VMware vCloud® Architecture Toolkit Software Tools

Version 3.0

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1. Overview

Software Tools provides information about software tools that can be used to support vCloud planning, implementation, testing, and maintenance.

- The VMware vCloud® Director™ Server Resource Kit (VDSRK) software tools are applications developed by VMware Engineering teams. You can use them in your vCloud test and development environments to test, automate, and maintain vCloud Director servers. These tools are freely available and can be used by anyone.
- Services automation tools, such as VMware Capacity Planner, VMware HealthAnalyzer, and VMware Migration Manager, support delivery of various VMware services by automating aspects of service delivery. These services and tools, which are useful for working with a vCloud solution,,are not directly available to customers, but customers can engage VMware Professional Services or partner companies for services that employ the tools. Eligible VMware partners who meet certain criteria, or who purchase a VMware Services Software Solutions subscription (SKU: CON-SSS), can use the services automation tools.

1.1 Audience

This document is written for vCloud IT administrators and software developers who are implementing a vCloud computing solution, typically for testing and automating the process of implementing the vCloud software stack. VMware partner consultants who deliver services that employ the use of VMware Services Software Solutions service automation tools should also find it useful.

Administrators should understand how to administer the vCloud Director server and its components, including the following technologies:

- VMware vCenter Server™.
- VMware vCloud Director™.
- Java.
- HyperText Markup Language (HTML).
- eXtensible Markup Language (XML).

In addition, administrators and developers should be familiar with vCloud Director and associated products that comprise the vCloud stack. These include supported data repositories and command-line syntax for the particular shell and platform on which the server is installed. Knowledge of the basic vCloud Director architectural concepts needed to successfully design and deploy a vCloud Director architecture and service is also helpful.

1.2 Scope

This reference guide documents only VDSRK and services automation tools. See VMware product documentation for detailed information about vCloud and vCloud Director.

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2. VMware vCloud Director Server Resource Kit

The VMware vCloud Director Server Resource Kit includes the following tools:

- vCloud Director Audit.
- vCloud Provisioner.
- CloudCleaner.

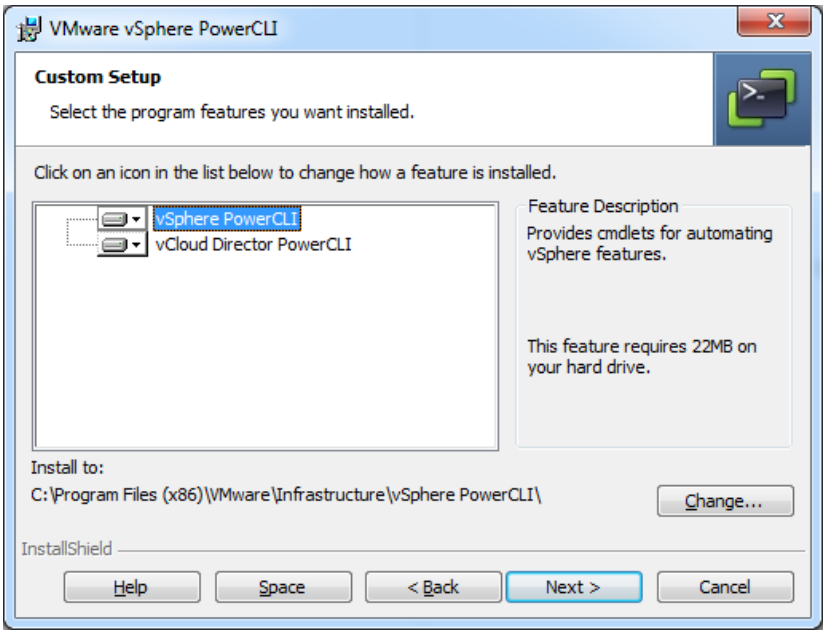
2.1 vCloud Director Audit

vCloud Director (VCD) users need to be able to report on VCD infrastructure, producing audit reports on their VCD deployments and returning data in a centralized, easy-to-read report. VCD Audit, based on the vCheck 6 framework from virtu-al.net (http://www.virtu-al.net/featured-scripts/vcheck/), provides VCD audit capabilities as an extensible, plug-in driven solution. VCD Audit works with vCloud Director 1.5.

2.1.1 Prerequisites

- VMware vSphere® PowerShell™ 2.0.
- vCloud PowerCLI 5.0.1 (or later).

When you install PowerCLI 5.0.1, verify that the vCloud Director PowerCLI option is selected, otherwise the `cmdlets` required by the VCD Audit tool are not made available. This option is not selected by default.



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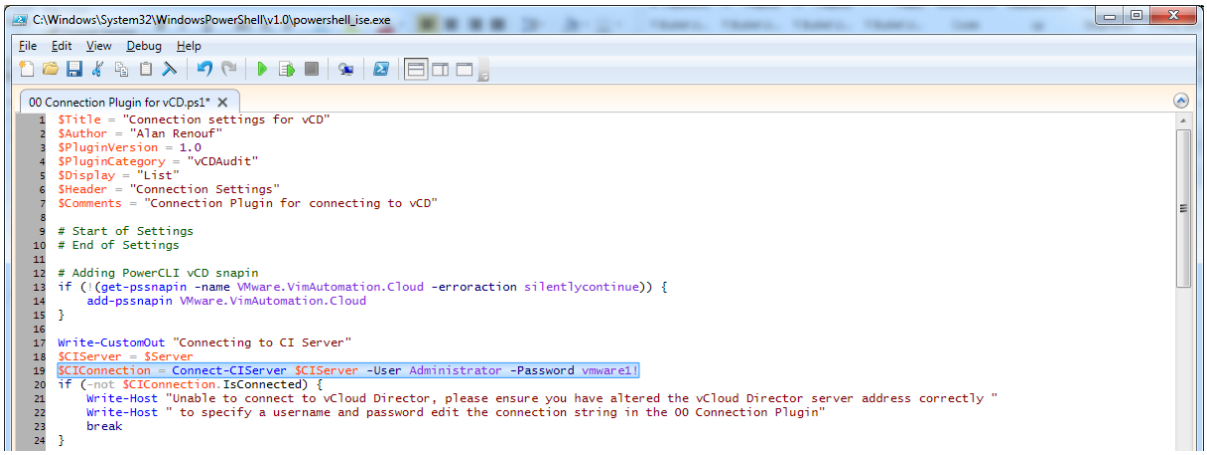
2.1.2 Setup, Configuration, and Use

To set up, configure, and use vCloud Director Audit

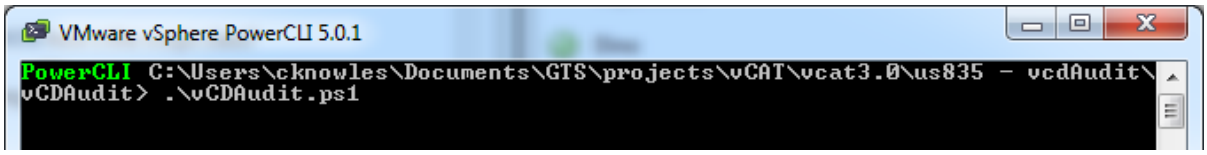
1. Download VCD Audit from http://www.virtu-al.net/2012/03/13/vcdaudit-for-vcloud-director/.
2. Unzip to a folder. There is no installation process.
3. Edit the `00 Connection Plugin for VCD.ps1` file to set the appropriate credentials for your vCloud environment (see line 19).



4. From PowerCLI, execute the following command:

   `.\VCDAudit.ps1`

5. If it is your first time running the application, you are prompted to configure VCD Audit. If you want to reconfigure after the initial setup, add the `-configure` flag to the command-line argument.



6. Configure the script with your vCloud Director environment settings. You are prompted for the following
   - IP Address or Hostname of the VCD environment.
   - SMTP server address.
   - Email address to which to send reports.
   - Subject line for report emails.
   - Whether or not to display reports after completion (true/false).
   - Whether or not to send an email after the report is completed (true/false).
   - Whether or not to include the report attachment as an HTML file (true/false).
   - Report title color (HTML RGB).

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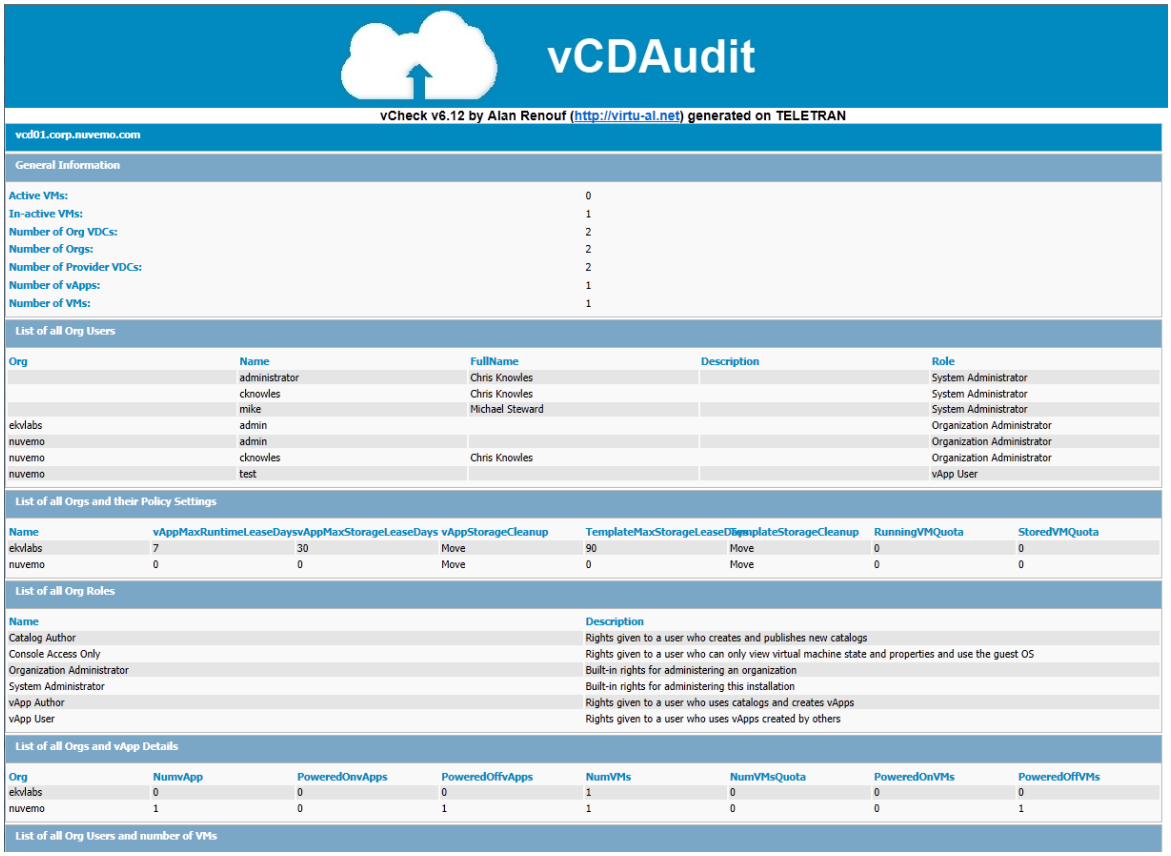
- Report heading color (HTML RGB).
- Report title text color (HTML RGB).
- Whether or not to include plug-in runtimes in report (true/false).
- Whether or not any plug-ins take longer than n seconds (integer, seconds).

7. From PowerCLI, run vCloud Director Audit:

```
.\VCDAudit.ps1
```

This collects information from vCloud Director and generates an HTML report similar to the following sample report:



vCDAudit

vCheck v6.12 by Alan Renouf (http://virtu-al.net) generated on TELETRAN

vcd01.corp.nuvemo.com

General Information

Active VMs:	0
In-active VMs:	1
Number of Org VDCs:	2
Number of Orgs:	2
Number of Provider VDCs:	2
Number of vApps:	1
Number of VMs:	1

List of all Org Users

Org	Name	FullName	Description	Role
	administrator	Chris Knowles		System Administrator
	cknowles	Chris Knowles		System Administrator
	mike	Michael Steward		System Administrator
ekvlabs	admin			Organization Administrator
nuvemo	admin			Organization Administrator
nuvemo	cknowles	Chris Knowles		Organization Administrator
nuvemo	test			vApp User

List of all Orgs and their Policy Settings

Name	vAppMaxRuntimeLeaseDays	vAppMaxStorageLeaseDays	vAppStorageCleanup	TemplateMaxStorageLeaseDays	TemplateStorageCleanup	RunningVMQuota	StoredVMQuota
ekvlabs	7	30	Move	90	Move	0	0
nuvemo	0	0	Move	0	Move	0	0

List of all Org Roles

Name	Description
Catalog Author	Rights given to a user who creates and publishes new catalogs
Console Access Only	Rights given to a user who can only view virtual machine state and properties and use the guest OS
Organization Administrator	Built-in rights for administering an organization
System Administrator	Built-in rights for administering this installation
vApp Author	Rights given to a user who uses catalogs and creates vApps
vApp User	Rights given to a user who uses vApps created by others

List of all Orgs and vApp Details

Org	NumvApp	PoweredOnvApps	PoweredOffvApps	NumVMs	NumVMsQuota	PoweredOnVMs	PoweredOffVMs
ekvlabs	0	0	0	1	0	0	0
nuvemo	1	0	1	1	0	0	1

List of all Org Users and number of VMs

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2.2 vCloud Provisioner

vCloud Provisioner acts as a middle layer that conveys data to and from its business objects model and to and from a vCloud Director instance. An abstraction layer enables a choice between implementations of the communication protocol between the vCloud Provisioner and vCloud Director.

vCloud Provisioner provides a solution for the following problems and tasks:

- Data-driven vCloud provisioning.
- Externalization of the vCloud object specifications in provision files.
- Abstraction between object specifications and the framework used for communicating with the vCloud.
- Loading of object specifications from an active vCloud Director setup.
- Comparison of two states of object specifications.

vCloud Provisioner includes the following features:

- Provides an interface for vCloud operations so that test cases do not have to be modified when the communication layer is replaced or modified.
- Provides a container for vCloud entities (`CloudProvisionData`).
- Provides functionality for loading the `CloudProvisionData` container, whether from an XML file or directly from a running vCloud.
- Provides functionality for flushing a `CloudProvisionData` container to a vCloud or to an XML format.
- Can compare two instances of `CloudProvisionData`.
- Can clean all entities that were flushed to the vCloud.
- Can append one instance of `CloudProvisionData` to another one.
- Can modify existing vCloud entities.

Figure 1 shows a workflow that uses vCloud Provisioner to flush an XML object specification to a vCloud. A similar workflow is used to load objects from a vCloud Director instance into a container.

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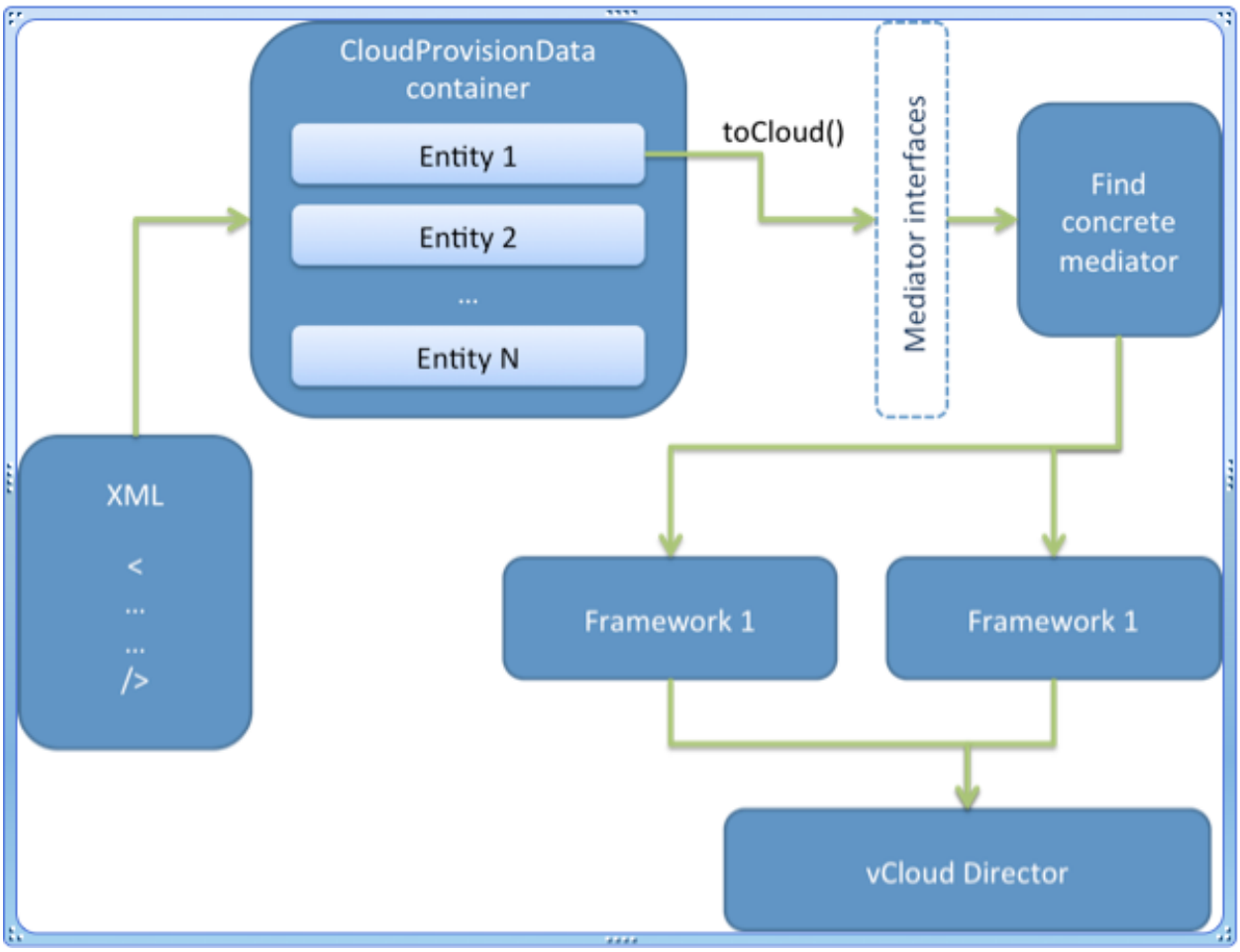
Figure 1. Workflow for Flushing an XML Object Specification to the vCloud



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2.2.1 vCloud Provisioner Requirements

- vCloud Provisioner runs on any operating system that has a JRE (Java Runtime Environment) 5.x or later installed.
- vCloud Provisioner depends on the following external JAR files:
  - `vcloud-test-backend`
  - `vcloud-test-util`
- To make sure that you have covered all of the dependencies, download the entire `vmware-redwood-test.tar.gz` archive.

2.2.2 Installing vCloud Provisioner

The source code for the vCloud Provisioner framework is part of the `test\qa\vcloud-test-iuc` project in the `com.vmware.vcd.provisioner` package.

You can also use a ready-to-use binary. The `vcloud-test-iuc` JAR file is part of the `vcloud-redwood-test.tar.gz` archive, which also includes all the dependency JAR files.

2.2.3 Basic Use of vCloud Provisioner

Example:

```
<org-network org="org1"
    name="yellow"
    desc="yellow routed network"
    net-pool="network pool 1"
    external-net="external network 1"
    net-config="org-yellow"
    allowed-external-ips="" />
```

Loading object specifications from XML:

```
CloudProvisionData prerequisites
= CloudProvisionData.fromXml("network-prequisities.xml", restServiceBundle);
```

Flushing the object specifications to the cloud:

```
prerequisites.toCloud();
```

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2.2.4 Advanced Use of vCloud Provisioner

Advanced use includes cleaning, comparing two instances of the `CloudProvisionData` container, appending, and modifying.

2.2.4.1. Cleaning

You can clean up all entities that were flushed to the vCloud using the following method:

```
CloudProvisionData.cleanUp(boolean onlyOwnedEntities);
```

Use the `onlyOwnedEntities` argument if only the entities that were created from this `CloudProvisionData` should be cleaned.

Example:

```
// Provision some networks and vApps
CloudProvisionData pdNewEntities = CloudProvisionData.fromXml("network-new.xml",
restServiceBundle);
try {
  pdNewEntities.toCloud();
  // Verify it works OK
  ....
} finally {
  pdNewEntities.cleanUp();
}
```

2.2.4.2. Comparing Two Instances of the CloudProvisionDataContainer

Comparing two instances is useful for tests that need to verify the state of the two vCloud instances, such as before and after an upgrade.

Example:

```
CloudProvisionData pdBefore = CloudProvisionData.fromXml("network-
prequisities.xml", restServiceBundle);
upgradeToT2(ssh);
CloudProvisionData pdAfter = CloudProvisionData.fromCloud(restServiceBundle);
if (pdAfter.equals(pdBefore) {
 // Success
} else {
 // FAILURE!
}
```

2.2.4.3. Appending Entities

You can append the entities from one `CloudProvisionData` container to another and then operate on the latter.

```
pdFirst.append(pdSecond);
```

2.2.4.4. Modifying Entities

You can modify existing entities by using the `modify()` method of individual entities, or the `modify()` method of the `CloudProvisionData` container.

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2.3 CloudCleaner

VMware vCloud Director (VCD) works in tandem with vCenter Server to deliver a reliable and efficient vCloud experience for users. Starting with the bottom layer, virtual machines are deployed on VMware VMware ESXi™ hosts. vCenter Server manages the hosts and monitors their usage and capacity. vCloud Director, in turn, manages and abstracts vCenter hardware concepts and concerns so that the user can request resources without concern about where or how they are acquired from the vCloud.

vCloud Director is the layer where organizations, users, vCenter instances, hosts, and other components come together in a vCloud. vCloud Director manages these resources well, and the system administrator can create, add, edit, remove, and destroy vCloud Director entities as needed. However, if you uninstall a vCloud Director, unneeded entities may be left on you vCenter Servers. Use CloudCleaner to clean up these unneeded entities.

CloudCleaner is a Java application, so it runs on Windows, Mac OS X, and any UNIX or Linux platforms that supports Java. When you use the CloudCleaner User Intervace (UI) to enter your vCenter IP and credentials, CloudCleaner examines the state of your vCenter and provides a list of entities to be cleaned.

2.3.1 CloudCleaner Requirements

- CloudCleaner requires an installed vCloud Director instance.
- Administrator access to at least one of the vCenter Servers.
- CloudCleaner will run on any operating system that has a JRE (Java Runtime Environment) 5.x or later installed.
- CloudCleaner uses the following open source libraries:
- JSch –- Java Secure Channel (http://www.jcraft.com/jsch/)
- VMware VI Java API (vijava) (http://vijava.sourceforge.net/)

2.3.2 How CloudCleaner Works

CloudCleaner talks directly to vCenter Server and its ESXi hosts, so it can be run at any time, regardless of the state of vCloud Director. (In fact, CloudCleaner could be used by a vCenter Administrator as an easy way to clean up vCenter servers). It only uses secure connections, and will try to validate host credentials upon first connection.

CloudCleaner uses entity naming and placement on vCenter as the primary means of identifying which items were created by vCloud Director, as opposed to items created on vCenter directly by users. Specifically, it targets:

- Virtual machines.
- Resource pools.
- Orphaned datastore folders.
- Networks.
- vCloud Director ESXi host agents.

Due to the enormous number of entities potentially needing to be cleaned, CloudCleaner runs up to 2000 simultaneous tasks.

CloudCleaner is safe to use. It displays a preview of the items it selected for removal before making any changes to your systems. CloudCleaner is used internally by VMware development and QA teams to clean hundreds of systems every week.

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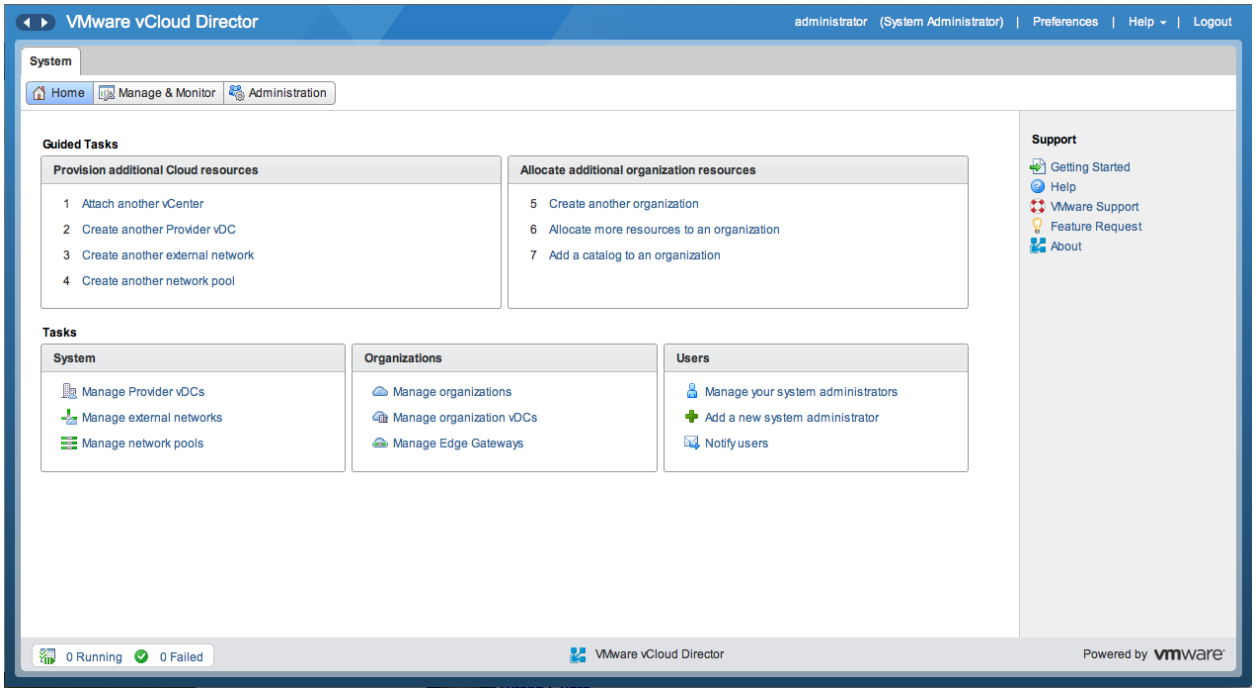
2.3.3 Leftover Entities

The following vCloud Director and vCenter screens illustrate the problem with leftover entities after vCloud Director is removed.

To view leftover entities

1. Display the vCloud Director UI .



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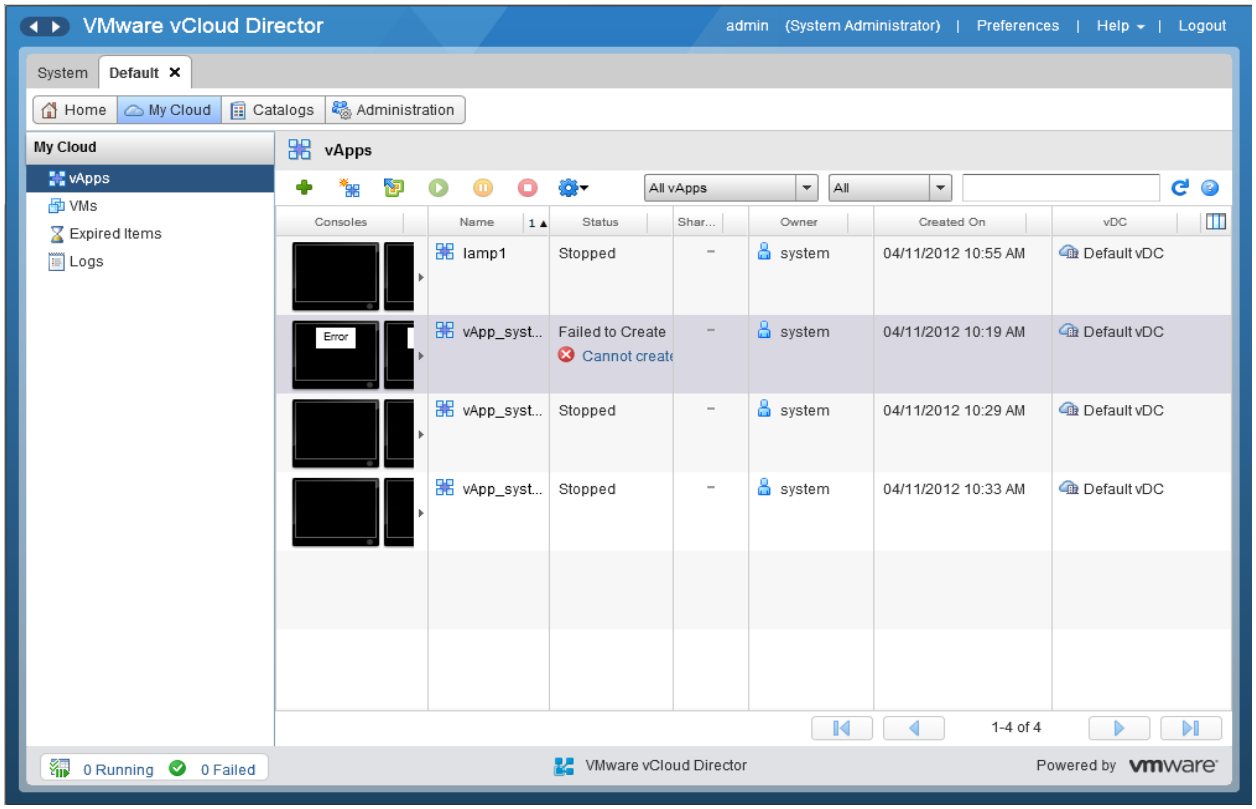
2. Go to your organization. In this example there are four vApps and a few virtual machines in the organization.



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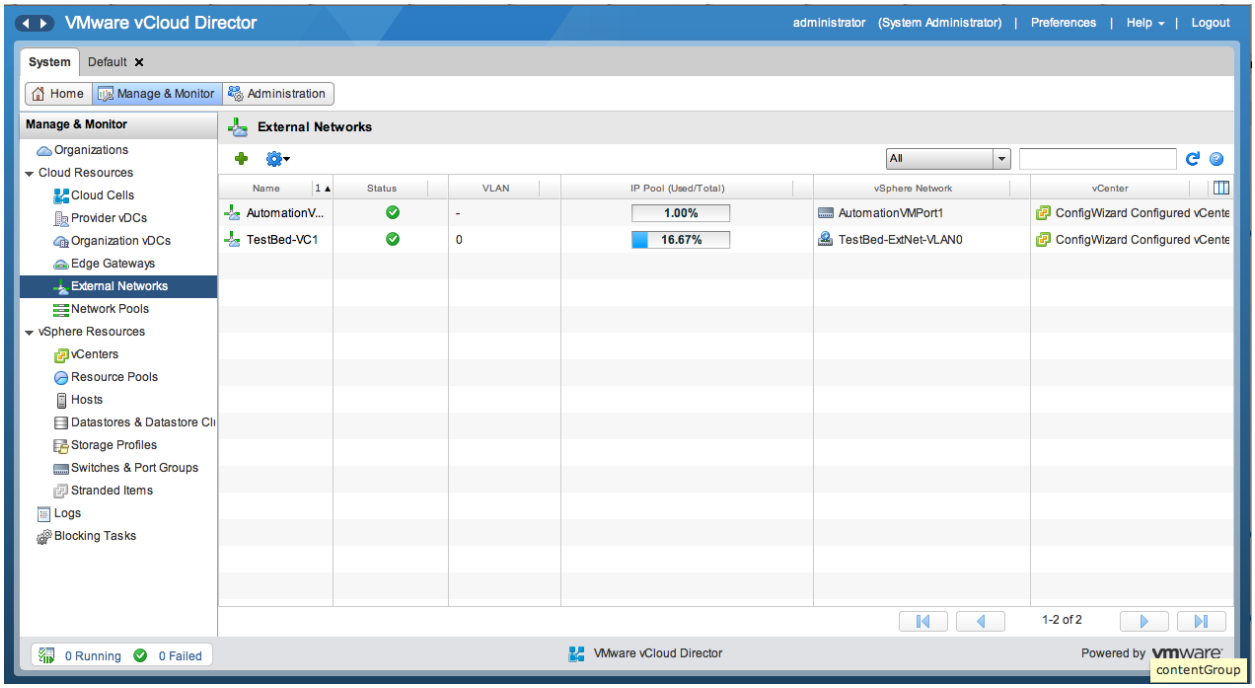
3. On the **Manage & Monitor** tab, there are entities such as external networks, network pools, and so on.

   If you uninstall and remove vCloud Director, and remove all of the settings and database, your vCenter Servers are left with of all these unneeded artifacts.



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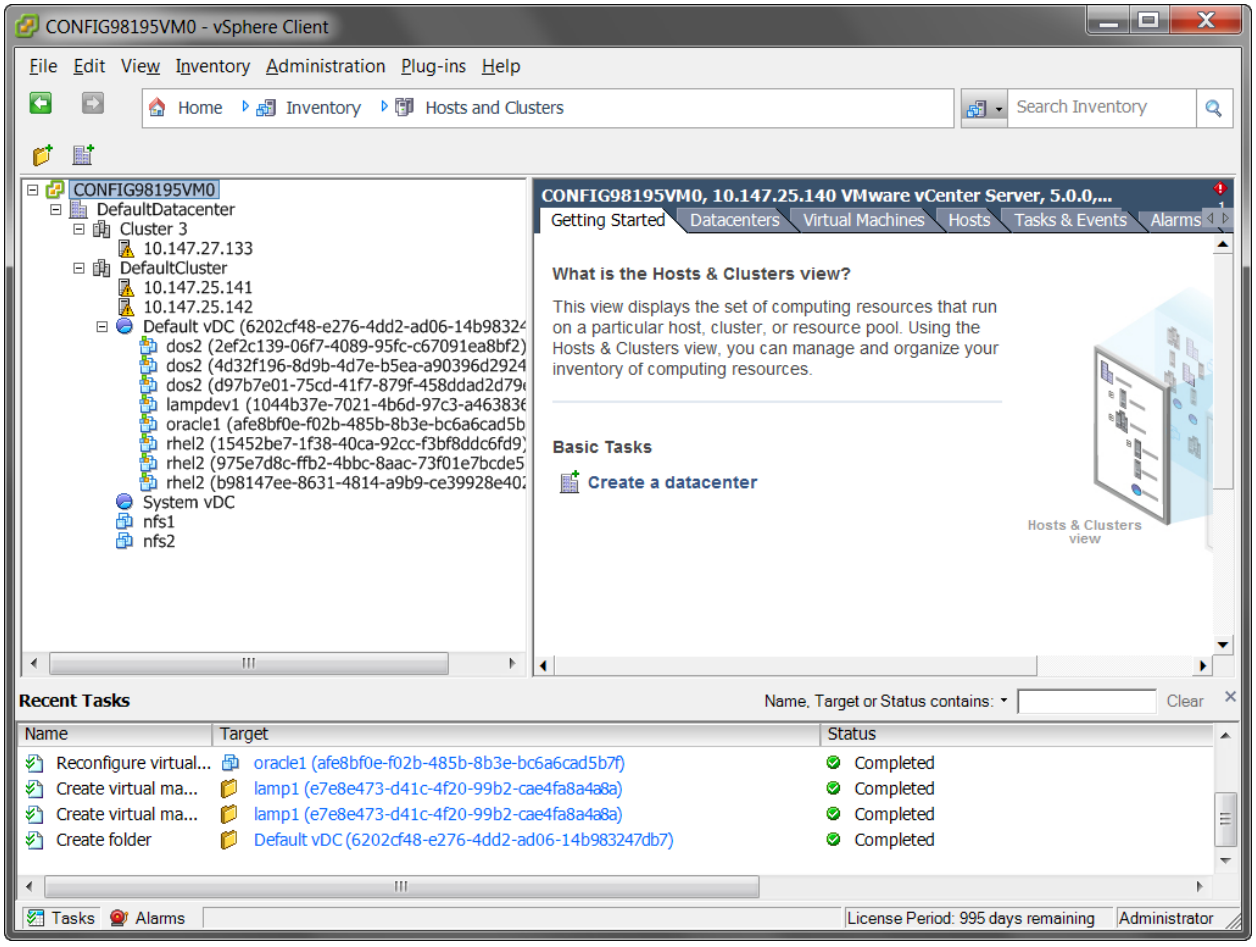
4. It is these entities that remain in your vCenter instances even after you have uninstalled and removed vCloud Director.

   CloudCleaner cleans up these entities and puts your vCenter Servers back to a clean state. Then, the vCenter Servers can be used with; for example, a new version of vCloud Director.



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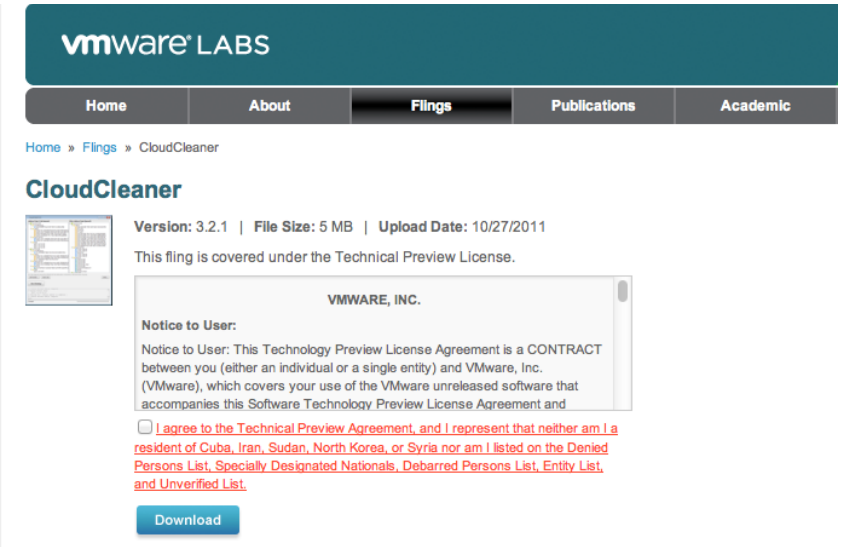
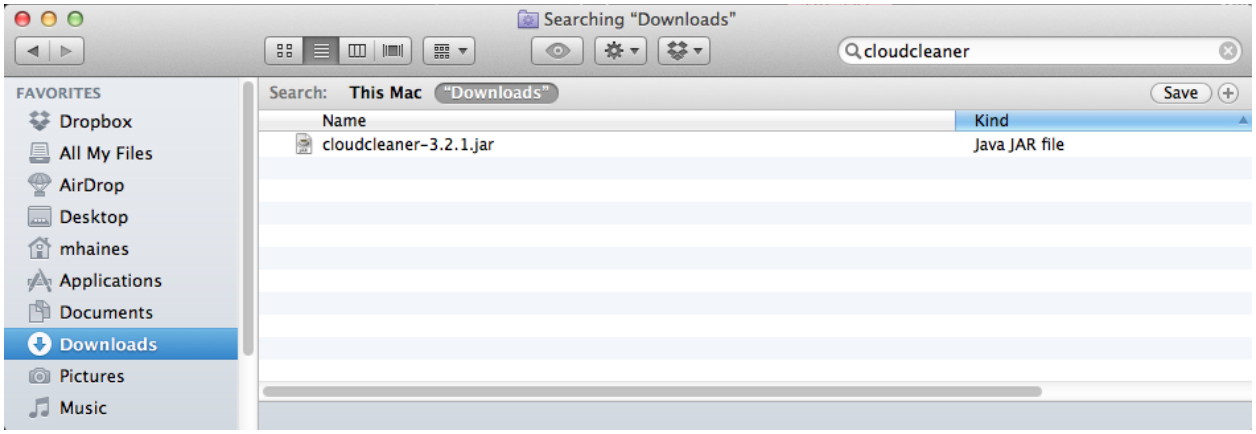
2.3.4 Installing CloudCleaner

To install CloudCleaner

1. Download CloudCleaner from the VMware Labs Flings website:
   http://labs.vmware.com/flings/cloudcleaner
2. Accept the Technical Preview Agreement and click **Download**.



3. After CloudCleaner has finished downloading you see the CloudCleaner JAR file:



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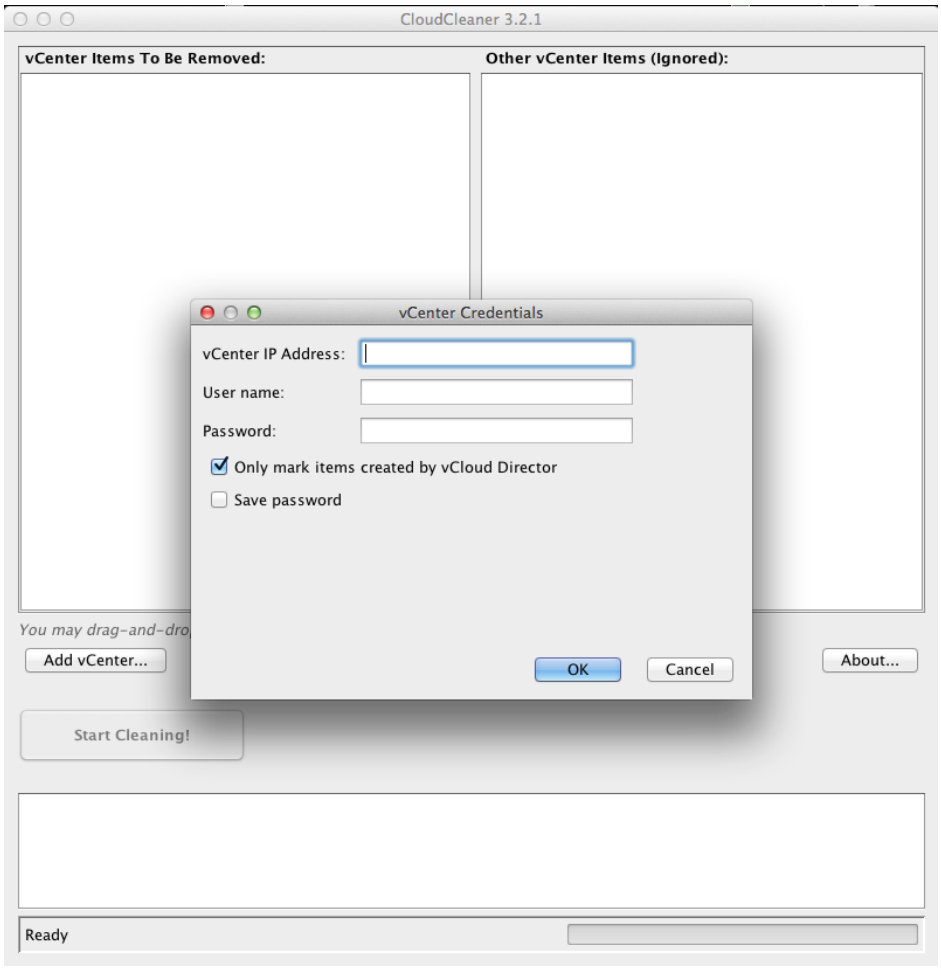
2.3.5 Basic Use of CloudCleaner

To use CloudCleaner to clean one or more vCenter Servers

1. Verify that you downloaded and saved CloudCleaner as a JAR file (*not* a ZIP file).
2. Run CloudCleaner.

   You can run CloudCleaner from the UI, or in Basic or Advanced mode from the command line.

   - To invoke CloudCleaner from the UI in Windows or Mac OS X, double-click the `cloudcleaner-3.2.1.jar` file.



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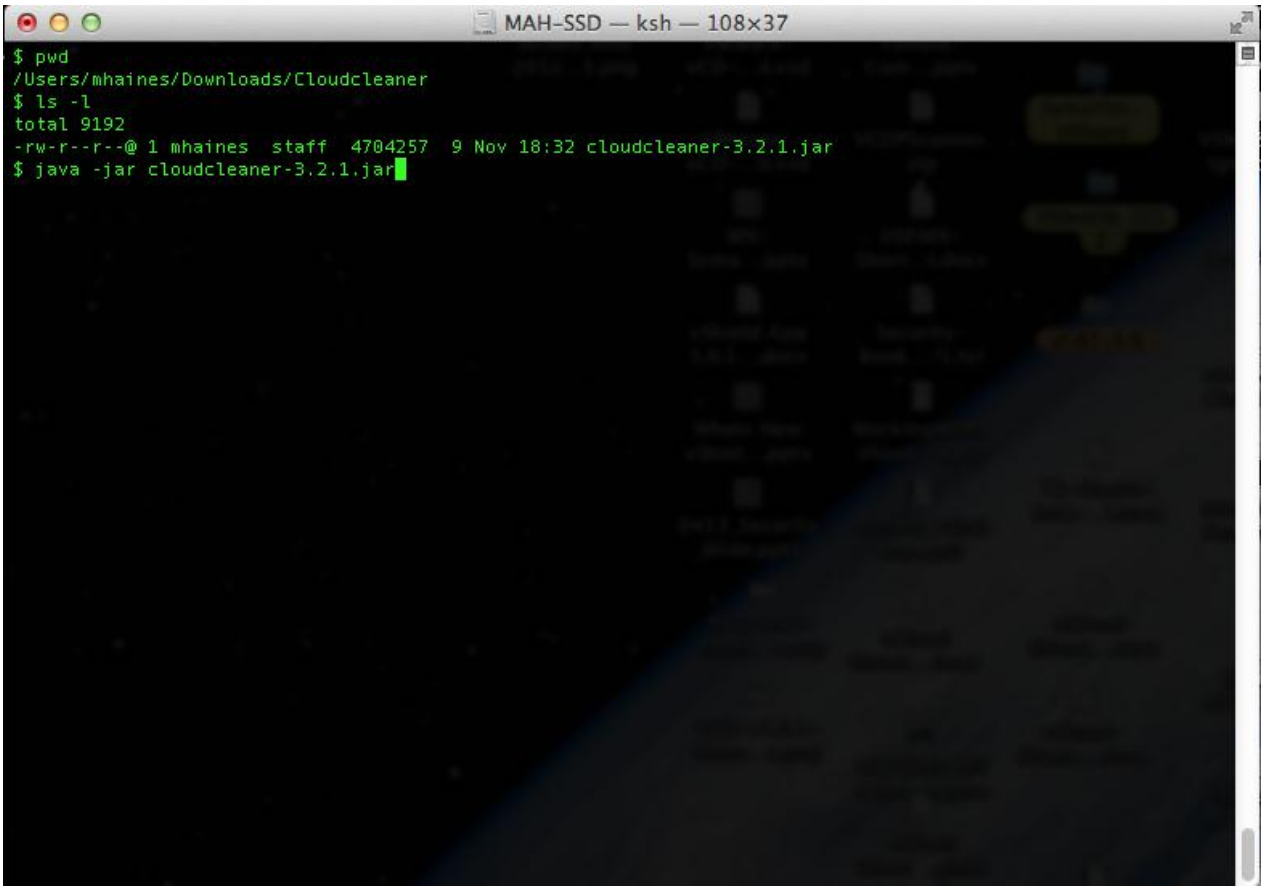
- To invoke CloudCleaner for basic use from a command line, run the `cloudcleaner-3.2.1.jar` command, as illustrated in the following example:



- For information about advanced command-line options, see

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Use with Advanced Options.

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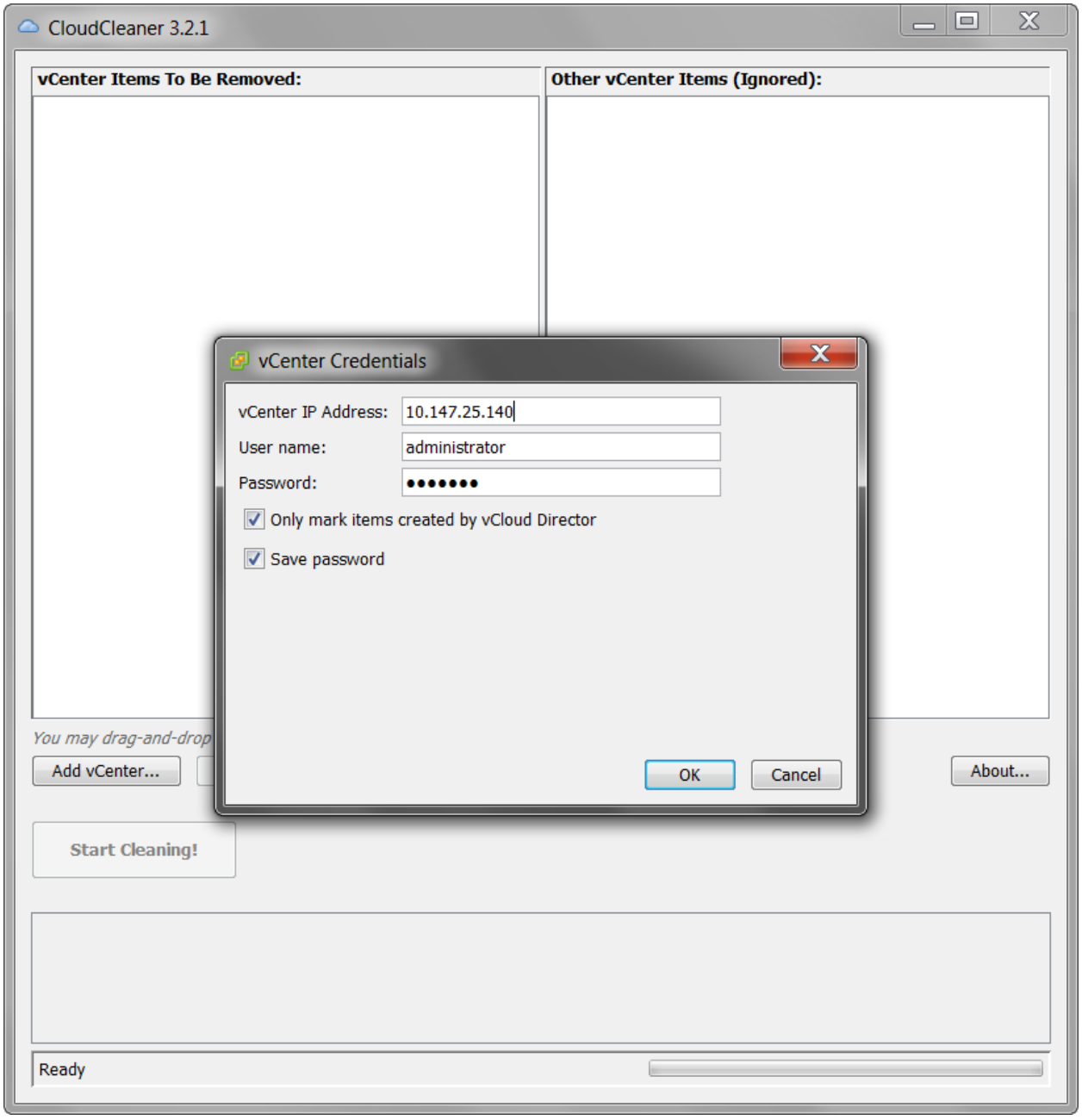
3. Provide your vCenter credentials.
   - Deselect **Only mark items created by vCloud Director** if you want to remove *all* items from your vCenter Server.
   - The default setting marks and removes only items that were created by vCloud Director.



Click **OK**.

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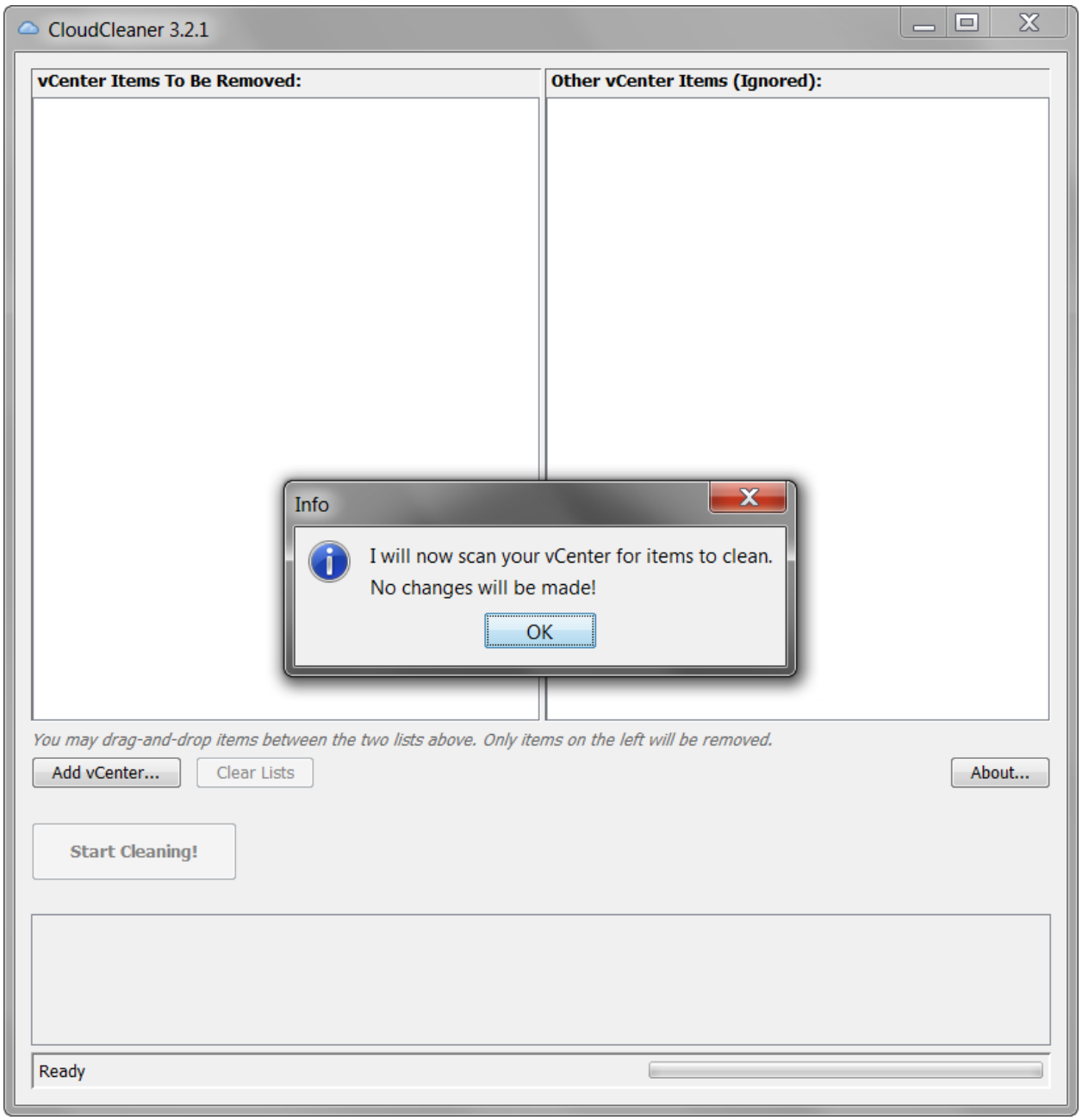
4. After authenticating, the following dialog is displayed.



5. Drag-and-drop items between the two panes to customize your selection of entities to remove. Entities created by vCloud Director that CloudCleaner detects are listed in the left pane, marked for removal. Hosts may also be displayed, which enables you to uninstall the host agent. Entities that CloudCleaner ignores are listed on the right.

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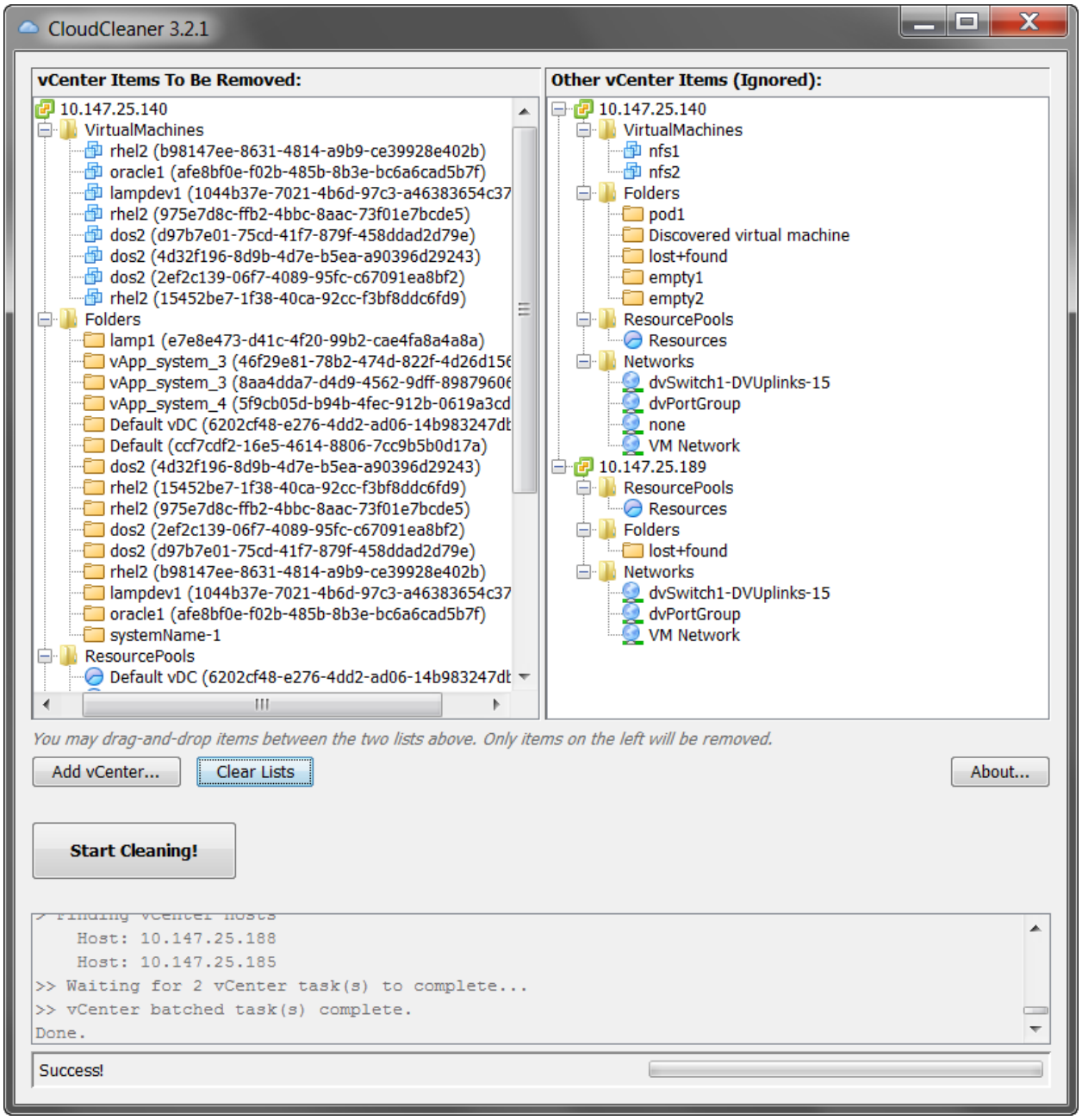
6. Optionally, click **Add vCenter** to add multiple vCenter Servers that have been used with vCloud Director. If you add multiple vCenter Servers, CloudCleaner cleans them all at the same time. CloudCleaner can use up to 5000 simultaneous threads, so it can handle large loads of vCenter Servers and their entities.



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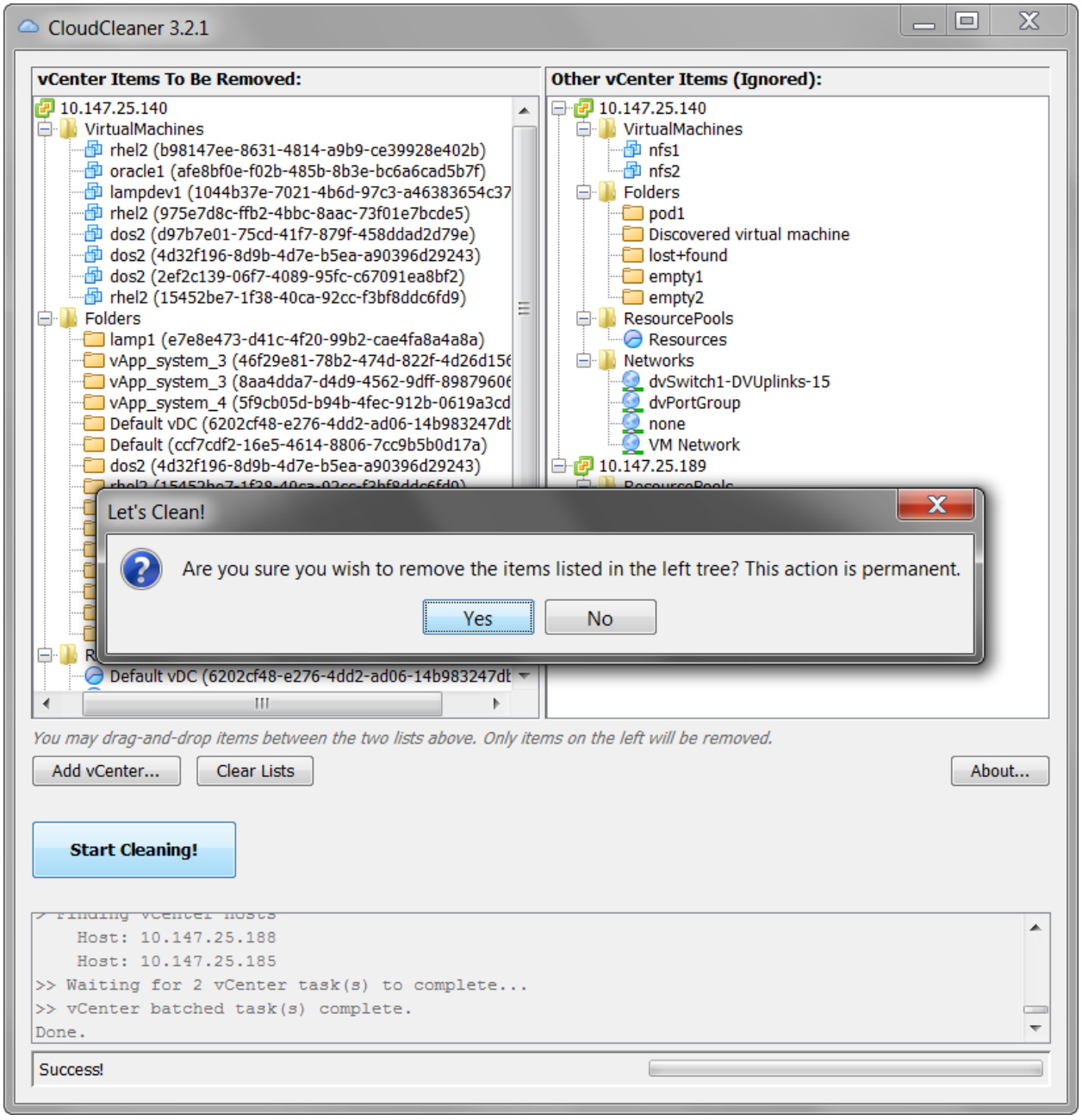
7. Click **Start Cleaning**. Before CloudCleaner starts the cleaning process, you are again asked for your vCenter Server credentials. Following successful authentication, a confirmation dialog is displayed. This is your last chance to cancel this process, which cannot be undone.



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2.3.6 Use with Advanced Options

Command-line options can be used with CloudCleaner. Running CloudCleaner with advanced options enables you to run the application "headless," meaning you can run it from the command line. This is useful when using CloudCleaner in a testing or automated environment where vCenter cleaning needs to occur on a regular basis. It is also useful when using CloudCleaner on a Linux machine from the shell.

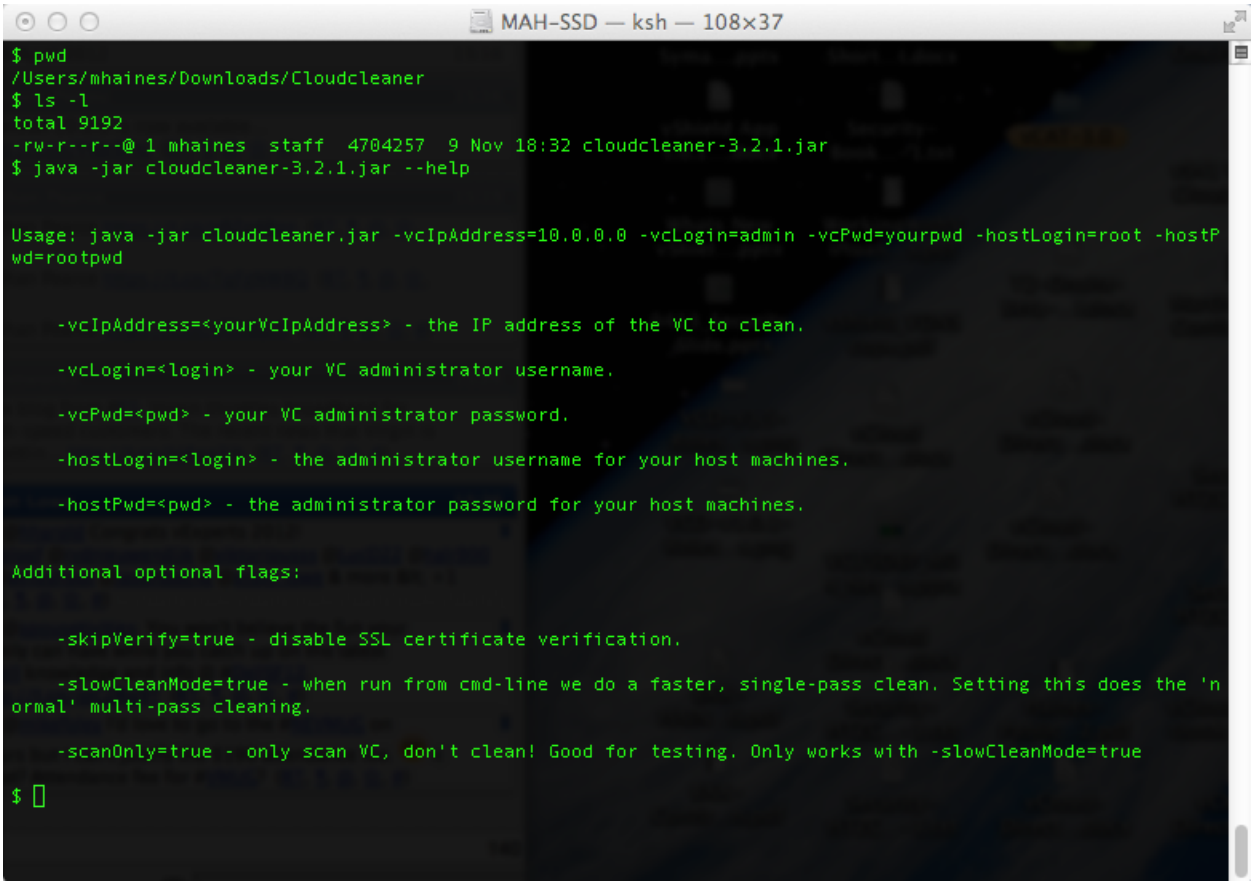
The following is a basic command-line example:

```
$ java -jar cloudcleaner.jar -vcIpAddress=10.10.10.1 -
vcLogin=administrator -vcPwd=secret -hostLogin=root -hostPwd=password
```

This runs CloudCleaner and automatically removes all vCloud Director-detected entities from the vCenter Server at IP Address 10.10.10.1. It uses a single username and password to connect to all of the vCenter hosts. When run in this mode, you cannot preview the items CloudCleaner selects to remove—it is assumed that you accept the default assessment of what should and should not be deleted.

The following figure shows the CloudCleaner advanced options.

Figure 1. CloudCleaner Advanced Options



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2.3.7 Additional CloudCleaner flags

- `-skipVerify=true`

  CloudCleaner checks a vCenter Server's security certificate the first time it accesses it. In the UI mode, you can choose to ignore invalid certificates. You cannot elect to ignore security certificates in the command-line-mode, so CloudCleaner fails if it accesses a vCenter it has not seen already in UI mode at some point. If you use this flag, CloudCleaner automatically ignores unknown and invalid security certificates.

- `-slowCleanMode=true`

  When run from the UI , CloudCleaner first scans your vCenter instances and then shows you the results. After you are satisfied, the actual cleaning begins. CloudCleaner does two full passes through your vCenter(s) and their entities. When run from the command line, CloudCleaner skips the scan and goes directly to the clean phase, doubling its speed. Though these two modes clean identically, you can pass this flag if you want to emulate CloudCleaner's scan-then-clean behavior.

- `-scanOnly=true`

  If you want to test your command-line parameters without actually cleaning your vCenter(s), you can pass this flag. You must also pass the *-slowCleanMode=true* flag.

2.3.7.1. Examples

Run and skip certificate verification (recommended usage):

```
$ java -jar cloudcleaner.jar -vcIpAddress=10.10.10.1 -vcLogin=administrator -
vcPwd=secret -hostLogin=root -hostPwd=password -skipVerify=true
```

Do a test-run (only scan, do not actually remove anything):

```
$ java -jar cloudcleaner.jar -vcIpAddress=10.10.10.1 -vcLogin=administrator -
vcPwd=secret -hostLogin=root -hostPwd=password -slowCleanMode=true -scanOnly=true
```

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3. Services Automation Tools

VMware Services Software Solutions services automation tools support various VMware services and are available to eligible VMware partners who meet certain criteria or purchase a VMware Services Software Solutions subscription (SKU: CON-SSS). This subscription provides access to and support for VMware Capacity Planner, VMware HealthAnalyzer, VMware Migration Manager, and more.

For information about services automation tools partners can visit VMware Partner Central. Services automation tools are not directly available to customers, but customers can engage with VMware Professional Services or VMware partners for services that employ these tools. Customers who have a VMware TAM may also purchase a subscription.

Services automation tools that provide support for vCloud include the following:

- VMware Capacity Planner.
- VMware HealthAnalyzer.
- VMware Migration Manager.

All services automation tools are fully supported by VMware Partner Support team.

3.1 Assessments and Capacity Planner

VMware Capacity Planner can help to successfully plan and estimate the size of the foundation infrastructure required for a scalable vCloud deployment. Capacity Planner provides the following benefits:

- Increased productivity with server consolidation and capacity optimization.
- Reduced complexity through IT standardization and hardware containment.
- Improved predictability with capacity utilization trends and virtualization benchmarks.

See the VMware Capacity Planner datasheet for additional information (http://www.vmware.com/products/capacity-planner/overview.html).

VMware Capacity Planner software is typically used during a Virtualization Assessment service delivered by VMware Professional Services or a VMware partner.

3.1.1 What is Capacity Planner?

VMware Capacity Planner is an agentless and robust capacity planning tool that provides an integrated set of analysis, planning, and decision support functionality that accelerates the delivery of accurate and benchmarked infrastructure assessment services for vCloud workloads. It is an integrated platform for analysis, planning, and decision making that enables comprehensive capacity planning, virtualization, and consolidation assessments. These assessments help to virtualize and consolidate datacenter vCloud infrastructure, redeploy strategic IT assets, and optimize vCloud workload planned capacity utilization.

Capacity Planner enables not only current state analysis of the existing infrastructure landscape, but also "what-if analysis" of the desired vCloud end state. It includes a rich set of components that deliver integrated capacity planning functionality including:

- Data collection.
- Data analysis.
- Decision engine based on industry benchmarks.
- Monitoring capabilities.

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The following are key components of Capacity Planner:

- Data Collector – The data collector is installed at the customer site and uses an agentless implementation to quickly discover systems. It collects detailed hardware and software inventory data, as well as key performance metrics required for optimal capacity utilization analysis. The data collector can gather information from heterogeneous environments based on multiple platforms.
- Data Manager – The data manager manages the data collection process. It provides an organized view of the collected information and administrative control for the data collector including setting up the job schedules; starting, monitoring and stopping various data collection tasks. The data manager also manages the process by which the collected data is sent to the information warehouse.
- Information Warehouse – The information warehouse is a central hosted data warehouse where the data collected from the client environment is sent, scrubbed, aggregated, and prepared for analysis. The information warehouse also includes valuable industry benchmark data that can be leveraged for benchmarking, scenario modeling, and for setting utilization thresholds.
- Data Analyzer – The data analyzer serves as the core analytical engine that performs all the analysis required for intelligent capacity planning. It includes advanced algorithms that resolve capacity optimization challenges and support analysis capabilities such as aggregation, trending and benchmarking. Scenario modeling and the what-if analysis help model and test various planning scenarios including virtualization, hardware procurement and server consolidation scenarios.
- Capacity Planner Dashboard Portal – The dashboard portal is a web-based, hosted application portal that delivers capacity analysis and planning capabilities to users through a browser interface. Users can access a rich set of prebuilt analyses, order and examine data, and create custom reports. Planning capabilities allow users to set objectives and constraints, and also model and test scenarios to arrive at informed capacity decisions. The monitoring capabilities of Capacity Planner its dashboard enable proactive anomaly detection and alerts.

The following figure shows all of the Capacity Planner components.

Figure 2.

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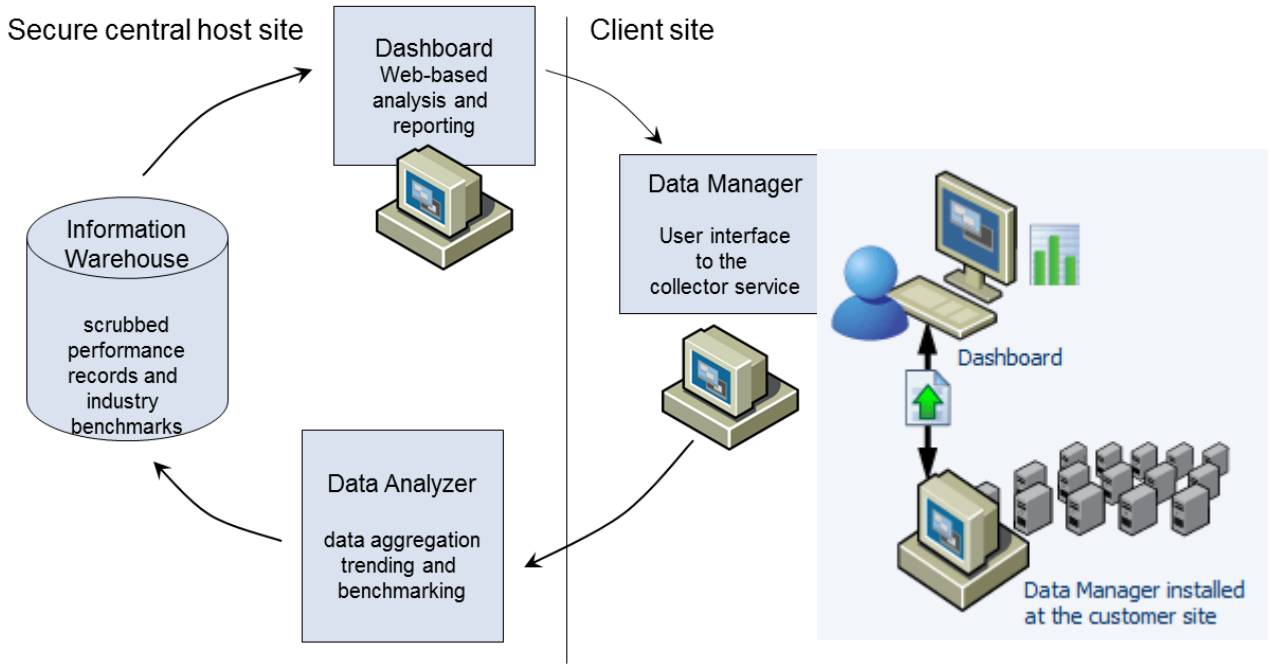
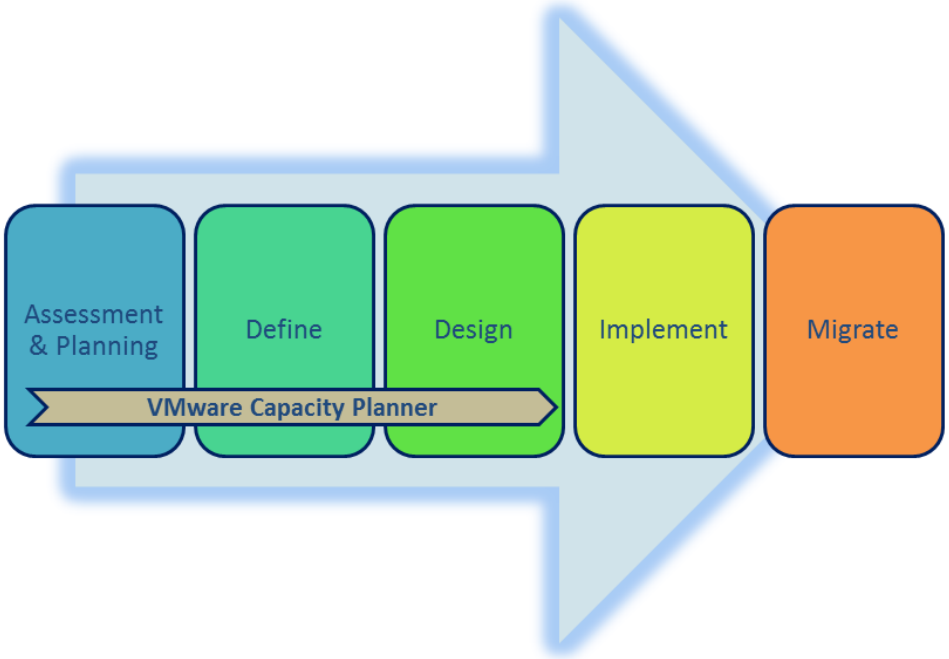
Capacity Planner Components



3.1.1.1. When Should Capacity Planner be Used?

The vCloud delivery methodology is conducted in phases as shown in the following figure.

Figure 3. Capacity Planner Agile vCloud Delivery Methodology



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Capacity Planner is typically used during the first three phases:

1. Assessment and Planning.
2. Define.
3. Design.

3.1.1.2. Capacity Planner Alignment with Agile vCloud Delivery Methodology

VMware Capacity Planner is aligned with the phases of the Agile vCloud delivery methodology.

- Assess and Plan:
  - *Assess* the current state of an infrastructure's workload capacity through comprehensive discovery and inventory of IT assets. Measure server loads and capacity utilization across various elements of the IT infrastructure by function, location and environment.
  - *Plan* for capacity optimization through detailed utilization analysis, benchmarking, trending and identification of capacity optimization alternatives. Identify resources and establish plan for vCloud-based virtualization, hardware purchase, or redeployment.
- Define and Design – Gather requirements and decide on the optimal solution by evaluating various alternatives through scenario modeling and "what-if" analyses. Determine which alternative best meets the predefined criteria. Monitor resource utilization through anomaly detection and alerts based on benchmarked thresholds. Help generate design recommendations for ongoing vCloud capacity optimization.

The effective use of Capacity Planner enables optimal design and construction of robust vApps that are published in the private or public catalogs in the vCloud Director, resulting in a scalable vCloud deployment.

3.2 VMware vSphere Health Check Service and HealthAnalyzer Tool

VMware vCloud is built on vSphere and it is important that the underlying infrastructure for a vCloud complies with the industry standard design guidelines for optimal performance. Over time, as the infrastructure is upgraded with new hardware and software versions, the infrastructure may become non-compliant with standard best practices, which can result in performance degradation in vCloud. To remediate these issues, it is recommended to periodically check the health of the vSphere environment against VMware design guidelines. VMware published a set of vSphere best practices and made them available through the vSphere Health Check service. The HealthAnalyzer tool automates data collection and parts of the analysis of compliance with best practices.

VMware HealthAnalyzer is fully supported by the VMware Partner Support team and is periodically updated with the latest best practice catalog, new features, and maintenance releases. A complete set of VMware HealthAnalyzer documentation is available from VMware Partner Central.

Note: A new version of HealthAnalyzer that supports a Health Check service for VMware View environments is also available.

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3.2.1 Health Check Service

During a Health Check service a VMware-certified consultant works with the customer vSphere infrastructure team to understand the customer environment, provide guidance on current best practices for configuring and managing vSphere, identify gaps between the current environment and design guidelines, and make recommendations to optimize the environment.

The health check service offers the following benefits:

- Optimize VMware vSphere performance.
- Maximize resources through efficiencies and roadmap for future improvements.
- Mitigate risks by leveraging experienced consultants and proven best practices.
- Interactive workshop to facilitate knowledge transfer on VMware vSphere best practices.

The Health Check service is sold and delivered by VMware and eligible VMware partners.

3.2.2 VMware HealthAnalyzer

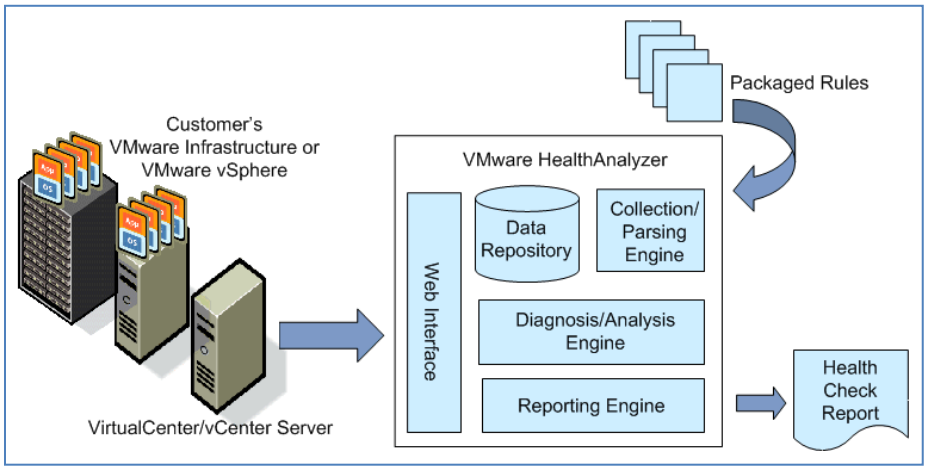
VMware HealthAnalyzer is a software tool used during a Health Check service. Though HealthAnalyzer is usually used during a Health Check service, it can be used at other times as well.

VMware HealthAnalyzer automates the collection of VMware vSphere inventory, configuration, and utilization data, analyzes data against best practices, recommends grades, and generates a report card that presents observations, findings, and data categorized by VMware Health Check best practices. VMware and partner consultants use the HealthAnalyzer web UI to review collected data, findings and observations, assign grades, make recommendations, and generate a Health Check Report.

VMware HealthAnalyzer is a Java web application also available as a virtual appliance (OVF). It can be configured and run on VMware Workstation, VMware Fusion, and VMware vSphere. At a high level, using HealthAnalyzer involves the following high-level steps:

1. Collect data from a VMware vCenter Server or ESXi host.
2. Create a report card where the tool analyzes data for a majority of the best practices.
3. Validate the recommendations provided by HealthAnalyzer.
4. Generate a final report.

Figure 4. VMware HealthAnalyzer Processing



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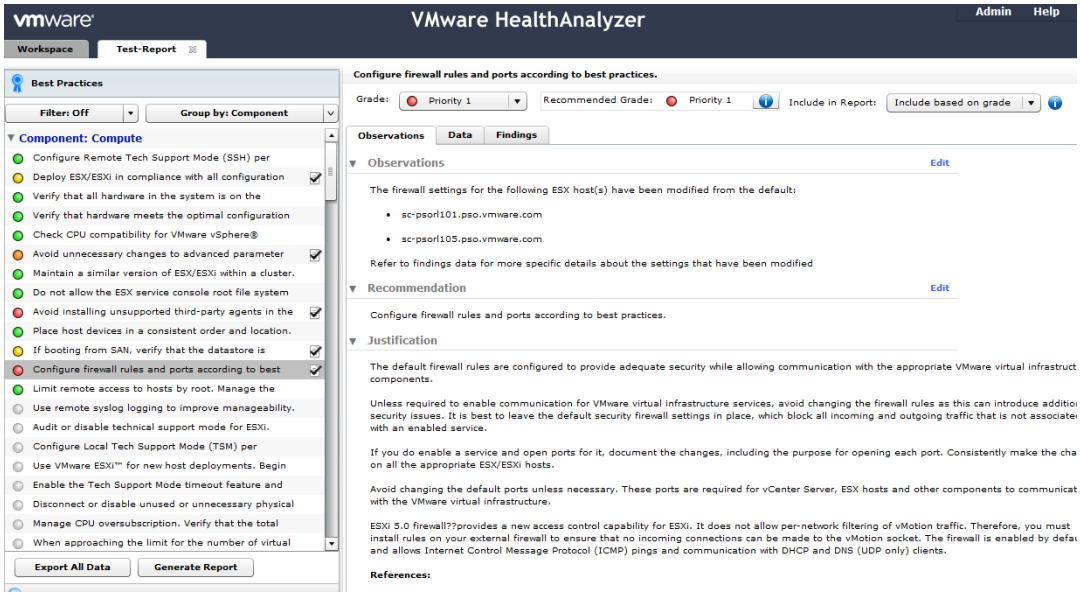
3.2.3 VMware HealthAnalyzer Requirements

HealthAnalyzer is distributed as a virtual appliance (OVF) or Java app, and requires the following:

- VMware vSphere (4.0 or later), VMware Player (2.5 or later), VMware Workstation (6.5 or later).
- Web browser – Mozilla Firefox (3.0 or later), Microsoft Internet Explorer (7.0 or later).
- Adobe Flash Player (10.0.12 or later).
- Microsoft Word (2007 or later), Microsoft Excel (2007 or later).
- A vCenter account with read-only permissions for all objects and permissions to read diagnostics and license information.

The following figure shows a sample HealthAnalyzer report card screen.

Figure 5. HealthAnalyzer Report Card



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3.3 VMware vCloud Migration Service and Migration Manager Tool

Customers who have an existing physical or virtual infrastructure and plan to migrate a large number of existing workloads to a private vCloud need a project management tool designed for that purpose. Vmware Migration Manager supports large-scale migration projects.

Migrating existing workloads (physical or virtual) to a private vCloud is a process comprised of several important tasks:

- Identifying resources to migrate.
- Scheduling migration to fit resource availability.
- Defining workflow steps to get approval from various workload owners, project managers, and resource owners.
- Documenting steps to migrate workloads.
- Updating and communicating status of migration of workloads to project personnel.

There can be other processes involved during the migration of a workload to a vCloud. When there are hundreds of workloads to be migrated managing these tasks is not trivial and requires a project management tool. Based on years of experience with P2V (physical to virtual) projects, VMware defined a methodology and a service for performing workload migration. This service uses a project management tool, VMware Migration Manager, that uses the P2V methodology and helps manage the migration process flow. You can find more information about the P2V service from the datasheet (http://www.vmware.com/files/pdf/services/consserv-p2v-accelerator-datasheet.pdf).

3.3.1 What is VMware Migration Manager?

VMware Migration Manager is a web-based application migration management application. It helps to manage the process of physical to virtual migration (P2V), or virtual to virtual migration (V2V) when there are many migrations involved. Migration Manager provides a collaboration platform, a workbench, and a series of dashboards to facilitate end-to-end migration management from initial candidate load to migration workbench and tracking. It also provides a centralized project management workbench with complete control over the migration process as well as comprehensive reporting including migration history and status.

The following high-level diagram illustrates a typical workflow when using Migration Manager for a migration project and the tasks associated with each part of the workflow.

Figure 6. Migration Manager Workflow

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3.3.2 Migration Manager System Requirements

VMware Migration Manager installs on Microsoft Windows and requires the following:

- Windows 2003 or Windows 2008.
- Microsoft .NET 4.0.
- MS SQL Server 2005 or later.
- MS IIS 6.0 or higher.
- MS Internet Explorer 8 or later, Google Chrome 13 or later, or Mozilla Firefox 3.0 or later.

3.3.3 VMware Migration Manager Sample Screens

The following sample screens show Migration Manager features and capabilities.

Figure 7. Home Screen (View depends on Role)

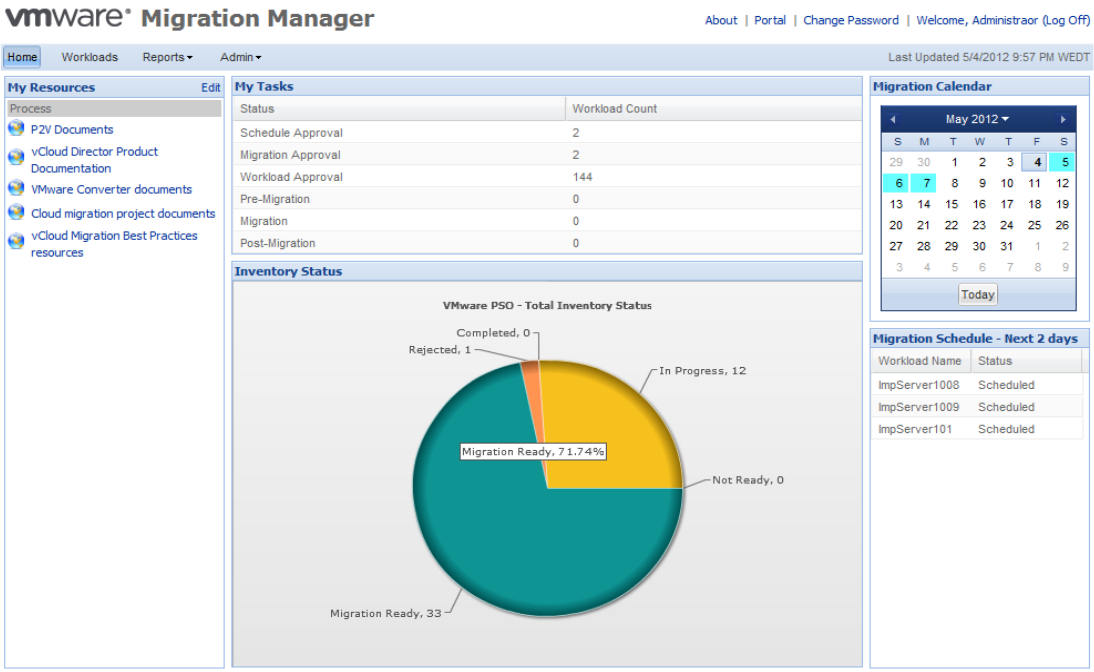

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Figure 8. Workloads Screen Showing All Workloads and their Migration Status

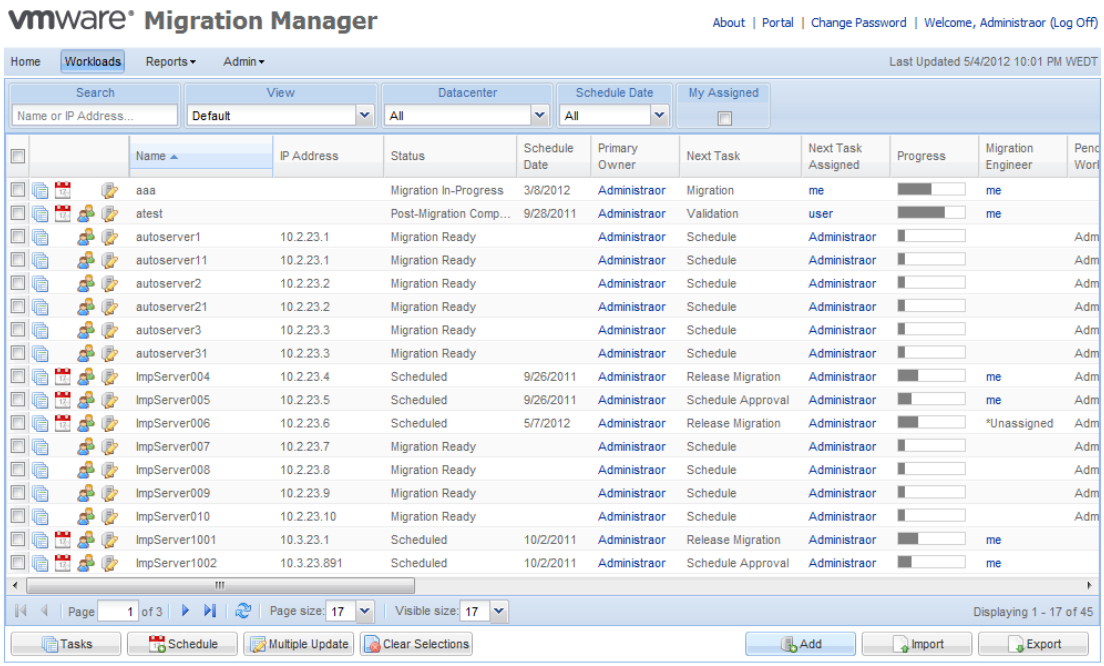

Figure 9. Add Workload Screen to Add a New Workload for Migration (Source Details)

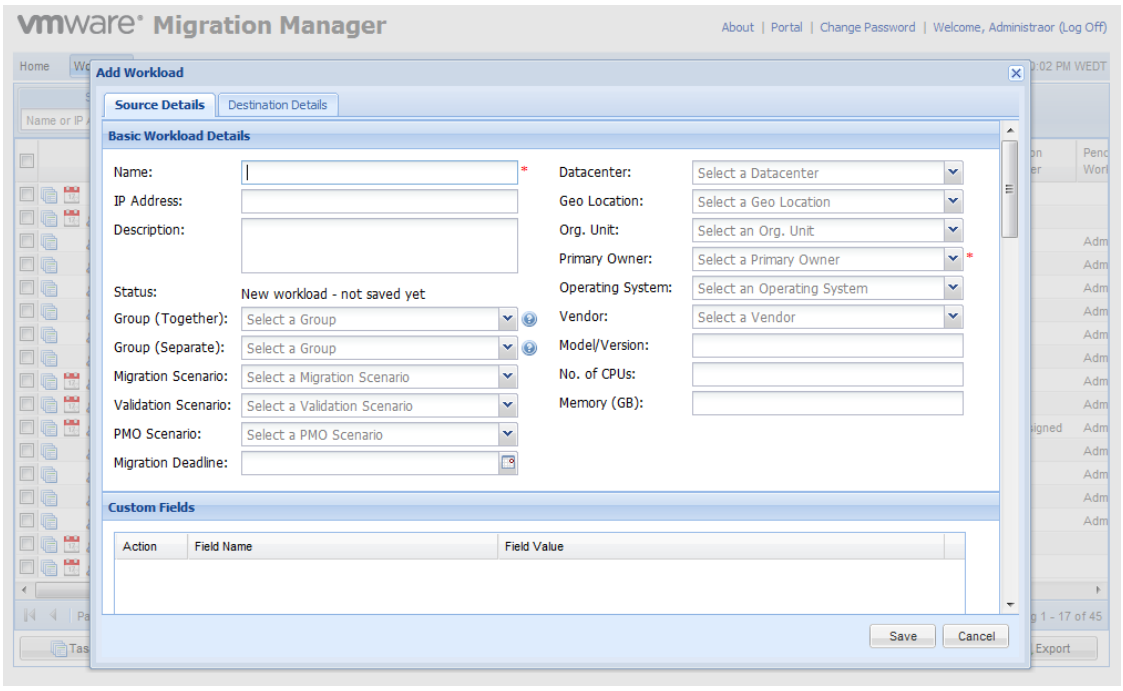

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Figure 10. Add Workload Screen to Add a New Workload for Migration (Destination Details)

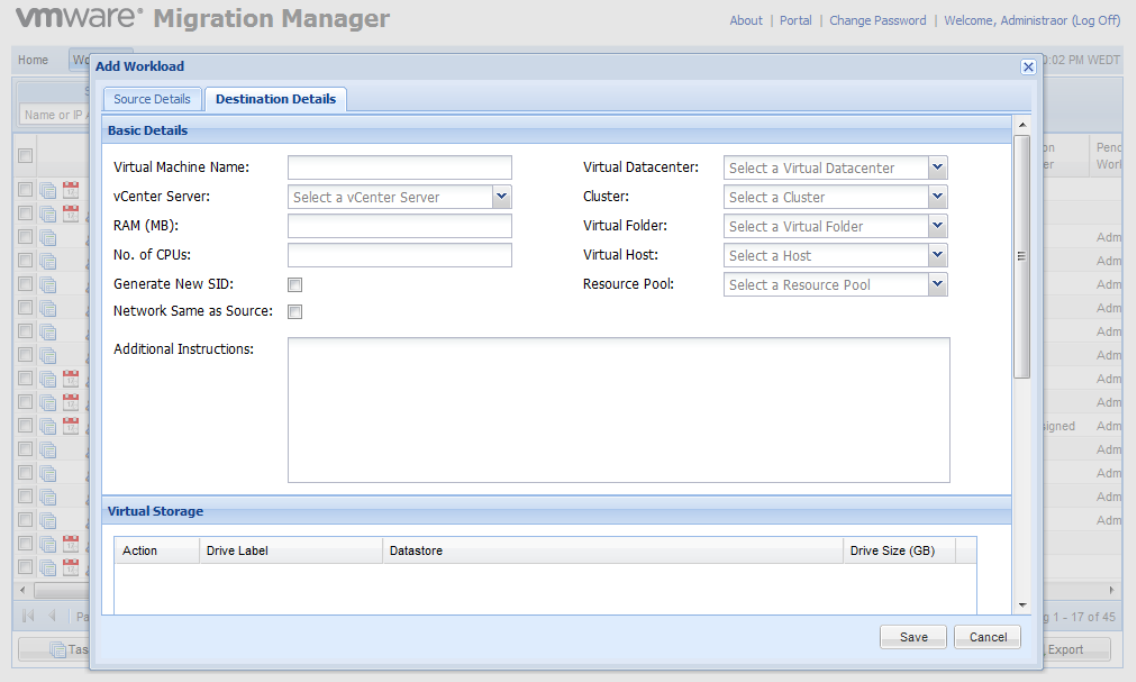

Figure 11. Workflow Screen Listing All Steps in the Migration Workflow

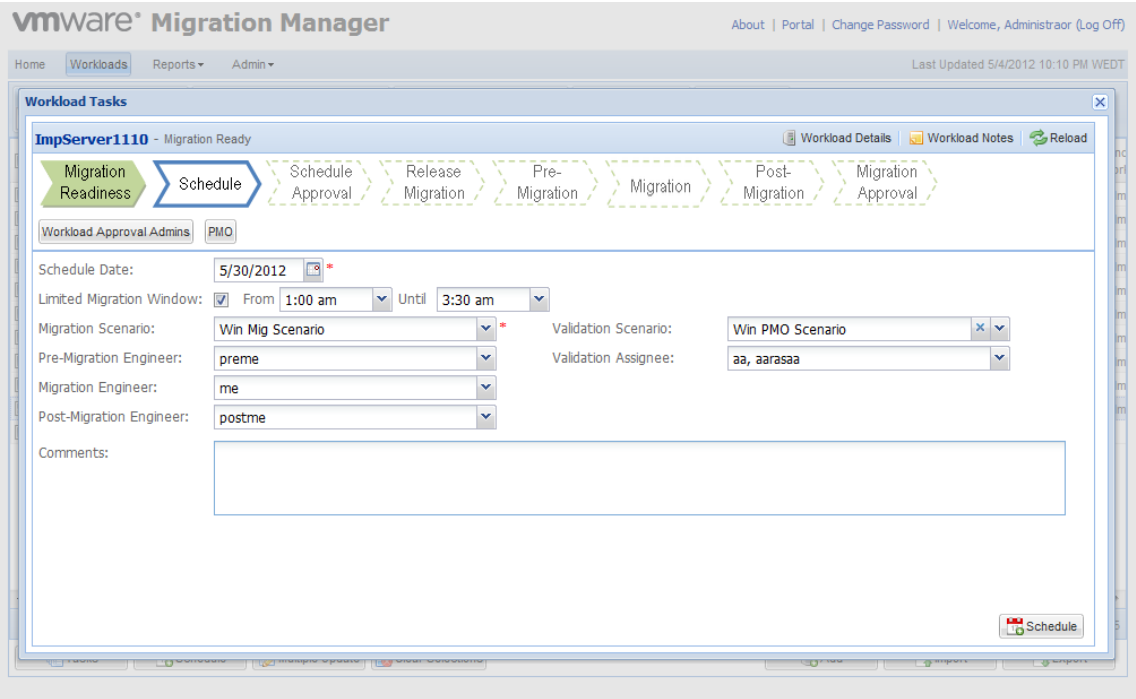

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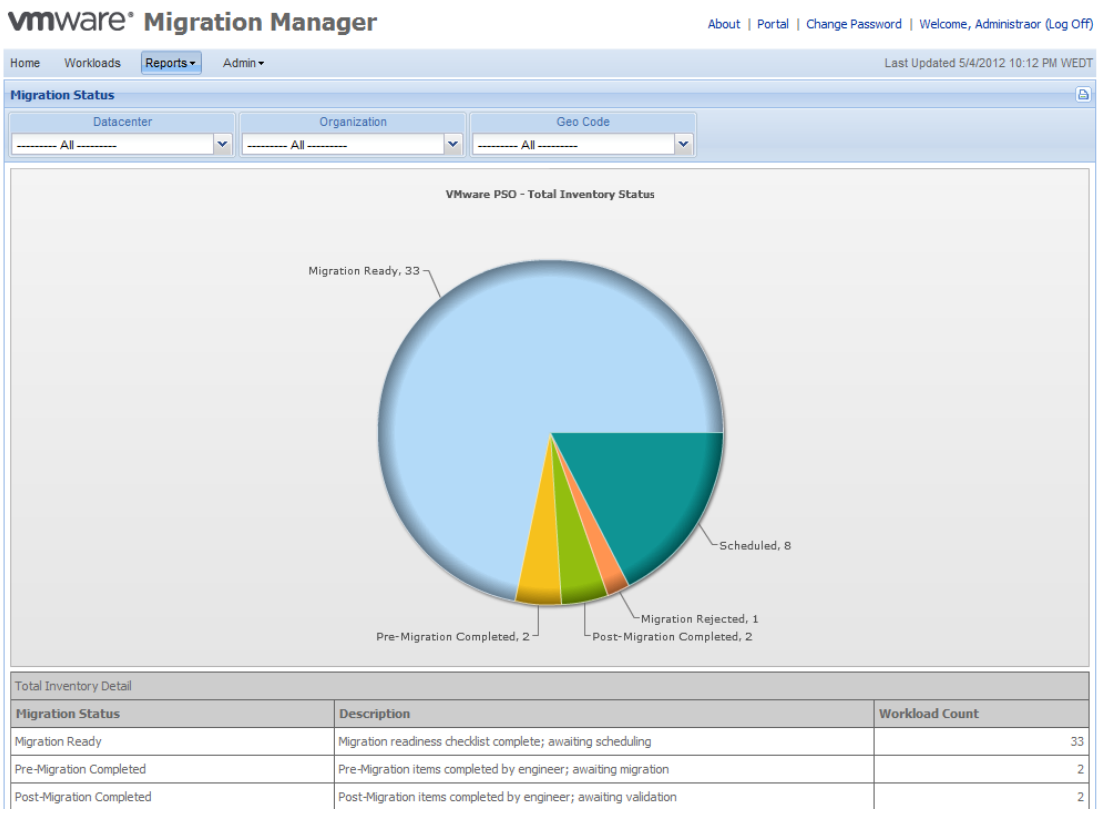
Figure 12. Report: Migration Status of Different Workloads by Migration Stage



Total Inventory Detail

Migration Status	Description	Workload Count
Migration Ready	Migration readiness checklist complete; awaiting scheduling	33
Pre-Migration Completed	Pre-Migration items completed by engineer; awaiting migration	2
Post-Migration Completed	Post-Migration items completed by engineer; awaiting validation	2

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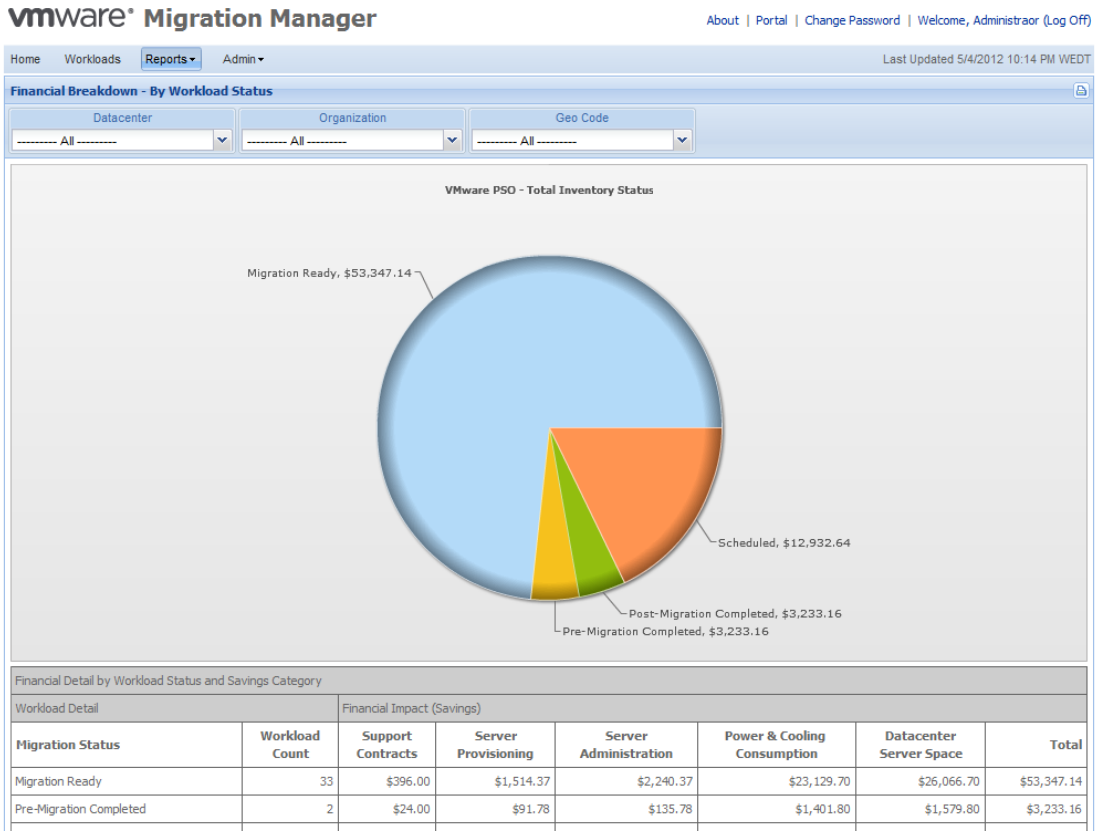
Figure 13. Report: Financial Breakdown of Savings by Migration Status



Financial Detail by Workload Status and Savings Category

Workload Detail		Financial Impact (Savings)					
Migration Status	**Workload Count**	**Support Contracts**	**Server Provisioning**	**Server Administration**	**Power & Cooling Consumption**	**Datacenter Server Space**	**Total**
Migration Ready	33	$396.00	$1,514.37	$2,240.37	$23,129.70	$26,066.70	$53,347.14
Pre-Migration Completed	2	$24.00	$91.78	$135.78	$1,401.80	$1,579.80	$3,233.16

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