

# FlexNet Publisher 2018 R4 (11.16.2) Release Notes

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Revision 00

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# Enhancements

## Command-line option in lmadmin

A new command-line option ("-addDependencyFNLS") has been added in lmadmin on Windows.

Now in the Windows platform, if lmadmin is installed as a service using the "-addDependencyFNLS" command-line option (along with the "-installService" option), then the service will get installed with a dependency on FlexNet Licensing Service (32-bit or 64-bit depending on the type of lmadmin executable).

(FNP-15226)

## Option to configure SOAP communication in lmadmin

When the lmadmin command prompt is used to add, delete and modify lmadmin users the SOAP protocol is used by default. A new lmadmin command line option "offlineupdate" is added to configure the user without any SOAP communication. Now, users will be directly added to the required configuration file. All previously running lmadmin instances must be closed before configuring users with the new command line option.

(FNP-19125)

## lc\_feat\_list enhancement

In FNP API lc\_feat\_list, the flag LM\_FLIST\_ALL\_FILES provides feature information about all the features from the license server. Some of these fetched features may be invalid as they are no longer served by the server. A new flag LM\_FILTERLIST\_ALL\_FILES is introduced which will filter and only return valid served feature names.

(FNP-19289)

## Username anonymity in REPORTLOG

If the variable HIDE\_USER is declared in the options file with REPORTLOG, then any user name will be SHA2 hashed before being written to the encrypted REPORTLOG. The consequence of this is that FlexNet Manager will show the username in obfuscated form.

(FNP-18717)

# Security Updates

## Third-party library updates

### OpenSSL Upgrade

OpenSSL has been upgraded to version 1.1.0h. (FNP-19318)

### gSOAP upgrade in FNPCommsSoap

The commercial gSOAP version used by the FlexNet Publisher component FNPCommsSoap has been upgraded to 2.8.69.

(FNP-19378)

### Apache Xerces-C upgrades

The version of Apache Xerces-C has been upgraded to 3.2.2.

(FNP-19994)

## Dongle Updates

There are no dongle updates to report for FlexNet Publisher 11.16.2.

## Platform Updates

### 11.16.2 Updates

#### Windows

The FlexNet Publisher Licensing Toolkit for Windows has been tested on Windows Server 2019.

#### macOS/OS X

The FlexNet Publisher Licensing Toolkit for macOS/OS X has been tested on macOS 10.14.

### Integrated Products and Tested Versions

| Product                                      | Tested Version                                                       |
|----------------------------------------------|----------------------------------------------------------------------|
| FlexNet Operations                           | FlexNet Operations 2018 R1 (18.1.0)                                  |
| FlexNet Manager for Engineering Applications | FlexNet Manager for Engineering Applications<br>2016 R2 SP1 (15.7.0) |
| FlexNet Operations Cloud                     | FlexNet Operations Cloud 2018 R2 (18.2.0)                            |

### 11.16.1 Updates

#### Linux

##### PIE support

The FlexNet Publisher Licensing Toolkits for Linux now offers PIE support for vendor daemons and ARM architecture on Linux. (FNP-19082, FNP-19054)

## SLES 15 support

64-bit Linux kits have been tested on SLES 15.

Dongles are not supported on systems running SLES 15. (FNP-19610, FNP-19618, and FNP-19619)

## Solaris

### New requirement for linking against librt.so on Solaris

On Solaris, code using the FlexNet Publisher libraries (client and server) must include `librt.so` (add `-lrt` to link command lines). The makefiles in the FlexNet Publisher Licensing Toolkit for Solaris have been adjusted accordingly. (FNP-19192)

## Integrated Products and Tested Versions

| Product                                      | Tested Version                                                    |
|----------------------------------------------|-------------------------------------------------------------------|
| FlexNet Operations                           | FlexNet Operations 2018 R1 (18.1.0)                               |
| FlexNet Manager for Engineering Applications | FlexNet Manager for Engineering Applications 2016 R2 SP1 (15.7.0) |
| FlexNet Operations Cloud                     | FlexNet Operations Cloud 2018 R2 (18.2.0)                         |

## 11.16.0 Updates

## Windows

The FlexNet Publisher Licensing Toolkit for Windows has been tested on Visual Studio 2017 (15.7 update). (FNP-18867)

## Linux

### PIE support

The FlexNet Publisher Licensing Toolkits for Linux support building client-side executables and utilities as Position-Independent Executables (PIE). Limitation: PIE support is not yet available for vendor daemons and ARM architecture on Linux. (FNP-18909)

### x86 Architecture

We test recent versions of SUSE Linux Enterprise Server, Red Hat Enterprise Linux, and Ubuntu Server (see [C/C++ Toolkits](#) for specific versions). We do not test other Linux distributions, but would consider as minimum requirements for potential FlexNet Publisher compatibility on a Linux x86 distribution the following: LSB 4.0 compliance and GLIBC-2.12 and Kernel 2.6.32.

Dongles are not supported on Ubuntu.

### AArch64 Architecture

Minimum requirements for potential FlexNet Publisher compatibility on Linux distributions are GLIBC-2.17 and Kernel 4.4.

## lmadmin Platforms

lmadmin is now available as a 64-bit application for all supported lmadmin platforms (FNP-17125, FNP-18383; Salesforce case 01270591).

## Integrated Products and Tested Versions

| Product                                      | Tested Version                                                    |
|----------------------------------------------|-------------------------------------------------------------------|
| FlexNet Operations                           | FlexNet Operations 2018 R1 (18.1.0)                               |
| FlexNet Manager for Engineering Applications | FlexNet Manager for Engineering Applications 2016 R2 SP1 (15.7.0) |
| FlexNet Operations Cloud                     | FlexNet Operations Cloud 2018 R2 (18.2.0)                         |

## 11.15.1 Updates

### Linux

#### x86 Architecture

We test recent versions of SUSE Linux Enterprise Server, Red Hat Enterprise Linux, and Ubuntu Server (see [C/C++ Toolkits](#) for specific versions). We do not test other Linux distributions, but would consider as minimum requirements for potential FlexNet Publisher compatibility on a Linux x86 distribution the following: LSB 4.0 compliance and GLIBC-2.12 and Kernel 2.6.32.

Dongles are not supported on Ubuntu. (FNP-17679)

#### ARM Architecture

In this release, FlexNet Publisher introduces the arm64\_linux kit for Linux support on AArch64. RHEL and SLES, but not Ubuntu, are supported with this new kit. See the [System Requirements](#) section.

## Integrated Products and Tested Versions

| Product                                      | Tested Version                                                    |
|----------------------------------------------|-------------------------------------------------------------------|
| FlexNet Operations                           | FlexNet Operations 2017 R4 (17.4.0)                               |
| FlexNet Manager for Engineering Applications | FlexNet Manager for Engineering Applications 2016 R2 SP1 (15.7.0) |
| FlexNet Operations Cloud                     | FlexNet Operations Cloud 2018 R1 (18.1.0)                         |

## 11.15.0 Updates

### Windows

The FlexNet Publisher Licensing Toolkit for Windows has been tested on Visual Studio 2017. (FNP-15995, Salesforce cases 01139627, 01136613)

### Linux

We test recent versions of SUSE Linux Enterprise Server and Red Hat Enterprise Linux (see [C/C++ Toolkits](#) for specific versions). We do not test other Linux distributions, but would consider as minimum requirements for potential FlexNet Publisher compatibility on a Linux distribution the following: LSB 4.0 compliance and GLIBC-2.7 and Kernel 2.6.27 (FNP-17765).

For the first time, the FlexNet Publisher Licensing Toolkit for Linux has been tested on Ubuntu. Testing was performed against Ubuntu 16. Ubuntu support is experimental in this release.

### macOS/OS X

The FlexNet Publisher Licensing Toolkit for macOS/OS X has been tested on macOS 10.13.

## Integrated Products and Tested Versions

| Product                                      | Tested Version                                                    |
|----------------------------------------------|-------------------------------------------------------------------|
| FlexNet Operations                           | FlexNet Operations 2017 R4 (17.4.0)                               |
| FlexNet Manager for Engineering Applications | FlexNet Manager for Engineering Applications 2016 R2 SP1 (15.7.0) |
| FlexNet Operations Cloud                     | FlexNet Operations Cloud 2017 R4                                  |

### 11.14.1 Updates

#### Windows

Windows Server 2016 has been tested in this release.

#### Linux

We test recent versions of SUSE Linux Enterprise Server and Red Hat Enterprise Linux (see [C/C++ Toolkits](#) for specific versions). We do not test other Linux distributions, but would consider as minimum requirements for potential FlexNet Publisher compatibility on a Linux distribution the following: LSB 4.0 compliance and GLIBC-2.7 and Kernel 2.6.27 (FNP-15725).

#### macOS/OS X

FlexNet Publisher has been tested on macOS 10.12.



## Integrated Products and Tested Versions

| Product                                      | Tested Version                                                |
|----------------------------------------------|---------------------------------------------------------------|
| FlexNet Operations                           | FlexNet Operations 2016 R3 16.3.0                             |
| FlexNet Manager for Engineering Applications | FlexNet Manager for Engineering Applications 2016 R1 (15.6.0) |
| FlexNet Operations Cloud                     | FlexNet Operations Cloud 2016 R4                              |

## 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 General Issues

#### Lmgrd and Vendor Daemon security vulnerabilities

Four vulnerabilities were reported by Kaspersky Lab ICS-CERT, three of which could be exploited to cause a denial of service (DoS) and one of which could potentially allow execution of arbitrary code (although an exploit to verify this has not been seen). These vulnerabilities affect lmgrd and the vendor daemon, in all platforms. (They do not affect lmadm or clients.)

The vulnerabilities have been resolved in this release. It is recommended to upgrade both lmgrd and the vendor daemon.

(FNP-19496)

### Resolved Issues Specific to License File-Based Licensing

#### Vendor Daemon CPU utilization on HP-UX

On HP-UX, both lmgrd and vendor daemon showed 100% CPU utilization during checkout and checkin of licenses from a FlexEnabled client. These have been resolved in this release.

(FNP-19681)

# Resolved Issues Specific to Trusted Storage–Based Licensing

## **Lmremove utility enhancement**

The utility `lmremove` has been enhanced to work for concurrent features served out from a trusted storage location.

(FNP-9422; Salesforce cases 00125001, 00506252, 00454508, 01152043, 00601731)

# Resolved `lmadmin`, `lmgrd`, and Utility Issues

## **Client re-authentication following reread of options file**

Previously on a server reread, any changes to the options file were only applied to post-reread checkout requests. However, for pre-reread clients, the changes were not applied. These clients would continue to use the licenses, which in some cases could lead to license leakage (for example, when changing the `RESERVE` option; see FNP-7322). As a result, `lmstat` reported that more licenses are in use than the total count of available licenses on the server (FNP-14494).

Now, the active client list is dynamically authenticated against any options file changes, with an exception of borrowed licenses or `DUP_VENDOR` clients, after every server reread.

If required, licenses can be claimed back from post-reread restricted users (in case of `EXCLUDE`). In addition, reservation rights shall be reshuffled based on validity (in case of `RESERVE`). Hence, `lmstat` now states the correct and expected output.

This re-authentication mechanism also applies to trusted-storage licenses.

(FNP-7322, FNP-14494, FNP-17481; Salesforce cases 00238270, 01507440, 00940050, 00952822, 01323143)

For more information, see [lmreread limitations](#).

## **User group is re-read for `USER_BASED` licenses (post `ls_user_based_reread_delay`)**

Previously, when a `GROUP` for `USER_BASED` licenses was defined in the options file, `lmreread` failed to reread the changes in the group entries. Now, after the delay enforced by the vendor variable `ls_user_based_reread_delay`, the user group will be re-read and the licensing rights will be provided accordingly.

(FNP-10448; Salesforce cases 00511537, 00747948, 01477715)

## **`PACKAGE` and `SUITE_RESERVED` keyword (`MAX` option not supported)**

For `SUITE_RESERVED` licensing, since `MAX` keyword is not applicable for 'package' itself, a warning message is displayed.

“Warning: For `SUITE_RESERVED` licensing, `MAX` keyword is not supported for package 'SRpkg', but only for respective components”.

(FNP-19381; Salesforce case 01617870)

# Known Issues

## Known Dongle Issues

### FLEXID10 dongle driver issue

FLEXID10 dongles may not work correctly with the latest v6.40 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)

### FLEXID10 uninstaller issue

While uninstalling the FLEXID10 (Wibu) driver (v6.40) on macOS/OS X platforms, the uninstaller does not remove `libwkextmac.dylib` from the default installer location (`/usr/local/lib`).

(FNP-16412)

### FLEXID9 dongle hostid not fetched

On some occasions, the FLEXID9 dongle hostid is not fetched on SuSE Linux 12 SP3 platforms when the machine is accessed remotely.

As a workaround, restart `hasplmd.service` using the following command:

```
sudo systemctl restart hasplmd.service
```

(FNP-19708)

## Known lmadm Issues

### Event Viewer not displaying server details

On a 64-bit Windows lmadm kit, the Event Viewer fails to display the lmadm server details. As a workaround, open `EventLogAdd.reg` and replace

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Eventlog\Application\lmadm_LicenseServer64]
```

with

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Eventlog\Application\lmadm_LicenseServer].
```

(FNP-19582)

### lmadm silent installer not displaying required error message

When a non-root user attempts to install lmadm in the default location, the installer can hang.

(FNP-6942)

### **Error when installing lmadm as a service on Windows with multibyte characters in the install path**

lmadm may not run correctly if installed as a service to a path with multibyte characters.

(FNP-11879; Salesforce case 00830014)

### **Error when running lmadm on SuSE Linux 11 SP4**

An error will occur when trying to run lmadm on SuSE Linux 11 SP4, because the OpenLDAP shared libraries packaged with lmadm are not suitable for this platform.

To run lmadm on SuSE Linux 11 SP4, remove the files libldap\* and liblber\* that are located in the same directory as the lmadm executable, or move these files to a different directory. The lmadm executable will then use the system-supplied versions of these libraries.

(FNP-19151)

## **Known Issues Specific to License File–Based Licensing**

### **LM\_FILTERLIST\_ALL\_FILES limitations**

When using multiple vendors, the newly introduced flag "LM\_FILTERLIST\_ALL\_FILES" lists the set of features being served by the vendor, with which client is built.

(FNP-20065)

Any USER\_BASED licenses which are yet to be served by the license server are listed as "available/being served" through the newly introduced flag, "LM\_FILTERLIST\_ALL\_FILES".

(FNP-20056)

### **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)

### Imreread limitations

Vendor Daemon crash is observed when attempting to remove the clients from the server through a re-read (manual/automatic) authentication where multiple licenses for the same feature are checked out from the server using different checkout data using a single job handle.

(FNP-20099; Salesforce case 01757360)

When a single job checks out multiple licenses of different features/pools, post re-read if one or more of the supported feature is dropped, then all the existing checkouts will go through the process of reconnection. If any jobs are queued for the same features, they may consume the released licenses.

After re-read, when a single license pool cannot serve all the licenses to a reconnecting client (partial checked out license is upgraded before the re-read), client will exit unless it is a bulk checkout scenario.

(FNP-19625, FNP-19623)

## 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)

## Known Java Issues

### Limitation of queuing in Java clients

When a Java client is set to queueing with the `Synch_queue` option, the clients get queued even when there are no licenses available while it waits for `SOCKET_READ_TIMEOUT` for 20 seconds. The licenses get dequeued when there is no response from the server, then exits throwing `LM_CANTRECEIVE FlexlmException`.

(FNP-11414; Salesforce cases 00753089, 01026773)

## Known Linux Issues

### Shared libraries limitations

Some of the FNP shared libraries use a non-LSB compliant interface `(__tls_get_addr*)` which is not supported by a few of the older version of GLIBC.

This creates an issue when GLIBC doesn't have this interface `(__tls_get_addr)`. However, most of the supported Linux distributions come with GLIBC library which has the definition for this interface.

(FNP-20096)

# System Requirements

## Tested Platforms

The following sections describe the platforms tested with the FlexNet Publisher 2018 R4 (11.16.2) 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:

<http://www.flexerasoftware.com/support/additional-support/end-of-life/flexnet-publisher.html>

## 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  | x86               | RHEL 6                                                                                 |
| Linux 32-bit  | x64               | RHEL 7<br>SLES 11 SP4 and 12 SP3                                                       |
| Linux 64-bit  | x64               | RHEL 6 and 7<br>SLES 11 SP4, SLES 12 SP3, and SLES 15<br>Ubuntu 16.04, 18.04 and 18.10 |
| Linux 64-bit  | ARMv8-A (AArch64) | RHEL 7<br>SLES 12 SP3 and SLES 15                                                      |

**Table 1 • Tested Platforms—C/C++ Toolkits**

| Platform Type                | Hardware Type           | Operating System                                                                                                                                |
|------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| macOS/OS X 32-bit and 64-bit | x86<br>x64              | macOS 10.14<br>macOS 10.13                                                                                                                      |
| Microsoft Windows 32-bit     | x86                     | Windows 10<br>Windows 7 SP1<br>It is a best practice to run license servers on a server-based OS.                                               |
| Microsoft Windows 32-bit     | x64                     | Windows Server 2019<br>Windows Server 2016                                                                                                      |
| Microsoft Windows 64-bit     | x64                     | Windows 10<br>Windows 7 SP1<br>Windows Server 2019<br>Windows Server 2016<br>It is a best practice to run license servers on a server-based OS. |
| Solaris 32-bit               | SPARC 32-bit<br>x86     | Solaris 10 and 11                                                                                                                               |
| Solaris 64-bit               | SPARC 64-bit<br>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<br>Development Kit | ● Solaris x86          | Java Standard Edition 1.8          |
|                                | ● Solaris x64          |                                    |
|                                | ● Solaris SPARC 32-bit | Java Standard Edition 1.8 and 1.11 |
|                                | ● Solaris SPARC 64-bit |                                    |
|                                | ● Windows x86          |                                    |
|                                | ● Windows x64          |                                    |
|                                | ● Linux x86            |                                    |
|                                | ● Linux x64            |                                    |
|                                | ● macOS x64            |                                    |

## Detailed Platform Information

The following sections list the operating systems and their associated hardware platforms tested with FlexNet Publisher 2018 R4 (11.16.2). 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](#)
  - [Linux 32-bit](#)
  - [ARMv8-A \(AArch64\)](#)
  - [Solaris 32-bit](#)
  - [AIX 32-bit](#)
  - [Microsoft Windows 64-bit](#)
  - [Linux 64-bit](#)
  - [macOS/OS X 32-bit and 64-bit](#)
  - [Solaris 64-bit](#)
  - [AIX 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:

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>          | i86_n                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Package Identifier</b>     | i86_n3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Tested Compiler</b>        | <ul style="list-style-type: none"> <li>● Visual Studio 2017 (15.9)</li> <li>● Visual Studio 2015 Update 3</li> <li>● Visual Studio 2013 Update 5</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>● Imadmin is supported in this toolkit.</li> <li>● Multiple Ethernet hostids are supported.</li> <li>● Short-code transactions are supported.</li> <li>● Prepped Trusted Configuration is supported.</li> <li>● Tested virtual machine platforms include: <ul style="list-style-type: none"> <li>VMware Workstation 14.1.1</li> <li>VMware ESXi 6.5 and 6.7</li> <li>Microsoft Windows Server 2016 Hyper-V</li> <li>Microsoft Windows 10 Hyper-V</li> <li>Citrix XenServer 7.5 and 7.6</li> <li>Oracle Virtual Box 5.2.18</li> <li>QEMU-KVM (Host OS: CentOS 7.5) <ul style="list-style-type: none"> <li>● Hypervisor: qemu-kvm-ev-2.10.0</li> <li>● Hypervisor Services: libvirt-daemon-kvm-3.9.0-14</li> <li>● Virtual Machine Manager: vmm v1.4.3</li> </ul> </li> <li>Parallels Desktop 14.1.0 for MAC 10.14</li> </ul> </li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Microsoft Windows 64-bit

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

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>          | x64_n                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Package Identifier</b>     | x64_n6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Tested Compiler</b>        | <ul style="list-style-type: none"><li>● Visual Studio 2017 (15.9)</li><li>● Visual Studio 2015 Update 3</li><li>● Visual Studio 2013 Update 5</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Notes</b>                  | <ul style="list-style-type: none"><li>● lmadm is supported using its 64-bit binary. While the 32-bit lmadm 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.</li><li>● Multiple Ethernet hostids are supported.</li><li>● Short-code transactions are supported.</li><li>● Prepped Trusted Configuration is supported.</li><li>● The lmtools utility cannot interact with the license server manager (lmgrd) when lmgrd is run as a service.</li><li>● Tested virtual machine platforms include:<br/>VMware Workstation 14.1.1<br/>VMware ESXi 6.5 and 6.7<br/>Microsoft Windows Server 2016 Hyper-V<br/>Microsoft Windows 10 Hyper-V<br/>Citrix XenServer 7.5 and 7.6<br/>Oracle Virtual Box 5.2.18<br/>QEMU-KVM (Host OS: CentOS 7.5)<ul style="list-style-type: none"><li>● Hypervisor: qemu-kvm-ev-2.10.0</li><li>● Hypervisor Services: libvirt-daemon-kvm-3.9.0-14</li><li>● Virtual Machine Manager: vmm v1.4.3</li></ul>Parallels Desktop 14.1.0 for MAC 10.14</li></ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Linux 32-bit

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

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>          | i86_lsb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Package Identifier</b>     | i86_lsb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Tested Compiler</b>        | For x86: <ul style="list-style-type: none"><li>● gcc 4.8.5 (RHEL 7)</li><li>● gcc 4.4.7 (RHEL 6)</li><li>● gcc 4.8.5 (SLES 12 SP3)</li><li>● gcc 4.3.4 (SLES 11 SP4)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Notes</b>                  | <ul style="list-style-type: none"><li>● lmadm is supported using its 32-bit binary.</li><li>● Multiple Ethernet hostids are supported.</li><li>● Short-code transactions are supported.</li><li>● Prepped Trusted Configuration is supported.</li><li>● Tested virtual machine platforms include:<br/>VMware ESXi 6.5 and 6.7<br/>VMware Workstation 14.1.1<br/>Microsoft Windows Server 2016 Hyper-V<br/>Microsoft Windows 10 Hyper-V<br/>Citrix XenServer 7.5 and 7.6<br/>Oracle Virtual Box 5.2.18<br/>QEMU-KVM (Host OS: CentOS 7.5)<ul style="list-style-type: none"><li>● Hypervisor: qemu-kvm-ev-2.10.0</li><li>● Hypervisor Services: libvirt-daemon-kvm-3.9.0-14</li><li>● Virtual Machine Manager: vmm v1.4.3</li></ul>Parallels Desktop 14.1.0 for MAC 10.14</li></ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Linux 64-bit

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>         | x64_lsb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Package Identifier</b>    | x64_lsb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Tested Compiler</b>       | <p>For x64:</p> <ul style="list-style-type: none"><li>● gcc 4.8.5 (RHEL 7)</li><li>● gcc 4.4.7 (RHEL 6)</li><li>● gcc 7.3.1 (SLES 15)</li><li>● gcc 4.8.5 (SLES 12 SP3)</li><li>● gcc 4.3.4 (SLES 11 SP4)</li><li>● gcc 7.3.0 (Ubuntu 18.04)</li><li>● gcc 5.4.0 (Ubuntu 16.04)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Notes</b>                 | <ul style="list-style-type: none"><li>● lmadm is supported using its 64-bit binary.</li><li>● Multiple Ethernet hostids are supported.</li><li>● Short-code transactions are supported.</li><li>● Prepped Trusted Configuration is supported (x64_lsb only).</li><li>● No dongle support on SLES 15</li><li>● Tested virtual machine platforms include:<ul style="list-style-type: none"><li>VMware ESXi 6.5 and 6.7</li><li>VMware Workstation 14.1.1</li><li>Microsoft Windows Server 2016 Hyper-V</li><li>Microsoft Windows 10 Hyper-V</li><li>Citrix XenServer 7.5 and 7.6</li><li>Oracle Virtual Box 5.2.18</li><li>QEMU-KVM (Host OS: CentOS 7.5)<ul style="list-style-type: none"><li>● Hypervisor: qemu-kvm-ev-2.10.0</li><li>● Hypervisor Services: libvirt-daemon-kvm-3.9.0-14</li><li>● Virtual Machine Manager: vmm v1.4.3</li></ul></li><li>Parallels Desktop 14.1.0 for MAC 10.14</li></ul></li></ul> |
| <b>Toolkit Functionality</b> | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                               |                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------|
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> . |
|-------------------------------|----------------------------------------------------------------------------------------|


## ARMv8-A (AArch64)

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

|                               |                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>          | arm64_linux                                                                                                                                                                                             |
| <b>Package Identifier</b>     | arm64_linux                                                                                                                                                                                             |
| <b>Tested Compiler</b>        | <ul style="list-style-type: none"> <li>gcc 4.8.5 (RHEL 7.4)</li> <li>gcc 7.3.1 (SLES 15)</li> </ul>                                                                                                     |
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>lmadm is not supported in this toolkit</li> <li>No VM detection or VMID hostid support</li> <li>No dongle support</li> <li>No trusted storage support</li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files.                                                                                                                                                                       |
| <b>Security Functionality</b> | No support for tamper-resistant applications. The toolkit is labeled as <i>notr</i> .                                                                                                                   |

## macOS/OS X 32-bit and 64-bit

The following table lists information about the macOS/OS X 32- and 64-bit systems tested with the FlexNet Publisher Licensing Toolkit:

|                           |                                                                                                                                                                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>      | <ul style="list-style-type: none"> <li>x86 - i86_mac</li> <li>x64 - x64_mac</li> </ul> <div>  <p><b>Note</b> • x86 - i86_mac only on OS X 10.13</p> </div> |
| <b>Package Identifier</b> | <ul style="list-style-type: none"> <li>universal_mac10_applelibcpp</li> </ul>                                                                                                                                                                 |
| <b>Tested Compiler</b>    | <ul style="list-style-type: none"> <li>Xcode 10.1</li> <li>Xcode 9.4.1</li> <li>Apple LLVM version 9.1.0 (clang-902.0.39.2)</li> <li>Apple LLVM version 10.0.0 (clang-1000.11.45.5)</li> </ul>                                                |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>• The universal toolkit contains both the x86 and x64 lmadm binaries and their installers. An x64-only lmadm installer and archive are available separately.</li> <li>• Multiple Ethernet hostids are not supported.</li> <li>• Short-code transactions are supported.</li> <li>• Prepped Trusted Configuration is supported.</li> <li>• For building requirements, see <a href="#">Requirements for Building the macOS/OS X Licensing Toolkit</a>.</li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> .                                                                                                                                                                                                                                                                                                                                                                                                                |

### 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 10.14, use Xcode 10.1
- For macOS 10.13, use Xcode 9.4.1

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):

- 32-bit Intel—Runs on OS X 10.13
- 64-bit Intel—Runs on OS X 10.13 or later on 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 10.13, use `xcode-select --print-path` to obtain the correct path and choose 10.13 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:

|                           |                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>      | <ul style="list-style-type: none"> <li>• x86_sol (on x86)</li> <li>• sun4_u (on SPARC 32-bit)</li> </ul>     |
| <b>Package Identifier</b> | <ul style="list-style-type: none"> <li>• x86_sol10 (on x86)</li> <li>• sun4_u10 (on SPARC 32-bit)</li> </ul> |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tested Compiler</b>        | <p>For x86:</p> <ul style="list-style-type: none"> <li>● cc (Sun C) 5.12</li> <li>● cc (Sun C) 5.13</li> <li>● cc (Sun C) 5.14</li> <li>● cc (Sun C) 5.15</li> </ul> <p>For SPARC 32-bit:</p> <ul style="list-style-type: none"> <li>● cc (Sun C) 5.14</li> <li>● cc (Sun C) 5.15</li> </ul>                                                                                                                                                                       |
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>● lmadm is supported in this toolkit.</li> <li>● Synchronous I/O multiplexing, via select, is supported for up to 65,535 file descriptors.</li> <li>● The number of system semaphore arrays can become exhausted.</li> <li>● Shared objects might not run when compiled with gcc on SPARC 32-bit.</li> <li>● Multiple Ethernet hostids are not supported.</li> <li>● Prepped Trusted Configuration is supported.</li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> .                                                                                                                                                                                                                                                                                                                                                                             |

## Solaris 64-bit

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

|                           |                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>      | <ul style="list-style-type: none"> <li>● x64_sun (on x64)</li> <li>● sun64_u (on SPARC 64-bit)</li> </ul>     |
| <b>Package Identifier</b> | <ul style="list-style-type: none"> <li>● x64_sun10 (on x64)</li> <li>● sun64_u10 (on SPARC 64-bit)</li> </ul> |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tested Compiler</b>        | <p>For x64:</p> <ul style="list-style-type: none"> <li>● cc (Sun C) 5.12</li> <li>● cc (Sun C) 5.13</li> <li>● cc (Sun C) 5.14</li> <li>● cc (Sun C) 5.15</li> </ul> <p>For SPARC 64-bit:</p> <ul style="list-style-type: none"> <li>● cc (Sun C) 5.14</li> <li>● cc (Sun C) 5.15</li> </ul>                                                                                                                                                                                            |
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>● lmadm is supported using its 64-bit binary. While the 32-bit lmadm 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.</li> <li>● Shared objects might not run when compiled with gcc on SPARC 64-bit.</li> <li>● Multiple Ethernet hostids are not supported.</li> <li>● Prepped Trusted Configuration is supported.</li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Security Functionality</b> | Support for tamper-resistant applications. The toolkit is labeled as <i>standard</i> .                                                                                                                                                                                                                                                                                                                                                                                                  |

## AIX 32-bit

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

|                           |                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>      | ppc_u                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Package Identifier</b> | ppc_u5 (on PowerPC™)                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Tested Compiler</b>    | <p>PowerPC</p> <p>cc (IBM XLC): 11.1 (AIX 7.1) and 13.1.3 (AIX 7.2)</p>                                                                                                                                                                                                                                                                                                                             |
| <b>Notes</b>              | <ul style="list-style-type: none"> <li>● lmadm is supported in this toolkit.</li> <li>● Short-code transactions are not supported.</li> <li>● Prepped Trusted Configuration is not supported.</li> <li>● The AIX FlexNet Publisher client libraries are PIC by default; therefore, only one version of these libraries is provided in the toolkit.</li> <li>● Java SDK is not supported.</li> </ul> |



|                               |                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------|
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                  |
| <b>Security Functionality</b> | No support for tamper-resistant applications. The toolkit is labeled as <i>notr</i> . |

## AIX 64-bit

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

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>          | rs64_u                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Package Identifier</b>     | rs64_u5 (on PowerPC™)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Tested Compiler</b>        | PowerPC<br>cc (IBM XLC): 11.1 (AIX 7.1) and 13.1.3 (AIX 7.2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>● lmadm is supported using its 64-bit binary. While the 32-bit lmadm 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.</li> <li>● Short-code transactions are not supported.</li> <li>● Prepped Trusted Configuration is not supported.</li> <li>● You must use ar -X64 and strip -X64 on this platform.</li> <li>● The AIX FlexNet Publisher client libraries are PIC by default; therefore only one version of these libraries is provided in the toolkit.</li> <li>● Java SDK is not supported.</li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Security Functionality</b> | No support for tamper-resistant applications. The toolkit is labeled as <i>notr</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Java Standard Edition

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

|                           |                                                               |
|---------------------------|---------------------------------------------------------------|
| <b>Platform Name</b>      | java                                                          |
| <b>Package Identifier</b> | Not applicable                                                |
| <b>Tested Compiler</b>    | JDK 8 and 11 (JDK 11 is not supported on Solaris x86 and x64) |

|                               |                                                                                                                                                                                                                                        |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Notes</b>                  | <ul style="list-style-type: none"> <li>• Implements the FlexNet Licensing for Java client library only.</li> <li>• Requires a C development environment.</li> <li>• Requires tamper-resistant licenses (TRL) to be enabled.</li> </ul> |
| <b>Toolkit Functionality</b>  | Licensing based on license files or trusted storage.                                                                                                                                                                                   |
| <b>Security Functionality</b> | No support for tamper-resistant applications. The toolkit is labeled as <i>notr</i> .                                                                                                                                                  |

## HP-UX 64-bit

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

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform Name</b>         | it64_hp (on Intel Itanium)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Package Identifier</b>    | it64_hp11i (on Intel Itanium)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Tested Compiler</b>       | Intel Itanium<br>HP C/aC++ B3910B A.06.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Notes</b>                 | <ul style="list-style-type: none"> <li>• lmadm has not been tested in this toolkit.</li> <li>• 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:<br/><br/> <pre>&gt;lmhostid &gt;The FlexNet Licensing host ID of this machine is "ID_STRING=9c788319-db72-d411-af62-0060b05e4c05"</pre> Older methods of obtaining the hostid that return the Ethernet address are still supported, but may fail on some systems. The older methods include:<br/><br/> <pre>&gt;uname -i (returns decimal hostid) &gt;lmhostid -long (returns hexadecimal hostid)</pre> </li> <li>• Multi-threaded licensing libraries are available on Intel Itanium.</li> </ul> |
| <b>Toolkit Functionality</b> | Licensing based on license files.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

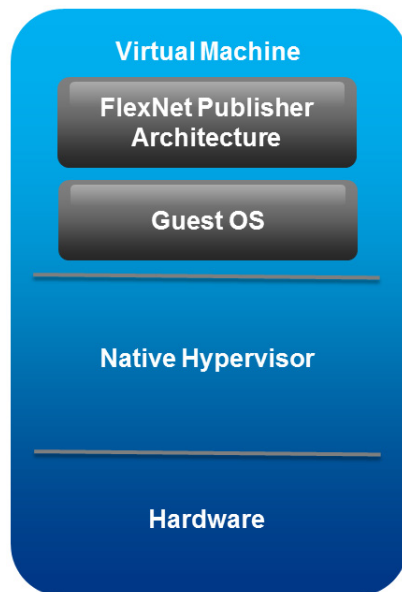
## Toolkits That Support Prepped Trusted Configuration

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

- i86\_lsb (32-bit Linux)
- i86\_n3 (32-bit Windows)
- sun4\_u10 (32-bit Solaris SPARC)
- x86\_sol10 (32-bit Solaris Intel)
- universal\_mac10 (Universal Mac)
- x64\_lsb (64-bit Linux)
- x64\_n6 (64-bit Windows)
- sun64\_u10 (64-bit Solaris SPARC)
- x64\_sun10 (64-bit Solaris Intel)

## 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               | VMware ESXi 6.5 and 6.7                    |
|                                |                             | Citrix XenServer 7.5 and 7.6               |
|                                |                             | VMware Workstation 14.1.1                  |
|                                |                             | Oracle VirtualBox 5.2.18                   |
|                                |                             | QEMU-KVM                                   |
|                                |                             | PARALLELS                                  |
|                                | Windows 10                  | VMware ESXi 6.5 and 6.7                    |
|                                |                             | Citrix XenServer 7.5 and 7.6               |
|                                |                             | VMware Workstation 14.1.1                  |
|                                |                             | Oracle VirtualBox 5.2.18                   |
|                                |                             | PARALLELS                                  |
|                                |                             | QEMU_KVM                                   |
| i86_n, x64_n                   | Windows 10                  | Microsoft Hyper-V from Windows Server 2016 |
|                                | Windows 7 SP1               | Microsoft Hyper-V from Windows 10 Pro      |
|                                | Windows Server 2019         |                                            |
|                                | Windows Server 2016         | VMware ESXi 6.5 and 6.7                    |
|                                | Windows Server 2019         | Citrix XenServer 7.5 and 7.6               |
|                                |                             | PARALLELS<br>QEMU-KVM                      |
| i86_lsb                        | RHEL 6 and 7                | VMware ESXi 6.5 and 6.7                    |
|                                | SLES 11 SP4 and SLES 12 SP3 | VMware Workstation 14.1.1                  |
|                                |                             | Citrix XenServer 7.5 and 7.6               |
|                                |                             | QEMU-KVM                                   |
|                                |                             | Microsoft Hyper-V from Windows Server 2016 |
|                                |                             | Microsoft Hyper-V from Windows 10 Pro      |
|                                |                             | PARALLELS                                  |
|                                |                             | Oracle VirtualBox 5.2.18                   |

**Table 3 • Tested Virtualization Stacks**

| FlexNet Publisher Architecture | Guest OS                              | Hypervisor                                 |
|--------------------------------|---------------------------------------|--------------------------------------------|
| x64 _lsb                       | RHEL 6 and 7                          | VMware ESXi 6.5 and 6.7                    |
|                                | SLES 11 SP4, SLES 12 SP3, and SLES 15 | VMware Workstation 14.1.1                  |
|                                |                                       | Citrix XenServer 7.5 and 7.6               |
|                                |                                       | QEMU-KVM                                   |
|                                |                                       | Microsoft Hyper-V from Windows Server 2016 |
|                                |                                       | Microsoft Hyper-V from Windows 10 Pro      |
|                                |                                       | PARALLELS                                  |
|                                |                                       | Oracle VirtualBox 5.2.18                   |

**Note •**

- Supported hostids in guest operating systems are *ETHER* (server and client) and, for all hypervisors other than Parallels and 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 | Google Cloud    | License servers:              |
|                                | • Windows 10          | Microsoft Azure | VM_UUID                       |
|                                |                       |                 | FlexEnabled clients:<br>ETHER |

**Table 4 • Tested Cloud Environments**

| FlexNet Publisher Architecture | Tested OS                | Cloud Platform  | Host ID                                                                                            |
|--------------------------------|--------------------------|-----------------|----------------------------------------------------------------------------------------------------|
| i86_n, x64_n                   | • Windows Server 2016    | Amazon EC2      | License servers:                                                                                   |
|                                | • Windows 10             |                 | VM UUID (previously AMZN_IID)<br>AMZN_EIP<br><br>FlexEnabled clients:<br><br>AMZN_IID<br><br>ETHER |
| i86_lsb, x64_lsb               | • RHEL 6 and 7           | Google Cloud    | License servers:                                                                                   |
|                                | • SLES 11 SP4 and 12 SP3 | Microsoft Azure | VM_UUID<br><br>FlexEnabled clients:<br><br>AMZN_IID<br><br>ETHER                                   |
| i86_lsb, x64_lsb               | • RHEL 6 and 7           | Amazon EC2      | License servers:                                                                                   |
|                                | • SLES 11 SP4 and 12 SP3 |                 | AMZN_EIP or VM_UUID<br><br>FlexEnabled clients:<br><br>AMZN_IID<br><br>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** • *Imadmin installers are no longer packaged within FlexNet Publisher kit archives, and must be downloaded separately.*

## Tested Platforms

Imadmin has been tested on the following platforms.

**Table 5 • Tested Imadmin Platforms**

| Platform Architecture               | Processor Type | Operating System                                                                                                                                |
|-------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AIX 32-bit</b>                   | PowerPC        | AIX 7.1 and 7.2                                                                                                                                 |
| <b>AIX 64-bit</b>                   | PowerPC        | AIX 7.1 and 7.2                                                                                                                                 |
| <b>Linux 32-bit</b>                 | x86            | RHEL 6                                                                                                                                          |
| <b>Linux 32-bit</b>                 | x64            | RHEL 7<br>SLES 11 SP4 and 12 SP3                                                                                                                |
| <b>Linux 64-bit</b>                 | x64            | RHEL 6 and 7<br>SLES 11 SP4, SLES 12 SP3, and SLES 15<br>Ubuntu 16.04, 18.04 and 18.10                                                          |
| <b>macOS/OS X 32-bit and 64-bit</b> | x86<br>x64     | macOS 10.14<br>macOS 10.13                                                                                                                      |
| <b>Microsoft Windows 32-bit</b>     | x86            | Windows 10<br>Windows 7 SP1<br>It is a best practice to run license servers on a server-based OS.                                               |
| <b>Microsoft Windows 32-bit</b>     | x64            | Windows Server 2019<br>Windows Server 2016                                                                                                      |
| <b>Microsoft Windows 64-bit</b>     | x64            | Windows 10<br>Windows 7 SP1<br>Windows Server 2019<br>Windows Server 2016<br>It is a best practice to run license servers on a server-based OS. |

**Table 5 • Tested lmadm Platforms**

| Platform Architecture | Processor Type          | Operating System  |
|-----------------------|-------------------------|-------------------|
| <b>Solaris 32-bit</b> | SPARC 32-bit<br>x86     | Solaris 10 and 11 |
| <b>Solaris 64-bit</b> | SPARC 64-bit<br>x86-x64 | Solaris 10 and 11 |



**Note •** The FlexNet Publisher Licensing Toolkits for 64-bit platforms supply 64-bit lmadm binaries. Flexera recommends their use on 64-bit platforms. Separate 32-bit lmadm installers and binary archives are also available and can be used on 64-bit platforms if necessary.

## Additional System Requirements

lmadm has these additional requirements:

- To use lmadm on Windows platforms, the relevant Microsoft Visual C++ 2010 SP1 Redistributable Package must be installed.
- The lmadm 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 lmadm installer.

## Tested Browsers

lmadm is tested on the following Web browsers:

- Red Hat Linux—Mozilla Firefox 46.x, Google Chrome 61.x
- Windows—Microsoft Internet Explorer 11, Microsoft Edge
- macOS/OS X—Apple Safari 6.x and 11



# Deprecated Features and Commands

**Table 6 •** Deprecated Features and Commands

| Deprecated Features and Commands                  | Comments                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Console mode on lmadm installation on macOS/ OS X | On macOS/OS X, the lmadm installer no longer supports Console mode.                                                                                                                                                                                                                                                             |
| Non-multithreaded libraries                       | <p>The following UNIX client libraries used with applications that do not use native multithreaded libraries have been deprecated:</p> <ul style="list-style-type: none"><li>● liblmgr_nomt_pic.a</li><li>● liblmgr_nomt_pic_trl.a</li><li>● liblmgr_nomt.a</li><li>● liblmgr_nomt_trl.a</li></ul>                              |
| License Generator toolkit                         | <p>License Generator toolkit is end-of-life. Instead, the responsegen shared object API has been exposed; see the example</p> <p>.\examples\activation\responsegen\ResponseGenApi.c.</p>                                                                                                                                        |
| AMZN_IID, HPV_UUID, VMW_UUID                      | Replaced by VM_UUID                                                                                                                                                                                                                                                                                                             |
| lmbind & LMB_* hostids                            | <p>lmbind is no longer packaged with FlexNet Publisher archives.</p> <p>lmbind sections have been removed from documentation</p>                                                                                                                                                                                                |
| VMW_* and HPV_* hostids                           | <p>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)</p>                                                                                                                   |
| Non trial-id trial ASRs                           | <p>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.</p>                                                                                                                             |
| License keys and default strength signatures      | <p>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.</p> |

**Table 6 • Deprecatcd Features and Commands**

| Deprecatcd Features and Commands    | Comments                                                                                                                                                                        |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CVD (Common Vendor Daemon)          | Other than for producers who have legacy licensing applications using CVD, this feature is no longer supported. Consequently CVD sections have been removed from documentation. |
| Decimal licenses and lc_convert API | Decimal licenses are deprecated. Consequently sections on decimal licenses and the <b>lc_convert</b> API have been removed from documentation.                                  |

# Legal Information

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