

vSphere SDK for Perl Installation Guide

vSphere 4.0

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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 4.0. 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 hosts and for developers who want to develop vSphere SDK for Perl scripts for vSphere hosts.

To view the current version of this book as well as all VMware API and SDK documentation, go to http://www.vmware.com/support/pubs/sdk_pubs.html.

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
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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Before You Begin

This chapter presents prerequisite information for installing the vSphere SDK for Perl. The chapter includes the following sections:

- [“Supported Platforms”](#) on page 7
- [“Download the vSphere SDK for Perl Binary”](#) on page 7
- [“Check Connectivity”](#) on page 8
- [“Documentation”](#) on page 8

Supported Platforms

You can install the vSphere SDK for Perl package on the following platforms:

- Windows:
 - XP Service Pack 2 32 bit
 - XP Service Pack 2 64 bit
 - Windows Vista Enterprise SP1 32 bit
 - Windows Vista Enterprise SP1 64 bit
- Linux:
 - Red Hat Enterprise Linux (RHEL) 5.2 (64 bit)
 - Red Hat Enterprise Linux (RHEL) 5.2 (32 bit)
 - SUSE Enterprise Server 10 SP1 32 bit
 - Ubuntu 8.04 32 bit

vSphere SDK for Perl requires OpenSSL. See [“Find and Install OpenSSL”](#) on page 10.

You can also deploy the vSphere Management Assistant (vMA) OVF on an ESX/ESXi system and use vSphere SDK for Perl from there. See [“Installing vMA”](#) on page 15.

Download the vSphere SDK for Perl Binary

Downloading the binary is the same for the different installer packages, and similar on Linux and Windows. If you want to use vMA to run vSphere SDK for Perl commands from, you can either download a ZIP file or deploy vMA using a URL. See [“Installing vMA”](#) on page 15.

To download the vSphere SDK for Perl

- 1 Go to the VMware SDK and API download page.
- 2 In the vSphere SDK for Perl section, click **Download**.
- 3 Read the license agreement and click **Yes** to accept and continue.
- 4 Download the file for the installation you want to perform.

Check Connectivity

Before you start to use the vSphere SDK for Perl, make sure that the connection from your development system to the target ESX/ESXi or vCenter Server system is working. You must be connected to perform the validation task (see [Chapter 5, “Validating the vSphere SDK for Perl Installation,”](#) on page 21) and to run vSphere SDK for Perl or vSphere CLI scripts.

You can use the Managed Object Browser (MOB) to connect to the target system. The MOB is a web-based server application hosted on all ESX/ESXi and vCenter Server systems. You can use the MOB for exploring server-side objects and their methods and properties and for learning about the vSphere object model.

NOTE If the ESX/ESXi or vCenter Server system uses HTTPS (the default), you need a user name and password to log in to the MOB.

To access the MOB on any ESX/ESXi or vCenter Server system

- 1 Launch a Web browser on your development system.
- 2 Connect to the MOB using the fully-qualified domain name (or IP address) of the ESX/ESXi or vCenter Server system as follows:

https://<hostname.yourcompany.com>/mob

- 3 Enter the user name and password when prompted.

The host might display a warning message about the SSL certificate authority, such as *Website Certified by an Unknown Authority*. If VMware is the certificate authority, disregard the warning and continue to log in to the MOB. The following page displays.

The screenshot shows the Managed Object Browser (MOB) interface. At the top, it displays the Managed Object Type: **ManagedObjectReference:ServiceInstance** and the Managed Object ID: **ServiceInstance**. Below this, there are two sections: **Properties** and **Methods**.

Properties

NAME	TYPE	VALUE
capability	Capability	capability
content	ServiceContent	content
serverClock	dateTime	"2007-11-26T21:49:47.291812Z"

Methods

RETURN TYPE	NAME
dateTime	CurrentTime
HostVMotionCompatibility[]	QueryVMotionCompatibility
ServiceContent	RetrieveServiceContent
ProductComponentInfo[]	RetrieveProductComponents
Event[]	ValidateMigration

If the ESX/ESXi or vCenter Server system has been configured to support HTTP (not HTTPS) connections and you used `http` in the URL, the system does not prompt you for a user name and password, and does not display SSL certificate warnings.

Documentation

The documentation for the vSphere SDK for Perl also includes a *Programming Guide* and a *Utility Applications Reference*.

Because your Perl scripts retrieve and work with server-side objects, you must understand the vSphere Web Services SDK. The vSphere API Reference is included with the vSphere SDK for Perl documentation. You might also find the *vSphere Web Services SDK Programmer's Guide* helpful.

Installing a vSphere SDK for Perl Package

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You can install a package that includes vSphere SDK for Perl and vSphere CLI on Linux or Windows. The two components are always installed together. After you have installed the package on your administration server, you can run vSphere SDK for Perl scripts on your ESX/ESXi or vCenter Server system. You must specify connection parameters, discussed in the *Programming Guide*.

This chapter discusses these topics:

- [“Installing the vSphere SDK for Perl Package on Linux”](#) on page 9”
- [“Installing the vSphere SDK for Perl on Windows”](#) on page 11
- [“Upgrading the vSphere SDK for Perl Package”](#) on page 12

Installing the vSphere SDK for Perl Package on Linux

You can install a vSphere SDK for Perl /vSphere CLI package on the Linux platforms listed in [“Supported Platforms”](#) on page 7. The package is called vSphere SDK for Perl package in the rest of this document. You need a development environment that includes a C compiler and the prerequisites included in this section.

Operating System Prerequisites

The installation script for the vSphere SDK for Perl is supported on default installations of the supported Linux distributions. If you want to install the vSphere SDK for Perl on a different Linux distribution, you must install all prerequisite libraries using the mechanism appropriate for the distribution (`apt`, `rpm`, and so on). See the documentation for the Linux distribution for details.

Prerequisite Libraries

The vSphere SDK for Perl installer for Linux requires the following libraries:

- The OpenSSL library (`libssl-dev` package), which is not included in the base Linux distribution. See [“Find and Install OpenSSL”](#) on page 10.

The vSphere SDK for Perl uses Open SSL for communication between the vCenter Server or ESX/ESXi system and the system on which vSphere SDK for Perl scripts run.

- Perl 5.8.8, which is included in the supported Linux distributions.
- The following libraries, which are included in the supported Linux distributions (see [“Supported Platforms”](#) on page 7):
 - Linker utility (`binutils` package)
 - GNU C libraries (`glibc` or `libc6` package)
 - XML DOM/SAX libraries (`libxml2` package)
 - Perl documentation (`perl-doc` package)
 - Perl URI library (`liburi-perl` package)

Find and Install OpenSSL

When you run the scripted installer on Linux, you might get an error message that the installer cannot find `-lcrypto` or is unable to link the `Crypt::SSLeay` module. This happens when the version of the `crypto` (SSL) library installed on your system is incompatible with the version of `Crypt::SSLeay` included in the vSphere SDK for Perl. This incompatibility might be the result of security or other updates that have been installed on your Linux system.

The vSphere SDK for Perl requires SSL because most connections between the vSphere API running on the ESX/ESXi host and the vSphere SDK for Perl are encrypted with SSL.

You can install Open SSL following the procedure explained below, or download a more recent version of `Crypt::SSLeay` in a CPAN repository (see the cpan.org Web site) and install that version using the CPAN shell tool.

NOTE These instructions are included for your convenience only. Filenames or the installation process might be different on your system.

Red Hat Enterprise Linux 5

The Red Hat Enterprise Linux (RHEL 5) installation DVD includes the OpenSSL package.

To Install OpenSSL on RHEL 5

- 1 Insert the installation DVD.

The system displays the DVD on the desktop.

- 2 From the terminal console, use `rpm` to install OpenSSL.

The filenames depend on your installation DVD. For example:

```
cd "/<the mount point>/Server"
rpm -i e2fsprogs-devel.1.39-8.el5.i386.rpm
rpm -i krb5-devel-1.5-17.i386.rpm
rpm -i zlib-devel-1.2.3-3.i386.rpm
rpm -i openssl-devel-1.2.9-8.1.i386.rpm
```

For 64-bit Linux, use the corresponding 64-bit packages. For example:

```
rpm -i e2fsprogs-devel.1.39-8.el5.x86_64.rpm
```

Ubuntu Desktop 8.04

Ubuntu uses `apt` (advanced packaging tool) to keep a local repository of libraries up to date.

NOTE Ubuntu requires that `perl-doc` and `liburi-perl` are included on your system. Install before you install the vSphere SDK for Perl if they are not already installed. The process is the same as for OpenSSL.

To install OpenSSL on Ubuntu Desktop 8.04

- 1 Connect to the Internet.
- 2 Enter the following command into the terminal window to update the local repository of libraries:

```
sudo apt-get update
```

- 3 Enter the following command into the terminal window to install the OpenSSL library:

```
sudo apt-get install libssl-dev
```

SUSE Enterprise 10 (SP1)

The SUSE Enterprise 10 installation DVD includes the OpenSSL package.

To install OpenSSL on SUSE Enterprise 10

- 1 Insert the SUSE installation DVD.

The system displays the DVD on the desktop.

- 2 From the terminal console, enter the installation commands, for example:

```
cd /media/SLES10SP_001/suse/i586
rpm -i openssl-devel-0.9.8a-18.15.i586.rpm
```

Install the vSphere SDK for Perl on Linux

This section explains how to unpack and install the vSphere SDK for Perl using the Linux installer. Before you start the installation, you must download the package. See [“Download the vSphere SDK for Perl Binary”](#) on page 7.

To install the vSphere SDK for Perl

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

- 2 Launch the installer:

```
/<location>/vmware-install.pl
```

- 3 When prompted, read the license agreement. To accept the license terms, enter **yes** at the prompt and press Enter.

- 4 Specify an installation directory, or press Enter to accept the default, which is `/usr/bin`.

When the installation process completes:

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

You can now run sample scripts or utility applications to test your installation. See [Chapter 5, “Validating the vSphere SDK for Perl Installation,”](#) on page 21.

If you accepted the defaults during installation, the utility applications and samples subdirectories are in the following locations:

- **Utility applications** – `/usr/lib/vmware-vcli/apps`
- **Sample scripts** – `/usr/share/doc/vmware-vcli/samples`

Uninstall the vSphere SDK for Perl on Linux

You can uninstall the vSphere SDK for Perl at any time by running the `vmware-uninstall-vSphereCLI.pl` script, as follows:

```
/<location>/bin/vmware-uninstall-vSphereCLI.pl
```

The default location is `usr`. If you specified a non-default installation location, use that location.

Installing the vSphere SDK for Perl on Windows

You can install the vSphere SDK for Perl package on Windows platforms listed in [“Supported Platforms”](#) on page 7. The Windows installer includes the ActivePerl runtime from ActiveState and all required Perl modules and libraries. If Perl is already installed on the target Windows system, you might be prompted to remove it.

If you do not want to remove an existing Perl installation, consider using vMA instead. See [Chapter 3, “Installing vMA,”](#) on page 15).

Prerequisites

The `chcp` program must be installed and in your `PATH` environment variable. If it is not, vSphere SDK for Perl programs display the following warning message on startup:

```
'chcp' is not recognized as an internal or external command, operable program or batch file.
```

If this message is displayed, vSphere SDK for Perl uses a default character encoding. With that encoding, some characters might not display correctly on some systems. Otherwise, programs function normally.

Install the vSphere SDK for Perl on Windows

This section explains how to unpack and install the vSphere SDK for Perl using the Linux installer. Before you start the installation, you must download the package. See [“Download the vSphere SDK for Perl Binary”](#) on page 7.

To install the vSphere SDK for Perl using the Windows installer

- 1 Run the executable you downloaded (see [“Download the vSphere SDK for Perl Binary”](#) on page 7).

If an earlier version of the vSphere SDK for Perl or the vSphere CLI package exists on the target Windows system, the installer offers to remove the existing version and install the new version instead. If you want to keep the existing version, cancel the installation process and install on a different system.

For compatibility information, see [“Upgrading the vSphere SDK for Perl Package”](#) on page 12.

- 2 Click **Next** in the Welcome page to continue.
- 3 In the Destination Folder page, click **Change** and select a different directory if you do not want to install in the default directory, which is `\Program Files\VMware\VMware vSphere CLI\Perl`.
- 4 Click **Next** to continue.
- 5 Click **Install** to proceed with the installation.

The installation might take a few minutes.

After the Installation wizard completes, you can test the installation by running one of the sample scripts or utility applications. See [“Validating the vSphere SDK for Perl Installation”](#) on page 21.

Uninstall the vSphere SDK for Perl on Windows

You can uninstall the vSphere SDK for Perl from a Windows system at any time using the **Add or Remove Programs** control panel and choosing vSphere CLI.

NOTE Because vSphere SDK for Perl and vSphere CLI are packaged together, you must uninstall both.

Upgrading the vSphere SDK for Perl Package

Different versions of the vSphere SDK for Perl support connectivity to different versions of vSphere, as described in [Table 2-1](#).

Table 2-1. vSphere SDK for Perl and vSphere

vSphere SDK for Perl	vSphere Hosts
Version 1.0	ESX 3.0.x VirtualCenter Server 2.0.x
Version 1.0_RCLI (included with VI CLI 1.0 but not shipped separately)	ESX/ESXi 3.5 VirtualCenter Server 2.5
Version 1.5	ESX 3.0.x, ESX/ESXi 3.5 VirtualCenter Server 2.0, VirtualCenter Server 2.5

Table 2-1. vSphere SDK for Perl and vSphere (Continued)

vSphere SDK for Perl	vSphere Hosts
Version 1.6	ESX 3.0.x, ESX 3.5, ESXi 3.5 VirtualCenter Server 2.0, VirtualCenter Server 2.5 Includes support for the Update 2 release
Version 4.0	ESX 3.0.x, ESX/ESXi 3.5, ESX/ESXi 4.0, vCenter Server 2.5, vCenter Server 4.0

Installing vMA

vMA is a virtual machine that includes prepackaged software, a logging component, and an authentication component that supports non-interactive login. vMA includes the vSphere SDK for Perl and the following components:

- 64-bit Enterprise Linux – The ESX service console runs on the ESX host, but vMA runs Linux on the virtual machine. You can move the files from the ESX/ESXi host to the vMA console (and back) using the `vi fs vSphere` CLI command.
- VMware Tools – Interface to the hypervisor.
- vSphere CLI – CLI commands for managing vSphere.
- Java JRE version 1.5 – Runtime engine for Java-based applications built with the vSphere Web Services SDK.

This chapter discusses deploying vMA and using vSphere SDK for Perl from vMA. It includes the following topics:

- [“Deploy vMA”](#) on page 15
- [“Run vSphere SDK for Perl Scripts from vMA”](#) on page 16

See the *vSphere Management Assistant Guide* for information about vMA, its vi-fastpass and vi-logger components, and its interfaces.

Deploy vMA

You can deploy vMA from an OVF file you download and unzip, or point to a vMA OVF URL.

To deploy vMA

- 1 Log in to a vSphere Client connected to vCenter Server 4.0 or ESX/ESXi 4.0.
- 2 Select the host to which you want to deploy vMA in the inventory pane.
- 3 Select **File > Deploy OVF Template**.

The Deploy OVF Template wizard opens.

- 4 Select one of these options:

Option	Description
Deploy from file	Select this option and click Next , then choose a location to which you downloaded the vMA ZIP file, which is available from site, and then click OK .
Deploy from URL	Select this option and click Next . Type <code>http://www.vmware.com/go/importvma/vma4.ovf</code> into the field and click Next .

- 5 Click **Next** when the download details are displayed and accept the license agreement.

- 6 Specify a name (optional), and select a location for the virtual machine when prompted.
If you are connected to a vCenter Server, you can select a folder.
- 7 Select the resource pool for the virtual machine.
The default is the top-level root resource pool.
- 8 Select the datastore to store the virtual machine on and click **Next**.
- 9 Select the network mapping and click **Next**.

IMPORTANT Make sure vMA is connected to the management network on which the ESX/ESXi systems that are intended vMA targets reside.

- 10 Review the information and click **Finish**.
The wizard imports the vMA virtual machine on the host you selected. The import process can take several minutes.

Run vSphere SDK for Perl Scripts from vMA

After you have imported vMA, the virtual machine appears in the vSphere Client inventory pane.

To run vSphere SDK for Perl scripts from vMA

- 1 Select and power on the virtual machine.
If you are unfamiliar with virtual machines, you can use the *Getting Started* guide available from the **Getting Started** tab.
- 2 Select the Console tab and click inside the console.
When the operating system has finished installing, you are prompted for network information for the virtual machine.
- 3 Accept the default network setup (DHCP), or specify an IP address when prompted.

NOTE To return the mouse pointer focus to your main system, press Ctrl+Alt.

- 4 When prompted, specify a host name for vMA.
- 5 When prompted, specify a password for the vi-admin user. The root user is disabled on vMA. Instead, you use the vi-admin password when performing actions that require root user access.
- 6 After vMA has been configured, log in as vi-admin with the password you established in the previous step.

You can now run vSphere SDK for Perl commands from the vMA console prompt. The samples and utility applications are installed in the following locations:

- **Utility applications** – `/usr/lib/vmware-vccli/apps`
- **Sample scripts** – `/usr/share/doc/vmware-vccli/samples`

Unless you set up ESX systems as vi-fastpass target servers from vMA, you must supply connection information each time you run a command. See the *Programming Guide*.

For additional information on vMA configuration and on setting up vi-fastpass target servers, see the *vSphere Management Assistant Guide*.

Installing the vSphere SDK for Perl from Source Code

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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 discusses source code installation in the following sections:

- [“Installing the vSphere SDK for Perl from Source Code on Linux”](#) on page 17
- [“Install the vSphere SDK for Perl from Source Code on Windows”](#) on page 18

Installing the vSphere SDK for Perl from Source Code on Linux

This section discusses the 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
- Required Perl modules:
 - Crypt-SSLeay (0.51) [Crypt::SSLeay]
 - Data-Dumper (2.102) [Data::Dumper]
 - MethodMaker (2.0.8) [Class::MethodMaker]
 - XML-LibXML (1.60) [XML::LibXML]
 - libwww-perl (5.805) [LWP]

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.

Install the vSphere SDK for Perl from Source Code

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 any prerequisite software is missing, a warning message like the following displays:

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

Finish installing all prerequisites before you proceed. See [“Requirements”](#) on page 17.
- 6 Build the vSphere SDK for Perl files:


```
make
```
- 7 Test that the build succeeded:


```
make test
```

Install the vSphere SDK for Perl from Source Code on Windows

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.

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 Extract the source bundle into a local directory.
- 3 Open a Windows command prompt (`cmd.exe`).
- 4 Navigate to the vSphere SDK for Perl download:


```
cd Program Files\VMware\VMware vSphere CLI\Perl
```

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 21.

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.

Validating the vSphere SDK for Perl Installation

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You can confirm successful vSphere SDK for Perl installation by running one of the utility applications or by running one of the sample scripts.

If you accepted the default during installation, you can find these scripts in the following locations:

Utility Applications **Windows:** C:\Program Files\VMware\VMware vSphere CLI\Perl\apps
 Linux: /usr/lib/vmware-vccli/apps

Sample Scripts **Windows:** C:\Program Files\VMware\VMware vSphere CLI\Perl\samples
 Linux: /usr/share/doc/vmware-vccli/samples

You can use the `/samples/discovery/datacenterlisting.pl` script for validating your installation. The script obtains a list of ESX/ESXi hosts and associated virtual machines. The script requires the name of the vCenter Server system and the name of the datacenter as parameters.

NOTE None of the scripts in the samples directory are supported. You can, however, modify and test the scripts and use them in your applications.

To run the script

- 1 Navigate to the `samples` directory, which is in the following location by default:

Linux	<code>/usr/share/doc/vmware-vccli/samples</code>
Windows	<code>C:\Program Files\VMware\VMware vSphere CLI\Perl\samples</code>

- 2 Run the script with its required parameters. The `datacenterlisting.pl` script requires a vCenter Server system not an ESX/ESXi host as the value of the `--server` parameter. Place quotes around host names and datacenter names that include special characters (single quotes on Linux and double quotes on Windows). For example:

Linux	<code>perl discovery/datacenterlisting.pl --server Server42 --datacenter 'Primary_Datacenter' --username Frog --password 'princ#'</code>
Windows	<code>perl discovery/datacenterlisting.pl --server Server42 --datacenter "Primary_Datacenter" --username Frog --password "princ#"</code>

- 3 Specify the user name and password on the command line or when prompted.

See the *Programming Guide* for a detailed discussion of how to run scripts and supply connection parameters.

