

# vSphere SDK for Perl Installation Guide

ESXi 6.0

vCenter Server 6.0

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# About This Book

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This book, *vSphere SDK for Perl Installation Guide*, provides information about installing the vSphere SDK for Perl. VMware® provides several SDK products, each of which targets different developer communities and platforms. This guide is for administrators who want to run vSphere SDK for Perl scripts on vSphere systems and for developers who want to develop vSphere SDK for Perl scripts for vSphere systems.

To view the current version of this book as well as all VMware documentation, go to <http://www.vmware.com/support/pubs>.

## Revision History

This book is revised with each release of the product or when necessary. A revised version can contain minor or major changes. [Table 1](#) summarizes the significant changes in each version of this book.

**Table 1.** Revision History

Revision	Description
11MAR2015	vSphere 6.0 Release. Removed the chapter “Installing vSphere SDK for Perl from Source Code”. VMware is no longer testing this process.
19SEP2013	vSphere 5.5 version of the product. No changes in this release.
10SEP2012	vSphere 5.1 version of the product. No changes in this release.
15MAR2012	vSphere 5.0 Update 1 version of the product. On RHEL, the installer no longer uses CPAN but proceeds like the vSphere 4.1 installer. All other Linux installers proceed like the vSphere 5.0 installer. This document reflects the changed behavior.
22AUG2011	vSphere 5.0 version of the product. On Linux, installer stops if required software is not available. The Linux installer requires Internet access and installs other prerequisites through CPAN.
13JUL2010	vSphere 4.1 version of the product. On Linux, installer does not run if required prerequisite software is not available. Linux installer installs recommended Perl modules if no version is currently installed. Linux installer no longer overwrites existing Perl modules. All information about the vSphere Management Assistant can now be found in the <i>vSphere Management Assistant Guide</i> .
21MAY2009	vSphere 4.0 version of the product. Uses the vSphere Management Assistant as the vSphere SDK for Perl appliance. The installer now includes both vSphere SDK for Perl and the vSphere Command-Line Interface (vSphere CLI). Added credential store library and sample to the vSphere SDK.
25JUL2008	Update for VI Perl Toolkit 1.6. Added new options for invocation, changed supported platforms.
10JAN2008	Update for VI Perl Toolkit 1.5. Includes miscellaneous documentation changes. vSphere SDK for Perl no longer available on source forge. Virtual appliance now in OFV format.
15JAN2007	First version of the vSphere SDK for Perl 1.0 documentation.

## Intended Audience

This book is intended for anyone who installs the vSphere SDK for Perl. All users must understand how to modify and run Perl scripts on the platform of their choice. Users who want to install the SDK for Perl from source code must also understand the source code installation process.

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# Installing vSphere SDK for Perl

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You can install a vSphere SDK for Perl package on a Linux or a Microsoft Windows system, or deploy the vSphere Management Assistant (vMA) on an ESXi host.

This chapter includes the following topics:

- [“Installation Overview”](#) on page 15
- [“Overview of Linux Installation Process”](#) on page 16
- [“Installing the vCLI Package on Red Hat Enterprise Linux”](#) on page 18
- [“Installing vCLI on Linux Systems with Internet Access”](#) on page 19
- [“Uninstalling the vCLI Package on Linux”](#) on page 21
- [“Installing and Uninstalling vCLI on Windows”](#) on page 21
- [“Uninstalling the vCLI Package on Windows”](#) on page 22
- [“Enabling Certificate Verification”](#) on page 22
- [“Deploying vMA”](#) on page 22

## Installation Overview

You can install a vSphere SDK for Perl package on a supported platform or deploy the vMA virtual machine on an ESXi host.

- **Installable Package.** Install a vSphere SDK for Perl package on a physical or virtual machine. See [“Installing the vCLI Package on Red Hat Enterprise Linux”](#) on page 18, [“Installing vCLI on Linux Systems with Internet Access”](#) on page 19, and [“Installing and Uninstalling vCLI on Windows”](#) on page 21.

The vSphere SDK for Perl installer installs both vSphere SDK for Perl and vCLI because many vCLI commands run on top of the vSphere SDK for Perl. The contents of the installer package differs for different platforms.

Platform	Installation Process
Windows	The installation package includes vCLI, vSphere SDK for Perl, and prerequisite Perl modules.

Platform	Installation Process
Red Hat Enterprise Linux	<p>You must install required software. See <a href="#">“Installing Required Prerequisite Software for Red Hat Enterprise Linux”</a> on page 18.</p> <p>The installer for RHEL prompts you whether you want to install other missing modules from the Internet or from the package.</p> <ul style="list-style-type: none"> <li>■ If you have Internet access, you can have the installer download Perl modules from CPAN.</li> <li>■ The installer can instead install Perl modules that it does not find on your system from the installer package.</li> </ul>
SLES and Ubuntu	<p>You must install required software and you must have Internet access. See <a href="#">“Installing Required Prerequisite Software for Linux Systems with Internet Access”</a> on page 19.</p> <p>The installer downloads other Perl modules from CPAN.</p>

After installation, you can run vCLI commands and vSphere SDK for Perl utility applications from the operating system command line. Each time you run a command, you specify the target server connection options directly or indirectly. You can also write scripts and manage your vSphere environment using those scripts.

- **vSphere Management Assistant (vMA).** Deploy vMA, a virtual machine that administrators can use to run scripts that manage vSphere, on an ESXi host. vMA includes vCLI, vSphere SDK for Perl, and other prepackaged software in a Linux environment.

vMA supports noninteractive login. If you establish an ESXi host as a target server, you can run vCLI host management commands and vSphere SDK for Perl commands against that server without additional authentication. If you establish a vCenter Server system as a target server, you can run most vSphere SDK for Perl commands against all ESXi systems that server manages without additional authentication. See [“Deploying vMA”](#) on page 22.

## Overview of Linux Installation Process

The installation script for vSphere SDK for Perl is supported on the Linux distributions that are listed in the *Release Notes*.

The vSphere SDK for Perl package installer installs the vCLI scripts and the vSphere SDK for Perl. The installation proceeds as follows.

- 1 The installer checks whether the following required prerequisite packages are installed on the system:

Perl	Perl version 5.8.8 or version 5.10 must be installed on your system.
OpenSSL	<p>The vSphere SDK for Perl requires SSL because most connections between the system on which you run the command and the target vSphere system are encrypted with SSL.</p> <p>The OpenSSL library (<code>libssl-devel</code> package) is not included in the default Linux distribution. See <a href="#">“Installing Required Prerequisite Software for Red Hat Enterprise Linux”</a> on page 18 and <a href="#">“Installing Required Prerequisite Software for Linux Systems with Internet Access”</a> on page 19.</p>
LibXML2	<p>Used for XML parsing. The vCLI client requires 2.6.26 or higher version. If you have an older version installed, please upgrade to 2.6.26 or higher.</p> <p>The <code>libxml2</code> package is not included in the default Linux distribution. See <a href="#">“Installing Required Prerequisite Software for Red Hat Enterprise Linux”</a> on page 18 and <a href="#">“Installing Required Prerequisite Software for Linux Systems with Internet Access”</a> on page 19.</p>
uuid	Included in <code>uuid-devel</code> for SLES 11 and in <code>e2fsprogs-devel</code> for other Linux platforms. Required by the UUID Perl module.

- 2 If the required software is found, the installer proceeds. Otherwise, the installer stops and informs you that you must install the software. See [“Installing Required Prerequisite Software for Red Hat Enterprise Linux”](#) on page 18 and [“Installing Required Prerequisite Software for Linux Systems with Internet Access”](#) on page 19 for instructions.
- 3 The installer checks whether the following Perl modules are found, and whether the correct version is installed.



- Crypt-SSLeay-0.55 (0.55-0.9.7 or 0.55-0.9.8)
- IO-Compress-Base-2.037
- Compress-Zlib-2.037
- IO-Compress-Zlib-2.037
- Compress-Raw-Zlib-2.037
- Archive-Zip-1.28
- Data-Dumper-2.121
- XML-LibXML-1.63
- libwww-perl-5.805
- LWP-Protocol-https-6.02
- XML-LibXML-Common-0.13
- XML-Namespacesupport-1.09
- XML-SAX-0.16
- Data-Dump-1.15
- URI-1.37
- UUID-0.03
- SOAP-Lite-0.710.08
- HTML-Parser-3.60
- version-0.78
- Class-MethodMaker-2.10
- JSON-PP-2.27203
- Devel-StackTrace-131
- Class-Data-Inheritable-0.08
- Convert-ASN1-0.26
- Crypt-OpenSSL-RSA-0.28
- Crypt-X509-0.51
- Exception-Class-1.37
- MIME-Base64-3.14
- UUID-Random-0.04
- Socket6-023
- IO-Socket-INET6-2.71
- Net-INET6Glue-0.600\_1

Earlier versions of libwww-perl include the LWP-Protocol-https module. More recent versions of libwww-perl do not include the LWP-Protocol-https module and you have to install that module.

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**NOTE** If you intend to run vCLI commands with SSL certification, be sure to check that LWP::UserAgent 6.00 or later is installed. The installer does not check this module, and earlier versions do not work with SSL.

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- 4 The installer proceeds depending on the Linux distribution.

Linux distribution	Installer behavior
RHEL (No Internet access)	<p>On RHEL, the installer allows you to install Perl modules with CPAN if Internet access is available.</p> <p>If no Internet access is available, and a module is not currently on your system, the installer installs it. If a different version of a module is found, the installer does not install it and proceeds with installation. At the end of the installation process, the installer informs you if the version on the system does not match the recommended version, and recommends that you install the version that vSphere SDK for Perl was tested with. You can install the modules using the package installer for your platform, the installation CD, or CPAN.</p> <p><b>Note:</b> The installer does not overwrite existing versions of recommended Perl modules. You must explicitly update those modules yourself.</p>
All Linux distributions (Internet access)	<p>The installer proceeds depending on whether the Perl modules are found.</p> <ul style="list-style-type: none"> <li>■ If a recommended Perl module is not found at all, the installer installs it using CPAN. You must meet the installation prerequisites or the installer cannot install the Perl modules and stops. See <a href="#">“Installing vCLI on Linux Systems with Internet Access”</a> on page 19.</li> <li>■ If a lower version of a recommended module is found, the installer does not install a different version from CPAN and proceeds with installation. After completing installation, the installer displays a message that the version on the system does not match the recommended version, and recommends that you install the version vSphere SDK for Perl was tested with. You can install the modules using the package installer for your platform, the installation CD, or CPAN.</li> <li>■ If a higher version of a recommended module is found, the installer proceeds with installation and does not display a message after installation.</li> </ul> <p><b>Note:</b> The installer does not overwrite existing versions of recommended Perl modules. You must explicitly update those modules yourself.</p>

- 5 After all required software and all prerequisite Perl modules are installed, you can install vSphere SDK for Perl. See [“Installing the vCLI Package on Red Hat Enterprise Linux”](#) on page 18 and [“Installing the vCLI Package on a Linux System with Internet Access”](#) on page 20.

If a previous version of vCLI, Remote CLI, or vSphere SDK for Perl is installed on your system, and you install vSphere SDK for Perl in a different directory, you must reset the PATH environment variable. You can do so before or after the installation, using the command appropriate for your distribution and shell (`setenv`, `export`, and so on). If you do not reset the path, the system might still look for executables in the old location.

## Installing the vSphere SDK for Perl Package on Red Hat Enterprise Linux

vCLI is supported on Red Hat Enterprise Linux versions that are listed in the *Release Notes*. On RHEL, the vSphere SDK for Perl installer prompts you whether you want to install required Perl modules from the installation package or from CPAN. Follow these steps to install the software.

- 1 Install required prerequisite software. See [“Installing Required Prerequisite Software for Red Hat Enterprise Linux”](#) on page 18.
- 2 When prompted, direct the installer to install additional prerequisites from the installation package (see [“Installing the vCLI Package on RHEL \(No Internet Access\)”](#) on page 18) or from CPAN (see [“Installing the vCLI Package on a Linux System with Internet Access”](#) on page 20).

### Installing Required Prerequisite Software for Red Hat Enterprise Linux

Prerequisite software on RHEL includes required software and recommended Perl modules.

## Required Software

If required software is not installed, the vCLI installer stops. You can install prerequisites using `yum`, the RHEL package installer (recommended), or from the installation DVD, as follows:

```
RHEL 6.3 32 bit  yum install e2fsprogs-devel libuuid-devel
                yum install perl-XML-LibXML
```

```
RHEL 6.3 64 bit  yum install e2fsprogs-devel libuuid-devel
                yum install glibc.i686
                yum install perl-XML-LibXML
```

## Recommended Perl Modules

When the installer finishes, it might issue a warning that the version of a module installed on your system does not match the version with which vCLI was tested. Install that version using `yum` or CPAN to resolve the issue. See [“Overview of Linux Installation Process”](#) on page 16 for a complete list of modules.

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**NOTE** The installer does not overwrite existing Perl modules.

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## Installing the vSphere SDK for Perl Package on RHEL (No Internet Access)

Before you install vSphere SDK for Perl, you must remove all previous versions of that software. The process differs from simply uninstalling vSphere SDK for Perl.

### To remove previous versions of vSphere SDK for Perl

- 1 Run the uninstall script, for example, if you installed vSphere SDK for Perl in the default location, run the following command:

```
/usr/bin/vmware-uninstall-vSphere-CLI.pl
```

- 2 Delete existing versions of `vSphere-CLI.xxxx.tar.gz` and delete the `vmware-vsphere-cli-distrib` directory.

### To install vSphere SDK for Perl on RHEL

- 1 Untar the vSphere SDK for Perl binary that you downloaded.

```
tar -zxvf VMware-vSphere-CLI-6.X.X-XXXXX.XXXX.x86_64.tar.gz
```

A `vmware-vsphere-vcli-distrib` directory is created.

- 2 Log in as superuser and run the installer:

```
/<location>/sudo vmware-vsphere-cli-distrib/vmware-install.pl
```

- 3 To accept the license terms, type **yes** and press Enter.
- 4 To install Perl modules locally, type **yes** and press Enter.
- 5 Specify an installation directory, or press Enter to accept the default, which is `/usr/bin`.

A complete installation process has the following result:

- A success message appears.
- The installer lists different version numbers for required modules (if any).
- The prompt returns to the shell prompt.

If you accepted the defaults during installation, you can find the installed software in the following locations:

- **vCLI scripts** – `/usr/bin`
- **vSphere SDK for Perl utility applications** – `/usr/lib/vmware-vcli/apps`
- **vSphere SDK for Perl sample scripts** – `/usr/share/doc/vmware-vcli/samples`

See the vSphere SDK for Perl documentation for a reference to all utility applications.

After you install the vSphere SDK for Perl, you can test the installation by running a command from the command prompt. See [“Running Host Management Commands from a Linux System”](#) on page 37.

## Installing vSphere SDK for Perl on Linux Systems with Internet Access

Before you can install the vSphere SDK for Perl package on a Linux system with Internet access, that system must meet following prerequisites.

- **Internet access.** You must have Internet access when you run the installer because the installer uses CPAN to install prerequisite Perl modules.
- **Development Tools and Libraries.** You must install the Development Tools and Libraries for the Linux platform that you are working with before you install vSphere SDK for Perl and prerequisite Perl modules.
- **Proxy settings.** If your system is using a proxy for Internet access, you must set the `http://` and `ftp://` proxies, as follows:

```
export http_proxy=<proxy_server>:port
export ftp_proxy=<proxy_server>:port
```

### Installing Required Prerequisite Software for Linux Systems with Internet Access

If required prerequisite software is not installed, the installer stops and requests that you install it. Installation of prerequisite software depends on the platform that you are using. See the *Release Notes* for the supported versions of each Linux platform.

**Table 2-1.** Installing Required Prerequisite Software

Platform	Installation
RHEL 6.3 32 bit	Find the required modules on the installation DVD, or use yum to install them.  <pre>yum install e2fsprogs-devel libuuid-devel yum install perl-XML-LibXML</pre>
RHEL 6.3 64 bit	Find the required modules on the installation DVD, or use yum to install them.  <pre>yum install e2fsprogs-devel libuuid-devel yum install glibc.i686 yum install perl-XML-LibXML</pre>
SUSE Enterprise	Install the prerequisite packages from the SLES SDK DVD. When you insert the DVD, it offers to auto run. Cancel the auto run dialog box and use the <code>yast</code> package installer to install OpenSSL or other missing required packages. <ul style="list-style-type: none"> <li>■ <b>SLES 11 64 bit.</b> <code>yast -i openssl-devel libuuid-devel libuuid-devel-32bit</code></li> <li>■ <b>SLES 11 32 bit.</b> <code>yast -i openssl-devel libuuid-devel</code></li> </ul> Some users might be authorized to use the Novell Customer Center and use <code>yast</code> to retrieve missing packages from there.
Ubuntu	<ol style="list-style-type: none"> <li>1. Connect to the Internet.</li> <li>2. Update the local repository of libraries from a terminal window.  <pre>sudo apt-get update</pre> </li> <li>3. Install the required libraries from a terminal window. <ul style="list-style-type: none"> <li>■ 32bit. <code>sudo apt-get install build-essential gcc uuid uuid-dev perl libssl-dev perl-doc liburi-perl libxml-libxml-perl libcrypt-ssleay-perl</code></li> <li>■ 64bit. <code>sudo apt-get install ia32-libs build-essential gcc uuid uuid-dev perl libssl-dev perl-doc liburi-perl libxml-libxml-perl libcrypt-ssleay-perl</code></li> </ul>           For Ubuntu 10.04 64 bit, the <code>resxtp</code> and <code>ESXCLI</code> commands do not work if you do not install the 32-bit compatibility libraries. </li> </ol>

## Installing the vSphere SDK for Perl Package on a Linux System with Internet Access

Install the vSphere SDK for Perl package and run a command to verify installation was successful.

### To install vSphere SDK for Perl

- 1 Log in as root.
- 2 Untar the vSphere SDK for Perl binary that you downloaded.
 

```
tar -zxvf VMware-vSphere-CLI-6.X.X-XXXXX.i386.tar.gz
```

 A `vmware-vsphere-vcli-distrib` directory is created.
- 3 (Optional) If your server uses a proxy to access the Internet, and if your `http://` and `ftp://` proxy were not set when you installed prerequisite software, set them now.
 

```
export http_proxy=<proxy_server>:port
export ftp_proxy=<proxy_server>:port
```
- 4 Run the installer:
 

```
sudo vmware-vsphere-cli-distrib/vmware-install.pl
```
- 5 To accept the license terms, type **yes** and press Enter.
 

The installer connects to CPAN and installs prerequisite software. Establishing a connection might take a long time.
- 6 On RHEL, when prompted to install precompiled Perl modules, type **no** and press Enter to use CPAN.
 

The installer connects to CPAN and installs prerequisite software. Establishing a connection might take a long time.
- 7 Specify an installation directory, or press Enter to accept the default, which is `/usr/bin`.
 

A complete installation process has the following result:

  - A success message appears.
  - The installer lists different version numbers for required modules (if any).
  - The prompt returns to the shell prompt.

If you accepted the defaults during installation, you can find the installed software in the following locations:

- **vCLI scripts** – `/usr/bin`
- **vSphere SDK for Perl utility applications** – `/usr/lib/vmware-vcli/apps`
- **vSphere SDK for Perl sample scripts** – `/usr/share/doc/vmware-vcli/samples`

See the vSphere SDK for Perl documentation for a reference to all utility applications. After you install vSphere SDK for Perl, you can test the installation by running a vCLI command or vSphere SDK for Perl utility application from the command prompt.

## Uninstalling the vSphere SDK for Perl Package on Linux

You can use a script included in the installation to uninstall the vSphere SDK for Perl package.

### To uninstall vSphere SDK for Perl on Linux

- 1 Change to the directory where you installed vSphere SDK for Perl (default is `/usr/bin`).
- 2 Run the `vmware-uninstall-vSphere-CLI.pl` script.
 

The command uninstalls vCLI and the vSphere SDK for Perl.

## Installing and Uninstalling vSphere SDK for Perl on Windows

Before you can run vSphere SDK for Perl commands from your Windows system, you must install the vSphere SDK for Perl package and test the installation by running a command.

The vSphere SDK for Perl installation package for Windows includes the ActivePerl runtime from ActiveState Software and required Perl modules and libraries. The vSphere SDK for Perl is supported on the Windows platforms that are listed in the *Release Notes*.

---

**IMPORTANT** If you want to run ESXCLI commands included in vCLI from a Windows system, you must have the Visual C++ 2008 redistributable for 32 bit installed on that system. Find `vc_redist_x86.exe` for Visual C++ 2008 and install it on your Windows system.

---

### To install the vSphere SDK for Perl Package on Windows

- 1 Download the vSphere SDK for Perl Windows installer package.  
You can find the installer in the **Automation Tools and SDKs** section of the **Drivers & Tools** tab of the vSphere download page.
- 2 Start the installer.
- 3 (Optional) If prompted to remove older versions of vSphere SDK for Perl or vCLI, you can either accept or cancel the installation, and install the vSphere SDK for Perl package on a different system.

---

**IMPORTANT** The installer replaces both the vSphere SDK for Perl and vCLI. To keep an older version, install this package on a different system.

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- 4 Click **Next** in the Welcome page.
- 5 To install the vSphere SDK for Perl in a nondefault directory, click **Change** and select the directory.  
The default location is `C:\Program Files\VMware\VMware vSphere CLI`.
- 6 Click **Next**.
- 7 Click **Install** to proceed with the installation.  
The installation might take several minutes to complete.
- 8 Reboot your system.  
Without reboot, path settings might not be correct on your Windows platform.

## Uninstalling the vSphere SDK for Perl Package on Windows

You can uninstall the vSphere SDK for Perl package as you would other programs.

### To uninstall vSphere SDK for Perl on Windows

- 1 Find the option for adding and removing programs on the Windows operating system you are using.
- 2 In the panel that appears, select **VMware vSphere CLI**, and click **Remove**.
- 3 Click **Yes** when prompted.

The system uninstalls the vSphere SDK for Perl, the vCLI, and all prerequisite software.

## Enabling Certificate Verification

The vSphere SDK for Perl and vCLI use `Crypt::SSEay` to support certificate verification. `Crypt::SSEay` allows verification of certificates signed by a Certificate Authority (CA) if you set the following two variables:

- `HTTPS_CA_FILE` – The CA file.
- `HTTPS_CA_DIR` – The CA directory.

See the `Crypt::SSLEay` documentation for details on setup.



---

**CAUTION** If the two environment variables `HTTPS_CA_FILE` and `HTTPS_CA_DIR` are set incorrectly or if a problem with the certificate exists, vCLI commands do not complete, and do not print error or warning messages. Use `HTTPS_DEBUG` for troubleshooting before running vCLI commands.

---

## Deploying vMA

As an alternative to a package installation, you can deploy vMA on an ESXi host and run vCLI commands from there. vMA is a virtual machine you can use to run scripts to manage ESXi systems. vMA includes a Linux environment, vCLI, and other prepackaged software.

Setting up vMA consists of a few tasks. The *vSphere Management Assistant Guide* discusses each task in detail.

- 1 Deploy vMA to an ESXi system that meets the hardware prerequisites.

See the *vSphere Management Assistant Guide* for prerequisites and deployment details.

- 2 Configure vMA.

When you boot vMA, you must specify the following required configuration information when prompted:

- Network information (the default is often acceptable)
  - Host name for vMA.
  - Password for the vi-admin user. The vi-admin user has superuser privileges on vMA. You cannot log in to vMA as the root user.
- 3 (Optional) Add a vCenter Server system or one or more ESXi systems as targets. You configure vMA for Active Directory authentication and can then add ESXi and vCenter Server systems to vMA without having to store passwords in the vMA credential store. See the *vSphere Management Assistant Guide*.

