IBM SmartCloud Entry

User Guide, Version 2.4

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Note

Before using this information and the product it supports, read the information in "Notices" on page 27.

Third Edition (October 2012)

Contents

IBM SmartCloud Entry User Guide

With IBM SmartCloud™ Entry 2.4, you can maintain control over the allocation of resources with a web-based application.

You can perform common public or private cloud operations such as:

- Provisioning and de-provisioning servers
- Drafting and cloning workloads
- Capturing workloads
- Starting and stopping servers as part of a workload
- Resizing existing servers

New Features

IBM® SmartCloud Entry has many new features this release.

These feature include:

- Addition of a resource use panel in the user interface
- Addition of a cloud status panel in the user interface
- IBM Systems Director VMControl™ 2.4 support

Virtual infrastructure

The IBM SmartCloud Entry uses either IBM Systems Director VMControl or VMware vSphere with vCenter (VMware) to provide the underlying virtual infrastructure environment. On the IBM SmartCloud Entry web pages, functions that do not apply to your environment are not shown.

Terminology

The IBM SmartCloud Entry uses many different types of virtual infrastructure environments. These environments use different terminology for the same concepts and are described in the following table.

Table 1. A terminology comparison between the virtual infrastructure type and the IBM SmartCloud Entry equivalent term

Virtual infrastructure type	Term	Definition	IBM SmartCloud Entry equivalent
VMware	Template	An image of a virtual machine that can be used to create new virtual machines.	Appliance
VMware	Virtual machine	A virtual computer, similar to a physical computer, that runs an operating system and applications.	Workload

Table 1. A terminology comparison between the virtual infrastructure type and the IBM SmartCloud Entry equivalent term (continued)

Virtual infrastructure type	Term	Definition	IBM SmartCloud Entry equivalent
VMware	Virtual machine	A system composed of partitioned, shared, or virtualized resources presented from a host system. An operating system and other software can be installed on a virtual machine. Another term used for this concept is virtual server.	Virtual server

Setting up your account

Before you log on to IBM SmartCloud Entry for the first time, you must request an account through your system administrator and know the URL for your IBM SmartCloud Entry server.

Procedure

1. Point your web browser to the URL for your IBM SmartCloud Entry server and log in. The URL will look similar to the following example, where *SCE hostname* is the name of your SCE host and *port number* is the port number: http://*SCE hostname*:*port number*/cloud/web/login.html
2. Open the User Profile tab by clicking your username in the top right title bar of the screen.
3. Update your user account information to include an email address and enable email notifications.

   Tip: If you do not enable email notification, then an administrator must recreate your user account anytime you forget your password, and all of your IBM SmartCloud Entry information is lost.

Results

Your account is now ready for use.

Workloads

You can use the **Workloads** tab in the IBM SmartCloud Entry to manage workloads after they are created.

VMControl: A workload in IBM SmartCloud Entry includes metadata about the customization properties used to create the workload and the provisioned virtual server information, unlike a workload in VMControl. This metadata is useful for record keeping purposes and provides additional features, such as duplicating workloads and workload drafts.

VMware: A workload is equivalent to a VMware virtual machine. All of the VMware virtual machines are displayed on the IBM SmartCloud Entry Workloads tab.

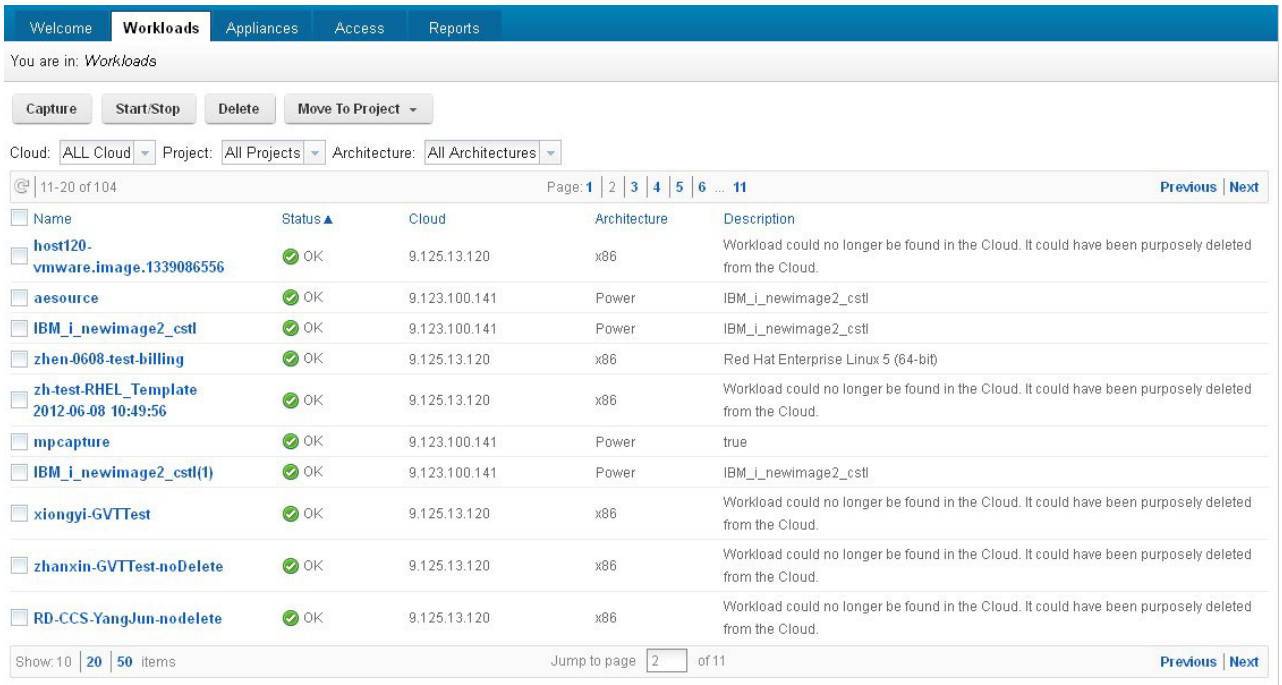

Figure 1. Workloads tab

If the list of workloads does not contain the workload you want, ensure that the current cloud, project, and architecture filters are set correctly.

Workload properties

On the workload properties page, you can view the workload status, perform actions on the workload, or view summary information about the workload. You can also specify the workloads to view based on architecture, project, or cloud.

Status

In IBM SmartCloud Entry, workloads have a status associated with them. If your workload status is not set to OK, click the workload to view more information, including the logs if they are available.

Summary information and actions

From the workload properties page, you can:

- Capture the workload
- Change the priority of the workload (VMControl 2.4.2 or later only)
- Move the workload to another project
- Copy the workload definition
- Resize the workload
- Stop or start the workload
- Suspend or resume the workload (VMControl 2.4.2 or later only)
- View pending requests for this workload (if approvals are enabled)
- View the virtual server, workload timestamps, metrics, and logs
- View the workload definition

Note: Some of these actions require administrator approval.

Copying a workload definition

You can copy an existing workload definition to create a similar workload. This option copies information such as number of processors, configuration values, network configurations, and so on, but it will not copy any of the existing software or data on the workload.

About this task

To copy the configuration information of an existing workload, click the workload you want to copy, and then click **Definition** > **Copy**.

The Workload is automatically copied and displayed as a new workload entry in the Workloads tab. You can then rename the new workload and change the values.

Note: Modifications that you make to the basic properties of a workload in IBM SmartCloud Entry are not reflected in VMControl or VMware.

Changing workload priority

With VMControl 2.4.2 or later, you can change the priority of a workload that is deployed to a pool.

To set the priority of a workload, click **Priority** and select the priority that you want for the workload. When the workload is updated, the following message is displayed:

`Workload` *`Workload name`* `has been saved.`

Capturing a workload

You can capture a workload at any time. This capture can be used to create a new virtual appliance that can then be deployed at a later time.

About this task

This task is specific to VMWare. For instructions to capture a workload on VMControl, speak to your administrator or see the IBM SmartCloud Entry Administrators Guide.

Procedure

1. Select the workload you want to capture and click **Capture**.
2. Go to the **Appliances** tab to see the new appliance.

Results

You will see a new virtual appliance named "*workload_name* snapshot" in the Capturing state, where *workload_name* is the name of the workload that you captured.

You can track the capture progress by clicking the appliance to see details.

Resizing a workload (VMControl)

You can modify the amount of resources used by the virtual machines provisioned by your workload.

Before you begin

If your workload is running on a KVM, make sure that the workload is stopped before continuing the procedure.

Procedure

1. Click **Resize** to open the Resizing workload window.

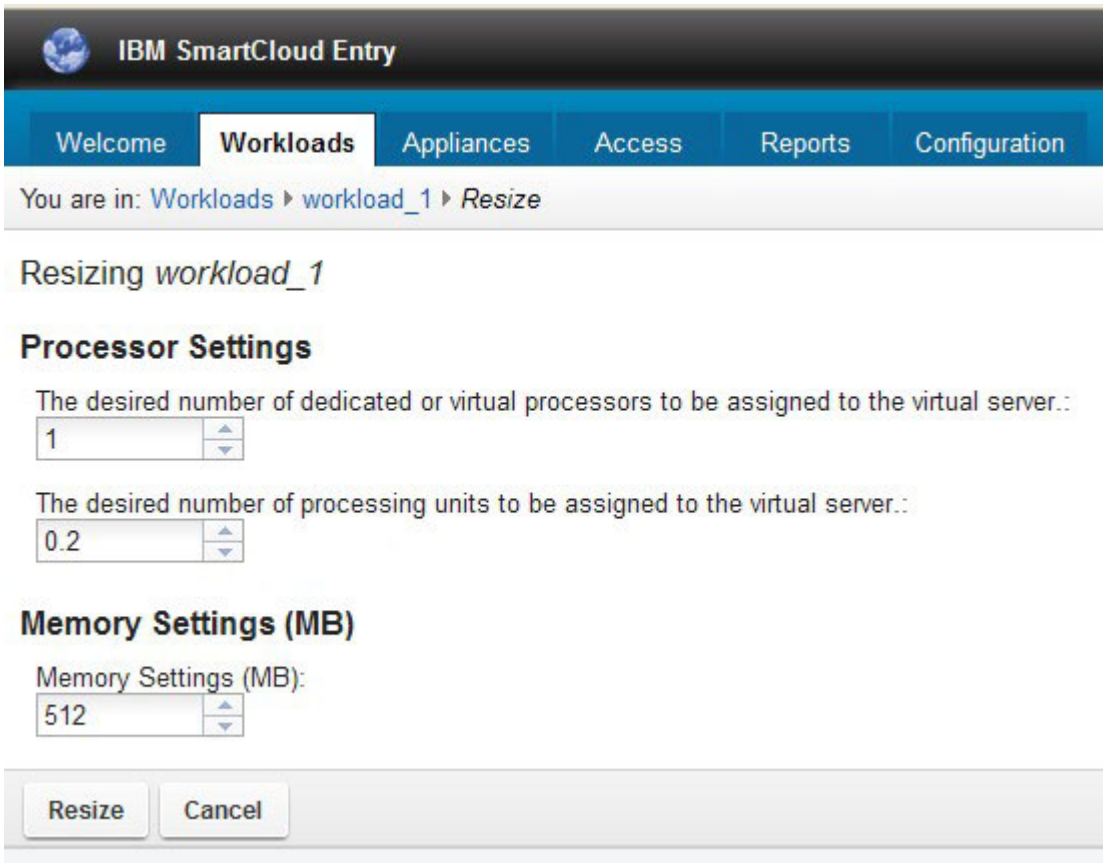

Figure 2. Workload resizing window

2. Update the number of processors, processing units, and memory resources to be allocated to the virtual machine in your workload.
3. Click **Resize**.

   Tip: If you see zeros in the fields you just updated, note that it can take up to two hours for the updated values to be reflected on your screen.

Resizing a workload (VMware)

You can modify the amount of resources used by the virtual machines provisioned by your workload running on VMware. Depending on how your VMware virtual machines are configured, you can add memory and virtual processors while your virtual server is running.

About this task

Increasing the size of the virtual machine disks makes more space available on the disk, but does not change the size of the file system. There are commands that must be run on the guest operating system to increase the size of the file system. For more information about how to change the size of the file system after storage is added, see your operating system documentation.

For more information about how a running virtual machine handles changes in memory and processor, see the VMware documentation and your operating system documentation.

Procedure

1. To resize an existing workload, click **Resize**.

2. Update the number of processors and memory resources to be allocated to the virtual machine in your workload.

   The settings that can be resized when a virtual machine is in the started state depend on how the virtual machine is configured on VMware:

   Note: If the workload is started and the virtual machine is not configured to allow memory or processor changes, those fields are not displayed. To change those values, you must first stop the workload.

   - For memory, the virtual machine must have the Memory Hot Add option enabled. Memory is only allowed to be increased, and the maximum amount allowed, and the valid values, are determined by VMware.
   - For processors, the virtual machine must have the CPU Hot Plug option enabled. To remove processors, the virtual machine must have the CPU Hot Add and Remove option enabled. The maximum number of processors allowed is determined by the number of logical processors on the vSphere machine that is running the virtual machine.
3. Increase the disk size.
4. Click **Resize**.

Suspending or resuming a workload

With VMControl version 2.4.2 or later, you can suspend and resume workloads if the virtual machines on the workload meet certain conditions.

Before you begin

Make sure the virtual machines in the workload meet the following conditions before you suspend or resume a workload:

- The virtual machines are not deployed in a shared storage pool.
- The virtual machines are not running AIX 6.1 or SLES 11 SP1.

Procedure

1. To suspend a workload, and all of the virtual machines on the workload, click **Suspend**.
2. To resume a workload, and all of the virtual machines on the workload, click **Resume**.

Viewing the virtual servers in a workload

The virtual servers that belong to the workload are displayed in the Workload properties window, along with their current state and IP address (if it is known to the IBM SmartCloud Entry). Click a virtual server in the **Virtual Servers** section to view operating details

Viewing pending requests for a workload

About this task

The pending requests for a workload are displayed in the Workload properties window, along with the requesting user, request status, action requested, and date of the request. Click the request ID to view additional details about the pending request.

Viewing workload timestamps and logs

About this task

The workload metrics are located in the **Timestamps** section of the Workload properties window.

The workload logs are located in the **Logs** section on the Workload properties window. A list of all of the logs for the workload is shown.

Adding storage to a virtual server in a workload (VMControl)

About this task

Click the **Add Storage** link on the Workload properties window to add additional storage to a virtual server.

For more details about adding storage, see "Adding storage to a virtual server."

Virtual server properties

You can view summary information and perform actions on the virtual server by selecting a virtual server from the Workload properties window.

From the virtual server properties page, you can:

- Add storage
- Provide the current administrator ID and password (for use during a virtual server capture)
- View storage volume information
- View virtual server properties

Adding storage to a virtual server

You can add storage to the virtual server. If you want to add secondary storage to a Power® virtual server (on VMControl), then the virtual server must be in a system pool. A KVM virtual server is not required to be in a system pool, but it must be stopped before storage can be added.

Before you begin

You cannot add storage to a virtual server that is deployed in a shared storage pool. Make sure that the virtual server you want to add storage to is not deployed into a shared storage pool.

Procedure

1. On the Virtual Server Properties window, click **Add Storage**.
2. Provide a name and the wanted storage size, and then click **Add**.

   Note: The name you specify in Step 2 is treated as a prefix and is automatically appended with a counter number by VMControl. For example, if you specify a disk named Disk, then VMControl displays that disk name as Disk1. The next time a Disk is added, the disk name is shown as Disk2, and so on.
3. Wait for the process to complete before attempting to add additional storage.

Secondary disk storage (VMControl):

When you are using secondary disks, there are some additional items for your consideration.

- If the approval lifecycle is enabled, the administrator must approve the request before the secondary disk is created and attached to a virtual server.
- Before creating a secondary disk, see "Secondary disk limitations with VMControl" on page 22 for additional considerations.

After a disk is created and added to a virtual server, the disk appears as another physical disk available to the operating system of the virtual server. In order to use the disk to store data, it must be mounted onto the file system of the virtual server, which in turn requires that the disk be formatted with a file system that the operating system can read and update. The steps for mounting and formatting a disk are operating system dependent, but the following list includes information about the commands you can use.

For example, on an AIX® virtual server, use these commands to make a secondary disk usable:

cfgmgr
Configures the device and gets the new disk to appear as an hdisk*.

lspv List the physical volumes, verifying that the disk is in the list.

mkvg Create a volume group, specifying a volume group name such as datavg and specifying the physical volume name such as hdisk1.

lsvg Verify the volume group is listed.

mkdir /test
Define a mount location named test.

crfs -v jfs -g datavg -m /test -a size=16M -a frag=512 -a nbpi=1024 -A yes
Create a file system named test on datavg and automatically mount it following a reboot.

mount /test
Mount the device at the specified directory.

For a Linux virtual server, use these commands for formatting and mounting the disk:

fdisk -l
List the disks, noting the device name of the new disk, such as xvd*.

mkfs -t ext3 /dev/xvdd
Format the disk xvdd.

mkdir /my_storage
Define a mount location named my_storage.

mount /dev/xvdd /my_storage
Mount the device xvdd at the my_storage directory. It might be helpful to mount it with the auto option, or edit the `/etc/fstab` file to automatically mount at a system reboot.

Your disk is ready for use after it is formatted and mounted.

Virtual server images

You can save a virtual server image in your workload to use as a backup. This function creates an exact copy of the virtual server disks and VMware configuration files that can be restored at a later time. Additionally, you can manage your saved images.

About this task

Saving an image differs from capturing a workload in the following ways:

- The saved image is an exact copy of the disks and the VMware configuration. No image cleanup is performed.
- The saved image cannot be deployed as a new workload. It can be used only to restore the associated virtual server disks and VMware configuration files.
- Only the creator (or an administrator) of the original virtual server has access to the virtual server saved images.

Note: Saving virtual server images is different than capturing a virtual server as the newly saved virtual server is not made available as an appliance for other deployment actions.

Saving a virtual server image

You can save a virtual server image to restore the associated virtual server disks and configuration files.

Before you begin

To save a virtual server image on VMControl, make sure that your system complies with the requirements detailed in one of the following topics:

- Backup Virtual Server from an SCS repository section in the IBM SmartCloud Entry Administrators Guide
- Capture support and requirements in an SCS-based Power virtualization environment (v6.2.x)
- Capture support and requirements in an SCS-based Power Systems™ virtualization environment (v6.3.x)

About this task

If your administrator enabled the approval lifecycle for Save Image requests, then the request is sent to an administrator for approval before any action is taken. After the request is approved, the virtual server is stopped and a copy is saved.

If the approval lifecycle is not enabled, then the Save request is sent to the system for processing in the background.

Procedure

1. On the Workloads tab, select the workload that contains the virtual server.
2. In the Virtual Server section, click the virtual server that you want to save. If the hypervisor is PowerVM®, then the virtual server must be stopped.
3. Click **Save Image**.
4. Optional: If you reach the maximum number of saved images, you are asked to confirm whether the system should delete the oldest saved image.
5. Optional: Click **Yes** to allow the system to delete the oldest saved image, or click **No** and manually delete a saved image to make room for the new saved image, and then click **Save Image** again.
6. If the virtual server is running, click **Yes** to stop the virtual server. After the save operation is complete, the virtual server is restarted.
7. Enter the name of the saved image and, optionally, a description.
8. Click **Save**.

Restoring a saved image

You can restore a saved image, which replaces the contents of a current virtual server.

About this task

If your administrator configured restoration operations to use the approval lifecycle, then the request is submitted to your administrator for approval. The restore operation does not start until the administrator approves the request. If the approval lifecycle is not enabled, the restore operation starts immediately.

Procedure

1. On the Workloads tab, select the virtual server you want to restore from the Virtual Server section.
2. In the list of Server Images, select the image that you want to restore.
3. Click **Restore** and then **Yes**.
4. Confirm that you want the contents of your current virtual server replaced with the saved copy. Any changes made since the save was performed are lost.

Managing saved images

You can view a list of your saved images or delete them.

Procedure

1. In the Virtual Server section on the Workloads tab, select the virtual server that contains the saved images you want to manage.
2. In the Saved Images section, locate the saved image that you want to work with.
3. To delete a saved image, select the saved image and click **Delete**.

   Remember: When you delete a workload, all of the saved images are also deleted.
4. Confirm that you want to delete the saved image.

Appliances

In the **Appliances** tab, you can see the virtual appliances that are available for deployment, view their properties, and deploy them.

In IBM SmartCloud Entry, each virtual appliance has a status associated with it. If the status is *OK*, then the virtual appliance is ready to be deployed. Click the refresh arrow to update the status.

To view the properties of a virtual appliance, select the name of the appliance.

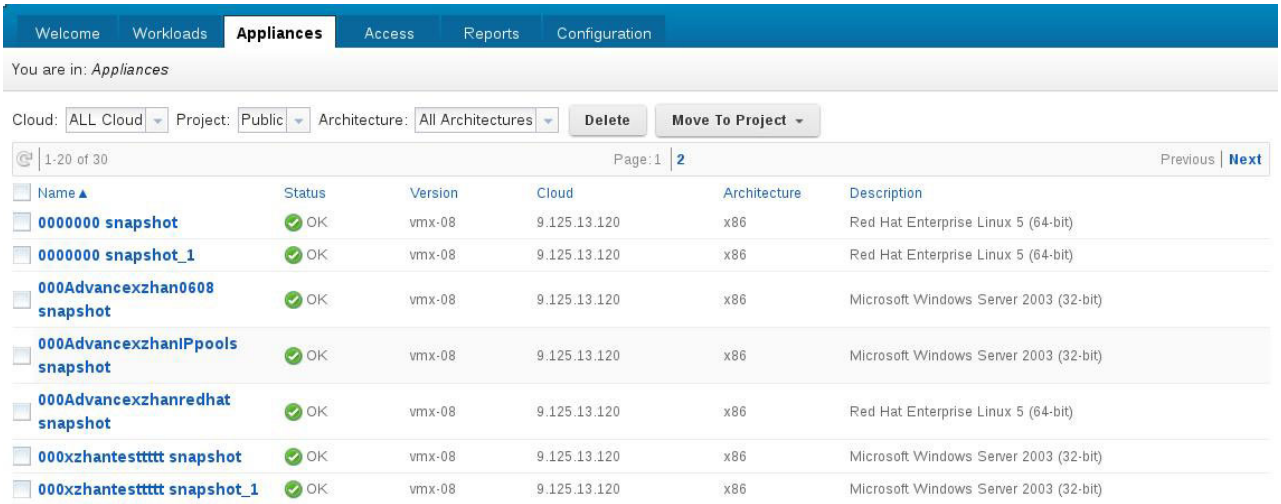

Figure 3. Appliances tab

If the list of appliances does not contain the appliance you want, make sure that the current project or desired cloud is set correctly. You can also select **Cloud**, **Project**, or **Architecture** to set those properties to view specific appliances.

Viewing virtual appliance properties

You can view virtual appliance properties such as the appliance name, description, last modification date, specification version, revision comments, and logs. You can also modify the appliance name, description, and project.

About this task

Click the virtual appliance to view or edit the details of that virtual appliance. Remember that modifications that you make to a virtual appliance in IBM SmartCloud Entry might not be reflected in the underlying virtual infrastructure.

Because a virtual appliance is equivalent to a VMware template, IBM SmartCloud Entry displays all of the VMware templates on the Appliances tab.

Deploying a virtual appliance

You can deploy a virtual appliance with either basic configuration options or advanced configuration options.

Procedure

1. Select the virtual appliance that you want to deploy.
2. In the Virtual Appliance Details window, click **Deploy**.

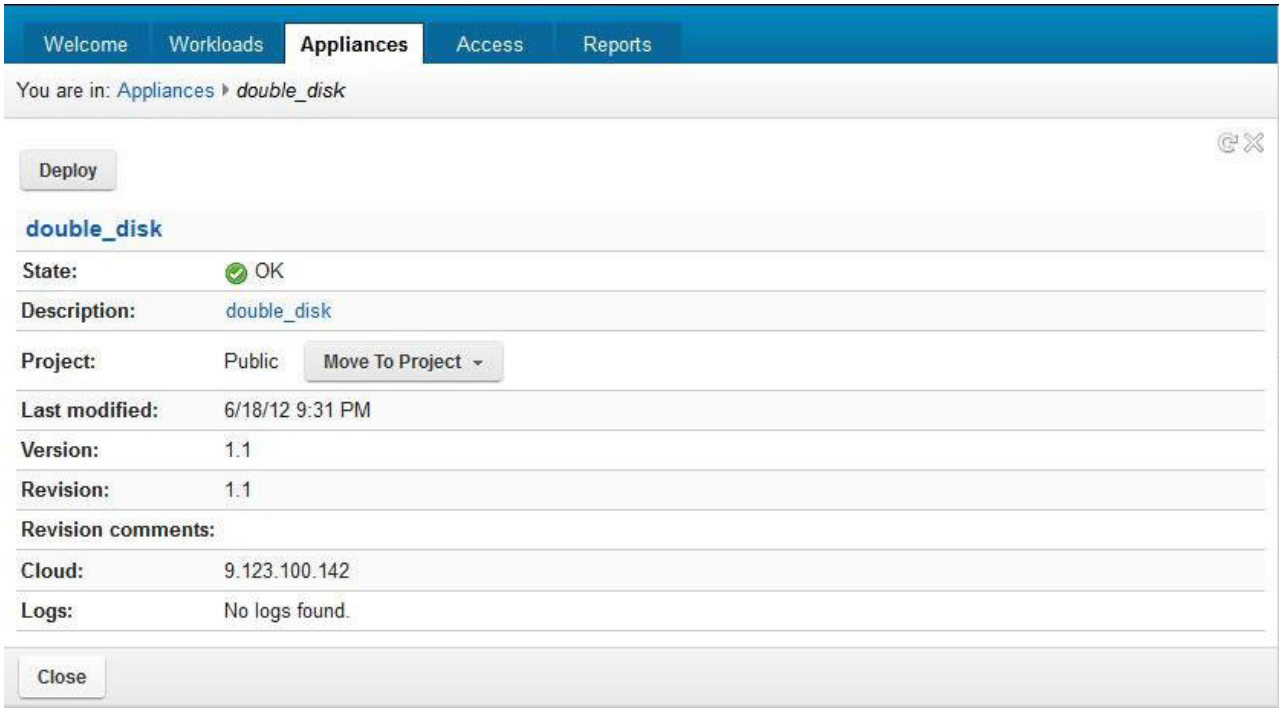

Figure 4. Appliances tab Deploy menu

Note: If your administrator enables you to use the advanced deploy function, then the **Deploy** button becomes a drop-down menu that looks like the following:

Figure 5. Deploy drop-down menu

With advanced deployment, you can allow users to suspend and resume workloads. This option is only visible in a Power virtualization environment. Both the KVM environment and the VMware environment support the suspend action by default.

For more information about using the advanced option, see the IBM SmartCloud Entry Administrators Guide.

Results

With a basic deployment, minimal configuration options, including name, description, project, processor information, and memory, are displayed. These options are configured by the administrator, so the options available to you might be different.

Note:

- Only the members of the selected project can see the workload that is created as a result of the appliance deployment. You can choose to move the deployment to another project by selecting a different project name in the **Move to Project** menu.
- If approvals are enabled, deployment will not complete until the request is approved by the administrator.
- If billing is enabled, you must be a member of an account that is not delinquent for the deployment to proceed.
- The expiration period and approvals policy settings for deployment depends on the policies set in the project.

Projects

You can create, manage, and request access to projects in the **Projects** tab, which is available on the **Access** tab.

To manage projects, go to the **Access** tab and click **Projects** to view the list of available projects.

IBM SmartCloud Entry *projects* are groups of virtual appliances and workloads that are visible only to the members of that project.

IBM SmartCloud Entry comes with a default project called the Public project, to which all users belong. All virtual appliances and workloads created outside of the IBM SmartCloud Entry are, by default, assigned to the Public project.

Project membership roles

When you are added as a member of a project, one of three membership roles are assigned to you.

Owner
A project owner has administrator authority to the project and its contents.

User A project user has the authority to use the project and the objects within the project. For example, a project user can deploy a virtual appliance to the project and do some limited management of the project and its contents. A user can also view and potentially restore backup images of virtual servers created by other users, depending on the way the administrator has set up the project and the roles.

Viewer
A project viewer has authority only to view the project and the virtual appliances and workloads contained in the project.

Managing projects

For projects that you own, you can set expiration policies and approval policies.

Procedure

1. Click the **Access** tab and then the **Projects** section.
2. Expand the title of the item you want to work with: **Expiration Policies** or **Approval Policies**.

3. Set your policies for your projects, or select **Use cloud default** to use the policies set by your administrator.

Figure 6. Expiration and approval policies

What to do next

For more information about expiration policies and approval policies, see the IBM SmartCloud Entry Administrators Guide.

Requesting project membership

You can request access to a project at any time.

Procedure

1. In the projects list, select the project that you want access to.
2. Click **Request Access**.

Results

An email notification is sent to the project creator requesting your access to the project. If the project creator account was deleted, or the project creator does not have email notifications enabled, the email will be sent to the IBM SmartCloud Entry administrator.

Deleting an existing project

As a project owner, you can delete a project at any time.

About this task

When a project is deleted from IBM SmartCloud Entry, all of the virtual appliances and workloads contained in the project are transferred to the public project.

Procedure

1. In the projects list, select the project you want to delete.

   Restriction: You cannot delete the default Public project.
2. Click **Delete Project**.

Requests

You can use the Requests tab to view and withdraw workload requests. If the administrator enabled approval policy support, then many actions could require administrator approval before they can complete.

For example, when you deploy an appliance to create a workload, a workload request is created and submitted to an administrator for approval. The status is set to Pending until the administrator handles the approval request.

To view the status of your requests, select the **Access** tab and then click **Request**.

Withdrawing a request

You can withdraw a request from the approval queue at any time.

Procedure

1. Select the **Requests** tab.
2. Select the rejected workload. If you don't see the rejected workload, make sure that **View** is set to Resolved Requests.

   Tip: You can expand the Comments section and click the **Add Comment** to enter additional comments about the request.
3. Click **Withdraw**.

Resubmitting a rejected request

If an administrator rejects your workload request, you can provide additional comments to resolve any issues and resubmit your request.

Procedure

1. Select the **Requests** tab.
2. Select the rejected workload. If the rejected workload is not in the list, make sure that the **View** list is set to Resolved Requests.
3. To change any of the request parameters before resubmitting the request, expand the **Request Details** section.
4. To enter additional information needed for your request, expand the **Comments** section and click **Add Comment**.
5. Click **Resubmit**.

Accounts

You can view information for those accounts of which you are either an owner or a member.

Accounts are required when IBM SmartCloud Entry billing is enabled. Guidelines for IBM SmartCloud Entry billing are:

- Only IBM SmartCloud Entry administrators can create accounts, but you can be made an account owner.

- You can deploy workloads only if you are an account member and the account has a positive balance with which to pay for server use.
- Only account owners and IBM SmartCloud Entry administrators can manage accounts.
- Accounts have a balance, an owner, an account balance threshold, account members, and invoices.
  - The *balance* is a monetary balance of the account.
  - The account *owner* is the IBM SmartCloud Entry user profile that is accountable for crediting and paying the account.
  - The *account balance threshold* is a value that represents the amount at which the account balance becomes a *low balance*. If the balance drops to zero, the account is delinquent.
  - The *account members* are IBM SmartCloud Entry users that belong to the account. When account members deploy workloads in IBM SmartCloud Entry, the workloads are billed to their account.
  - Each workload has an *invoice*. An account can have many invoices which are viewable from the Account properties window.

Viewing or managing an account

You can view the properties of any account, or manage the accounts that you own.

About this task

To view account properties or manage accounts that you own, select the **Access** tab and click **Accounts**. Then, you can select the account that you want to work with in the account table.

Deleting an account

You can delete an account only if you are the owner of the account, and only when the account is not associated with any active workloads.

Procedure

1. In the account table, click the account you want to delete to view the account properties.
2. Click **Delete** and confirm the deletion.

Events

You can see events such as workload completion, workload failure, new account requests, and new accounts created.

You can see all public system events and all of the events that occur on any resources in projects of which you are a member.

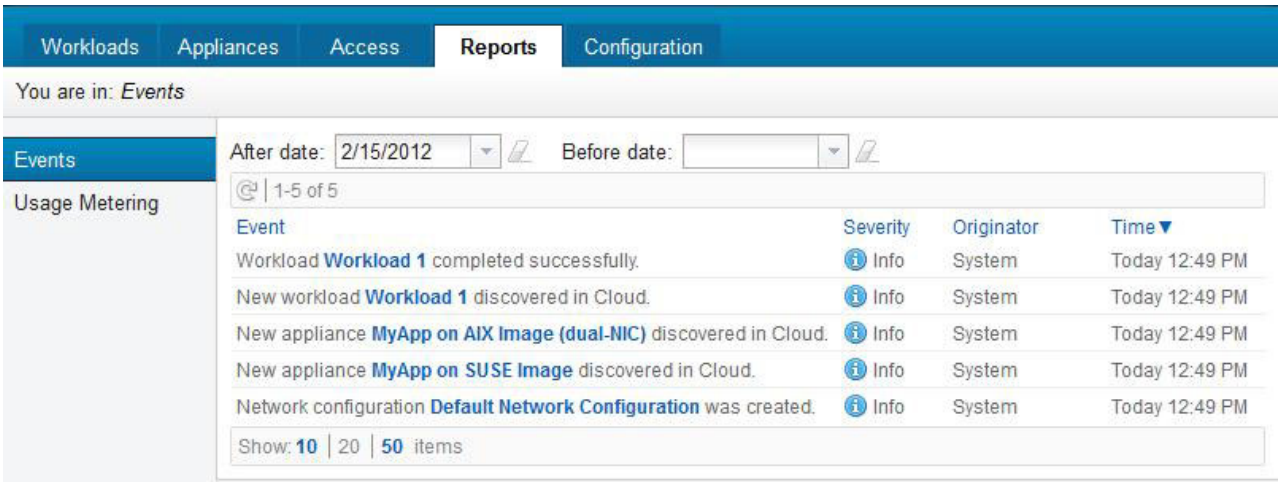

Figure 7. Events tab

Usage metering

You can see how many of each type of resources you are using with each virtual server and adjust as necessary for your billing purposes.

In the **Usage metering** tab, which is available on the **Reports** tab, you can see the statistics of the resources in use, including processors, memory, and storage, for each virtual server associated with a project. For example, you can see what state a virtual server is in, how much processor time it uses, how much memory it uses (in GB hours), and how much storage it uses (in GB hours).

To view usage information for the virtual servers allocated to a project, use the filter options to specify the project, user name, architecture, or hypervisor, and click **Submit**. You can then click the name of a virtual server to see more specific information about that server.

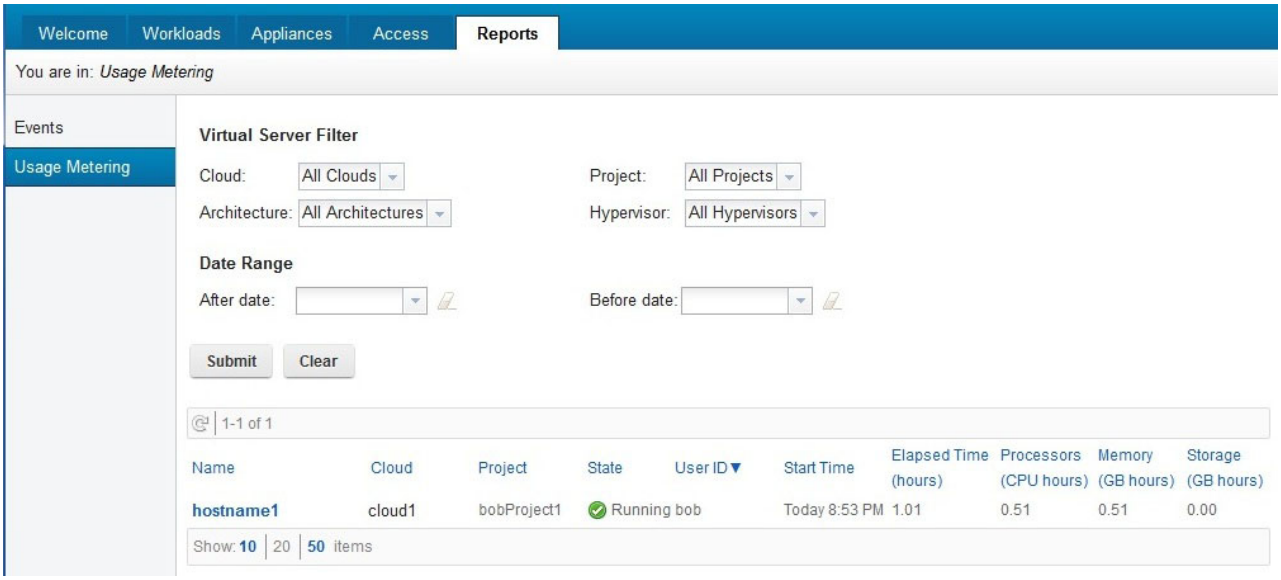

Figure 8. Usage information for a virtual server

Resource usage

In the Resource Usage panel, you can see the statistics of the resources in use, including architecture type, processors, memory, and storage.

There are two types of architecture: Power and x86. The processors, memory and storage resources are used in multiple clouds. In the Resource Usage panel, you can see the total usage of every kind of resource by each type of architecture. When you move the mouse over a bar in the chart, a tool tip appears showing the details of each cloud's use of processors, memory, and storage.

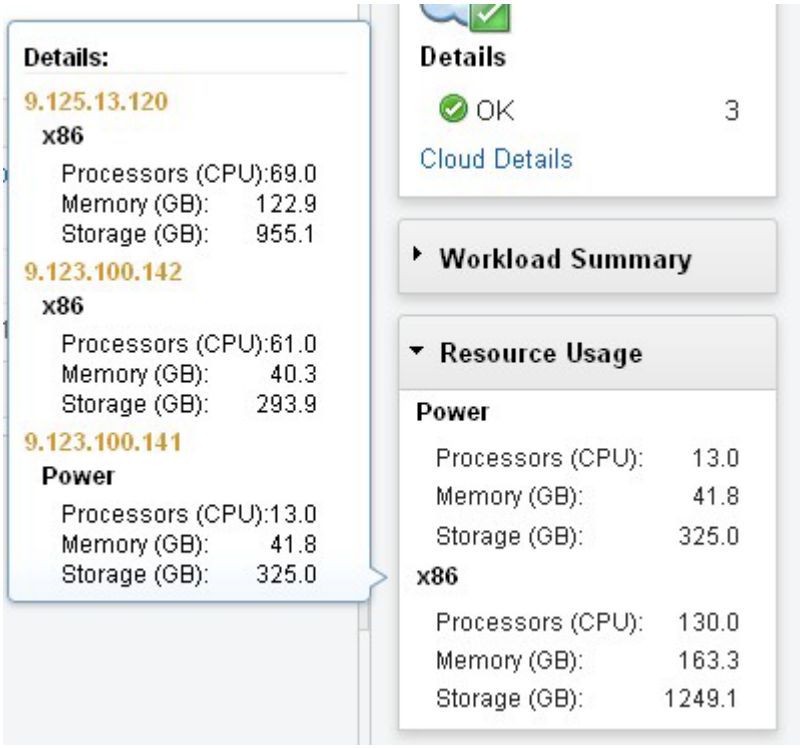

Figure 9. Resource usage information

Cloud status

In the Cloud Status panel, you can see how many clouds are either OK or have an error.

Figure 10. Cloud status

IBM SmartCloud Entry for System X

IBM SmartCloud Entry for System X is installed as a pre-integrated software stack, and delivered as virtual images that automate IT service deployment in a virtual environment.

IBM SmartCloud Entry version 2.4 supports management of VMware hypervisors only.

IBM SmartCloud Entry simplifies the process of common public or private cloud operations, such as:

- Provisioning and de-provisioning virtual servers
- Capturing a workload to create a new virtual appliance
- Starting up and shutting down virtual servers
- Resizing existing virtual servers
- Creating projects to give team-specific access to workloads
- Providing network configurations which set unique network properties to different workloads
- Billing, accounting, and metering support
- Providing request and approval workflow support

Tivoli® Provisioning Manager for Images provides the following capabilities to manage the virtual images created and used in IBM SmartCloud Entry x86 Edition:

- Reduces labor costs by enabling the discovery, capture, storage and deployment of virtual images and physical server images from a single repository
- Optimizes server assets and reduces energy costs with anywhere-to-anywhere server image conversions
- Improves your agility and flexibility through snapshot and restoration of servers with complete hardware independence

IBM Systems Director Standard Edition

You can install IBM Systems Director to provide system management and health reporting.

For more information about IBM Systems Director, see the Installing IBM Systems Director Standard Edition for IBM x86 topic.

Tivoli Provisioning Manager for Images

With Tivoli Provisioning Manager for Images, you can capture an existing workload to deploy a new appliance.

The primary use of Tivoli Provisioning Manager for Images within IBM SmartCloud Entry is to create a deployable appliance from an existing workload. The steps required to complete this task are:

1. Create the boot media.
2. Capture the virtual image.
3. Deploy the virtual image.
4. Convert the VMware virtual appliance to a IBM SmartCloud Entry appliance

For more information about Tivoli Provisioning Manager for Images, see the IBM Tivoli Provisioning Manager for Images Information Center.

Creating boot media

To create a deployable appliance from an existing workload, boot the target machine with Tivoli Provisioning Manager for Images-generated boot media. This boot media is generated using the **Deployment Media Wizard**.

Procedure

1. Ensure that the Windows Automated Installation Kit (AIK) is installed on the Tivoli Provisioning Manager for Images server. For more information about Windows AIK, see Windows Automated Installation Kit.
2. In Tivoli Provisioning Manager for Images, go to the Task Templates and the System Profiles page.
3. At the bottom of the page, click **Generate media**.
4. Select **Create a generic network boot CD/DVD** and click **Next**.
5. If you want to obtain the IP address of the booted machine automatically, select **Dynamic IP address with DHCP**. Otherwise, select **Static IP address**.

   The boot media is produced as an ISO file that is stored in the file location on the machine running the web interface extensions provided.
6. Make the generated ISO file available to the target system using one of the following methods:
   - Mount the ISO file as an optical device in a virtualized environment. For more information about mounting the ISO file as an optical device, consult the documentation for your virtualization solution.
   - Burn the ISO file to physical media and place the media in the optical drive from which you will boot the system.

What to do next

For detailed instructions about creating a network boot CD or DVD, see Creating a network boot CD or DVD with the wizard.

Capturing virtual images

You can capture a virtual image of a physical or virtual system for use later in converting a VMware virtual machine into a deployable IBM SmartCloud Entry appliance.

Before you begin

- In most instances, at least 1 GB of RAM must be present on the source system.

- Capturing a Windows image requires disk and network drivers to be bound in the WinPE 3.0 deployment engine used to create the boot media. Additional information is available at WinPE and its uses
- If capturing 64-bit Red Hat Enterprise Linux, consult Capturing images and storing on the server for special instructions
- Source systems containing proprietary file systems are not supported. The file systems must be deleted or formatted to a supported format.
- Ensure that the operating system partition precedes data partitions, or the subsequent deployment will fail.
- Ensure that the system does not contain four primary partitions. The fourth must be a logical partition or a subsequent deployment will fail.

Procedure

1. Ensure the source system has network access to the Tivoli Provisioning Manager for Images management server.
2. Boot the source system using the boot media specific to the operating system being captured.
3. When you are prompted, connect to Tivoli Provisioning Manager for Images.
4. In Tivoli Provisioning Manager for Images, select **OS deployment** > **Target monitor**.
5. When the source system is listed, select **Advanced Features** > **Image Monitor**.
6. Click **New Image**.
7. When prompted, find and select the source system as the source machine.
8. After Tivoli Provisioning Manager for Images contacts the VM, prepares, and exports the virtual image, choose the appropriate action to take on the source system: Reboot, Shutdown, or Boot on OS. Then click **Finish**.

Deploying virtual images

You can produce a running virtual or physical machine from an image contained in the Tivoli Provisioning Manager for Images image library. You can also deploy an image to VMware, and then convert the image into an IBM SmartCloud Entry appliance.

Before you begin

- The minimum hard drive size on the target system is 10 GB for 32-bit Windows and 20 GB for 64-bit Windows.
- You can use a different type of hard disk from that of the target for 32-bit images only.

Procedure

1. To create an IBM SmartCloud Entry appliance, create a new VMware virtual machine for the operating system to be deployed. The VMware virtual machine must have network access to the Tivoli Provisioning Manager for Images management server.
2. Boot the target system using the boot media specific to the operating system being deployed.
3. When you are prompted, connect to Tivoli Provisioning Manager for Images.
4. In Tivoli Provisioning Manager for Images, select **OS deployment** > **Target monitor**.
5. Right-click the target system and select **Context** > **Deploy now**.
6. When prompted, select **Deploy an operating system from a virtual image (system snapshot)** and then click **Next**.
7. Select **Simple deployment**.
8. Select the correct deployment scheme and click **Next**.
9. Select the virtual image to deploy and click **Next**.
10. Select a deployment date and time, or click **Next** to deploy immediately.

What to do next

You can monitor the task on the Task page, or through the system console. When the task is complete, choose the appropriate action to take on the target system: Reboot, Shutdown, or Boot on OS.

Converting a VMware virtual machine for deployment

To deploy a VMware virtual machine, convert it into an IBM SmartCloud Entry appliance or template, and then discover the template using IBM SmartCloud Entry.

Before you begin

Verify that the virtual machine has the latest version of VMware Tools installed.

Procedure

1. Shut down the virtual machine.
2. Browse to the virtual machine in the vCenter Client.
3. Right-click the virtual machine and select **Template**.
4. To keep the VM runnable, select **Clone to Template**. Otherwise, click **Convert to Template**.
5. Name the template and select the desired inventory location. Click **Next**.
6. Select the cluster or host to store the template and click **Next**.
7. Select the datastore to store the template files and click **Next**.
8. Select the appropriate virtual disk format and click **Next**.
9. Verify the settings and click **Finish**.

Results

You can now configure the VMware virtual machine template for deployment within IBM SmartCloud Entry.

Related information:

http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1004050

Troubleshooting

Cached display

When you install or upgrade to IBM SmartCloud Entry version 2.4, your browser might not update the images from a previous version of the software.

Be sure to clear your browser's cache after you upgrade to, or install, IBM SmartCloud Entry version 2.4.

Error message language

Some error messages appear in a language other than the language that you set for the IBM SmartCloud Entry user interface.

These error messages appear in the language set in your operating system. If the error message does not appear in the language that you want, verify your settings in both the IBM SmartCloud Entry user interface and the operating system.

Microsoft Windows product key

When IBM SmartCloud Entry deploys a Microsoft Windows operating system, the VMware virtual infrastructure environment runs a customization process. IBM SmartCloud Entry provides an entry field for the product key when using advanced deployment properties. Without a valid Windows product key, the deployment will succeed but the customization process does not.

For more information about installation and prerequisite software instructions for VMware, see the IBM SmartCloud Entry Administrators Guide.

Secondary disk limitations with VMControl

In some cases, you might not be able to add new storage or delete existing disks on a virtual server running in a workload.

The following limitations might apply to your environment:

- Secondary disks can only be added to an existing virtual server if the selected virtual appliance was deployed to a POWER® system pool.
- After disks are added to a running virtual server, you can only delete a disk if you are deleting the workload action. You cannot resize, detach, or reattach a disk with IBM SmartCloud Entry.
- Administrative assistance might be required to detach a disk.
- Administrative assistance might be required to completely delete a disk.
- VMControl can attach new storage only when the previous storage attachment job is complete. If you attempt to attach storage while another storage attachment job is still active, the new storage attachment fails.

Complete the following steps to delete a disk:

1. Log in to the virtual server and remove the disk using the following command:
   ```
   rmdev -dev hdisk1
   ```
2. Log in to the IBM Systems Director VMControl user interface and complete the following steps:
   a. Stop the virtual server.
   b. Edit the virtual server.
   c. Go to the **Virtual Disks** tab.
   d. Get a list of the virtual disks.
   e. For the disk you want to remove, record the physical volume name, such as hdisk33, and the storage server name, such as SCE_VIOS1.
   f. Click OK to finishing editing the virtual server.
3. Log in to the VIOS using the physical volume name previously recorded and complete the following steps:
   a. Run the following command:
      ```
      lsdev -dev hdisk33 -attr
      ```
   b. In the output of the command, find the unique_id property and record the 32-character disk ID, starting from the 6th character. For example, if the unique_id is 332136005076802808158800000000000007A04214503IBMfcp, then you would record 600507680280815880000000000007A.
4. Log on to the IBM Storwize® V7000 user interface and complete the following steps:
   a. On the **All Volumes** tab, search for the unique disk ID previously recorded to find the logical unit number (LUN).
   b. Right click the LUN and then click Delete.

   Tip: For other storage systems, these steps are similar.

5. Log in to the VIOS again and run the following commands to remove the disk for each VIOS:

```
rmvdev -vdev hdisk33
rmdev -dev hdisk33
```

Note: If there are two physical volumes configured for redundancy and the LUN is mapped to both of the physical volumes, repeat steps 3 through 5 on each VIOS. The hdisk name might be different on each VIOS. For example, on VIOS1, it could be hdisk33 and on VIOS2, it could be hdisk17.

A new disk created for a virtual server cannot be detached and later reattached to a virtual server on a different host. The disk was created and attached to a specific host VIOS where the virtual server was originally created. After a disk is detached, it must be rediscovered in the VIOS where the virtual server that created it resides. As a result, the disk might not be accessible to another virtual server in the pool.

Internet Explorer display

When you are using IBM SmartCloud Entry in Internet Explorer 8 or Internet Explorer 9, you might see that layout and formatting makes the screen difficult to navigate.

When you are running IBM SmartCloud Entry in Internet Explorer 8 and Internet Explorer 9, the display is in Compatibility View mode by default.

Switch from Compatibility View mode to the standard mode with the following steps:

1. To switch from Compatibility View mode to the standard mode, click on the Compatibility View button, located on the right side of the address bar (highlighted in green in the following image).

Figure 11. Compatibility button

2. If the Compatibility View button is not visible, press F12.
3. Depending on which version of Internet Explorer you are using, continue with one set of the following steps:
   - If you are using Internet Explorer 8, click **Browser Mode: IE8** > **Internet Explorer 8** to select the standard mode of viewing. Notice that the only checkmark in the menu is in front of **Internet Explorer 8**.

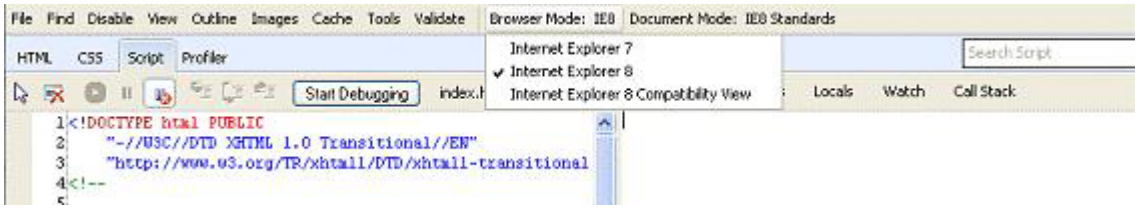

Figure 12. Browser Mode: IE8 menu

   - If you are using Internet Explorer 9, click **Browser Mode: IE9** > **Internet Explorer 9** to select the standard mode of viewing. Notice that the only checkmark in the menu is in front of **Internet Explorer 9**.

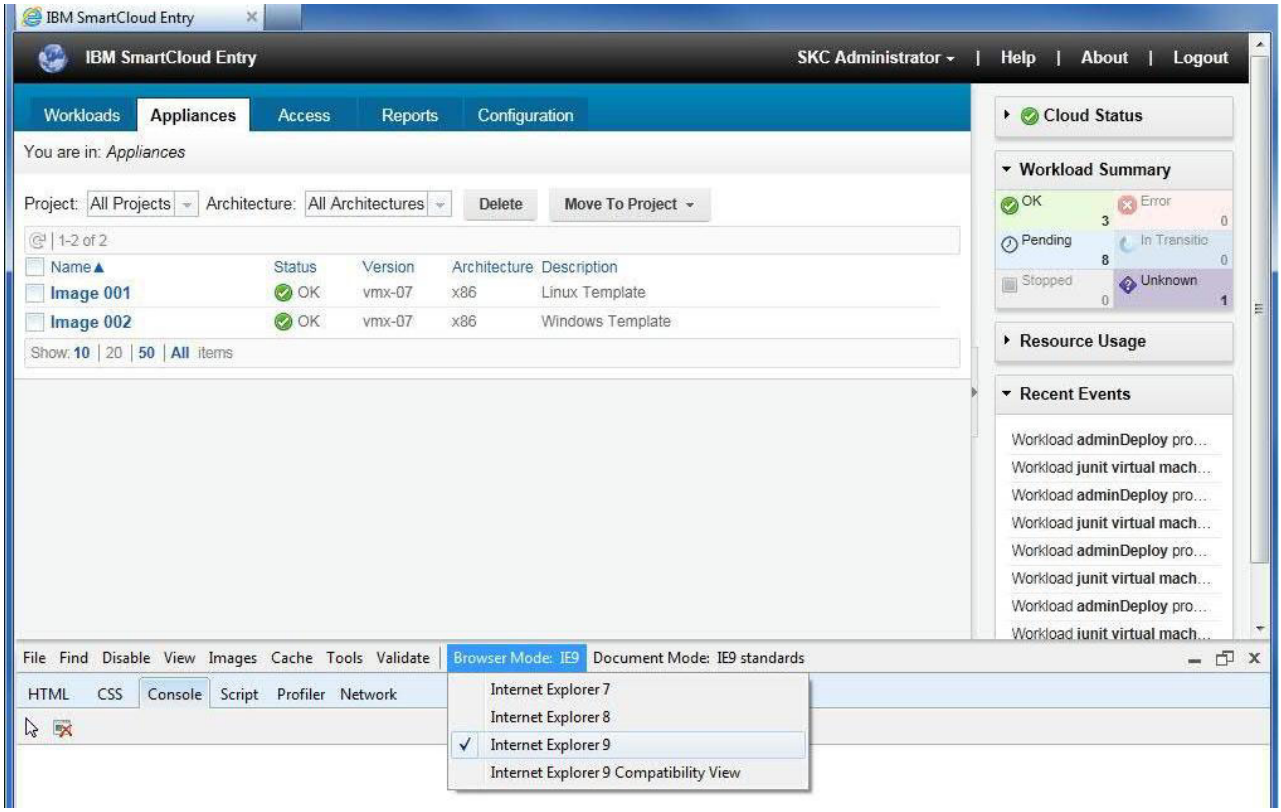

Figure 13. Browser Mode: IE9 menu

Tip: If IBM SmartCloud Entry switches from standard mode to Compatibility View mode automatically, clear the option in **Tools** > **Internet options** > **Advanced** > **Automatically recover from page layout errors with Compatibility View**.

Accessibility

IBM SmartCloud Entry does not interfere with the accessibility features for supported browsers. For a comprehensive list of accessibility features please visit the accessibility support page for the supported browser that you are using. For a list of supported browsers, see the IBM SmartCloud Entry Administrator Guide.

The publications for this product are in Adobe Portable Document Format (PDF) and should be compliant with accessibility standards. If you experience difficulties using the PDF files and want to request a web-based format for a publication, email a request to the following address:

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