM64. It would fail with a security error. To get around this, build your Universal2 kits that target both ARM and Intel architectures on ARM machine.

(FNP-23847)

Batch Checkout Enhancements

Batch checkout is now enhanced to support checkout filters, Trusted Storage and Client side TS lookup before the checkout from server.

The attributes supported at transaction entry level are:

- LM_A_BORROW_EXPIRE
- LM_A_BORROW_RETURN_BY_VERSION
- LM_A_CHECKOUT_DATA
- LM_A_CHECKOUTFILTER
- LM_A_CHECKOUTFILTER_EX

- LM_A_CHECKOUTFILTERLAST_EX
- LM_A_CHECK_LOCAL_TS_SIGNATURE
- LM_A_IGNORE_FILE_CHECK_IN_HEARTBEAT (Linux Only)
- LM_A_LINGER
- LM_A_MULTIPLE_CHECKOUT_DATA
- LM_A_RETRY_COUNT
- LM_A_RETRY_INTERVAL
- LM_A_SORT_TS_FIRST
- LM_A_TS_ONLY
- LM_A_VENDOR_CALLBACK_DATA

(FNP-23201)

Efficient Method of Checking Duplicate Checkout

The lc_checkout() API has been enhanced to preview, if a subsequent checkout call will result into duplicate or not, when DUP_GROUP criteria is in use. A new flag LM_CO_DUP_LOCALTEST has been introduced in lc_checkout() API. With LM_CO_DUP_LOCALTEST flag, lc_checkout() API will return a success or failure note to show the possibility of the duplicate checkout in the subsequent calls.

(FNP-23884)

Security Updates

This release includes the following security updates:

- Third Party Library Updates

Third Party Library Updates

gSOAP Upgrade

gSOAP version has been upgraded to 2.8.111.

(FNP-23704)

OpenSSL Upgrade

OpenSSL version has been upgraded to 1.1.1i.

(FNP-24597)

Dongle Updates

This release includes the following dongle updates:

- Dongle

Dongle

- Dongles are not supported in everRun 7.8.
- HASP 4 M1 dongles are not tested in this release.

Platform Updates

This section lists platform updates for the following releases:

11.18.1 Updates

The 11.18.1 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 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/OS X 11.0 (Big Sur)

In this release, FlexNet Publisher supports Universal2 kit for MacOS/OSX Big Sur(x86_64 + ARM64).

(FNP-23847)

11.18.0 Updates

The 11.18.0 updates include the following:

- Integrated Products and Tested Versions
- Windows
- 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 (21.1.0)

Windows

Diagnostics Port Listener Issue

Diagnostics port listener is supported on Windows 10 from build 17093 and not supported on Windows 7 and Windows 10 earlier than build 17093.

(FNP-23784)

MacOS

End of Life for MacOS/OS X Universal Kit (x86-32 + x64)

Starting FlexNet Publisher 11.18.0, product will not support Universal kit for MacOS/OS X (x86-32 + x64). Customers can continue using x64_mac10 kits.

Support for MacOS/OS X 11.0 (Big Sur) on Intel Architecture

In this release, FlexNet Publisher x64_mac10 kit supports MacOS/OS X 11.0 (Big Sur) Intel architecture.

11.17.2 Updates

The 11.17.2 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 2020 R1 (20.1.0)
FlexNet Manager for Engineering Applications	FlexNet Manager for Engineering Applications 2019 R2 (15.10.0)
FlexNet Operations Cloud	FlexNet Operations Cloud 2020 R2 SP1 (20.3.0)

11.17.1 Updates

The 11.17.1 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 2020 R1 (20.1.0)
FlexNet Manager for Engineering Applications	FlexNet Manager for Engineering Applications 2019 R2 (15.10.0)
FlexNet Operations Cloud	FlexNet Operations Cloud 2020 R2 SP1 (20.2.0)

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 Issues Specific to License File–Based Licensing
- Resolved Issue Between Client and License Server
- Resolved Issue Specific to Trusted Storage-Based Licensing
- Resolved Issue Dongle Driver

Resolved Issues Specific to License File–Based Licensing

Fix for Memory Leak - Batch Checkout

The memory leak, which was encountered during batch checkout process on client side in the FNP 11.18.0 release has been resolved now.

(FNP-24736)

Resolved Issue Between Client and License Server

Fix for Access Violation Exception

With the Microsoft Visual Studio 2015 or newer, when FlexNet License Finder dialog was invoked from license checkout call, Access Violation Exception was thrown by the client. This issue has been resolved.

(FNP-24193, FNP-24666)

Patches for libxml2

Multiple vulnerabilities were found in libxml2 v2.9.10, which is used by lmadmin. Latest available patches were applied to libxml2 to resolve the vulnerabilities CVE-2020-7595, CVE-2019-20388 and CVE-2020-24977.

(FNP-23595)

Fix for lmdiag Error(-5,147)

When there are multiple increment lines for same feature with only difference in notice keyword, lmdiag was throwing an error (-5, 147). This issue has been fixed now.

(FNP-19428)

Fix for License Checkout Error(-5,412)

When a FlexEnabled application does checkout using the same job handle after a server restart. The checkout was failing with and error (-5,412). This issue has been fixed now.

(FNP-22966, FNP-24993)

Resolved Issue Specific to Trusted Storage-Based Licensing

Fix for License Checkout Error (-21,126)

The checkout was failing when there were duplicate increment lines for same feature with different versions. This issue has been observed at Trusted Storage when the Client checkout filter was used. This issue has been fixed.

(FNP-21787)

Application Hardening on Windows

Researchers identified an elevated privilege issue related to the FlexNet Licensing Service, an optional FlexNet Publisher component used with trusted storage. It only impacts systems running on Windows. Originally, the vulnerability and its report utilized a vector that had been mitigated through a change in the Microsoft Windows operating systems. However, we received further updates from the reporter in 2021 to indicate existence of more vectors and thus exposing the vulnerability.

This release contains a application hardening against this vulnerability by adding code to check for the existence of a symbolic link on the C:\ProgramData\FLEXnet. Detection of a symbolic link on these folder or files in this situation results in a system error code "19885" from the FNP API such as Activation APIs and Activation utilities. When the system error "19885" occurs you are advised to check and remove the symbolic link if exist and continue using the product.

(FNP-24995)

Resolved Issue Dongle Driver

Broadcast to Port 1947

When FLEXID09 dongle drivers are in use to support extraction of host-id. The FLEXID09 dongle starts broadcast to a port 1947. This broadcast is to auto-discover a component that is of no relevance to FNP. To stop this broadcast FNP has added a configuration batch file on Windows and a script on Linux/MAC OSX platform.

(FNP-18188, FNP-25067)

Multiple FLEXID-10 Dongles Detection

When more than one FLEXID-10 dongles were plugged into the dongle ports only one of them was detected. This behavior is seen in FNP starting 11.16.2 until 11.18.1. This issue has been fixed now.

(FNP-24656)

Known Issues

This release includes known issues in the following categories:

- Known Dongle Issues

Known Dongle Issues

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)

Issues on Windows 10 Version 2004

There may be some issues seen on Windows 10 Version 2004 when Sentinel LDK Run-time Environment version 7.100 or earlier is already installed or will be installed. FlexNet Publisher toolkit latest releases (since 11.17.0) have already been upgraded to LDK version 7.103 and issue might not occur on upgraded kits. The issue is not yet tested as FlexNet Publisher has not introduced the support for Windows 10 Version 2004 in this release.

(FNP-23418)

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)

CVE Vulnerability

The CVE-2021-3450 vulnerability is seen with openssl-1.1.1i version in 11.18.1.0 release. It will be resolved in successive FNP release.

(FNP-25063)

Vulnerabilities through CodeInSight Scan

The vulnerabilities CVE-1999-0236, CVE-1999-1412, and CVE-2007-0086 are observed through CodeInSight Scan. These will be resolved in successive FNP release.

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

Borrow Activation to a Linux Client Causes a Crash

The **flxActBorrowActivate** function crashes when server trusted storage contains an INCREMENT line before a PACKAGE line. However, FlexNet Operations does not produce licenses in this configuration.

(FNP-10437; Salesforce case 00506917)

Error Observation in Mac BigSur ARM Platform

While building the FNP universal2 kit on Mac BigSur 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 Mac BigSur machine.

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

(FNP-23847, FNP-25111)

Known Java Issues

There is no known Java issue in the release 11.18.1.0.

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 2021 (11.18.1) 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

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

Platform Type	Hardware Type	Operating System
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 SP4, SLES 12 SP5, SLES 15 SP1, and SLES 15 SP2 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 Mac 11.1
macOS/OS X 64-bit	ARM-64	Mac 11.1
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.
Microsoft Windows 32-bit	x64	Windows Server 2019 Windows Server 2016
Microsoft Windows 64-bit	x64	Windows 10 Windows 7 SP1 ESU (Extended Security Updates) Windows Server 2019 Windows Server 2016 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
Solaris 32-bit	SPARC 32-bit x86	Solaris 10 and 11
Solaris 64-bit	SPARC 64-bit x86-x64	Solaris 10 and 11

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

Detailed Platform Information

The following sections list the operating systems and their associated hardware platforms tested with FlexNet Publisher 2021 (11.18.1). 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
- 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 (15.9.33) • Visual Studio 2015 Update 3 • Visual Studio 2013 Update 5

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 MAC 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
Tested Compiler	• Visual Studio 2019 (16.8.3) • Visual Studio 2017 (15.9.33) • Visual Studio 2015 Update 3 • Visual Studio 2013 Update 5

Item	Description

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 MAC 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

Item	Description
Tested Compiler	For x86: • gcc 8.2.1 (RHEL 8) • gcc 4.8.5 (RHEL 7) • gcc 4.3.4 (SLES 11 SP4)
Notes	• `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 MAC 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 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

Item	Description
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 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)
Notes	• `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 MAC 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)
Notes	• `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)

Item	Description
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

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

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)

Item	Description
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
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)

Item	Description
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
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.

Item	Description
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

Item	Description
Tested Compiler	• JDK 8 • JDK 11 (JDK 11 is not supported on Solaris x86 and x64) • OpenJDK 15 (Warnings are observed during installation and uninstallation of lmadmin installer on Windows as mentioned in FNP-22382) and in MAC lmadmin installer will not work as mentioned in FNP-24247
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

Item	Description

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.

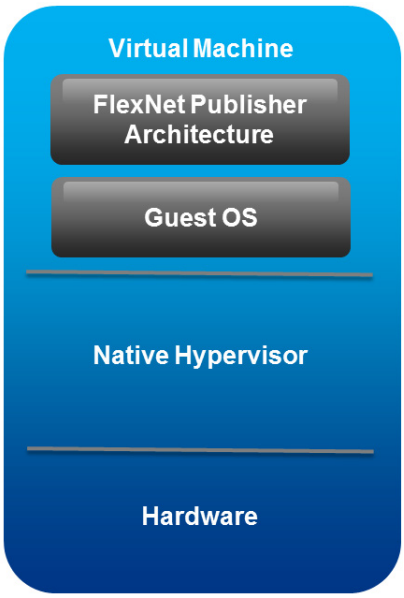
Toolkits That Support Prepped Trusted Configuration

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 Mac)
- universal2_mac11 (Universal Mac)

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

Table 3 ▪ Tested Virtualization Stacks

FlexNet Publisher Architecture	Guest OS	Hypervisor
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
i86_lsb	RHEL 7, and 8 SLES 11 SP4	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 SP4,SLES 15, SLES 15 SP1, and SLES 15 SP2	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

Table 3 ▪ Tested Virtualization Stacks

FlexNet Publisher Architecture	Guest OS	Hypervisor

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.*

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
		Google Cloud
		Microsoft Azure
			License servers:
			`VM_UUID`
			FlexEnabled clients:
			`ETHER`

i86_n, x64_n	• Windows Server 2016
	• Windows 10
		Amazon EC2	License servers:
			`VM UUID` (previously `AMZN_IID`)
			`AMZN_EIP`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

i86_lsb, x64_lsb	• RHEL 6 and 7
	• SLES 11 SP4
		Google Cloud
		Microsoft Azure
			License servers:
			`VM_UUID`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

Table 4 ▪ Tested Cloud Environments

FlexNet Publisher Architecture	Tested OS	Cloud Platform	Host ID

i86_lsb, x64_lsb	• RHEL 6, 7 and 8
	• SLES 11 SP4 and SUSE 15
		Amazon EC2	License servers:
			`AMZN_EIP` or `VM_UUID`
			FlexEnabled clients:
			`AMZN_IID`
			`ETHER`

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

Table 5 ▪ Tested `lmadmin` Platforms

Platform Architecture	Processor Type	Operating System
Linux 32-bit	x64	RHEL 7 and 8 SLES 11 SP4
Linux 64-bit	x64	RHEL 6, 7 and 8 SLES 11 SP4, SLES 12 SP4, SLES 15, SLES 15 SP1, and SLES 15 SP2 Ubuntu 16.04, 18.04, and 20.4
macOS/OS X 64-bit	x64	MacOS 10.15 MacOS 10.14 Mac 11.1
macOS/OS X 64-bit	ARM-64	Mac 11.1
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
Microsoft Windows 64-bit	x64	Windows 10 Windows 7 SP1 ESU Windows Server 2019 Windows Server 2016 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 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.*

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.
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

Table 6 ▪ Deprecated Features and Commands

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

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