

vSphere SDK for Perl Installation Guide

ESXi 5.0

vCenter Server 5.0

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About This Book

This book, the *vSphere SDK for Perl Installation Guide*, provides information about installing the vSphere SDK for Perl 5.0. 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
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

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 7
- [“Installing and Uninstalling vSphere SDK for Perl on Linux”](#) on page 8
- [“Installing and Uninstalling vSphere SDK for Perl on Windows”](#) on page 11
- [“Enabling Certificate Verification”](#) on page 13
- [“Deploying vMA”](#) on page 13

Installation Overview

You can install a vCLI package on a supported platform of your choice or deploy the vMA virtual machine on an ESXi host.

- **vSphere SDK for Perl packages.** Install a vSphere SDK for Perl package on a physical or virtual machine. See [“Installing and Uninstalling vSphere SDK for Perl on Linux”](#) on page 8 and [“Installing and Uninstalling vSphere SDK for Perl on Windows”](#) on page 11.

The vSphere SDK for Perl installer also installs vSphere SDK for Perl because vCLI commands run on top of the vSphere SDK for Perl. On Windows, the installation package includes vCLI, vSphere SDK for Perl, and prerequisite Perl modules. On Linux, the installation package includes vCLI and vSphere SDK for Perl. You are responsible for installing required prerequisite software.

After you have installed the package, 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. See [“Specifying Authentication Information”](#) on page 22. You can also write scripts and manage your vSphere environment using those scripts.

- **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 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 13.

Installing and Uninstalling vSphere SDK for Perl on Linux

The installation script for the vSphere SDK for Perl is supported on the following Linux distributions:

- Red Hat Enterprise Linux 5.5 Server (32 bit and 64 bit)
- SLES 10 SP1 (32 bit and 64 bit)
- SLES 11 (32 bit and 64 bit)
- Ubuntu 10.04 (32 bit and 64 bit)

The Linux installer for vSphere SDK for Perl 5.0.0 stops if you do not have required software installed. The installer uses CPAN to download and install other prerequisite Perl modules from CPAN sites. You must have an Internet connection to allow the installer to download and install Perl modules from CPAN.

Install vSphere SDK for Perl on Linux only if you are an experienced Linux administrator who knows how to use the system's package manager. Otherwise, use vMA. See [“Deploying vMA”](#) on page 13.

Installation Prerequisites

Install the vSphere SDK for Perl package on a Linux system that meets the 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
```

Installation Process

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	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. The OpenSSL library (<code>libssl-dev</code> package) is not included in the default Linux distribution. See “Installing Required Prerequisite Software for Your Linux Platform” on page 10.
LibXML2	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. The <code>libxml2</code> package is not included in the default Linux distribution. “Installing Required Prerequisite Software for Your Linux Platform” on page 10.
uuid	Included in <code>uuid-dev</code> for SLES 11 and in <code>e2fsprogs</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 Your Linux Platform”](#) on page 10 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-2.005

- Compress-Zlib-2.005
- IO-Compress-Zlib-2.005
- Compress-Raw-Zlib-2.017
- Archive-Zip-1.26
- 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-0.02
- SOAP-Lite-0.710.08
- HTML-Parser-3.60
- version-0.78

Earlier versions of libwww-perl include the LWP-Protocol-https module. Very recent versions of libwww-perl do not include the LWP-Protocol-https module.

- 4 The installer proceeds depending on whether the Perl modules are found.
 - 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 [“Installation Prerequisites”](#) on page 8.
 - 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.
 - If a higher version of a recommended module is found, the installer proceeds with installation and does not display a message after installation.

IMPORTANT The installer does not overwrite existing versions of recommended Perl modules. You must explicitly update those modules yourself.

- 5 After all required software and all prerequisite Perl modules are installed, you can install vSphere SDK for Perl. See [“Installing the vSphere SDK for Perl Package”](#) on page 10.

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 Required Prerequisite Software for Your Linux Platform

If required prerequisite software is not installed, the installer stops and requests that you install it. Installation depends on the platform that you are using.

Table 1-1. Installing Required Prerequisite Software

Platform	Installation
Red Hat Enterprise Linux 5.5, 32-bit and 64-bit	Install prerequisites using yum, the RHEL package installer (recommended), or from the installation DVD. For example: <pre>yum install openssl-devel libxml2-dev e2fsprogs-dev</pre>
SLES 10, 32 bit SLES 10, 64 bit	Install the prerequisite packages from the SLES 10 and SLES 11 SDK DVD. When you insert the DVD, it offers to auto run. Cancel the auto run dialog box and use the yast package installer to install OpenSSL or other missing required packages. <ul style="list-style-type: none"> ■ SLES 10, 64 bit. <code>yast -i openssl-devel libxml2-devel-32bit e2fsprogs-devel-32bit</code> ■ SLES 10, 32 bit. <code>yast -i openssl-devel libxml2-devel e2fsprogs-devel</code> Some users might be authorized to use the Novell Customer Center and use yast to retrieve missing packages from there. Note that SLES 10 includes libxml2 version 2.6.23. The vCLI client require 2.6.26 or higher. Upgrade to 2.6.26 or higher.
SLES 11, 32 bit SLES 11, 64 bit	Install the prerequisite packages from the SLES 10 and SLES 11 SDK DVD. When you insert the DVD, it offers to auto run. Cancel the auto run dialog box and use the yast package installer to install OpenSSL or other missing required packages. <ul style="list-style-type: none"> ■ SLES 11 64 bit. <code>yast -i openssl-devel libuuid-devel libuuid-devel-32bit</code> ■ SLES 11 32 bit. <code>yast -i openssl-devel libuuid-devel</code> Some users might be authorized to use the Novell Customer Center and use yast to retrieve missing packages from there.
Ubuntu 10.04, 32 bit Ubuntu 10.04, 64 bit	<ol style="list-style-type: none"> 1. Connect to the Internet. 2. Update the local repository of libraries from a terminal window. <pre>sudo apt-get update</pre> 3. Install the required libraries from a terminal window. <ul style="list-style-type: none"> ■ 32 bit. <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> ■ 64 bit. <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> For Ubuntu 10.04 64 bit, you must install the 32-bit compatibility libraries or the resxtop and ESXCLI commands do not work.

Installing the vSphere SDK for Perl Package

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

To install vSphere SDK for Perl on Linux

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

```
tar -zxvf VMware-vSphere-CLI-5.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. This might take a long time.

- 6 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.

To run a vCLI command on Linux

- 1 Open a command prompt.
- 2 (Optional) Change to the directory where you installed the vCLI (default is `/usr/bin`).
- 3 Run the command, including the connection options.

```
<command> <conn_options> <params>
```

Specify connection options in a configuration file or pass them on the command line. The extension `.pl` is not required on Linux. For example:

```
vicfg-nas --server my_esxserver --list
```

The system prompts you for a user name and password for the target server.

See [Table 3-2, “vCLI Connection Options,”](#) on page 26 for a complete list of connection options.

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 following Windows platforms:

- Windows Vista Enterprise SP1 32 bit and 64 bit
- Windows 2008 64 bit
- Windows 7 32 bit and 64 bit

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 on the VMware Communities 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.

- 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.

Running Commands on Windows

After you install vSphere SDK for Perl and reboot your system, you can test the installation by running a vCLI or SDK for Perl command from the Windows command prompt.

To run a vSphere SDK for Perl command on Windows

- 1 From the Windows Start menu, choose **Programs > VMware > VMware vSphere CLI > Command Prompt**.
A command prompt shell for the location where vCLI is installed appears. You have easy access to vCLI and to vSphere SDK for Perl commands from that location.
- 2 Run the command, passing in connection options and other options.
On Windows, the extension `.pl` is required for `vicfg-` commands, but not for `ESXCLI`.
`<command>.pl <conn_options> <params>`
For example:
`vicfg-nas.pl --server my_esxhost --list`
The system prompts you for a user name and password.

See [Table 3-2, “vCLI Connection Options,”](#) on page 26 for a complete list of connection options.

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::SSLEay` to support certificate verification. `Crypt::SSLEay` 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*.

Installing the vSphere SDK for Perl from Source Code

2

Some developers prefer to install the vSphere SDK for Perl from source code instead of installing a complete package. You can install the vSphere SDK for Perl from source code on any platform that supports Perl.

NOTE This chapter does not provide detailed installation instruction. You are expected to know how to install the prerequisite software using CPAN or another mechanism.

Use vMA or one of the vSphere SDK for Perl packages if have no experience installing from source code.

This chapter includes the following topics:

- [“vSphere SDK for Perl Source Code Installation on Linux”](#) on page 15
- [“vSphere SDK for Perl Source Code Installation on Windows”](#) on page 17

vSphere SDK for Perl Source Code Installation on Linux

Some developers prefer a customized installation from source code. This section discusses the source code installation requirements and the installation process on Linux.

Requirements

Before you install the vSphere SDK for Perl, make sure that the following software is installed on your system.

- Perl 5.8 or Perl 5.10
- Required packages. The vSphere SDK does not work if you do not have this software installed.
 - OpenSSL – 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. The OpenSSL library (`libssl-dev` package) is not included in most default Linux distribution.
 - LibXML2 – Used for XML parsing. The `libxml2` package is not included in the default Linux distribution.
 - `e2fsprogs` – A set of utilities for maintaining the ext2, ext3 and ext4 file systems. Required by the UUID Perl module.

Some additional packages are required on Ubuntu. See [“Installing Prerequisite Software for Ubuntu Desktop 9.04”](#) on page 11.

- Recommended Perl modules. Versions of these modules are installed on most Linux distributions. Even if you are using an earlier or later version, the vSphere SDK for Perl most likely performs properly.
 - `Crypt-SSLeay-0.55` (0.55-0.9.7 or 0.55-0.9.8)
 - `IO-Compress-Base-2.005`
 - `Compress-Zlib-2.005`
 - `IO-Compress-Zlib-2.005`

- Compress-Raw-Zlib-2.017
- Archive-Zip-1.26
- Data-Dumper-2.121
- XML-LibXML-1.63
- libwww-perl-5.805
- 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

NOTE You can obtain and install any missing modules using CPAN. See the cpan.org Web site. You can also use the CPAN module included with your Perl installation.

Installing the vSphere SDK for Perl from Source Code on Linux

The vSphere SDK for Perl source code package contains a single platform-independent compressed file, available from the SDK download page. For download instructions, see [“Download the vSphere SDK for Perl Binary”](#) on page 7.

To build the vSphere SDK for Perl

- 1 Download the vSphere SDK for Perl source bundle from the vSphere SDK for Perl download page.
- 2 Open a Linux shell session and change to the directory to which you downloaded the package, for example:

```
cd /tmp
```

- 3 Unzip the package and extract the files, for example:

```
gunzip <filename>.tar.gz
tar xf <filename>.tar
```

- 4 Connect to the directory containing the extracted files and review the README file for information about licensing, additional requirements, and late-breaking information:
- 5 Run the Makefile.PL for the vSphere SDK for Perl:

```
perl Makefile.PL
```

If a recommended module is already installed on your system, but the version is not the version with which the SDK for Perl is tested, a warning message like the following appears:

```
Warning: prerequisite Data::Dumper 2.121 not found. We have 2.12.
```

Finish installing all prerequisites before you proceed. See [“Requirements”](#) on page 15.

- 6 Build the vSphere SDK for Perl files.

```
make
```

- 7 Test that the build succeeded.

```
make test
```

vSphere SDK for Perl Source Code Installation on Windows

Some developers prefer a customized installation from source code. This section discusses the installation requirements and the installation process on Windows.

Requirements

Before you install the vSphere SDK for Perl, make sure that the following software is installed on your system:

- Perl 5.8. You can obtain and install the most recent version of ActivePerl from ActiveState.
- Required Perl modules:
 - XML-LibXML-Common
 - XML-LibXML
 - Crypt-SSLeay
 - Data-Dumper
 - Class-MethodMaker

You can install the required modules and packages using the Perl Package Manager.

- Microsoft `nmake`, which you can obtain from the Microsoft knowledge base article 132084. This tool does not support paths with spaces in them.

IMPORTANT Make sure Perl is in your path before you start the process.

Installing the vSphere SDK for Perl from Source Code on Windows

The vSphere SDK for Perl source code package contains a single platform-independent compressed file, available from the SDK download page. For download instructions, see [“Download the vSphere SDK for Perl Binary”](#) on page 7.

To build the vSphere SDK for Perl

- 1 Download the vSphere SDK for Perl source bundle from the vSphere SDK for Perl download page.

IMPORTANT Be sure to download the 32-bit tar bundle, not the Windows installer.

- 2 Extract the source bundle into a local directory.
- 3 Open a Windows command prompt (`cmd.exe`).
- 4 Navigate to the location to which you downloaded the source bundle:

```
cd <download_dir>
```

- 5 Run this command:

```
perl Makefile.PL
```

The console displays progress.

- 6 Run `nmake` at the command prompt:

```
nmake  
nmake install
```

After the process completes, you can validate the installation. See [“Validating the vSphere SDK for Perl Installation”](#) on page 19.

NOTE For detailed step-by-step instructions for installation on Windows, see Richard Gersthagen’s Web site, which you can find by searching for `run virtual` on the Internet.
