

Storage as a Service

VMware vCloud Automation Center & NetApp



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1. Introduction

vCloud Automation Center provides the ability to request infrastructure, applications, desktops, and a wide range of IT service through a common service catalog. On-demand self-service allows consumers to obtain, configure, and deploy cloud services by using the cloud service catalogs, without requiring the assistance of IT. Service architects can create advanced services by using the capabilities of vCenter Orchestrator and the vCenter Orchestrator workflow engine and publish the advanced services to service catalogs. Advanced services are custom cloud services which enable you to provide XaaS (anything as a service).

This solution provides storage as a service and allows consumers to request catalog item that provision applications to use NetApp storage, and to manage NetApp Snapshot backups. With the help of this solution consumers can add disaster recovery support to VMware NFS datastore and QOS policy to NAS datastore and they can also move a NAS datastore to new location. This solution also provides Oracle Provisioning with NetApp Storage to its consumers. This provisioning includes catalog items for creating a new Oracle Gold environment – clustered On TAP, cloning and configuring Oracle environment and add snap creator Oracle backup ability to volumes.

2. System Pre-requisites

1. Configure vCenter Orchestrator 6.0 with vCloud Automation Center 6.0. Please refer documentation Configuring vCenter Orchestrator and vCenter Orchestrator plug-ins for the same
2. NetApp WFA On Command package deployed and configured with vCenter Orchestrator 6.0

3. Solution Details

This section describes the steps used to create this solution

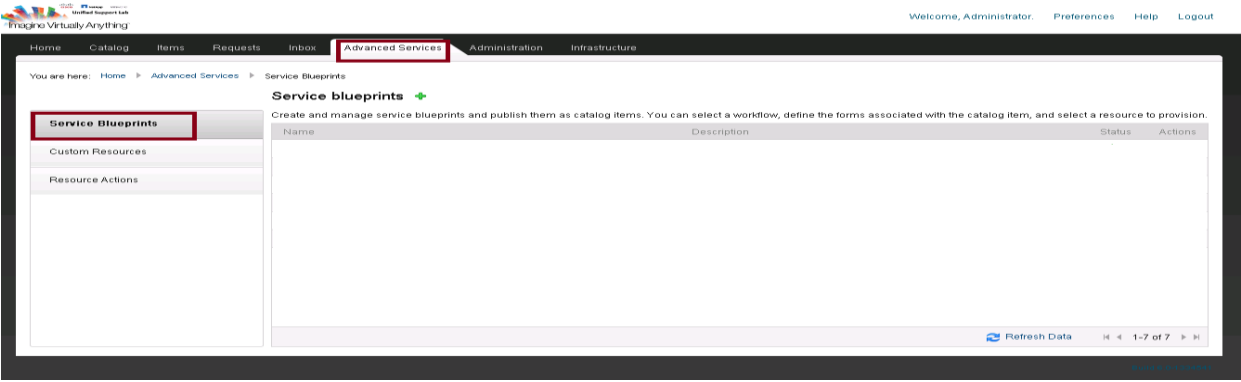
3.1 Create Service Blueprint

1. Login to vCloud Automation Center

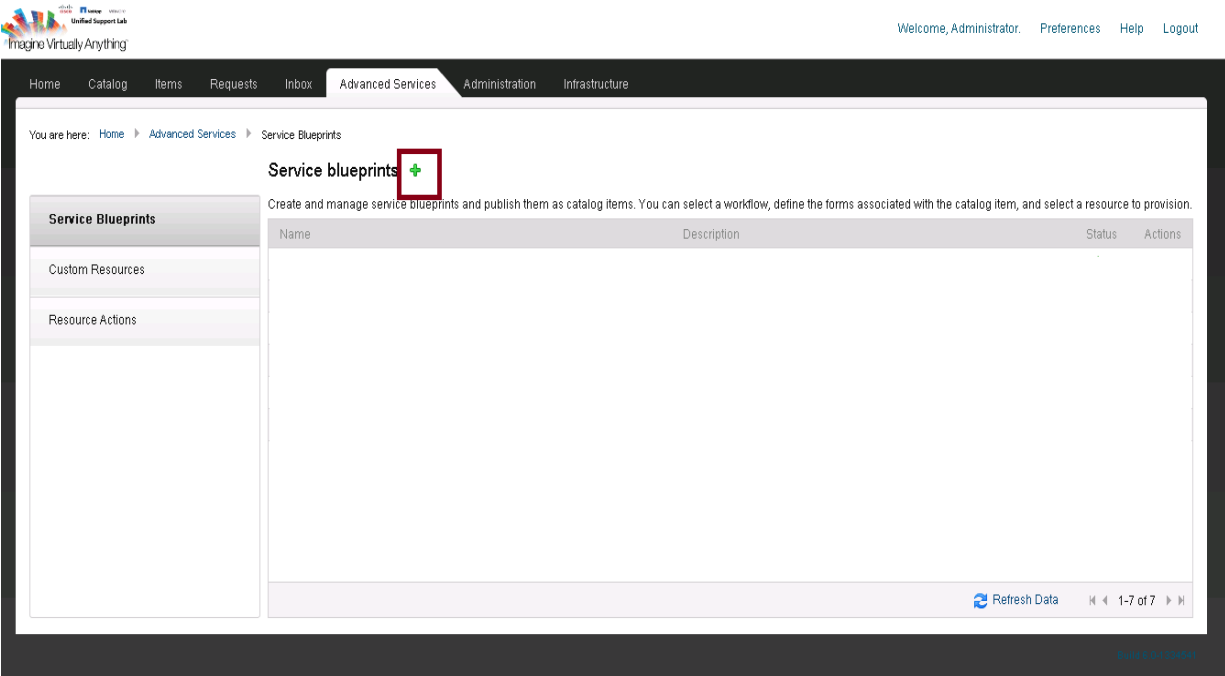


2. Click **Service Blueprints** from **Advanced Services**.

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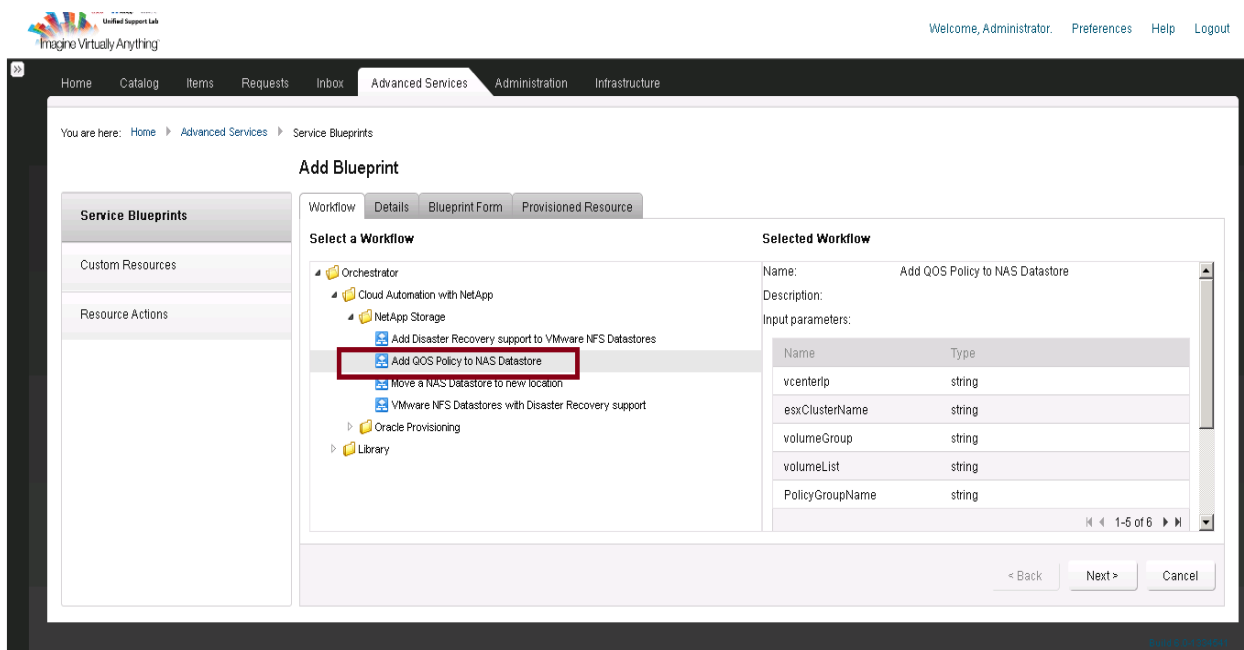


3. Add a service blueprint by clicking

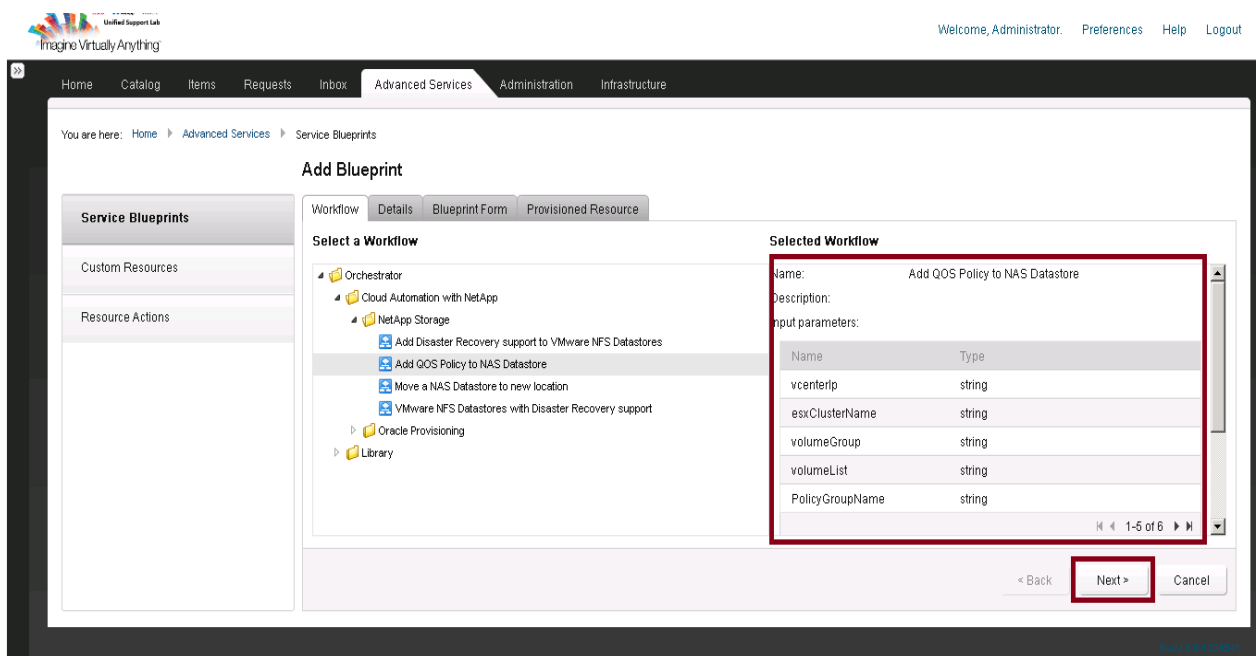


4. Select the workflow “ADD QOS Policy to NAS Datastore”.

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5. The workflow name, description, input and output parameters are displayed on the right side of selected workflow. Click **Next**



6. Screen displays the Name and Description of the workflow, change the name, if you want to. Click **Next**

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Imagine Virtually Anything

Welcome, Administrator. Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Advanced Services > Service Blueprints

Add Blueprint

Service Blueprints

Custom Resources

Resource Actions

Workflow Details **Blueprint Form** Provisioned Resource

*Name Add QOS Policy to NAS Datastore

Description Add QOS Policy to NAS Datastore

< Back **Next >** Cancel

7. We are moved to **Blueprint Form** tab. We see input parameters of the selected workflow have been placed on the form.

Imagine Virtually Anything

Welcome, Administrator. Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Advanced Services > Service Blueprints

Add Blueprint

Service Blueprints

Custom Resources

Resource Actions

Workflow Details Blueprint Form **Provisioned Resource**

Form: Request form

New fields

- Text field
- Text area
- Password field
- Integer field
- Decimal field

Form page: NetApp Service level Objectives

VMware Environment

vcenterip

esxClusterName

< Back Next > Cancel

8. Change Labels with descriptive text and Click **Next**

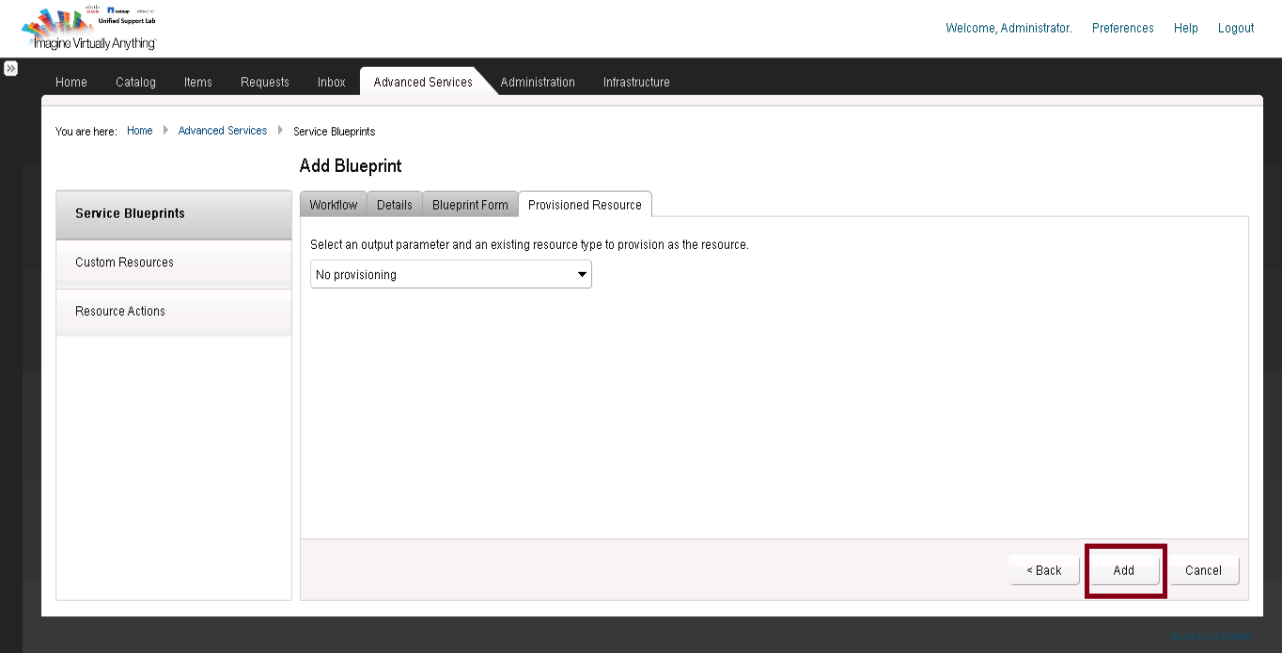
How-to guide for configuring Storage as a Service using NetApp Workflow Automation & VMware vCloud Automation vCenter

The screenshot shows the 'Add Blueprint' form in the NetApp Workflow Automation interface. The 'Blueprint Form' tab is selected. On the left, there is a sidebar with 'Service Blueprints', 'Custom Resources', and 'Resource Actions'. The main area has a 'Form' dropdown set to 'Request form'. Below it, a 'New fields' list includes Text field, Text area, Password field (labeled 'MOCK'), Integer field, and Decimal field. The 'Form page' is set to 'NetApp Service level Objectives'. The form content includes a 'VMware Environment' section with a 'vCenter Server IP Address' field (highlighted with a red box) and an 'esxClusterName' field. At the bottom right, there are buttons for '< Back', 'Next >' (highlighted with a red box), and 'Cancel'.

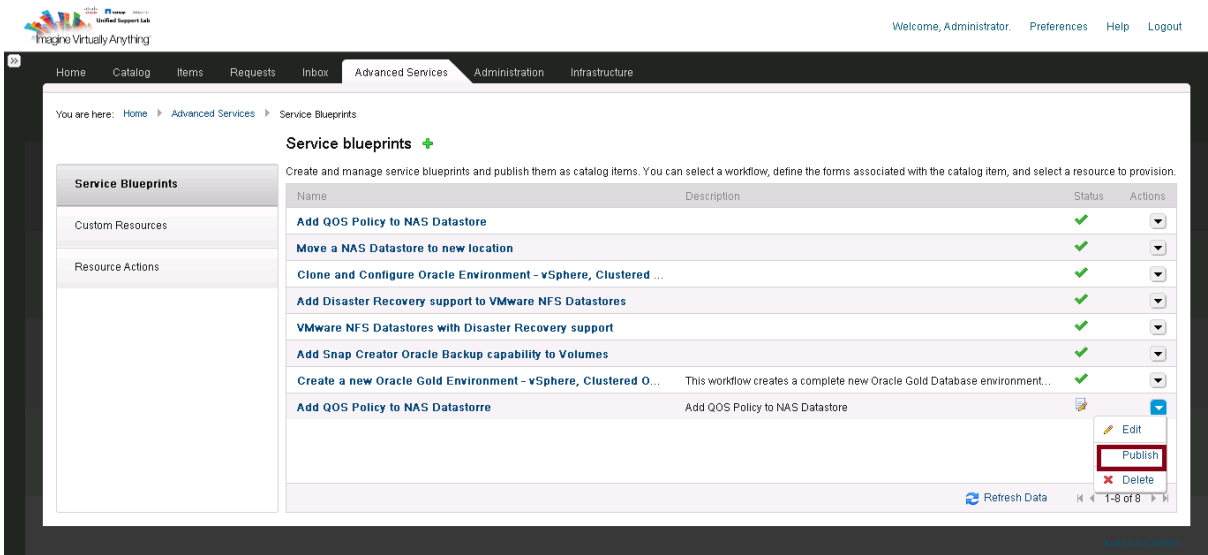
9. We are moved to **Provisioned Resource**. Keep “No Provisioning”.

The screenshot shows the 'Add Blueprint' form in the NetApp Workflow Automation interface, now on the 'Provisioned Resource' tab. The 'Workflow' tab is also visible. The main area contains the instruction 'Select an output parameter and an existing resource type to provision as the resource.' Below this is a dropdown menu with 'No provisioning' selected (highlighted with a red box). At the bottom right, there are buttons for '< Back', 'Add', and 'Cancel'.

10. Click **Add** we are moved to list of service blueprints.



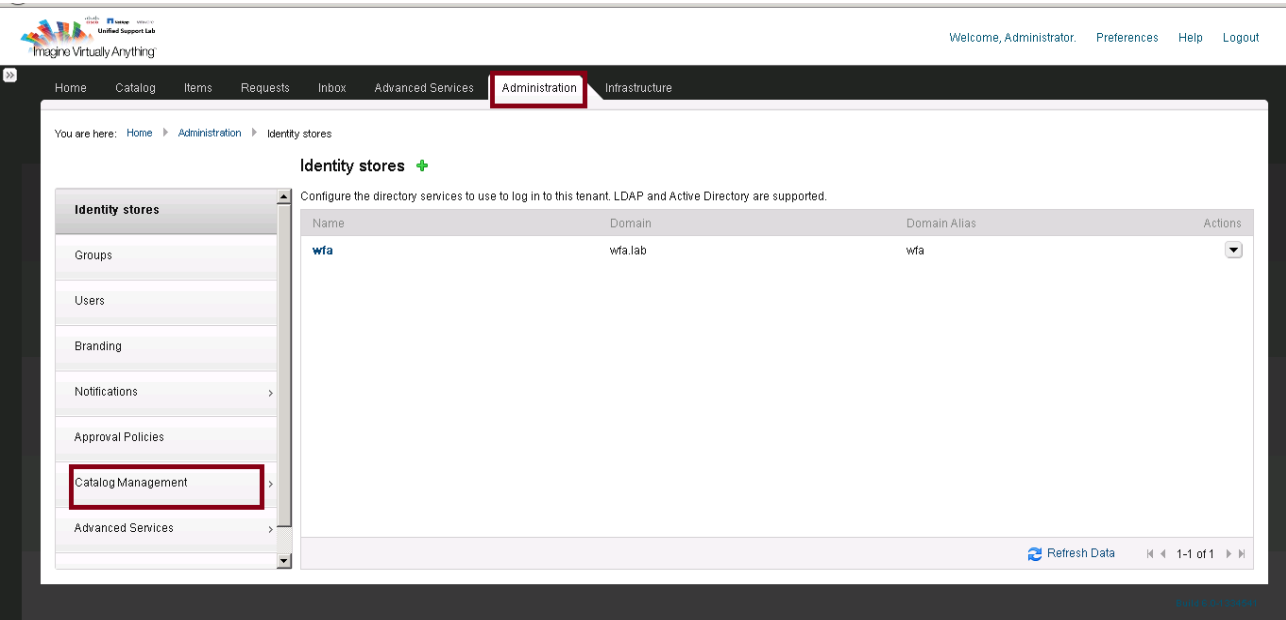
11. Click **Actions** button and choose **Publish** for the created service blueprint. It will publish the service blueprint to service Catalog.



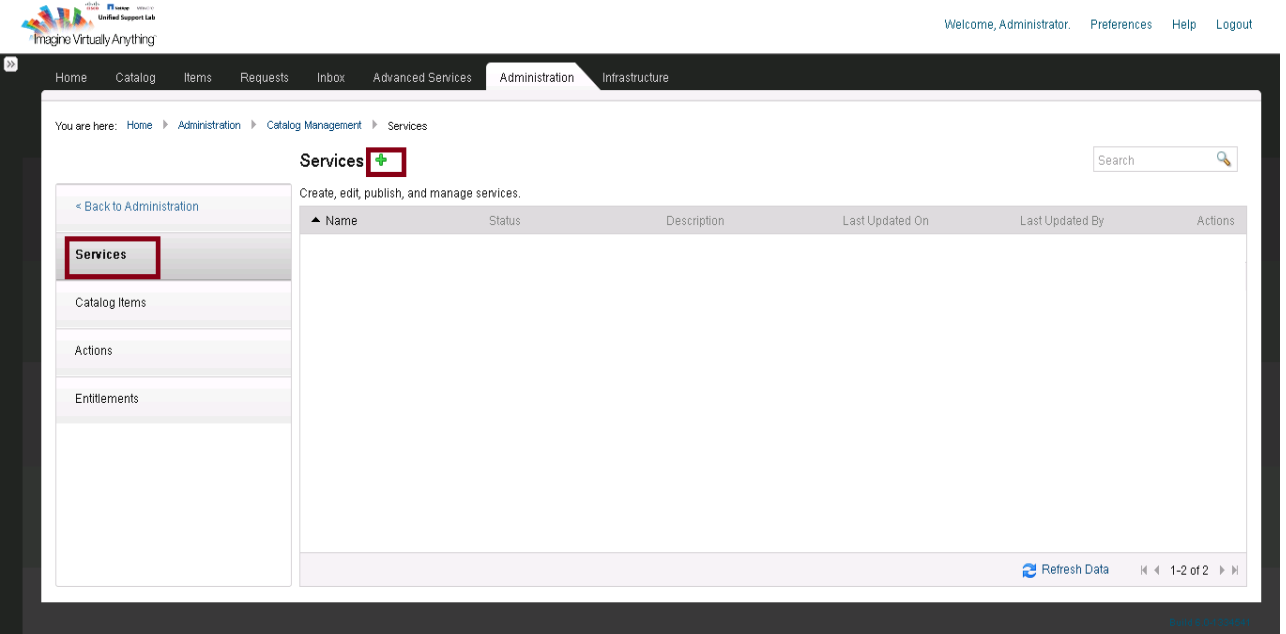
3.2 Create Service

1. Navigate to **Administration** tab, click **Catalog Management**

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2. Select **Services** and click **+** to create a new service.



3. Enter details for the service and click **Add**

The screenshot shows the 'Add Service' form in the NetApp Workflow Automation interface. The form is titled 'Add Service' and is located under the 'Administration' tab. The left sidebar shows a navigation menu with 'Services' selected. The form fields are as follows:

- Name:** NetApp Storage
- Description:** NetApp Storage Service
- Icon:** (empty field with a 'Browse...' button)
- Preview:** (empty field)
- Status:** Active (dropdown menu)
- Hours:** 01:00 to 10:30 (dropdown menus)
- Owner:** Administrator@wfa.lab (text field with a red 'x' icon)

At the bottom right of the form, there are two buttons: 'Add' (highlighted with a red box) and 'Cancel'.

3.3 Create Entitlement

1. Select **Entitlements** from **Administration** -> **Catalog Management** and click **+** to create entitlement

The screenshot shows the 'Entitlements' page in the NetApp Workflow Automation interface. The page is titled 'Entitlements' and is located under the 'Administration' tab. The left sidebar shows a navigation menu with 'Entitlements' selected. The main content area shows a table with the following columns:

Name	Business Group	Order	Description	Status	Expires On	Last Updated By	Last Updated	Actions
------	----------------	-------	-------------	--------	------------	-----------------	--------------	---------

Below the table, there is a 'Refresh Data' button and a pagination indicator showing '1-1 of 1'.

2. Enter details for entitlement and click **Next**

Imagine Virtually Anything

Welcome, Administrator. Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Administration > Catalog Management > Entitlements

Add Entitlement

< Back to Administration

Services

Catalog Items

Actions

Entitlements

Details Items & Approvals

*Name: NetApp Storage Entitlement

Description: NetApp Storage Entitlement

Expiration Date: 10/18/2013 12:00 PM

*Status: Active

*Business Group: Business 1

*Users & Groups:

Name

Administrator@wfa.lab

< Back Next > Cancel

3. Select **Entitled Services** and **Entitled Catalog items** for the entitlement

Imagine Virtually Anything

Welcome, Administrator. Preferences Help Logout

Home Catalog Items Requests Inbox Advanced Services Administration Infrastructure

You are here: Home > Administration > Catalog Management > Entitlements

Add Entitlement

< Back to Administration

Services

Catalog Items

Actions

Entitlements

Details Items & Approvals

Entitled Services +

Search

Name	Approval Policy
NetApp Stora...	(none)

Entitled Catalog Items +

Search

Name	Approval Policy
Add QOS Pol...	(none)

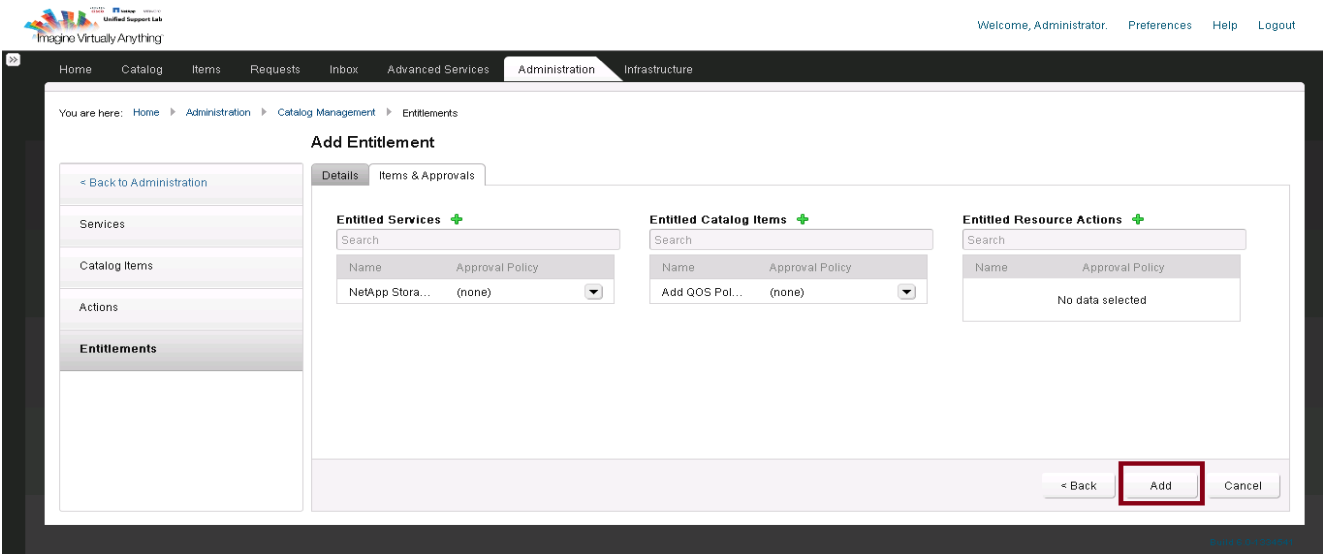
Entitled Resource Actions +

Search

Name	Approval Policy
No data selected	

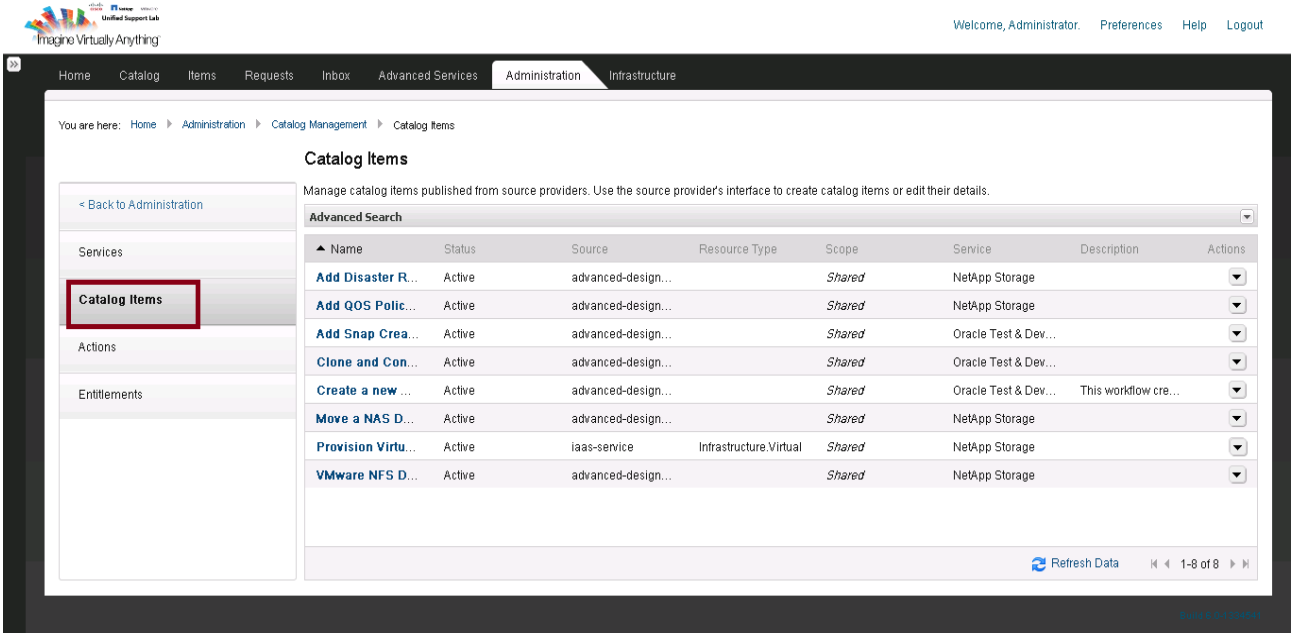
< Back Add Cancel

4. Click Add

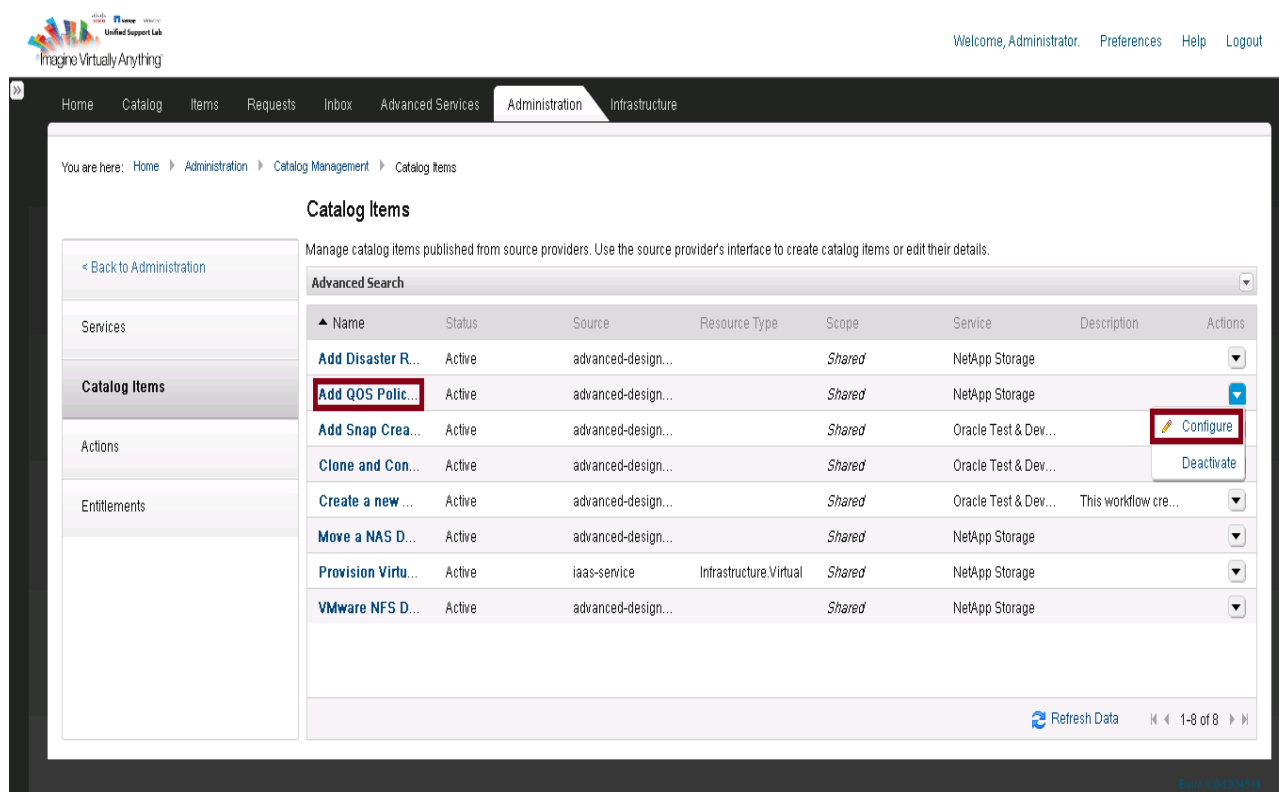


3.4 Configure Catalog Item

1. Select **Catalog Items** from **Administration** -> **Catalog Management**



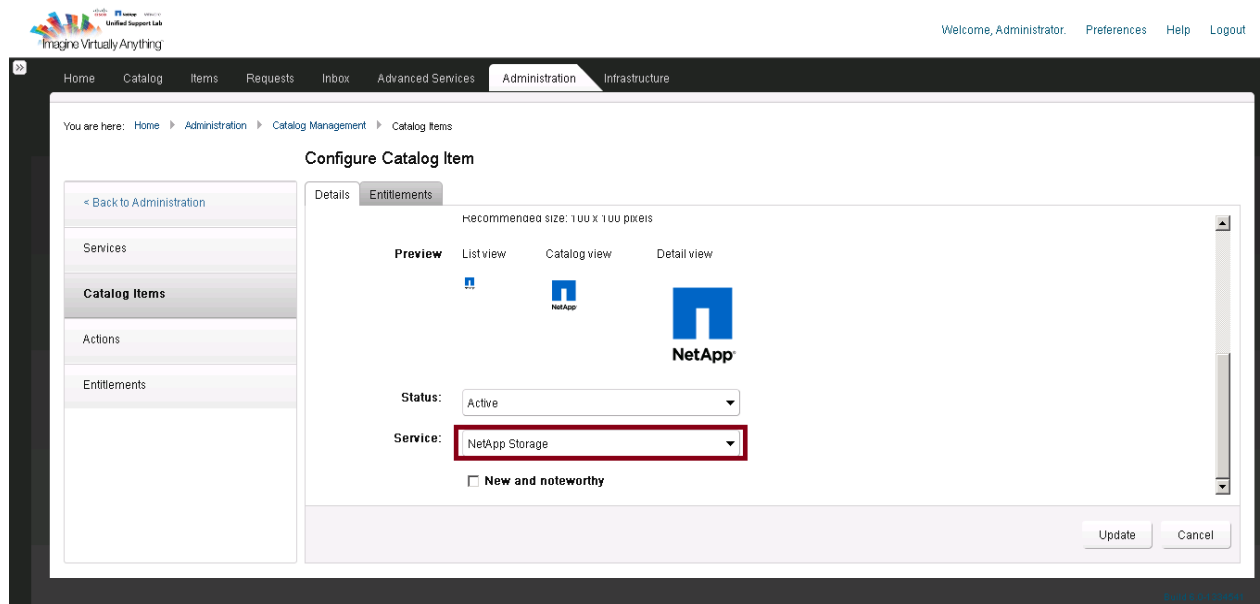
2. Click **Action** button on the **Add QOS Policy to NAS Datastore** and select **Configure**.



The screenshot shows the 'Catalog Items' management interface. A table lists various catalog items. The item 'Add QOS Policy to NAS Datastore' is highlighted with a red box. In the 'Actions' column for this item, the 'Configure' button is also highlighted with a red box.

Name	Status	Source	Resource Type	Scope	Service	Description	Actions
Add Disaster R...	Active	advanced-design...		Shared	NetApp Storage		
Add QOS Polic...	Active	advanced-design...		Shared	NetApp Storage		Configure
Add Snap Crea...	Active	advanced-design...		Shared	Oracle Test & Dev...		Deactivate
Clone and Con...	Active	advanced-design...		Shared	Oracle Test & Dev...		
Create a new ...	Active	advanced-design...		Shared	Oracle Test & Dev...	This workflow cre...	
Move a NAS D...	Active	advanced-design...		Shared	NetApp Storage		
Provision Virtu...	Active	iaas-service	Infrastructure.Virtual	Shared	NetApp Storage		
VMware NFS D...	Active	advanced-design...		Shared	NetApp Storage		

3. From the **Service** drop-down, select **NetApp Storage** to assign this Catalog Item to the **NetAPP Storage Category**



The screenshot shows the 'Configure Catalog Item' dialog box. The 'Service' dropdown menu is set to 'NetApp Storage'. The 'Status' is set to 'Active'. The 'New and noteworthy' checkbox is unchecked.

Details Entitlements

Recommended size: 1000 x 1000 pixels

Preview List view Catalog view Detail view

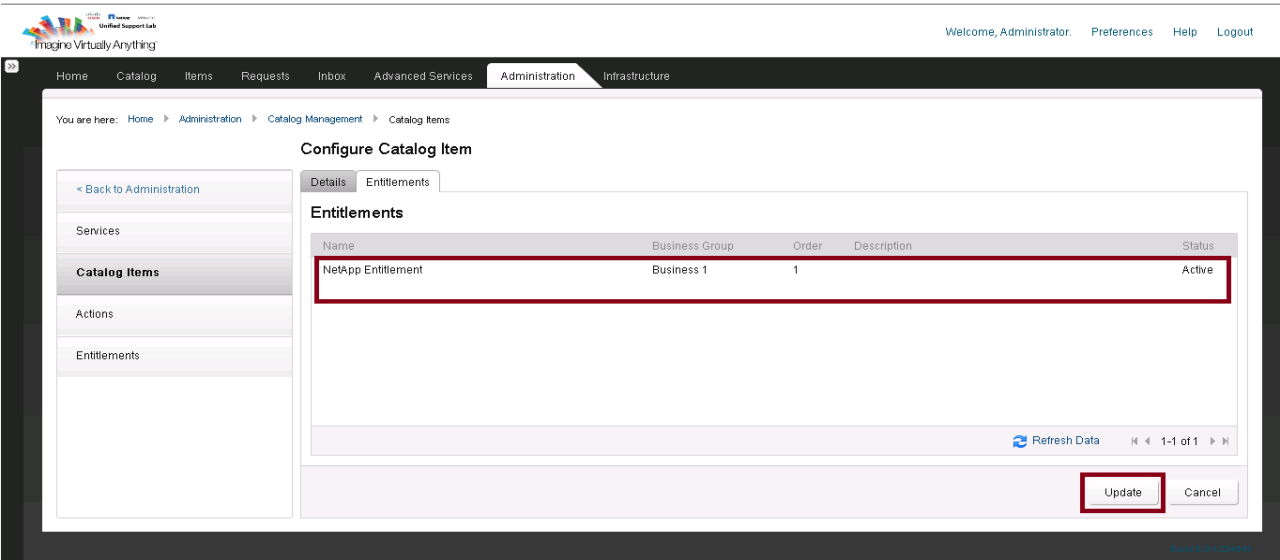
Status: Active

Service: NetApp Storage

☐ New and noteworthy

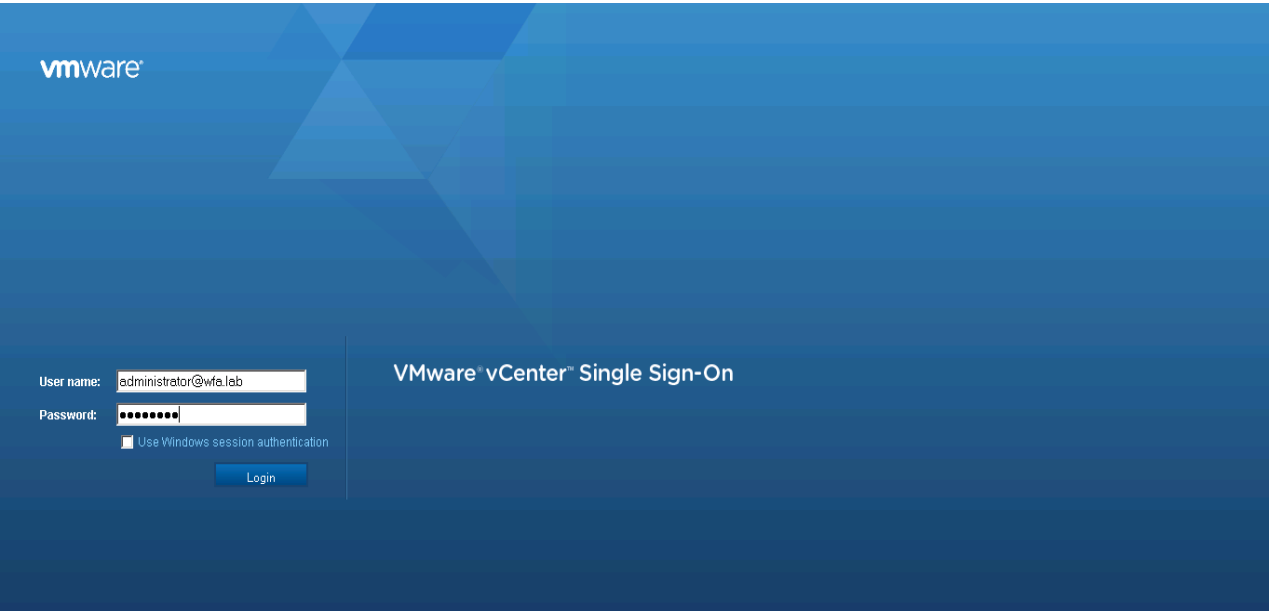
Update Cancel

4. Select **Entitlements** tab to verify entitlement and click **Update**

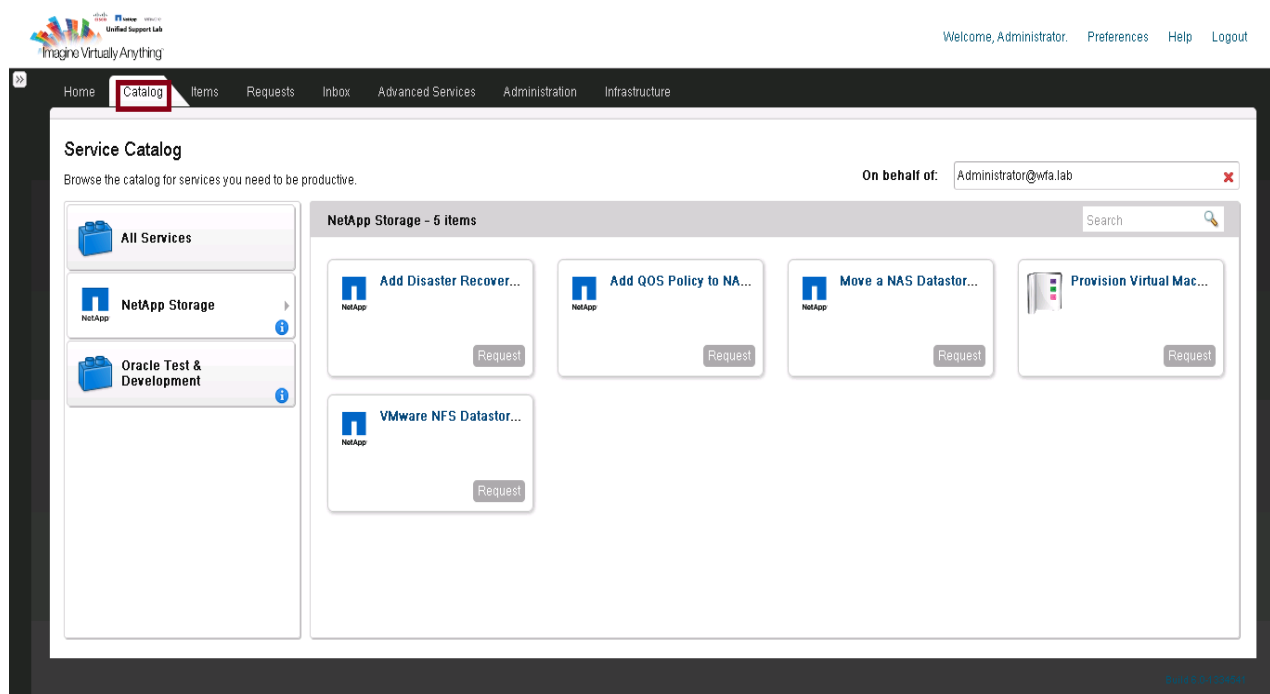


3.5 Request Catalog Item

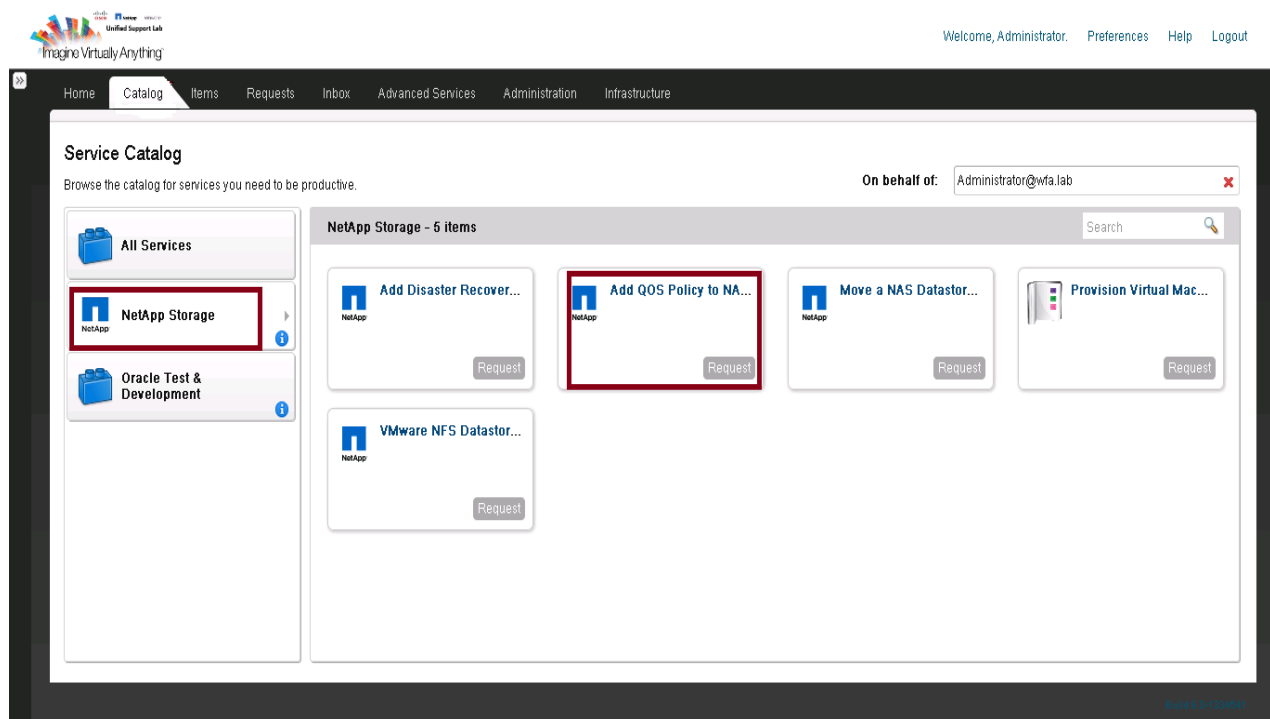
1. Login to vCloud Automation Center as Catalog consumer



2. Navigate to the **Catalog** tab



3. Click **NetApp Storage** service and select **Add Policy to QOS to NAS Datstore** and click **Request**



4. Enter request **Description** and click **Next**

The screenshot shows the 'New Request' form in the NetApp workflow automation interface. The 'Request Information' tab is active, and the 'Description' field is highlighted with a red box, containing the text 'Adding QOS Policy'. The 'Next >' button is also highlighted with a red box. The form includes a sidebar with the NetApp logo and the text 'Add QOS Policy to NAS Datastore'. The top navigation bar includes links for Home, Catalog, Items, Requests, Inbox, Advanced Services, Administration, and Infrastructure. The top right corner shows the user's name 'Welcome, Administrator' and links for Preferences, Help, and Logout.

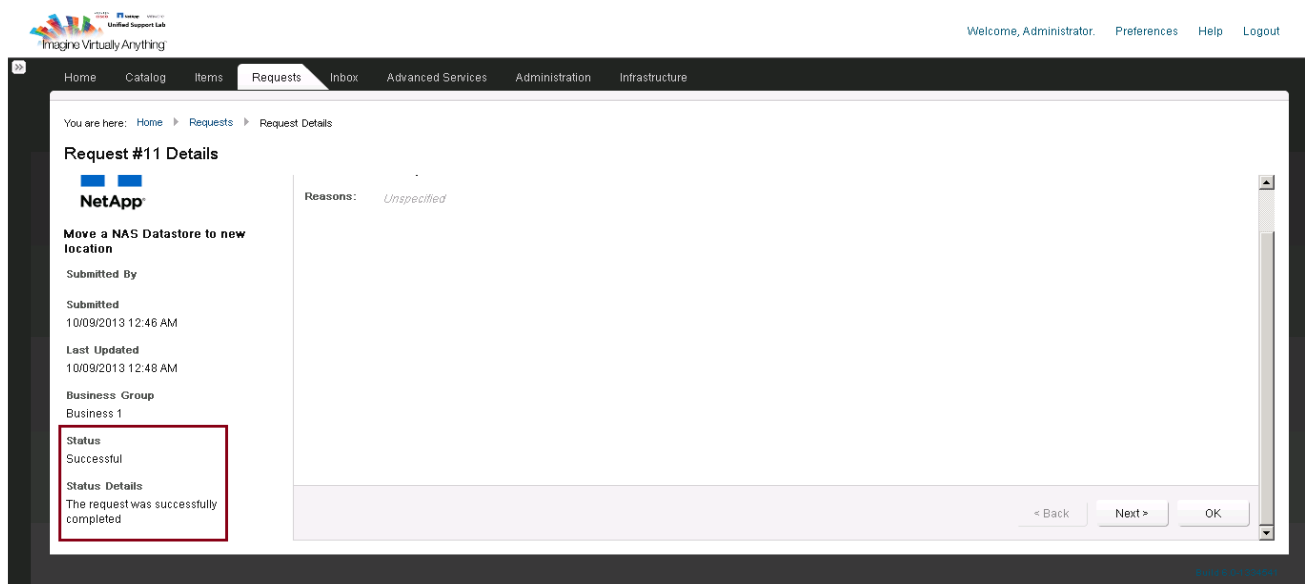
5. Enter values on the displayed form and click **Submit**

The screenshot shows the 'New Request' form in the NetApp workflow automation interface, now filled with values. The 'Request Information' tab is active. The form includes a sidebar with the NetApp logo and the text 'Add QOS Policy to NAS Datastore'. The top navigation bar includes links for Home, Catalog, Items, Requests, Inbox, Advanced Services, Administration, and Infrastructure. The top right corner shows the user's name 'Welcome, Administrator' and links for Preferences, Help, and Logout. The form fields are as follows:

- VMware Environment**
 - vCenter Ip: 10.101.160.126
 - ESX Cluster Name: bonnie-anne
 - Volume Group: all
- Datastore List**
 - List of Datastores: (empty)
- Service Level Objective**
 - Service Level Objective Policy: Bronze

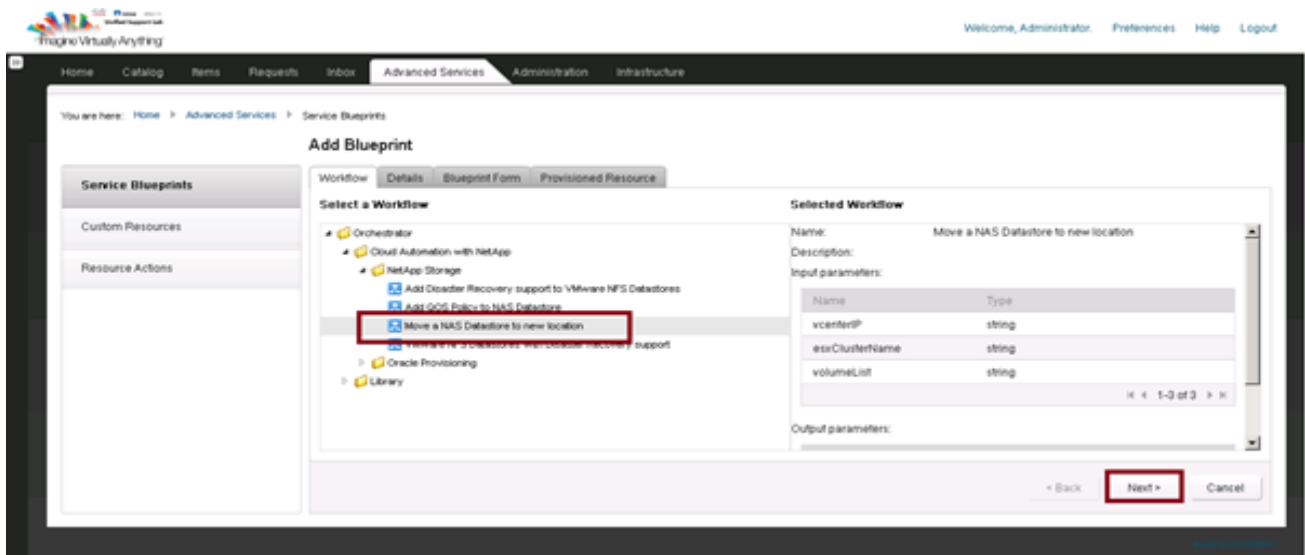
The 'Submit' button is highlighted with a red box.

6. Navigate to **Requests** tab to view the submitted request status.

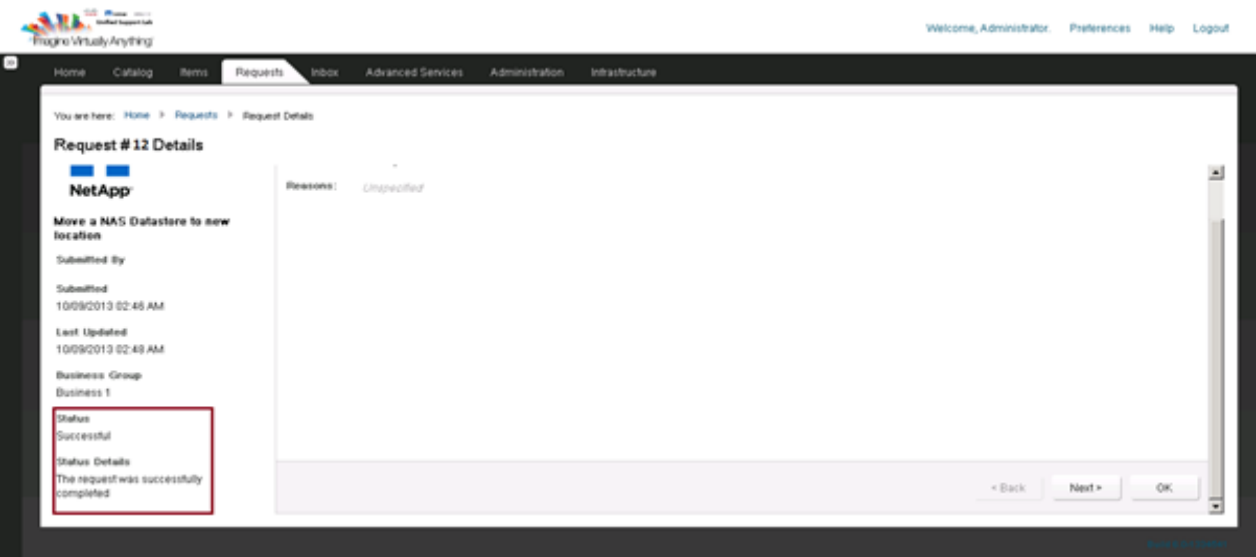


3.6 Execute Other Workflow

To execute any other workflow, user would have to create a New Service Blueprint, Select the workflow that he wishes to execute. In this case let us assume workflow to be executed is “**Move a NAS Datastore to new location**”. The workflow name, description, input and output parameters are displayed on the right side of selected workflow. User should c Click **Next**. Follow the same steps as displayed earlier to complete the Blueprint creation, Create Entitlement, Configure Catalog Item and Request Catalog Item.



Once the request is successful, Navigate to **Requests** tab to view the submitted request status.



4. Summary

NetApp WFA Plugin, Storage as a service utilizes industry's leading Cloud-enabled development and process automation platform, VMware **vCenter Orchestrator** and Cloud-enabled self-service provisioning solution available with integration of the VMware **vCloud Automation Center**.

5. Benefits

1. Allows consumers to request catalog item that provision applications to use NetApp storage and to manage NetApp Snapshot backups.
2. With the help of this solution consumers can add disaster recovery support to VMware NFS data store and QOS policy to NAS data store and they can also move a NAS data store to new location.
3. This solution also provides Oracle Provisioning with NetApp Storage to its consumers.
 - a. This provisioning includes catalog items for creating a new Oracle Gold environment – clustered On TAP
 - b. Cloning and configuring Oracle environment
 - c. Add snap creator Oracle backup ability to volumes.