

VMware vCloud Suite SDK's - Samples

The VMware vCloud Suite SDK's (Java, C#, Perl, Python, Ruby) enables programmatic access to [vSphere API's](#). Access to capabilities exposed through the [VMware vSphere Web Services API](#) is done using the [VMware vSphere Management SDK\(Java & C#\)](#), [VMware vSphere Perl SDK\(Perl\)](#), [Open Source Python SDK\(pyvmomi\)](#) & [Open Source Ruby SDK\(rbvmomi\)](#). The vCloud Suite SDK's includes libraries for accessing new features like Content Library and existing features like Tagging which did not support a public API prior to vSphere 6.0.

Use-Cases

Authentication

- I want to move away from legacy username and password based login and start to use the SSO Token based login. Refer to these samples,
 - Java -
AcquireBearerTokenByUserCredentialSample, AcquireHoKTokenByUserCredentialSample, LoginByTokenSample from **vCenter Single Sign On SDK**. ConnectionWorkflow, TagCluster from **VMware vCloud Suite SDK for Java**
 - .NET -
AcquireBearerTokenByUserCredentialSample, AcquireHoKTokenByUserCredentialSample, LoginByTokenSample from **vCenter Single Sign On SDK**. TagCluster from **VMware vCloud Suite SDK for .NET**
 - Python - connection_workflow.py from **VMware vCloud Suite SDK for Python**
 - Perl - connect.pl, save_session.pl, load_session.pl from **VMware vSphere SDK for Perl**. tag_life_cycle.pl, tagging_workflow.pl from **VMware vCloud Suite SDK for Perl**
 - Ruby - connection_workflow.rb from **VMware vCloud Suite SDK for Ruby**

vCenter Server and Host Management

- I want to migrate Virtual Machines to perform host maintenance or balance loads or collocate virtual machines that communicate with each other, move virtual machines apart to minimize fault domain, migrate to new server hardware etc. What are the different ways to migrate Virtual Machines. Refer to these samples,
 - Java - VMotion, XVMotion, VMRelocate, XVCvMotion from **vSphere Web Services SDK**
 - .NET - VMotion, XVMotion, XVCvMotion, ColdMigration from **vSphere Web Services SDK**
 - Perl - vmmigrate.pl, hostevacuate.pl, hoststops.pl from **VMware vSphere SDK for Perl**
- I want to know the list of all the vCenter Server or Management nodes in our M x N setup. It is really very hard to keep track of all the VC's. Is there a simple way to get this information. Refer to these samples from respective language's **VMware vCloud Suite SDK**.
 - Java – ListServices
 - Python - print_services.py
- I want to tag different clusters based on departments within our company. Based on which I need to generate usage reports and performance statistics. Refer to these samples from respective language's **VMware vCloud Suite SDK**,
 - Java - TagCluster, TagLifeCycle, TaggingWorkflow
 - .NET - TagCluster, TagLifeCycle
 - Perl - tag_life_cycle.pl, tagging_workflow.pl
 - Python - tagging_workflow.py
 - Ruby - tagging_workflow.rb
 - REST – tags
- I want to keep track of the status of all the tasks which are running and also the historical tasks. Refer to these samples from **vSphere Web Services SDK**,
 - Java – LicenseManager
 - .NET – LicenseManager
- I want to track the license usage of vSphere environment by generating reports for the license usage of assets. Refer to these samples,
 - Java – TaskList

- .NET - TaskList

Virtual Machine Administration

- I want to create a library that will contain templates of the VM's/ISO's with pre-installed softwares and latest security patches. So that users need not do the same thing again and again. Also our VM's become compliant and is the same across the board. Refer to these samples from respective language's **VMware vCloud Suite SDK**,
 - Java – ContentLibraryWorkflow
 - Python - content_library_workflow.py
- I want to capture vApp that contains 3 VM's (Web Server, App Server & DB Server) and publish it. So that users can just import and start using the current setup. Refer to these samples from **vSphere Web Services SDK**,
 - Java - OVFManagerExportVAPP, OVFManagerExportVMDK, OVFManagerImportLocalVApp, OVFManagerImportVAppFromUrl
 - .NET - OVFManagerExportVAPP, OVFManagerExportVMDK, OVFManagerImportLocalVApp, OVFManagerImportVAppFromUrl
- I want to schedule a task to perform snapshot and backup operations of VM and disks accordingly. Refer to these samples,
 - Java - VMSnapshot, GetVMFiles from **vSphere Web Services SDK**
 - .NET - VMSnapshot, GetVMFiles from **vSphere Web Services SDK**
 - Perl - snapshotmanager.pl, vmsnapshot.pl, fileaccess.pl from **VMware vSphere SDK for Perl**
- I want to add an additional disk to a VM which is running short of disk capacity. Refer to these samples,
 - Java - VMReconfig, VMDeltaDisk, VMDiskCreate, VMPromoteDisks from **vSphere Web Services SDK**
 - .NET - GetVirtualDiskFiles, VMReconfig from **vSphere Web Services SDK**
 - Perl - vmreconfig.pl, vdiskcreate.pl from **VMware vSphere SDK for Perl**

- I want to do guest customization inside the VM by creating/uploading a file and running it inside the guest. Refer to these samples from **vSphere Web Services SDK**,
 - Java - CreateTemporaryFile, DownloadGuestFile, UploadGuestFile, RunProgram
- I want to create a lab setup for my students. How to clone a virtual machine for each student, with all the lessons and labs required for the term. Refer to these samples,
 - Java - VMCreate, VMClone from **vSphere Web Services SDK**
 - .NET - VMCreate, VMClone from **vSphere Web Services SDK**
 - Perl - vmcreate.pl, vmclone.pl from **VMware vSphere SDK for Perl**

Host Profiles

- I want to replicate the baselined and compliant host across all of the new hosts. Refer to these samples, Are there ways to apply the current host's profile to other hosts. Refer to these samples from **vSphere Web Services SDK**,
 - Java – HostProfileManager
 - .NET - HostProfileManager

Networking

- I want to add virtual nics to a VirtualMachine and configure it with a virtual switch. Refer to these samples from **vSphere Web Services SDK**,
 - Java - AddVirtualNic, AddVirtualSwitch, AddVirtualSwitchPortGroup
 - .NET - AddVirtualNic, AddVirtualSwitch, AddVirtualSwitchPortGroup, NIOCFForDVS

Storage

- I want to load balance Virtual Machines storage consumption leveraging the Storage DRS feature. Refer to these samples from **vSphere Web Services SDK**,
 - Java - CreateStorageDRS, SDRSRecommendation, SDRSRules

- .NET - CreateStorageDRS, SDRSRecommendation, SDRSRules
- I want to define storage requirements for the virtual machine and control which type of storage is provided for the virtual machine, how the virtual machine is placed within the storage, and which data services are offered for the virtual machine by leveraging the VMware Storage Policy (spbm) feature. Refer to these samples from **VMware Storage Policy SDK**,
 - Java - CreateProfile, ListProfiles, VMCreate, CheckCompliance, DeleteProfile

Monitoring and Performance

- I want to trigger a vCenter alarm when the virtual machine's power state changes. Refer to these samples from **vSphere Web Services SDK**,
 - Java - VMPowerStateAlarm, VMPowerOps
 - .NET - VMPowerStateAlarm, VMPowerOps
- I want to monitor and report the status of hardware health Ex: get data about fans, sensors etc. Refer to these samples from **vSphere Web Services SDK**,
 - Java - CIMReader
 - .NET - CIMInfo
- I want to gather and collect the performance metrics of a VM, Host etc. Refer to these samples,
 - Java - Basics, History, PrintCounters, RealTime, VITop, VIUsage, LineChart from **vSphere Web Services SDK**
 - .NET - Basicis, History, RealTime from **vSphere Web Services SDK**
 - Perl - viperformance.pl from **VMware vSphere SDK for Perl**
- I want to monitor for changes/updates to some of the properties of a VM. Refer to these samples from **vSphere Web Services SDK**,
 - Java - GetUpdates
 - .NET - GetUpdates, WatchVM
- I want to trigger a workflow or trigger some action based on a specific event or property change. Refer to these samples from **vSphere Web Services SDK**,

- Java - EventFormat, EventHistoryCollectorMonitor, VMEventHistoryCollectorMonitor
- .NET - EventFormat, EventHistoryCollectorMonitor, VMEventHistoryCollectorMonitor

API Extensibility

- I want to enhance/write a new management application that extends the vSphere API functionality. Also, we are planning to expose the new functionality via our management application UI and also via API's. Refer to this sample from **VMware vCloud Suite SDK for Java**,
 - Java - Backup Provider

Java

VMware vSphere Management SDK

The VMware vSphere Management SDK is a bundle that contains a set of VMware vSphere SDKs (vSphere Web Services SDK, vSphere Storage Management SDK, vSphere ESX Agent Manager SDK, SSO Client SDK and vSphere Storage Policy SDK). The vSphere Software Development Kits provide all the documentation, libraries, and code examples needed for developers to rapidly build solutions integrated with the industry's leading virtualization platform.

vSphere Web Services SDK (vsphere-ws)

ESXi and vCenter Server systems provide a web service that you can access by using the vSphere API. The vSphere Web Services SDK facilitates developing client applications that target the vSphere API.

Name	Description
com.vmware.alarms.VMPowerStateAlarm	Demonstrates how to create an Alarm to monitor the virtual machine's power state.
com.vmware.cim.CIMReader	Demonstrates how to work with CIM and vSphere API together. Walks through the Common Information Model (CIM) data associated with an ESX Host. CIM data cannot be retrieved from a vCenter.

com.vmware.connection.BasicConnection	Demonstrates how to set up a vSphere connection as it was done in vSphere 4.x and is provided as a reference for anyone working with older vSphere servers that do not support modern SSO features.
com.vmware.connection.SsoConnection	Demonstrates how to set up a vSphere connection using SSO.
com.vmware.events.EventFormat	Demonstrates how to retrieve and format the lastEvent from Hostd or Vpxd.
com.vmware.events.EventHistoryCollectorMonitor	Demonstrates how to create and monitor an EventHistoryCollector. This sample uses the latestPage property of the EventHistoryCollector to filter the Events.
com.vmware.events.VMEventHistoryCollectorMonitor	Demonstrates how to create EventHistoryCollector filtered for a single VM and monitor Events using the latestPage attribute of the EventHistoryCollector.
com.vmware.general.Browser	Demonstrates how to browse and prints the managed entity, its type, reference value, property name, Property Value, Inner Object Type, its Inner Reference Value and inner property value.
com.vmware.general.Connect	Demonstrates how to connect to an ESX server or to vCenter server.
com.vmware.general.Create	Demonstrates how to create managed entity like Host-Standalone Cluster, Datacenter, and folder.
com.vmware.general.Delete	Demonstrates how to delete the specified managed entity from the inventory tree. The managed entity can be a virtual machine, ClusterComputeResource or a Folder.
com.vmware.general.GetCurrentTime	Demonstrates how to get the current time of the vSphere Server.
com.vmware.general.GetHostName	Demonstrates how to get the hostname and additional details of the ESX Servers in the

	inventory.
com.vmware.general.GetUpdates	Demonstrates how to use the PropertyCollector to monitor one or more properties of one or more managed objects. In particular this sample monitors all or one Virtual Machine for changes to some basic properties.
com.vmware.general.Info	Demonstrates how to use the AboutInfo object to find out more about the vSphere WS API end-point you are currently connected to.
com.vmware.general.LicenseManager	Demonstrates how to use the Licensing API using License Manager.
com.vmware.general.Move	Demonstrates how to move a managed entity from its current location in the inventory to a new location, in a specified folder.
com.vmware.general.PropertyCollector	Demonstrates how to use the property collector features added in version 4.1.
com.vmware.general.RemoveManagedObject	Demonstrates how to destroy or unregister Managed Inventory Object like a Host, VM, Folder, etc.
com.vmware.general.Rename	Demonstrates how to rename a managed entity.
com.vmware.general.SearchIndex	Demonstrates how to use the SearchIndex API.
com.vmware.general.SimpleClient	Demonstrates how to list the inventory contents (managed entities).
com.vmware.general.TaskList	Demonstrates how to iterate through list of tasks if any are running.
com.vmware.guest.CreateTemporaryFile	Demonstrates how to create a temporary file inside a virtual machine.

com.vmware.guest.DownloadGuestFile	Demonstrates how to download a file from the guest to a specified path on the host where the client is running.
com.vmware.guest.RunProgram	Demonstrates how to run a specified program inside a virtual machine with output re-directed to a temporary file inside the guest and downloads the output file.
com.vmware.guest.UploadGuestFile	Demonstrates how to upload a file from the client machine to a specified location inside the guest.
com.vmware.host.AcquireSessionInfo	Demonstrates how to acquire a session with VC or ESX and print a cim service ticket and related session information to a file.
com.vmware.host.AddVirtualNic	Demonstrates how to add a Virtual Nic to a PortGroup.
com.vmware.host.AddVirtualSwitch	Demonstrates how to add a virtual switch.
com.vmware.host.AddVirtualSwitchPortGroup	Demonstrates how to add a Virtual Machine Port Group to a vSwitch.
com.vmware.host.DVSCreate	Demonstrates how to create/update Distributed Virtual Switch.
com.vmware.host.HostProfileManager	Demonstrates how to use the HostProfileManager and ProfileComplianceManager.
com.vmware.host.NIOCForDVS	Demonstrates how to add/modify NetworkResourcePool to Distributed Virtual Switch.
com.vmware.host.RemoveVirtualNic	Demonstrates how to remove a Virtual Nic from a PortGroup on a vSwitch.
com.vmware.host.RemoveVirtualSwitch	Demonstrates how to remove a virtual switch.
com.vmware.host.RemoveVirtualSwitchPortGroup	Demonstrates how to remove a Virtual Switch PortGroup.

com.vmware.httpfileaccess.GetVMFiles	Demonstrates how to get all the config files, snapshots files, logs files, virtual disk files to the local system.
com.vmware.httpfileaccess.PutVMFiles	Demonstrates how to put VM files in specified Datacenter and Datastore and register and reconfigure the particular VM.
com.vmware.performance.Basics	Demonstrates how to iterate through the available performance counters or other data for a requested ESX system.
com.vmware.performance.History	Demonstrates how to read performance measurements from the current time.
com.vmware.performance.PrintCounters	Demonstrates how to iterate and write available VM, Hostsystem or ResourcePool perf counters into the file specified.
com.vmware.performance.RealTime	Demonstrates how to iterate and display performance measurements from the current time at the console.
com.vmware.performance.VITop	Demonstrates how to obtain metrics for the specified CPU and memory counters by name on a host. This sample is an ESX-Top-like application.
com.vmware.performance.VIUsage	Demonstrates how to create a GUI for graphical representation of the counters.
com.vmware.performance.widgets.LineChart	Demonstrates how to draw a nice pretty chart given a set of data.
com.vmware.scheduling.DeleteOneTimeScheduledTask	Demonstrates how to delete a scheduled task.
com.vmware.scheduling.OneTimeScheduledTask	Demonstrates how to create of ScheduledTask using the ScheduledTaskManager.
com.vmware.scheduling.WeeklyRecurringScheduledTask	Demonstrates how to create a weekly recurring ScheduledTask using the ScheduledTaskManager.

com.vmware.scsilun.SCSILunName	Demonstrates how to iterate and display the CanonicalName, Vendor, Model, Data, Namespace and NamespaceId of the host SCSI LUN name.
com.vmware.simpleagent.CreateUser	Demonstrates how to create a user account and password stores them the local credential store. CreateUser should be used in conjunction with the {SimpleAgent} sample application only. CreateUser generates an arbitrary user name (Usernnnn, where nnnn is a psuedo-randomly generated number) and password and stores them in the credential store on the local machine. CreateUser works with ESX or ESXi only (not vCenter).
com.vmware.storage.CreateStorageDRS	Demonstrates how to create Storage DRS.
com.vmware.storage.SDRSRecommendation	Demonstrates how to run the Storage DRS on a given SDRS cluster and show the list of recommendations generated by SDRS.
com.vmware.storage.SDRSRules	Demonstrates how to Add/List/Modify/Delete the rules for an existing SDRS cluster.
com.vmware.vapp.OVFManagerExportVAPP	Demonstrates how to export VMDK's and OVF Descriptor of all VM's in the vApps.
com.vmware.vapp.OVFManagerExportVMDK	Demonstrates how to export VMDK's of a VM to the localSystem.
com.vmware.vapp.OVFManagerImportLocalVApp	Demonstrates how to import or deploy an OVF Appliance from the Local drive.
com.vmware.vapp.OVFManagerImportVAppFromUrl	Demonstrates how to import or deploy an OVF Appliance from the specified URL.
com.vmware.vm.VMClone	Demonstrates how to create a template of an existing VM and deploy multiple instances of this template onto a datacenter.
com.vmware.vm.VMCreate	Demonstrates how to create a VM.

com.vmware.vm.VMDeltaDisk	Demonstrates how to create a delta disk on top of an existing virtual disk in a VM, and simultaneously removes the original disk using the reconfigure API.
com.vmware.vm.VMDiskCreate	Demonstrates how to create a virtual disk.
com.vmware.vm.VMLinkedClone	Demonstrates how to create a linked clone from an existing snapshot.
com.vmware.vm.VMManageCD	Demonstrates how to add/remove CDROM to/from an existing VM, list information about VMs CDROMs & update an existing CDROM.
com.vmware.vm.VMManageFloppy	Demonstrates how to add/remove floppy to/from an existing VM, list information about a VMs Floppies and update an existing floppy drive.
com.vmware.vm.VMotion	Demonstrates how to validate if VMotion is feasible between two hosts or not, It is also used to perform migrate/relocate task depending on the data given.
com.vmware.vm.VMPowerOps	Demonstrates how to perform Power operations on multiple Virtual Machines. Works with groups of Virtual Machines all at one time.
com.vmware.vm.VMPromoteDisks	Demonstrates how to consolidate a linked clone by using promote API.
com.vmware.vm.VMReconfig	Demonstrates how to reconfigure a virtual machine, which include reconfiguring the disk size, disk mode, etc.
com.vmware.vm.VMRelocate	Demonstrates how to relocate a linked clone using disk move type.
com.vmware.vm.VMSnapshot	Demonstrates how to perform VM snapshot operations.
com.vmware.vm.XVCvMotion	Demonstrates how to relocate VM from one

	VC to another.
com.vmware.vm.XVMotion	Demonstrates how to migrate/relocate VM to another host and datastore using the drs placement recommendations.

vCenter Single Sign On SDK (ssoclient)

The vCenter Single Sign On SDK supports the development of vCenter client applications that use the vCenter Single Sign On API to obtain SAML tokens. A vCenter client can use the SAML token to login to a vCenter Server.

Name	Description
com.vmware.sso.client.samples.AcquireBearerTokenByUserCredentialSample	Demonstrates how to acquire a Bearer Token using SSO Credentials.
com.vmware.sso.client.samples.AcquireHoKTokenByHoKTokenSample	Demonstrates how to acquire a Hok Token using Hok Token.
com.vmware.sso.client.samples.AcquireHoKTokenBySolutionCertificateSample	Demonstrates how to acquire a Hok Token using Solution certificate.
com.vmware.sso.client.samples.AcquireHoKTokenByUserCredentialSample	Demonstrates how to acquire a Hok Token using SSO Credentials.
com.vmware.sso.client.samples.RenewTokenSample	Demonstrates how to renew a token.
com.vmware.sso.client.samples.ValidateTokenSample	Demonstrates how to validate a token.
com.vmware.vsphere.samples.LoginByTokenSample	Demonstrates how to login to vCenter using the SSO token.

vSphere Storage Monitoring Service SDK (sms-sdk)

The Storage Monitoring Service (SMS) runs in conjunction with vCenter Server to provide reporting services about storage. The SMS API enables developers to use just a few lines of code to pull together reports about storage consumption.

Name	Description
Sample Provider	Demonstrates how to register, list and unregister a VASA provider. It requires access to an active VASA provider.

vSphere Solutions Manager, ESX Agent Manager, and vServices SDKs (eam)

The vCenter Solutions Manager, vSphere ESX Agent Manager, and vServices SDK are part of the vSphere Management SDK.

Name	Description
Sample Solution	Demonstrates how to use the ESX Agent Manager API.

VMware Storage Policy SDK (spbm)

The VMware Storage Policy SDK supports the development of vSphere client applications that use the VMware Storage Policy API to create and manage storage profiles and support virtual machine provisioning. A vSphere storage profile defines policy information that describes storage requirements for virtual machines and storage capabilities of storage providers. You use VMware storage policies to manage the association between virtual machines and datastores.

Name	Description
com.vmware.spbm.samples.AboutInfo	Demonstrates how to retrieve the basic information about the spbm end-point.
com.vmware.spbm.samples.CheckCompliance	Demonstrates how to check the compliance of the VM's associated with a storage profile.
com.vmware.spbm.samples.CreateProfile	Demonstrates how to create a new Tag-Based Storage Profile with one rule-set. The rule-set contains a rule based on tags from a tag-category.
com.vmware.spbm.samples.CreateVSANProfile	Demonstrates how to create a new Storage Profile with one rule-set based on vSAN Capabilities.

com.vmware.spbm.samples.DeleteProfile	Demonstrates how to delete a Storage Profile.
com.vmware.spbm.samples.EditProfile	Demonstrates how to update a Tag-Based Storage Profile. Add/Delete rulesets. Add a ruleset based on tags from a tag category. Delete a ruleset from a storage profile.
com.vmware.spbm.samples.ListProfiles	Demonstrates how to iterate and list the storage profiles and their basic information.
com.vmware.spbm.samples.ViewProfile	Demonstrates how to iterate and list the contents of a storage Profile.
com.vmware.spbm.samples.VMClone	Demonstrates how to create a clone of an existing VM to a new VM and associate it with the specified storage profile.
com.vmware.spbm.samples.VMCreate	Demonstrates how to create a VM with a storage policy based management profile. The VM uses the datastores configured with the host.
com.vmware.spbm.samples.VMRelocate	Demonstrates how to relocate a virtual machine's virtual disks to a datastore compliant with the given storage policy based management profile. If multiple datastores are compliant, this sample picks one of them.

VMware vCloud Suite SDK for Java

The VMware vCloud Suite SDK for Java enables programmatic access to vSphere. Access to capabilities exposed through the vSphere Web Services API is done using the vSphere Management SDK. It includes java libraries for accessing new features like Content Library and existing features like Tagging which did not support a public API prior to vSphere 6.0. The SDK also provides development kit for defining, implementing and exposing new API services (API Extensibility).

Name	Description
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com.vmware.vcloud.suite.samples.tagging.TagCluster	Demonstrates how to tag a cluster.
com.vmware.vcloud.suite.samples.tagging.TagLifecycle	Demonstrates how to perform CRUD operations of tags/categories.
com.vmware.vcloud.suite.samples.interop.ContentLibraryWorkflow	Demonstrates how to create a published content library backed by a datastore, upload a VM template to it, download the VM template, deploy a VM from the uploaded template on a cluster and finally power on the VM.
com.vmware.vcloud.suite.samples.interop.TaggingWorkflow	Demonstrates how to perform CRUD operations of tags/categories. Also Demonstrates the attach/detach tags to/from a cluster.
com.vmware.vcloud.suite.samples.lookupservice.ListServices	Demonstrates how to discover the various services running on the Platform Service Controller and the vCenter Management Node using the lookup service API's.
com.vmware.vcloud.suite.samples.workflow.ConnectionWorkflow	Demonstrates how to discover and connect to the various services using SSO Token.
com.vmware.vcloud.suite.samples.workflow.VapiConnectionWorkflow	Demonstrates how to discover and connect to the vapi endpoint service using SSO credentials.
com.acme.virtualmachine - Backup Provider	Demonstrates how to define, implement and expose a new API service. The sample defines a basic backup API, implements it and exposes it as a new API service.

Dotnet

VMware vSphere Management SDK

The VMware vSphere Management SDK is a bundle that contains a set of VMware vSphere SDKs (vSphere Web Services SDK, vSphere Storage Management SDK, vSphere ESX Agent Manager SDK, SSO Client SDK and vSphere Storage Policy SDK). The vSphere Software Development Kits provide all the documentation, libraries, and code examples needed for developers to rapidly build solutions integrated with the industry's leading virtualization platform.

vSphere Web Services SDK (vsphere-ws)

ESXi and vCenter Server systems provide a web service that you can access by using the vSphere API. The vSphere Web Services SDK facilitates developing client applications that target the vSphere API.

Name	Description
AcquireSessionInfo	Demonstrates how to acquire a session with VC or ESX and print a cim service ticket and related session information to a file.
AddVirtualNic	Demonstrates how to add a Virtual Nic to a PortGroup.
AddVirtualSwitch	Demonstrates how to add a virtual switch.
AddVirtualSwitchPortGroup	Demonstrates how to add a Virtual Machine Port Group to a vSwitch.
Basics	Demonstrates how to iterate through the available performance counters or other data for a requested ESX system.
Browser	Demonstrates how to browse and prints the managed entity, its type, reference value, property name, Property Value, Inner Object Type, its Inner Reference Value and inner property value.
CIMInfo	Demonstrates how to work with CIM and vSphere API together. Walks through the Common Information Model (CIM) data associated with an ESX Host. CIM data cannot be retrieved from a vCenter.
ColdMigration	Demonstrates how to upload VM files to a specific Datacenter and Datastore, register and reconfigure the particular VM.
Connect	Demonstrates how to connect to an ESX server or to vCenter server.
Create	Demonstrates how to create managed entity like Host-Standalone Cluster, Datacenter, and folder.
CreateStorageDRS	Demonstrates how to create Storage DRS.
CreateUser	Demonstrates how to create a user account and password stores them the local credential store.

	CreateUser should be used in conjunction with the {SimpleAgent} sample application only. CreateUser generates an arbitrary user name (Usernnnn, where nnnn is a psuedo-randomly generated number) and password and stores them in the credential store on the local machine. CreateUser works with ESX or ESXi only (not vCenter).
Delete	Demonstrates how to delete the specified managed entity from the inventory tree. The managed entity can be a virtual machine, ClusterComputeResource or a Folder.
DeleteOneTimeScheduledTask	Demonstrates how to delete a scheduled task.
DisplayNewProperties	Demonstrates how to retrieve and display the specified properties of the Host.
DisplayNewPropertiesVM	Demonstrates how to retrieve and display the specified properties of the Virtual Machine.
DVSCreate	Demonstrates how to create/update Distributed Virtual Switch.
EventFormat	Demonstrates how to retrieve and format the lastEvent from Hostd or Vpxd.
EventHistoryCollectorMonitor	Demonstrates how to create and monitor an EventHistoryCollector. This sample uses the latestPage property of the EventHistoryCollector to filter the Events.
GetHostName	Demonstrates how to get the hostname and additional details of the ESX Servers in the inventory.
GetVMFiles	Demonstrates how to get all the config files, snapshots files, logs files, virtual disk files to the local system.
GetUpdates	Demonstrates how to use the PropertyCollector to monitor one or more properties of one or more managed objects. In particular this sample monitors all or one Virtual Machine for changes to some basic

	properties.
GetVirtualDiskFiles	Demonstrates how to retrieve the VM disk files info.
History	Demonstrates how to read performance measurements from the current time.
HostPowerOps	Demonstrates how to perform the basic host operations like shutdown, reboot, standByMode etc.
HostProfileManager	Demonstrates how to use the HostProfileManager and ProfileComplianceManager.
LicenseManager	Demonstrates how to use the Licensing API using License Manager.
MoveEntity	Demonstrates how to move a managed entity from its current location in the inventory to a new location, in a specified folder.
NIOCForDVS	Demonstrates how to add/modify NetworkResourcePool to Distributed Virtual Switch.
OneTimeScheduledTask	Demonstrates how to create of ScheduledTask using the ScheduledTaskManager.
OVFManagerExportVAPP	Demonstrates how to export VMDK's and OVF Descriptor of all VM's in the vApps.
OVFManagerExportVMDK	Demonstrates how to export VMDK's of a VM to the localSystem.
OVFManagerImportLocalVApp	Demonstrates how to import or deploy an OVF Appliance from the Local drive.
OVFManagerImportVAppFromUrl	Demonstrates how to import or deploy an OVF Appliance from the specified URL.
PrintCounters	Demonstrates how to iterate and write available VM, Hostsystem or ResourcePool perf counters into the file specified.
PropertyCollector	Demonstrates how to use the property collector features added in version 4.1.

QueryMemoryOverhead	Demonstrates how to use query the memory overhead of a Virtual Machine.
RealTime	Demonstrates how to iterate and display performance measurements from the current time at the console.
RecordSession	Demonstrates how to perform a recording of a Virtual Machine.
RemoveManagedObject	Demonstrates how to destroy or unregister Managed Inventory Object like a Host, VM, Folder, etc.
RemoveVirtualNic	Demonstrates how to remove a Virtual Nic from a PortGroup on a vSwitch.
RemoveVirtualSwitch	Demonstrates how to remove a virtual switch.
RemoveVirtualSwitchPortGroup	Demonstrates how to remove a Virtual Switch PortGroup.
RenameEntity	Demonstrates how to rename a managed entity.
SCSILunName	Demonstrates how to iterate and display the CanonicalName, Vendor, Model, Data, Namespace and NamespaceId of the host SCSI LUN name.
SDRSRecommendation	Demonstrates how to run the Storage DRS on a given SDRS cluster and show the list of recommendations generated by SDRS.
SDRSRules	Demonstrates how to Add/List/Modify/Delete the rules for an existing SDRS cluster.
SearchIndex	Demonstrates how to use the SearchIndex API.
SimpleClient	Demonstrates how to list the inventory contents (managed entities).
TaskList	Demonstrates how to iterate through list of tasks if any are running.
VMClone	Demonstrates how to create a template of an existing VM and deploy multiple instances of this template onto a datacenter.

VMCreate	Demonstrates how to create a VM.
VMEventHistoryCollectorMonitor	Demonstrates how to create EventHistoryCollector filtered for a single VM and monitor Events using the latestPage attribute of the EventHistoryCollector.
VMotion	Demonstrates how to validate if VMotion is feasible between two hosts or not, It is also used to perform migrate/relocate task depending on the data given.
VMPowerOps	Demonstrates how to perform Power operations on multiple Virtual Machines. Works with groups of Virtual Machines all at one time.
VMPowerStateAlarm	Demonstrates how to create an Alarm to monitor the virtual machine's power state.
VMReconfig	Demonstrates how to reconfigure a virtual machine, which include reconfiguring the disk size, disk mode, etc.
VMSnapshot	Demonstrates how to perform VM snapshot operations.
WatchVM	Demonstrates how to use the PropertyCollector to monitor one or more properties of one or more managed objects.
WeeklyRecurrenceScheduledTask	Demonstrates how to create a weekly recurring ScheduledTask using the ScheduledTaskManager.
XVCvMotion	Demonstrates how to relocate VM from one VC to another.
XVMotion	Demonstrates how to migrate/relocate VM to another host and datastore using the drs placement recommendations.

vCenter Single Sign On SDK (ssoclient)

The vCenter Single Sign On SDK supports the development of vCenter client applications that use the vCenter Single Sign On API to obtain SAML tokens. A vCenter client can use the SAML token to login to a vCenter Server.

Name	Description
AcquireBearerTokenByUserCredentialSample	Demonstrates how to acquire a Bearer Token using SSO Credentials.
AcquireHoKTokenByHoKTokenSample	Demonstrates how to acquire a Hok Token using Hok Token.
AcquireHoKTokenBySolutionCertificateSample	Demonstrates how to acquire a Hok Token using Solution certificate.
AcquireHoKTokenByUserCredentialSample	Demonstrates how to acquire a Hok Token using SSO Credentials.
RenewTokenSample	Demonstrates how to renew a token.
ValidateTokenSample	Demonstrates how to validate a token.
LoginByToken	Demonstrates how to login to vCenter using the SSO token.

VMware vCloud Suite SDK for Dotnet

The vCloud Suite SDK for .NET enables programmatic access to vSphere. Access to capabilities exposed through the vSphere Web Services API is done using vSphere Management SDK. It includes .NET libraries for accessing new features like Content Library and existing features like Tagging which did not support a public API prior to vSphere 6.0.

Name	Description
vmware.vcloud.suite.samples.cis.tagging.TagLifecycle	Demonstrates how to perform CRUD operations of tags/categories.
vmware.vcloud.suite.samples.interop.TagCluster	Demonstrates how to tag a cluster.

Perl

VMware vSphere SDK for Perl

The vSphere SDK for Perl provides an easy-to-use Perl scripting interface to the vSphere API. Administrators and developers can work with vSphere API objects using vSphere SDK for Perl subroutines.

Name	Description
connect.pl	Demonstrates how to connect to an ESX host or vCenter.
credstore_admin.pl	Demonstrates how to perform CRUD operations on a credential store.
dsbrowse.pl	Demonstrates how to iterate, list and browse through the datastores.
extractlog.pl	Demonstrates how to extract the vmware.log from any virtual machine.
fileaccess.pl	Demonstrates how to interface for get and put operations on the datastore and configuration files and put operation on the /tmp directory.
guestinfo.pl	Demonstrates how to retrieve the guest properties/attributes.
hostdiagnostics.pl	Demonstrates how to display the log for the ESX host or VirtualCenter server, and allows users to monitor the log.
hostevacuate.pl	Demonstrates how to evacuate a host by migrating all virtual machines from one host to another in preparation for maintenance actions on that host.
hostinfo.pl	Demonstrates how to query and list various hosts and attributes for a host or set of hosts.
hostops.pl	Demonstrates how to perform operations like add standalone, disconnect, reconnect, enter maintenance mode, exit from maintenance mode, reboot, shutdown host, add host, remove host, and move host into folder/cluster.
load_session.pl	Demonstrates how to connect to a host using a saved session file.
save_session.pl	Demonstrates how to connect to a host and save session state to a file.
sharesmanager.pl	Demonstrates how to modify shares for memory, CPU, and disk for

	specified virtual machine.
snapshotmanager.pl	Demonstrates how to perform the basic operations of snapshot. Ex: List, Create, Revert, Goto, Rename, Remove & RemoveAll.
vdiskcreate.pl	Demonstrates how to create virtual disk on a virtual machine. The virtual disk is composed of one or more files on the host file system. Together, these files appear as a single hard disk to the guest operating system.
viperformance.pl	Demonstrates how to retrieve performance counters from the specified host. Performance counters shows these primary attributes: CPU Usage, Memory Usage, Disk I/O Usage, Network I/O Usage, and System Usage.
vidiscovery.pl	Demonstrates how to iterate and list the hierarchy of items in a VirtualCenter server or ESX host inventory such as datacenter, folders, resource pools and hosts with proper indentation.
viversion.pl	Demonstrates how to retrieve the Virtual Center's name, type, version, and build number.
vmclone.pl	Demonstrates how to clone a virtual machine. You can customize the virtual machine or the guest operating system as part of the clone operation.
vmcontrol.pl	Demonstrates how to perform the common provisioning operations on one or more virtual machines: powering on, powering off, resetting, rebooting, shutting down, suspending and setting into standby mode.
vmcreate.pl	Demonstrates how to create one or more new virtual machines based on the parameters specified in the input valid XML file.
vminfo.pl	Demonstrates how to retrieve the specified properties of the virtual machine(s). If none are specified then the predefined properties are displayed.
vmmigrate.pl	Demonstrates how to migrate one or more virtual machines within the current host or from the current host to another host.
vmreconfig.pl	Demonstrates how to reconfigure a virtual machine based on the parameters specified in the valid XML file.

vmregister.pl	Demonstrates how to perform the virtual machine registration. You can register a virtual machine to a host or unregister it from a host.
vmsnapshot.pl	Demonstrates how to create snapshots of virtual machines (memory dump is not included) based on the filter criteria. A snapshot captures the entire state of a virtual machine at the time the user take the snapshot.
vmtemplate.pl	Demonstrates how to convert an existing virtual machine to a template and vice versa.

VMware vCloud Suite SDK for Perl

The VMware vCloud Suite SDK for Perl enables programmatic access to vSphere. It includes perl libraries for accessing new features like Content Library and existing features like Tagging which did not support public API prior to vSphere 6.0.

Name	Description
tag_life_cycle.pl	Demonstrates how to perform CRUD operations of tags/categories.
tagging_workflow.pl	Demonstrates how to perform CRUD operations of tags/categories. Also Demonstrates the attach/detach tags to/from a cluster.

Python

Open Source pyvmomi SDK

pyVmomi is the Python SDK for the VMware vSphere API that allows you to manage ESX, ESXi, and vCenter.

Note: **Only supports** - vSphere Web Services SDK. **Does not have support for** - vCenter Single Sign On SDK, vSphere Storage Monitoring Service (SMS) SDK, VMware Storage Policy SDK, vSphere ESX Agent Manager SDK.

-- <https://github.com/vmware/pyvmomi>

-- <https://github.com/vmware/pyvmomi-community-samples>

VMware vCloud Suite SDK for Python

The VMware vCloud Suite SDK for Python enables programmatic access to vSphere. Access to capabilities exposed through the vSphere Web Services API is done using the open-source pyVmomi project. It includes python libraries for accessing new features like Content Library and existing features like Tagging which did not support a public API prior to vSphere 6.0.

Name	Description
com.vmware.vcloud.suite.sample.workflow.connection_workflow.py	Demonstrates how to discover and connect to the various services using SSO Token.
com.vmware.vcloud.suite.sample.workflow.content_library_workflow.py	Demonstrates how to create a published content library backed by a datastore, upload a VM template, download the VM template, deploy a VM from the uploaded template on a cluster and finally power on the VM.
com.vmware.vcloud.suite.sample.lookupservice.print_services.py	Demonstrates how to discover the various services running on the Platform Service Controller and the vCenter Management Node using the lookup service API's.
com.vmware.vcloud.suite.sample.workflow.tagging_workflow.py	Demonstrates how to perform CRUD operations of tags/categories. Also Demonstrates the attach/detach tags to/from a cluster.
com.vmware.vcloud.suite.sample.workflow.vapi_connection_workflow.py	Demonstrates how to discover and connect to the vapi endpoint service using SSO credentials.

Ruby

Open Source rbvmomi SDK

rbVmomi is the Ruby SDK for the VMware vSphere API that allows you to manage ESX, ESXi, and vCenter.

Note: Only supports - vSphere Web Services SDK. **Does not have support for** - vCenter Single Sign On SDK, vSphere Storage Monitoring Service (SMS) SDK, VMware Storage Policy SDK

-- <https://github.com/vmware/rbvmomi>

-- <https://github.com/vmware/rbvmomi/tree/master/examples>

VMware vCloud Suite SDK for Ruby

The VMware vCloud Suite SDK for Ruby enables programmatic access to vSphere. Access to capabilities exposed through the vSphere Web Services API is done using the open-source rbVmomi project. It includes ruby libraries for accessing new features like Content Library and existing features like Tagging which did not support a public API prior to vSphere 6.0.

Name	Description
connection_workflow.rb	Demonstrates how to discover and connect to the various services using SSO Token.
tagging_workflow.rb	Demonstrates how to perform CRUD operations of tags/categories. Also Demonstrates the attach/detach tags to/from an existing entity.

REST

VMware vCloud Suite SDK for REST

The VMware vCloud Suite REST SDK enables programmatic access to vSphere. It contains REST API documentation that describes the REST interface to the Content Library and Tagging features in the vCloud Suite.

Note: Does not have support for - vSphere Web Services SDK, vCenter Single Sign On SDK, vSphere Storage Monitoring Service (SMS) SDK, VMware Storage Policy

Name	Description
tags.js	Demonstrates how to iterate and list through the already existing tags.