

Camp Rubrik

Camp Rubrik Lab Guide



Introduction to Camp Activities

Welcome to Camp Rubrik! We appreciate you spending time with us to see first-hand how powerful and simple Rubrik is to use.

Today's challenge is to see how far you can get in the lab exercises.

Throughout the guide you will find boxes labeled "Trail Map." These callouts are intended to give you further insight or to define some concepts.

If at any point you get stuck or want to learn more information, let a Guidance Counselor know and a staff member will assist you.

Without further ado, let's dive in.

Orienteering

Objective: Create and Apply an SLA Domain

In this lab, you will perform the following tasks:

- Walkthrough the Rubrik UI
- Gain familiarity with the Rubrik Dashboard
- Create and apply an SLA Domain

The Rubrik Cloud Data Management (RCDM) platform is a software-defined system that distributes data, metadata, and tasks across the Rubrik cluster and public cloud for linear scalability and performance.

Getting Started

Once racked, the Rubrik system setup is easily and quickly completed in under an hour for virtual and physical environments. RCDM uses multicast DNS to automatically discover and self-configure each of the nodes within the cluster. The user assigns IP addresses to each of the nodes and login credentials for the environment to be managed by Rubrik. To expand cluster size, the user simply assigns new IP addresses through the management dashboard. To reduce cluster size, the user selects the nodes to remove.

Thereafter, the cluster automatically self-adjusts and re-balances to deliver fault tolerance against node and disk failures.

Dashboard Walkthrough

Rubrik's simple user interface is built on a API-driven framework with a HTML5 web user interface. To see it

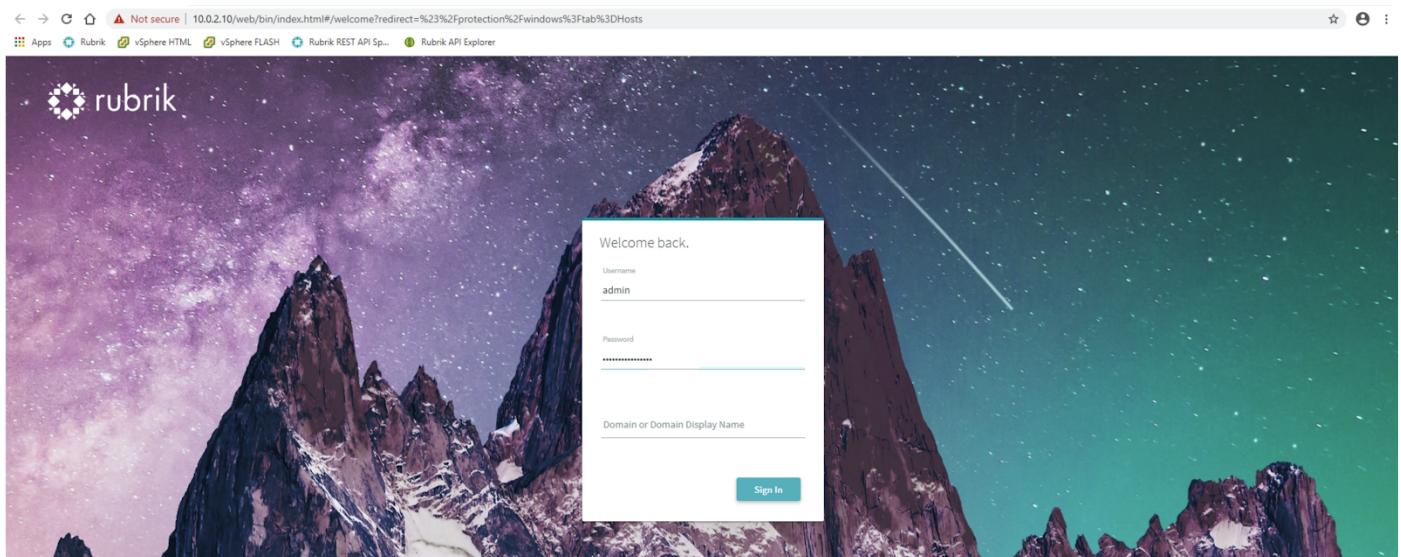
for yourself:

Once you have accessed the Camp Rubrik lab environment, select the **Jump1** Host and authenticate using the following OS credentials:

- Username: `demo@rubrik.lab`
- Password: `Welcome10!`

Open up the web browser (Chrome) and select the shortcut for the Rubrik UI. Login using the following credentials:

- Username: `admin`
- Password: `Welcome10!Rubrik`



Once authenticated, the Rubrik UI will default to the **Dashboard** page.

A screenshot of the Rubrik UI Dashboard. The left sidebar has a dark theme with navigation links like 'Dashboard', 'SLA Domains', 'Virtual Machines', etc. The main area has several cards: 'vSphere VMs' (3 Protected, 1 Unprotected, Protect Now), 'SLA Domains' (4 Hours, Gold level, 4 objects; 1 Day, Bronze level, 0 objects; 12 Hours, Silver level, 0 objects), 'Activity' (list of events including logins and backups), 'Live Mounts' (0), 'System' (checkmark icon, 0 Incoming Snapshots), 'System' (Brik: 1, Node: 1), and a summary bar at the bottom showing 38 Snapshots, 73.9% Local Data Reduction, 0% Archival Data Reduction, and 0 B Archive, with a note about Recent Ingestion at 87 B/s.

Let's explore the various Dashboard panes.

The **vSphere VMs** pane provides a high-level overview of how many vSphere objects are protected by an SLA Domain.

Click on **vSphere VMs** to display the dropdown box that allows you to view a protection overview by workload type.

vSphere VMs ▾

[See All ➔](#)



3
Protected



1
Unprotected

[Protect Now ➔](#)

SLA Domains provides an overview of each SLA Domain and how many objects are being protected.

SLA Domains

[See All ➔](#)



Gold
4 Protected Objects



Bronze

0 Protected Objects



Silver

0 Protected Objects

Activity pane lists all currently and recently completed tasks.

Activity

[See All ▶](#)

	Completed backup of the transaction log for SQL Server database 'AdventureWorks' from 'sql-s...'.	06/16/2020 10:11 pm
	admin logged in	06/16/2020 10:07 pm
	Completed backup of the transaction log for SQL Server database 'AdventureWorks' from 'sql-s...'.	06/16/2020 9:56 pm
	Completed backup of the transaction log for SQL Server database 'AdventureWorks' from 'sql-s...'.	06/16/2020 9:41 pm
	Completed backup of the transaction log for SQL Server database 'AdventureWorks' from 'sql-s...'.	06/16/2020 9:26 pm

Towards the middle of the Dashboard screen, you can see the number of active **Live Mounts** as well as the number of **Incoming Snapshots**.



0
Live Mounts

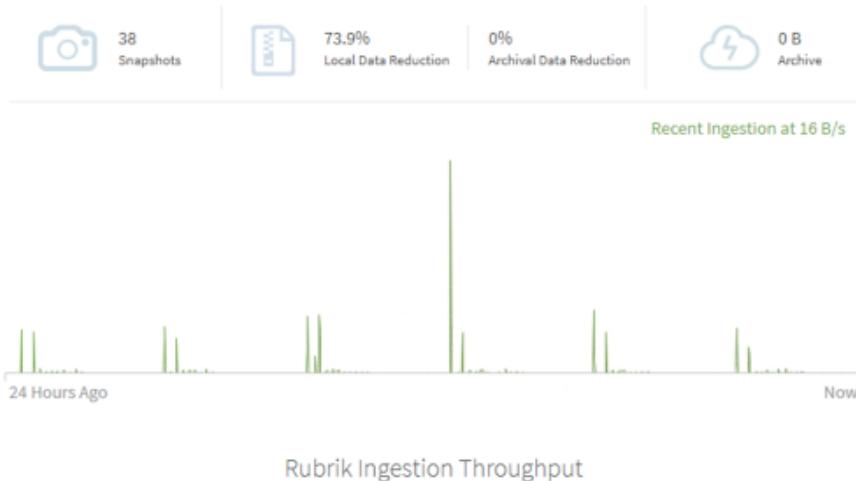


System

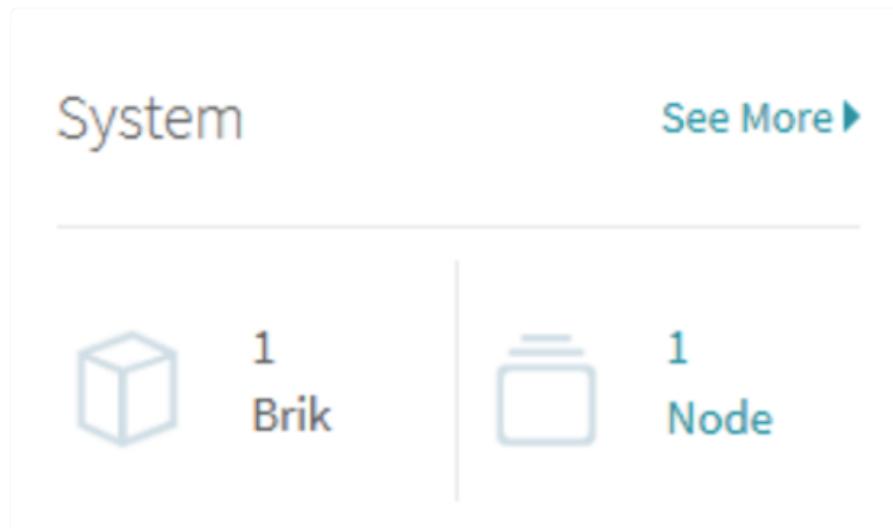


0
Incoming Snapshots

At the bottom, you are able to get a quick peek at the number of snapshots residing on this Rubrik cluster, percent data reduction using deduplication and compression, and amount of data archived.



Looking at the bottom left of the Dashboard, select **See More** in the **System** pane. This section details the specs of the Rubrik cluster as well as some performance details.



SLA Domains

The SLA Domain unifies data protection policies under a single policy engine. It provides a configurable set of policies that can be applied to all objects protected by Rubrik, whether groups of virtual machines, applications, or hosts to achieve specific data protection objectives.

Rubrik orchestrates end-to-end data lifecycle management. An SLA Domain can be automatically assigned to new workloads as each is provisioned. No manual intervention is required for data to be archived for long-term retention, replicated to your DR site, or expiry at the end of the lifecycle. Easily provision and sunset your workloads without worrying about data management.

SLA Domains represent an easy-to-configure container for data protection policies. The following table provides an overview of those policies.

Policy	Description
Snapshot, backup frequency, and retention	Directs the Rubrik cluster when to create point-in-time snapshots, backups of data sources, and how long to keep the data.
Replication	Directs the Rubrik cluster to send replicas of source snapshots and backups to a target Rubrik cluster. Also defines the maximum time to keep the replic
Archiving	Directs the Rubrik cluster to move snapshot and backup data to a separate data storage system for long-term retention.

Rubrik provides Gold, Silver, and Bronze SLA Domains by default for your immediate use. Custom SLA Domains can be quickly and easily created to meet the data protection and retention requirements of different groups of virtual machines, applications, and file system hosts.

Create an SLA Domain

To create an SLA Domain:

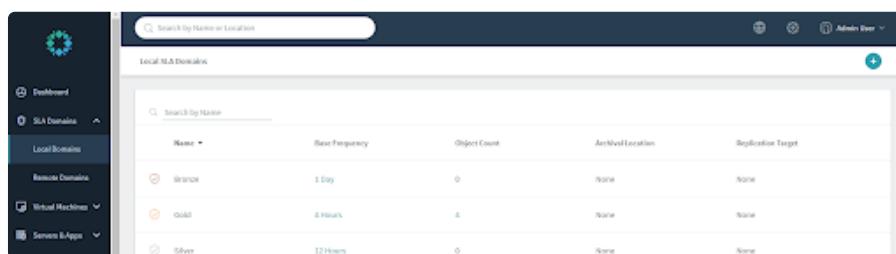
On the left-hand navigation pane, select **SLA Domains > Local Domains**.

(i) Trail Map:

Local Domain - an SLA Domain that is created on the local Rubrik cluster.

Remote Domain - an SLA Domain that was created on a Rubrik cluster other than the local Rubrik cluster. Remote SLA Domains appear on a local Rubrik cluster when the local Rubrik cluster is a replication target.

In the upper right-hand corner, click the blue + icon.



Create an SLA Policy using the same configuration values demonstrated in the following image:

Create SLA Domain

Retention Lock

1 Set Frequency and Retention 2 Set Archiving and Replication (Optional) 3 Summary

SLA Domain Name
Camp Rubrik

Continuous Data Protection

Service Level Agreement
Choose how often we take snapshots and the length of time we keep them.

Weekly and Quarterly Frequencies

Take Snapshots:	Keep Snapshots:
Every (Hours) 4	For (Days) 1
Every (Day) 1	For (Days) 365
Every (Months)	For (Months)
Every (Years)	For (Years)

Local retention set to 1 year.

Snapshot Window

[Cancel](#) [Next](#)

- Trail Map:** Continuous Data Protection enables you to protect your high value applications, running on vSphere, with near-zero RPOs. With CDP, you can recover from local or remote points in time with near zero RPOs for recovery from the latest point in time, or per-second granularity for recovery from historical points in time.

Select **Next** to configure replication and archive in the Remote Settings portion of the SLA Domain.

Create SLA Domain

1 Set Frequency and Retention 2 Set Archiving and Replication (Optional) 3 Summary

Retention On Brik

0 60 days 1 year

Archiving
 NFS:myarchive Enable Instant Archive [?](#)

Archiving starts after 60 days, and is retained on the archival location for 305 days.

Replication

A replication target has not been set up yet. Please [add a replication target](#) to configure retention.



Enable the **Archival** toggle and select `NFS:myarchive` from the dropdown box. Change **Retention On Brik** as 60 days. Note that the arrow keys can be used to fine-tune the amount of time specified. Press the **Next** button.

Create SLA Domain

Set Frequency and Retention Set Archiving and Replication (Optional) Summary

SLA Domain Name: Camp Rubrik

Frequency and Retention

Take every	Retain for
4 hours	1 day
1 day	365 days

Local Retention: 60 days

Archiving

Location	NFS:myarchive
Threshold	60 days
Retention	305 days

Cancel Back Create

Review and then click **Create** to finish.

Apply an SLA Domain

An SLA Domain may be applied at a broad level - such as the management server (e.g. vCenter Server), folder, host, cluster, or tag. This enables newly provisioned workloads to automatically inherit protection from a higher level resource. Alternatively, an SLA Domain may be granularly applied per object to achieve specific data protection objectives.

To do so:

In the web UI, on the left-side menu, click **Virtual Machines > vSphere VMs**. The vSphere VMs page appears, with the VMs tab selected.

Select **Clusters/Hosts**. The Clusters/Hosts tab appears.



The screenshot shows the vSphere interface with the 'SLA Domains' section selected in the sidebar. In the main pane, there is a table titled 'All VMs' with columns for Name, Location, SLA Domain, and Assignment. One row is highlighted, showing a checkbox in front of the 'Name' column. The 'Assignment' column for this row shows 'No SLA'.

Select the checkbox in front of the vCenter Server.

Notice that the **Manage Protection** button in the upper right-hand corner illuminates and is now clickable.
Do not assign an SLA Domain at this time.

The screenshot shows the vSphere interface with the 'Clusters/Hosts' tab selected. In the main pane, there is a table titled 'All vCenters' with columns for Name, Virtual Machines, SLA Domain, and Assignment. One row is highlighted, showing a checkbox in front of the 'Name' column. The 'Assignment' column for this row shows 'Unassigned'.

To place a granular policy on an individual object:

Select the **VMs** tab. The **VMs** page appears. Search for your Linux virtual machine running on vSphere. Type in `ubuntu` in the **Search by Name** field to locate the assigned Linux VM (`ubuntu14-vm1`).

The screenshot shows the vSphere interface with the 'VMs' tab selected. In the main pane, there is a table titled 'All VMs' with a search bar containing 'ubuntu'. One row is highlighted, showing a checkbox in front of the 'Name' column. The 'Assignment' column for this row shows 'Direct'.

Select the Ubuntu virtual machine and click **Manage Protection**.

Find and select the previously created `Camp Rubrik` SLA Domain and press **Next**.

The screenshot shows the 'Manage Protection' wizard. Step 1: Assign SLA. Step 2: Review Impact. A search bar labeled 'Search SLA Domains' is present. Below it is a table with columns: Name, Local, Archival Location, and Replication Targets. A '+' button is located in the top right corner of the table area.

<input type="radio"/>		Bronze	2 years	--	--
<input checked="" type="radio"/>		Camp Rubrik	60 days	305 days on NFS:myar...	--
<input type="radio"/>		Gold	2 years	--	--
<input type="radio"/>		Silver	2 years	--	--

[Cancel](#)[Next](#)

Review the retention change caused by changing the SLA Domain.

Manage Protection



Assign SLA

2

Review Impact

SLA Domain Name

Gold - Camp Rubrik

Apply changes to existing snapshots

Frequency and Retention

Take every

Retain for

4 hours

3 days 1 day

1 day

32 days 365 days

1 month on the last day of the month

12 months

1 year on the last day of the year in January

2 years

Local Retention

2 years 60 days

Local retention decreased for new snapshots.

Retention decreased for existing snapshots on the Rubrik cluster and any archival locations. As a result of the decreased retention, existing snapshots may expire immediately and be deleted locally and on their associated archival locations.

[Cancel](#)[Back](#)[Submit](#)

Click **Submit**.

The VM will soon update to reflect it is protected by the selected SLA Domain.

Search & Rescue

Objective: Search and Recover Files

In this lab, you will perform the following tasks:

- Search for a VM
- Search for a file
- Recover a file via download

Backups are one of the most – if not the most – important defense against ransomware. Rubrik's uniquely immutable filesystem natively prevents unauthorized access or deletion of backups, allowing IT teams to quickly restore to the most recent clean state with minimal business disruption. With a Google-like search, Rubrik eliminates the search complexity inherent in legacy solutions by introducing consumer-grade file search that delivers query results instantly. This allows you to easily recover your data in the event of disaster.

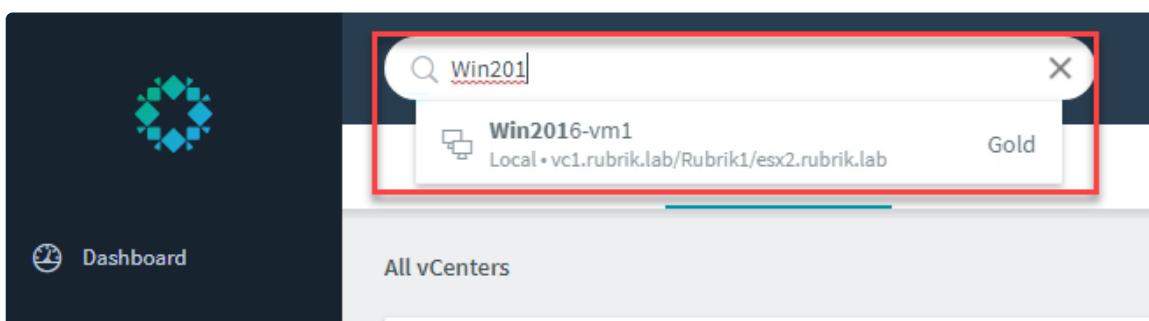
Getting Started

As you type your query, Rubrik expedites the query by displaying suggested search results with auto-complete functionality. The user can instantly locate specific versions of files across time and locations for all VMs, applications, and file systems - no matter where the data resides (on-premises or in the cloud).

File Recovery

To recover a file:

Search for the `Win2016-vm1` virtual machine running on vSphere.





The **Overview** pane provides information regarding the object's location, configuration for CloudOn (if configured), the SLA Domain applied, Oldest and Latest Snapshot, total snapshots, etc. This can vary depending on location and type of machine. On the right-hand side there is a **Snapshots** calendar view. The next few steps will guide you on your journey to explore this more.

Overview

Rubrik Backup Service Connected ✓

vc1.rubrik.lab vCenter	esx2.rubrik.lab Host
Gold SLA Domain	0 Live Mounts
6/15/20 10:50 AM Oldest Snapshot	6/17/20 3:01 PM Latest Snapshot
14 Total Snapshots	6/17/20 7:00 PM Next Scheduled Snapshot

Snapshots

Search by File Name

Today Year Month Day

< June 2020 >

S	M	T	W	T	F	S
		1	2	3	4	5
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Select a date that has a blue dot by hovering over and then clicking on the blue dot (indicating there are recovery points from this day). All available snapshots are listed. An example screenshot below demonstrates all of the snapshots available for the selected VM. Note that the date and number of snapshots may differ from the following image.

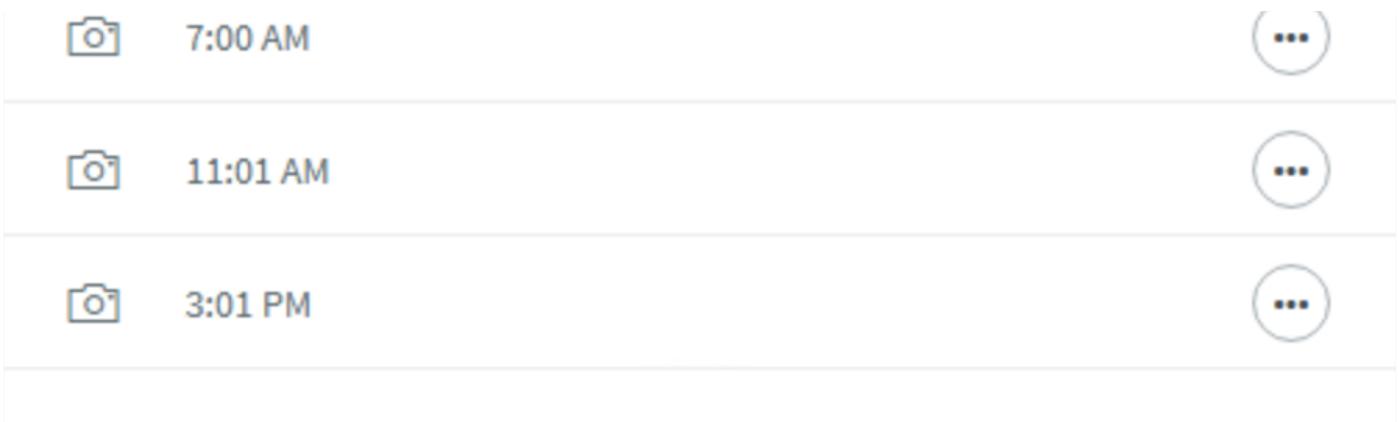
Snapshots

Search by File Name

Today Year Month Day

< June 17, 2020 >

3:00 AM	
---------	--



Select the ellipses icon (. . .) next to one of the snapshots.

Click **Recover Files**. Next type in the search bar the word `hosts`. Two files are shown.

Click on the checkbox in front of the `C:\Windows\System32\drivers\etc\hosts` and then click **Next**.

Recover Files

1 Select Files 2 Recover Files

You have selected a snapshot of 'Win2016-vm1' from Jun 17, 2020 05:46:54 PM PDT

Win2016-vm1

<input type="checkbox"/>	Name	Size	Last Modified
<input type="checkbox"/>	C:\Windows\WinSxS\amd64_microsoft-windows-w...ucture-other-minwin_31bf3856ad3...	824 B	07/16/2016
<input checked="" type="checkbox"/>	C:\Windows\System32\drivers\etc\hosts	824 B	07/16/2016

Selected 1

C:\Windows\System32\drivers\etc\hosts X

Cancel Next

There are four options shown: **Download**, **Overwrite original**, **Restore to separate folder**, and **Export**.

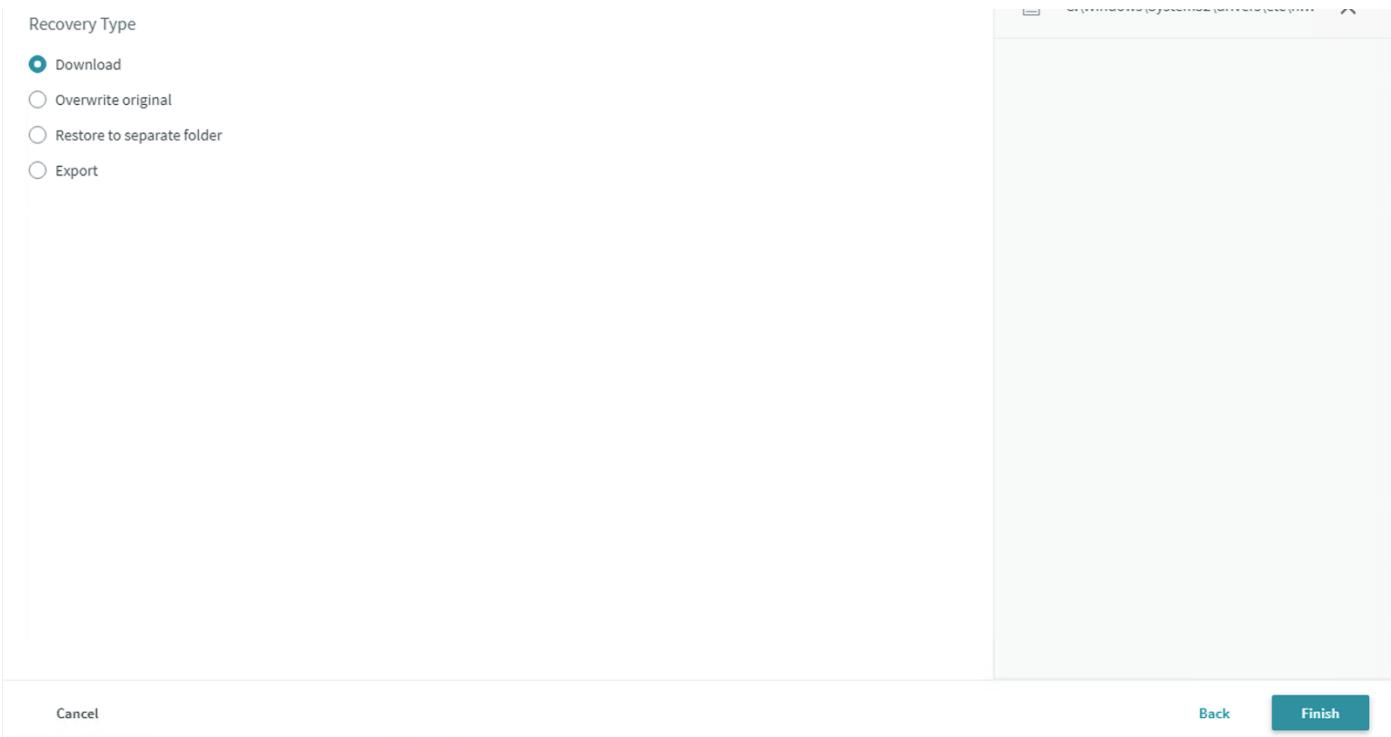
Recover Files

1 Select Files 2 Recover Files

You have selected a snapshot of 'Win2016-vm1' from Jun 17, 2020 05:46:54 PM PDT

Selected 1

C:\Windows\System32\drivers\etc\hosts X



Do not select any of the options at this time and click **Cancel** to exit the dialog.

i Trail Map:

Download - Rubrik cluster generates download links to use for file level restore (FLR) of files and folders, making it available to download locally to the user's device.

Overwrite original - files and folders restored directly to a guest file system of the protected workload whether a VM, physical server, or NAS share. This will overwrite the existing files on the machine.

Restore to separate folder - files and folders restored to a folder of your choosing.

Export - allows you to restore files and folders to a different machine.

In the Rubrik UI, locate the **Search by File Name** in the **Snapshots** view and type in the word `hosts` to locate the file.

The screenshot shows the Rubrik UI. On the left, the 'Overview' section displays four items: 'vc1.rubrik.lab vCenter', 'esx2.rubrik.lab Host', 'Gold SLA Domain', and '0 Live Mounts'. On the right, the 'Snapshots' view is shown with a search bar containing 'hosts'. Two results are listed in the table:

Name & Location	Snapshot Time	Versions
C:\Windows\WinSxS\amd64_microsoft-wind...	6/17/20, 3:01 PM	14
C:\Windows\System32\drivers\etc\hosts	6/17/20, 3:01 PM	14

Click on the `C:\Windows\System32\drivers\etc\hosts`. On the window that appears, choose a

version of the file (screenshot below) and select the ellipses (. . .).

Choose Version

Please select a file version of C:\Windows\System32\drivers\etc\hosts.

Date ▾

	06/17/2020 3:01 PM (Latest)	Download
	06/17/2020 11:01 AM	Restore
	06/17/2020 7:00 AM	
	06/17/2020 2:00 AM	

Done

Choose **Download**.

This may take a few moments. Click on the globe icon in the top right corner of the Rubrik UI to review the notification informing you that the file is ready to download. Click on the “Download link” message.





Download link for 1 path(s) from snapshot of 'Win2016-vm1' taken at 'Wed Jun 17 22:01:09 UTC 2020' is ready

6/17 7:30 pm



admin started a job to download 1 path(s) from a backup of 'Win2016-vm1' taken on Jun 17, 2020 22:01:09 UTC

6/17 7:29 pm

On the window that opens, click on the download link.

Status	Activity	Date	
✓	Download link for 1 path(s) from snapshot of 'Win2016-vm1' taken at 'Wed Jun 17 22:01:09 UTC 2020' is ready	6/17 7:30 pm	

On your Jump1 host accessing the lab environment, browse to the **Downloads** folder to view hosts.

Life-Saving

Objective: Recover a VM

In this lab, you will perform the following tasks:

- Live Mount a VM
- Unmount a VM
- Mount a VMDK
- Unmount a VMDK

Rubrik radically simplifies the recovery process of virtual machines to deliver near-zero RTOs without additional storage provisioning. Quickly test upgrades or recover from ransomware without data loss.

Getting Started

By serving as an online repository for VM data during the recovery process, Rubrik eliminates the requirement to transfer data before recovery can begin. Live Mount provides a near-zero Recovery Time Objective (RTO).

Trail Map:

Recovery Time Objective - defines how long it takes to recover data, which can be a single file or a complete data center. This is sometimes referred to as "how long can you afford to have a system offline?"

Instant Recovery - replaces the source virtual machine with a fully functional point-in-time copy. The Rubrik cluster powers off and renames the source virtual machine and assigns the name of the source virtual machine to the recovered virtual machine. The recovered virtual machine is then powered on and the recovered virtual machine is connected to the source network. The Rubrik cluster is the datastore for the recovered virtual machine until it is Storage vMotioned to another datastore.

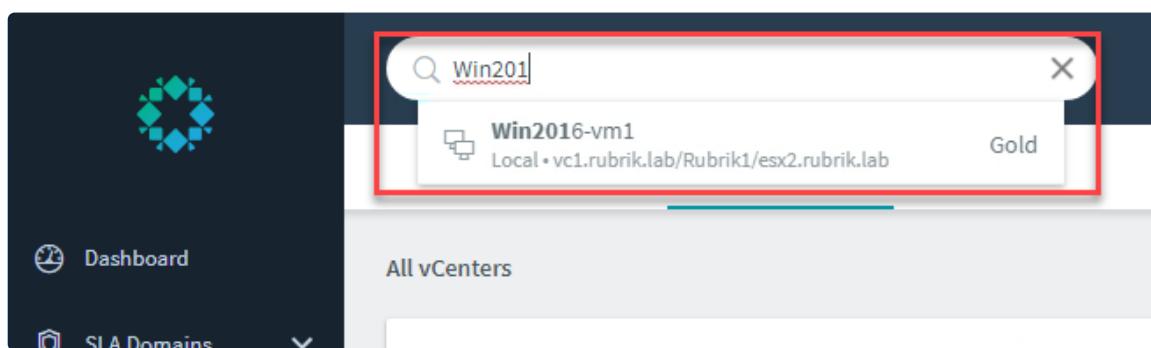
Live Mount - creates a new virtual machine from a point-in-time copy of the source virtual machine. The recovered virtual machine uses the Rubrik cluster as its datastore until it is Storage vMotioned to another datastore. The Rubrik cluster assigns a new name to the recovered virtual machine and powers it up. The source virtual machine runs in parallel.

Export - creates a new virtual machine from a point-in-time copy of the source virtual machine. The datastore of the selected Hyper-V host is the datastore for the recovered virtual machine. The Rubrik cluster assigns a new name to the recovered virtual machine and powers it up.

VM Live Mount

To Live Mount a VM:

Using your assigned Windows 2016 Server (`Win2016-vm1`), select a snapshot by clicking on the blue dot on an available date.



Open the ellipsis (. . .) menu for the snapshot and choose **Mount Virtual Machine**.

The screenshot shows a dashboard for the host esx2.rubrik.lab. On the left, there's a summary section with icons and counts: vCenter (vc1.rubrik.lab), Host (esx2.rubrik.lab), SLA Domain (Gold), Live Mounts (0), Oldest Snapshot (6/17/20 5:46 PM), Latest Snapshot (6/17/20 5:46 PM), and Total Snapshots (1). On the right, a timeline shows a snapshot created at 5:46 PM on June 17, 2020, under the Computing category. A context menu is open over this snapshot, with the 'Mount Virtual Machine' option highlighted by a red box.

Created Time	Expiration Date
5:46 PM	Computing

- [Mount Virtual Machine](#)
- [Mount Virtual Disks](#)
- [Instantly Recover](#)
- [Export](#)
- [Recover Files](#)
- [Delete](#)
- [Place on Legal Hold](#)
- [Change Retention](#)

Choose an ESXi host for the virtual machine, expand **Advanced Settings**.

Select the checkbox next to **Remove virtual network devices**. This option should be enabled when networking configurations may result in an IP address conflict.

Mount Virtual Machine

This screenshot shows a modal dialog for selecting a host to mount a virtual machine. At the top is a search bar with a magnifying glass icon and the placeholder text 'Search'. Below the search bar are two filter dropdowns: 'Host' and 'Cluster ▾'. Underneath these filters is a list of hosts. The host 'esx1.rubrik.lab' is shown with a solid blue circle icon and is selected. The host 'esx2.rubrik.lab (Current)' is shown with an outline blue circle icon and is not selected. The background of the dialog has a light gray gradient.

Host
esx1.rubrik.lab
esx2.rubrik.lab (Current)

Advanced Settings ▲

- Remove virtual network devices
- Preserve MAC addresses
- Power on mounted virtual machine
- Remove Tags

[Cancel](#)

[Mount](#)

Click **Mount**.

The Rubrik cluster mounts the snapshot on the selected ESXi host using the original VM name appended by a date time stamp (e.g. Win2016-vm1_03-05_23:18:0). The virtual machine is then powered on. During the process, messages about the status appear in the Notifications page. The Rubrik cluster records the final result of the task in the Activity Log.

On the left-side menu, click **Live Mounts > vSphere VMs**.

Locate your Windows virtual machine and wait for its **Status** to change to **Powered On**.

This may take about a minute to appear.

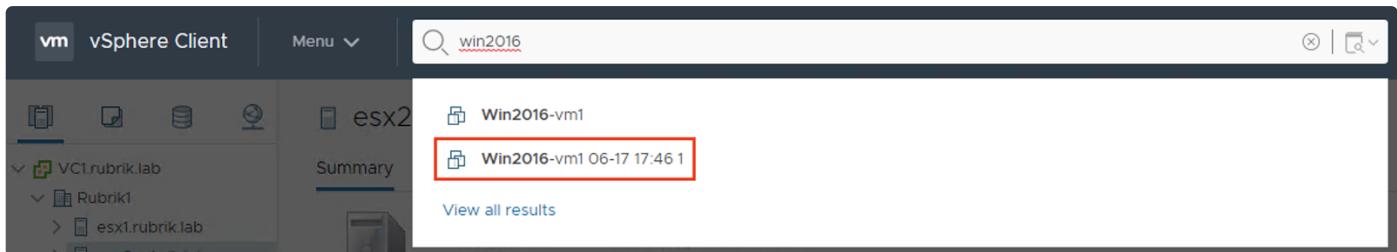
The screenshot shows the Rubrik interface for managing vSphere VM live mounts. The left sidebar has navigation links for Dashboards, SLA Domains, Virtual Machines, and Servers & Apps. The main area is titled 'vSphere VM Live Mounts' and contains a table with the following data:

Name	Status	Snapshot Time	Mount Time	Source
Win2016-vm1_06-17_17:46:1	Powered On	6/17/20 5:46 PM	6/17/20 8:05 PM	Win2016-vm1

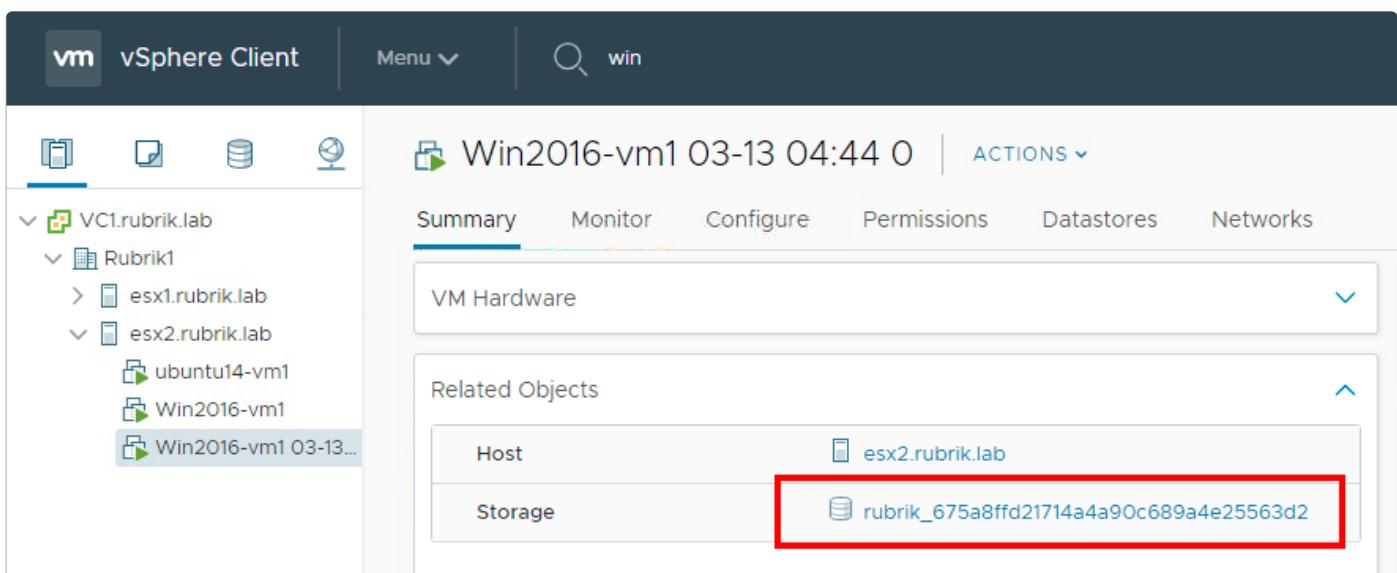
Open a new tab in the web browser and navigate to the vSphere HTML shortcut URL (bookmarked in the Chrome web browser) and authenticate using the following credentials:

- Username: demo@rubrik.lab
- Password: Welcome10!

Use the search function in the top center to locate `Win2016-vm1` (appended with the snapshot time/date stamp) in vCenter Server.



On the **Summary** tab of the VM, scroll down until the **Related Objects** pane is located. Notice the **Storage** on which the VM is running. It is recommended to Storage vMotion the VM files to primary storage if it is desired to keep the VM running long-term.



Switch back to the Rubrik UI tab and navigate to **Live Mounts > vSphere VMs**.

Locate your virtual machine and click the ellipses (. . .). Click **Unmount** and then **Unmount** again once the dialog appears.

(Optional) If you return to the vSphere Web Client, you will notice that the Live Mount VM has been removed from the vCenter Server inventory.

Trail Map:

The Rubrik cluster sets the protection state of the Live Mount recovered virtual machine to Do Not Protect. To protect the new virtual machine, add it to an SLA Domain, or remove the individual assignment of Do Not Protect to permit it to inherit protection.

Live Mount can be used to near-instantly instantiate identical environments in moments in isolated or test environments. You can also test an application upgrade, failure scenario, or other use cases using your backup storage. When you are done, you simply throw it away.

VMDK Live Mount

To mount a virtual disk:

Using your assigned Windows 2016 Server (Win2016-vm1), select a snapshot by clicking on the blue dot on an available date. (**Virtual Machines > vSphere VMs**)

Open the ellipsis (. . .) menu for the snapshot date chosen.

Choose **Mount Virtual Disks**.

Multiple disks should be listed. Select the checkbox in front of the 2GB drive.

Mount Virtual Disks

1 Source ————— 2 Target

Select virtual disks to mount from this snapshot.

Select virtual disks to mount from this snapshot.			
<input type="checkbox"/> <input type="text" value="Search by Name"/>			
<input type="checkbox"/> Disk Name ▾	Datastore	Size	
<input type="checkbox"/> Win2016-vm1/Win2016-vm1.vmdk	NFS	40 GB	
<input checked="" type="checkbox"/> Win2016-vm1/Win2016-vm1_1.vmdk	NFS	2 GB	

[Cancel](#)[Next](#)

After clicking on **Next**, you have the option of selecting any of your VMs to mount the disk on. Select the radio button in front of the `Win10-vm1` virtual machine and click **Finish**.

Mount Virtual Disks

 [Source](#) [Target](#)

Select from compatible virtual machines.

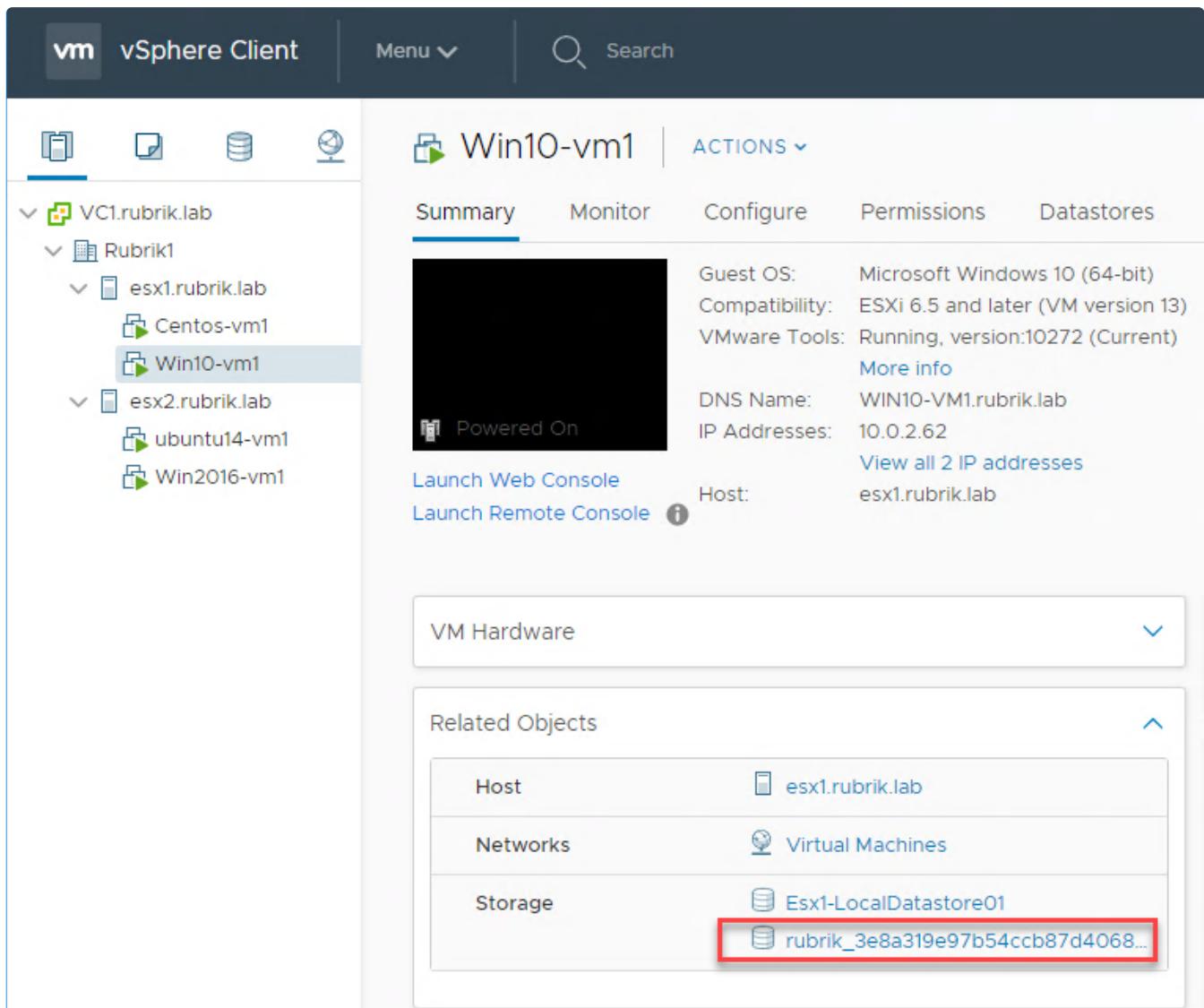
Virtual Machine Name ▾			Location
<input type="radio"/>	Centos-vm1		vc1.rubrik.lab/Rubrik1
<input type="radio"/>	ubuntu14-vm1		vc1.rubrik.lab/Rubrik1
<input checked="" type="radio"/>	Win10-vm1		vc1.rubrik.lab/Rubrik1
<input type="radio"/>	Win2016-vm1		vc1.rubrik.lab/Rubrik1

[Cancel](#)[Back](#)[Finish](#)

This will live mount the VMDK to the Windows 10 VM. You can check this by opening up the HTML5 vSphere client from the Chrome bookmark bar.

After logging into the vSphere client, click on `Win10-vm1` and look at the **Related Objects** to see the NFS

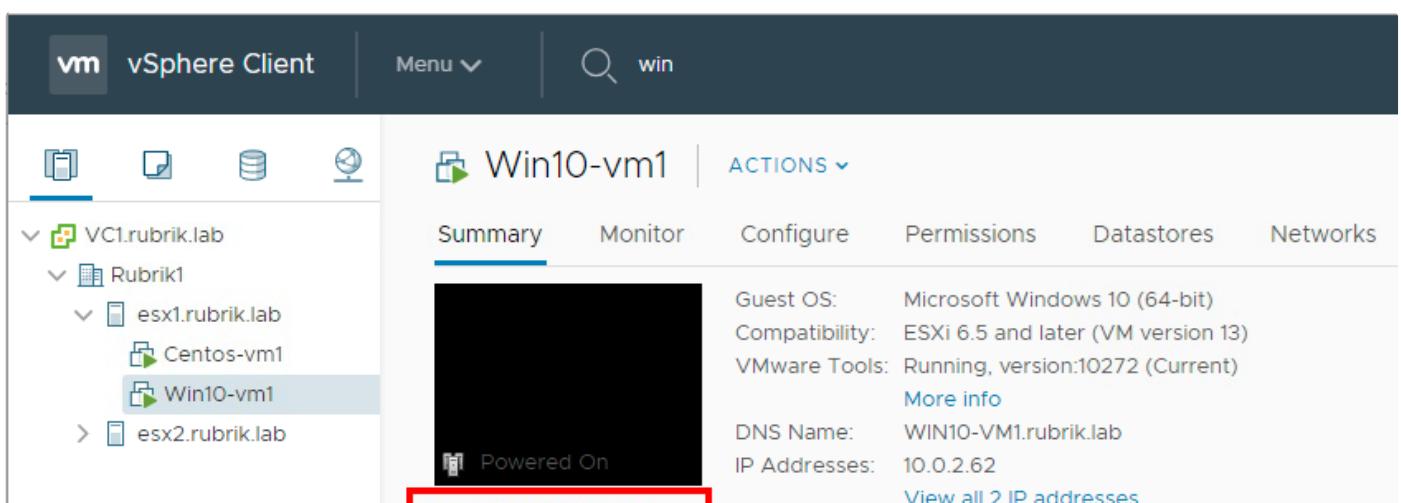
datastore mounted from the Rubrik cluster.



The screenshot shows the vSphere Client interface. On the left, the navigation tree shows a folder structure under 'VC1.rubrik.lab' containing 'Rubrik1' and 'esx1.rubrik.lab'. 'esx1.rubrik.lab' contains 'Centos-vm1', 'Win10-vm1' (which is selected), and 'ubuntu14-vm1'. 'Ubuntu14-vm1' and 'Win2016-vm1' are also listed under 'esx2.rubrik.lab'. The main pane displays the summary for 'Win10-vm1'. The 'Datastores' tab is selected, showing details about the VM's storage configuration. The 'Storage' section lists 'Host' (esx1.rubrik.lab), 'Networks' (Virtual Machines), and 'Storage'. Under 'Storage', there are two entries: 'Esx1-LocalDatastore01' and 'rubrik_3e8a319e97b54ccb87d4068...'. The latter entry is highlighted with a red box. Other tabs in the summary include 'Monitor', 'Configure', 'Permissions', and 'Datastores'. Below the summary, there are links to 'Launch Web Console' and 'Launch Remote Console'.

To see that the virtual disk is added to the VM, click on Launch Web Console. You may need to login using the following credentials:

- Username: Demo
- Password: Welcome10!



The screenshot shows the vSphere Client interface. The navigation tree is identical to the previous one. The main pane displays the summary for 'Win10-vm1'. The 'Summary' tab is selected, showing the 'Powered On' status. Other tabs in the summary include 'Monitor', 'Configure', 'Permissions', 'Datastores', and 'Networks'. The 'Datastores' tab shows the same storage configuration as the previous screenshot. The 'Storage' section lists 'Host' (esx1.rubrik.lab), 'Networks' (Virtual Machines), and 'Storage'. Under 'Storage', there are two entries: 'Esx1-LocalDatastore01' and 'rubrik_3e8a319e97b54ccb87d4068...'. The 'Powered On' status is highlighted with a red box at the bottom of the summary pane.

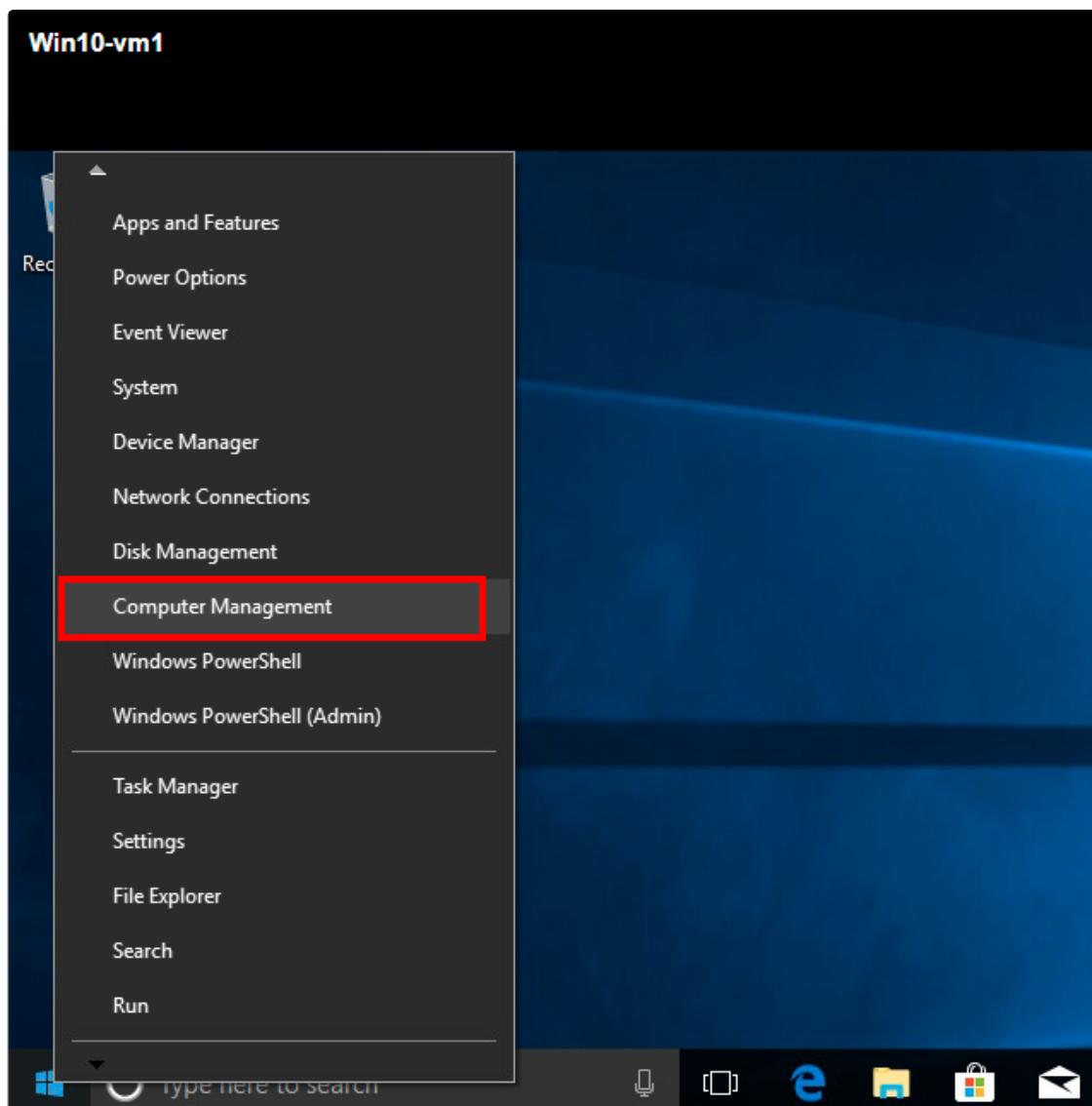
[Launch Web Console](#)

[Launch Remote Console](#)

Host:

esx1.rubrik.lab

Right click on the Windows Start Menu and select **Computer Management**.



Select **Disk Management** under **Storage** to open up the Windows Disk Management screen.

A screenshot of the Windows Computer Management interface. The left navigation pane shows 'Computer Management (Local)' with sections for System Tools, Storage (which has 'Disk Management' selected and highlighted with a red box), and Services and Applications. The main pane displays disk information for 'Disk 0'. A table shows volumes: (C:) is a 31.51 GB NTFS partition, healthy, and the primary partition. A 'System Reserved' volume is also listed. The right pane shows actions related to Disk Management.

Volume	Layout	Type	File System	Status
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)

Disk	Volume	File System	Status
Disk 0	System Reserved	NTFS	Healthy (System, Active, Primary Partition)
Disk 0	(C:)	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)



If you don't see a `vol2`, you may need to refresh the disks. If needed, select **Action** and then **Rescan Disks**.

A screenshot of the Windows Disk Management interface. The 'Action' menu is open, and the 'Rescan Disks' option is highlighted with a red box. The main pane shows disk details: Disk 0 (Basic, 32.00 GB, Online) with a System Reserved partition (C:) and another partition (Healthy, Boot, Page File, Crash Dump, Primary Partition); Disk 1 (Basic, 2.00 GB, Online) with a vol2 (E:) partition (2.00 GB NTFS, Healthy, Primary Partition). A legend at the bottom indicates that black represents 'Unallocated' and blue represents 'Primary partition'.

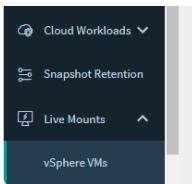
This VMDK has been mounted as part of the recovery process.

Return to Windows Explorer and verify that the new `E:\` drive (`vol2`) has appeared.

Navigate to the `E:\logos` folder on the disk and verify the Rubrik logos exist.

Return to the Rubrik UI and navigate to **Live Mounts > vSphere VMs**, select the ellipsis (. . .) menu choose **Unmount**. Confirm the unmount.

A screenshot of the Rubrik UI's 'vSphere VM Live Mounts' page. It shows a table of live mounts. One entry is selected: '1 Disk in Win10-vm1' (Powered On, Snapshot Time: 3/13/2019 8:44:22 AM, Source: 1 Disk from Win2016-vm1, Host: esx1.rubrik.lab). A red box highlights the 'Unmount' button in the table's footer.



Exploration

Objective: Work with Filesets and Snapshot Management

In this lab, you will perform the following tasks:

- Locate Rubrik Backup Service
- Manage Filesets
- Manage Windows Volume Protection
- Snapshot Management

This section will provide you the opportunity to explore the Filesets and Windows Volumes Protection, as well as Snapshot Management.

Getting Started

Every good explorer needs a set of tools to navigate the mountainous terrain of files and folders. Rubrik provides filesets as a simple tool for organizing and protecting your files and folders whether on Linux, Windows, AIX, Solaris hosts and servers, or NAS shares. Rubrik filesets are purpose-built for quickly locating and recovering your critical files or folders when urgency strikes. Your adventure as an explorer will continue as you navigate through the valley of snapshot management.

Rubrik Backup Service

The Rubrik Backup Service (RBS) provides the Rubrik cluster application-level visibility for SQL Server and Oracle databases, as well the ability to manage physical Windows, Linux, AIX, and Solaris workloads. Rubrik can backup Linux and Windows virtual machines at a more granular level than via a VM level backup.

The Rubrik Backup Service software can be downloaded directly from the Rubrik cluster, or the software can be downloaded once and copied to the appropriate server as needed.

 Trail Map:

The Rubrik Backup Service software can only be used with the Rubrik cluster from which the software is obtained. Each Rubrik cluster generates a copy of the Rubrik Backup Service software that includes authentication and encryption information specific to that Rubrik cluster. This method ensures that the Rubrik cluster and a hosted deployment of the Rubrik Backup Service can reliably authenticate each other and encrypt data-in-flight

After upgrading the Rubrik cluster software, the Rubrik cluster automatically upgrades the Rubrik Backup Service software on all protected server hosts. Upgrades do NOT require a reboot or a server restart.

The Rubrik Backup Service must run as an account that is a member of the Administrators group of the Windows Server host. On Linux or Unix machines you will need to install with root level access.

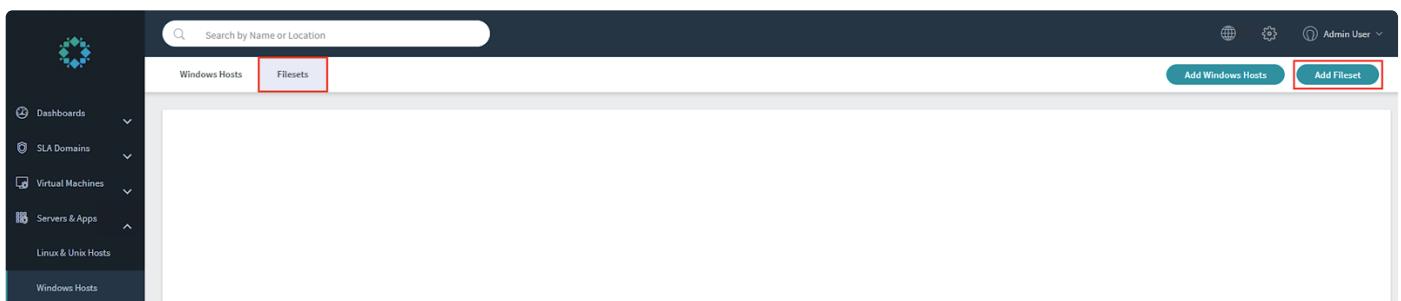
Filesets

A fileset defines a set of files and folders on a Linux host, a Windows host, or a NAS share. The Rubrik cluster interprets a fileset based on the values provided in the Include, Exclude, and Do Not Exclude fields. The Rubrik cluster applies a set of rules to the values provided in these fields and permits several types of values to be added to the fields. The Rubrik cluster uses the filesets that are assigned to a host or share to determine which data to manage and protect.

To create a fileset:

In the Rubrik UI, on the left-side menu, click **Servers & Apps > Windows Hosts**. The Windows Hosts page appears.

Select **Filesets** and then **Add Fileset**.



The Add Fileset dialog appears. Enter the following values:

- Fileset Name: Camp Rubrik Fileset
- Include: C:\Users**
- Exclude: C:\Users\AppData**

The fileset should resemble the following image.



Fileset Name

Camp Rubrik Fileset

Rules (i)

Use ****** to include all files

Include (C:, *.pdf)

C:\Users**

Exclude (C:\Secret, *.mov, *.mp3, *.mp4)

C:\Users\AppData**

Do Not Exclude (C:\company, *.mp4)

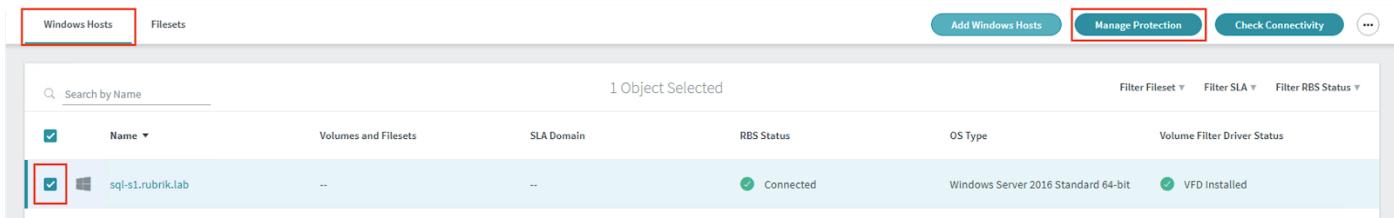
Enable Pre/Post Scripts

Cancel

Add

Click **Add**.

Return to the **Windows Hosts** tab, select the `sql-s1` workload, and then choose **Manage Protection**.



The screenshot shows the 'Windows Hosts' tab selected in the navigation bar. A list of hosts is displayed, with one host, 'sql-s1.rubrik.lab', selected and highlighted with a red border around its checkbox. The 'Manage Protection' button in the top right corner of the host details area is also highlighted with a red border.

Select **Filesets** as the Type and choose the `Camp Rubrik Fileset` created in a previous step.

Manage Protection

You have selected **sql-s1.rubrik.lab**. Select a group of volumes or a set of files to protect

Type

Volumes
For single hosts. A collection of hard disk drives from Windows servers that can be protected with the same SLA Domain.

Filesets
For multiple hosts. Set of sub-volume folders and files that can be protected with different SLA Domains.

Search by Name

Name	SLA Domain
Camp Rubrik Fileset	

Includes
C:\Users**
Excludes
C:\Users\AppData**
Do Not Exclude
--

Cancel Next

Press **Next** and select the **Camp Rubrik** SLA Domain. Press **Finish**.

A host or share can be paired with several different filesets, with each host fileset or share fileset protecting a different set of data. Each of the host filesets or share filesets can be assigned to a different SLA Domain, permitting different levels of protection for each set of data.

Windows Volume Protection

A Rubrik cluster can protect a group of drives on a Windows server. Protecting Windows volumes uses the Rubrik Backup Service on a Windows host to create a Virtual Hard Drive (VHD) file.

To protect a Windows volume:

In the Rubrik UI, on the left-side menu, click **Servers & Apps > Windows Hosts**. The Windows Hosts page appears.

Select the **sql-s1** workload, and then choose **Manage Protection**.

Windows Hosts Filesets

1 Object Selected

Name Volumes and Filesets SLA Domain RBS Status OS Type Volume Filter Driver Status

sql-s1.rubrik.lab -- -- Connected Windows Server 2016 Standard 64-bit VFD Installed

Select **Volumes** as the Type and choose the `Z:\` drive. Press **Next**.

Manage Protection

1 Volumes or Files ————— 2 SLA ————— 3 Review Impact

You have selected `sql-s1.rubrik.lab`. Select a group of volumes or a set of files to protect

Type

Volumes

For single hosts. A collection of hard disk drives from Windows servers that can be protected with the same SLA Domain.

Filesets

For multiple hosts. Set of sub-volume folders and files that can be protected with different SLA Domains.

Search by Name			
	Drives & Mount Points	Partition Type	Size
<input type="checkbox"/>	C:\	NTFS	39.5 GB
<input checked="" type="checkbox"/>	Z:\	NTFS	4 GB

Cancel

Next

Select the `Camp Rubrik` SLA Domain. Press **Next**.

Manage Protection

1 Volumes or Files 2 SLA 3 Review Impact

Assign an SLA Domain to the volume ["Z:\\" on host sql-s1.rubrik.lab.

Search SLA Domains				
	Name	Local	Archival Location	Replication Targets
<input type="radio"/>	Bronze	2 years	--	--
<input checked="" type="radio"/>	Camp Rubrik	60 days	305 days on NFS:myar...	--
<input type="radio"/>	Gold	2 years	--	--
<input type="radio"/>	Silver	2 years	--	--

[Cancel](#) [Back](#) [Next](#)

Review the changes and press **Finish**.

Click on the `sql-s1` workload to navigate to the host page. Note the Volumes and Filesets pane. Press **On-Demand Snapshot** to take a backup.

sql-s1.rubrik.lab Local

[Take On Demand Snapshot](#) [Manage Protection](#) [...](#)

Overview		VFD Installed
Oldest Snapshot	Latest Snapshot	
0 Total Snapshots	0 Missed Snapshots	

Schedules						
Search by File Name	Year	Month				
Today	<	June 2020				
S	M	T	W	T	F	S

			1	2	3	4	5	6	
7	8	9	10	11	12	13			
14	15	16	17	18	19	20			
21	22	23	24	25	26	27			
28	29	30							

The **On-Demand Snapshot** dialog appears, ensure the `Z:\` drive is selected and press **Next**.

Take On Demand Snapshot

1 Volumes or Files ————— 2 SLA ————— 3 Review Impact

Select a group of volumes or a set of files to take a snapshot of.

Type

Volumes

For single hosts. A collection of hard disk drives from Windows servers that can be protected with the same SLA Domain.

Filesets

For multiple hosts. Set of sub-volume folders and files that can be protected with different SLA Domains.

Search by Name

Drives & Mount Points

Partition Type

Size

C:\

NTFS

39.5 GB

Z:\

NTFS

4 GB

Cancel

Next

Press **Next** and select the `Camp Rubrik` SLA Domain. Press **Finish**. Note that an on-demand snapshot

can be managed by a separate policy to specify a different retention period.

Click on the globe menu in the Activity Log. The **Activities** screen reports the latest status of the snapshot operation. Select the message under Activities to review the Activity Detail.

The screenshot shows a dark-themed interface with a globe icon in the top right corner. Below it, there are two buttons: "Activity Log" on the left and "See All" with a right-pointing arrow on the right. The main area displays a single activity entry:

Completed backup of Volume Group 'sql-s1.rubrik.lab volumes'.
6/18 1:52 pm

A Live Mount of a volume group can provide direct access to the volumes in the group, allowing for quick recovery. To do so:

Locate the **Snapshots** calendar view screen and find a date indicated by a green dot. Click on the green dot to see one or more available snapshots from that date.

Click on the ellipsis (...) menu and select **Mount**.

The screenshot shows a "Snapshots" calendar view. At the top, there is a search bar labeled "Search by File Name". Below the search bar, there are three navigation buttons: "Today", "Year", "Month", and "Day", with "Day" being underlined. In the center, there is a date selector showing "June 18, 2020" with arrows for navigating between months. The main table lists snapshots with columns for "Created Time", "Volume / Fileset", and "Expiration Date". The first row shows a snapshot created at 1:50 PM on June 18, 2020, for volume Z:\. The "Mount" option in the ellipsis menu for this row is highlighted with a red box. The second row shows a snapshot created at 1:53 PM on June 18, 2020, for "Camp Rubrik File..." containing 3403 files. The ellipsis menu for this row includes options: "Recover Files", "Place on Legal Hold", and "Change Retention".

Created Time	Volume / Fileset	Expiration Date
1:50 PM	Z:\	Com
1:53 PM	Camp Rubrik File... 3403 Files	Com

In the **Mount Snapshot** screen, ensure the checkbox next to the `Z:\` is selected and click **Next** to continue.

Mount Snapshot

1 Volumes ————— 2 Hosts ————— 3 SMB Configuration

Search by Name			
Drives & Mount Points	Partition Type	Size	
<input checked="" type="checkbox"/> Z:\	NTFS	4 GB	

Cancel

Next

Select the radio button next to **No Host**. This will expose the SMB path during the mount operation. Click **Next** to continue.

Mount Snapshot

1 Volumes ————— 2 Hosts ————— 3 SMB Configuration

Search by Name

Hosts

sql-s1.rubrik.lab (Current)



No Host

Do not create mount points on a host. Simply expose the SMB paths

Cancel

Back

Next

Enter the following information on the **SMB Configuration** screen:

- Domain: rubrik.lab
- Usernames: demo
- Active Directory Groups: rubrikgroup
- Client IP: 10.0.2.100

Mount Snapshot

Volumes ————— Hosts ————— 3 SMB Configuration

Domain
rubrik.lab

Usernames
demo
Use commas to separate usernames

Active Directory Groups
rubrikgroup
Use commas to separate groups

Client IPs
10.0.2.100
Use commas to separate IPs. This is used for mapping client IPs to AD domains.

[Cancel](#) [Back](#) [Finish](#)

The process will take a few moments to complete to expose the SMB share. You can review progress in the **Activities** pane.

Activities			Filter Status ▾
Status	Message	Date	
✓	Mounted Volume Group 'sql-s1.rubrik.lab (Z:\)'.	Jun 18, 2020 02:50:00 PM PDT	

On the left-side menu, click **Live Mounts > Windows Volumes**. Hover over the `sql-s1.rubrik.lab` server name to view the SMB Path details. Click the SMB Path to copy the information into the Clipboard.

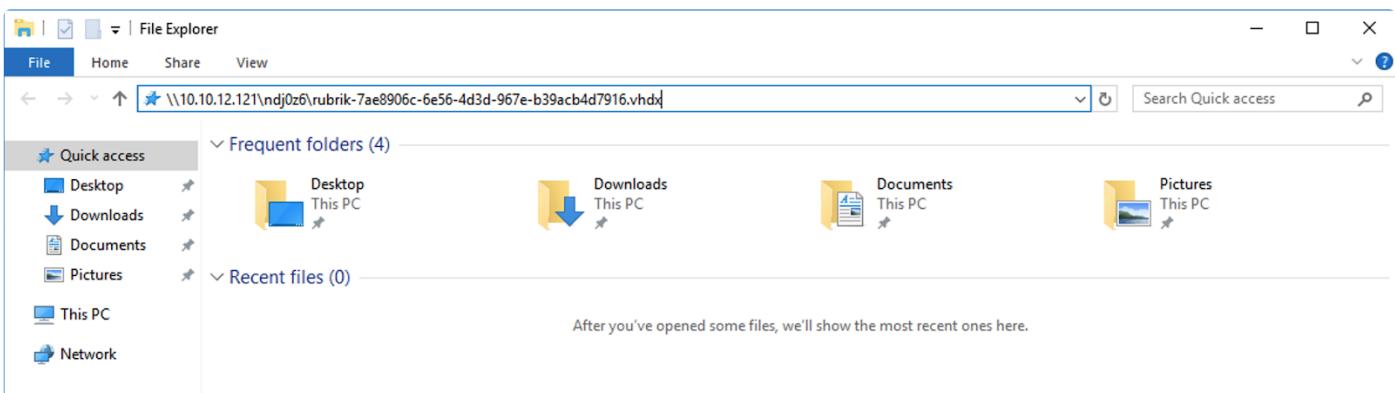
Windows Volumes Live Mounts

Name	Source Host	Snapshot Time	Target Host	Restore Script Path:
sql-s1.rubrik.lab (Z:\)	sql-s1.rubrik.lab	6/18/2015 10:50 PM	--	\\10.10.12.121\nd0z6\with_layout\RubrikBMR.ps1

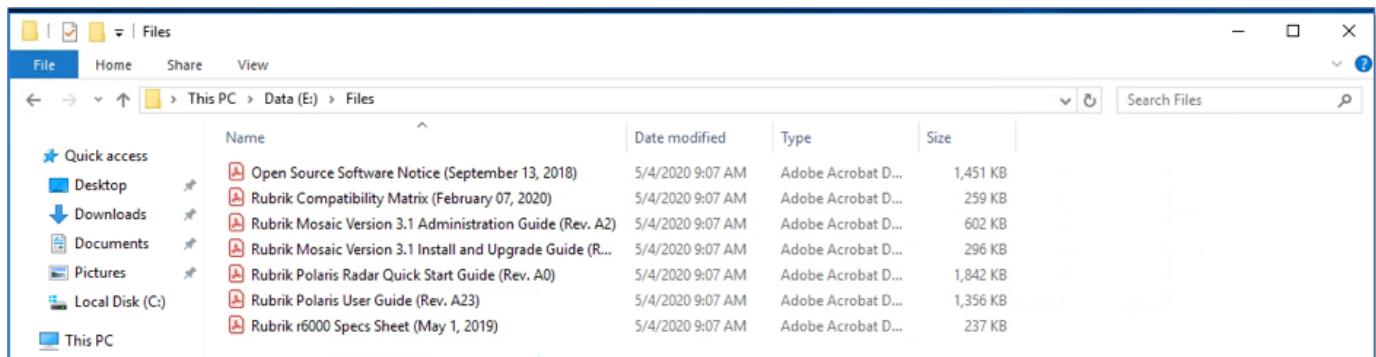
Original Mount Points SMB Path Size

Z:\ \\10.10.12.121\nd0z6\rubrik... 40.03 GB

Open the Windows File Explorer application on Jump1. Paste the contents of the Clipboard in the Navigation window of File Explorer and press **Enter**.



In this case, notice the Live Mount has mounted the `E:\volume` as Data. There is a Files folder listed with seven files listed.



Snapshot Management

A data object, such as a snapshot or backup, is an unmanaged object when any of the following circumstances are true:

- Data source is no longer available to the Rubrik cluster.
- Data source was removed from an SLA Domain and not added to another SLA Domain.
- Data object was created on-demand and without a retention policy.
- Data object is a replica that is no longer associated with the replication source.
- Data object is an archival copy that was retrieved from an archival location.

In each of these cases the data object does not have a retention policy to control the life of the data. Data objects without a retention policy are called unmanaged objects.

The Snapshot Management page may be used to initiate management tasks for unmanaged objects and consists of two levels: data source level and object level. The data source level provides information about the virtual machines, applications, and filesets that are the source of the unmanaged object data. The object level provides information about the individual unmanaged objects of a selected data source.

On the left-side menu, click **Snapshot Management**.

The data source level of the Snapshot Retention page appears.

The screenshot shows the 'Snapshot Retention' tab selected in the top navigation bar. A search bar at the top allows searching by name or location. Below it, there are tabs for 'Snapshot Retention' and 'Legal Hold'. On the left, a sidebar lists various categories: Dashboards, SLA Domains, Virtual Machines, Servers & Apps, Linux & Unix Hosts, Windows Hosts, NAS Shares, SQL Server DBs, Oracle DBs, Managed Volumes, Cloud Workloads, and Snapshot Management. The 'Snapshot Management' item is highlighted. The main content area is titled 'All Objects' and contains a table with columns: Name, Location, Object Availability, SLA Domain, Snapshots, Local Storage, and Archival Storage. Two entries are listed: 'Centos-vm1' and 'Win2016-vm1'. Both are located at 'vc1.rubrik.lab/Rubrik1/esx1.rubrik.lab' and are marked as 'Protected'. Their SLA Domain is 'Gold', they have 7 and 6 snapshots respectively, and their local storage is 1 GB and 9.5 GB, while archival storage is 0 B.

In the **Name** column, select the name of a data source.

The local host page or Recovery Points card page appears.

The screenshot shows the local host page for 'Centos-vm1'. At the top, it says 'Centos-vm1 Local'. There are two main sections: 'Overview' on the left and 'Snapshots' on the right. The 'Overview' section displays several metrics: 'vc1.rubrik.lab vCenter' (with a vCenter icon), 'esx1.rubrik.lab Host' (with a host icon), 'Gold SLA Domain' (with a shield icon), '0 Live Mounts' (with a lightning bolt icon), '6/17/20 5:43 PM Oldest Snapshot' (with a calendar icon), '6/18/20 1:26 PM Latest Snapshot' (with a clock icon), and '6 Total Snapshots' (with a camera icon). The 'Snapshots' section shows a monthly calendar for June 2020. The days of the week are labeled S, M, T, W, T, F, S. Specific dates are marked: June 17th and 18th are highlighted with blue dots, indicating they are scheduled snapshots. Other dates like 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 are regular days.

Tasks (such as Instant Restore, Live Mount, etc.) may be conducted with the data available through the Snapshots panel. Please do not conduct any tasks against an Unmanaged Object at this time.

Pioneering

Objective: Manage Databases

In this lab, you will perform the following tasks:

- Live Mount a SQL Server Database

- Unmount a SQL Server Database

This section presents new recovery methods that take database management to another level. The instructions focus on Microsoft SQL, however, please note that similar functionality (database Live Mount) is available for Oracle.

Getting Started

Databases are at the heart of the data management strategy for all enterprises. This is because critical applications are built and hosted on databases—both relational and non-relational—so any downtime on databases has a direct impact on the company’s revenue. Rubrik is committed to delivering value to our customers by simplifying their data management strategies across all environments.

Live Mount also allows customers to quickly clone their production database onto an alternate host but with the added benefit of not having to copy files, eliminating the need to provision any storage for database clones.

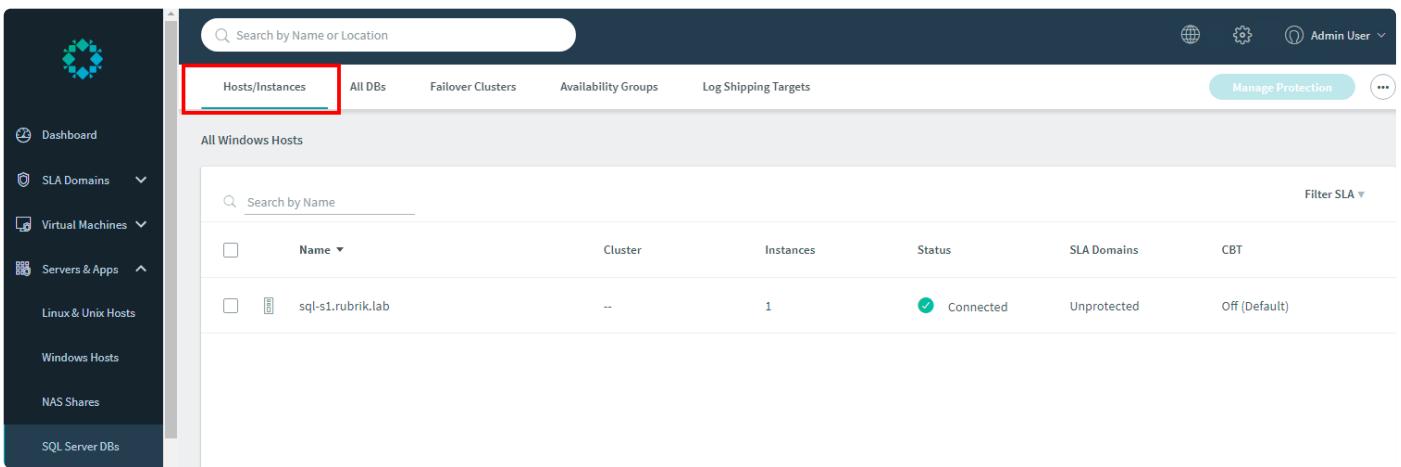
SQL Live Mount

SQL Live Mount creates a new database from a point-in-time copy of the source database. The Rubrik cluster presents an SMB share of the new database directly from the Rubrik cluster storage layer. Using Live Mount to access a copy of a database can significantly reduce the RTO for the database, especially for granular level recovery.

A Live Mount database can be attached to an SQL Server instance on any Windows Server host that is running the Rubrik Backup Service. Transmissions between the Rubrik cluster and the host of the Live Mount are secured by end-to-end encryption.

Use Live Mount functionality to create a new database from a point-in-time copy of a source database:

On the left-side menu, click **Servers & Apps > SQL Server DBs**. The Hosts/Instances window appears



The screenshot shows the Rubrik interface with the 'Hosts/Instances' tab highlighted in red. The main pane displays a list of hosts under 'All Windows Hosts'. One host, 'sql-s1.rubrik.lab', is listed with details: Cluster (empty), Instances (1), Status (Connected), SLA Domains (Unprotected), and CBT (Off [Default]).

Name	Cluster	Instances	Status	SLA Domains	CBT
sql-s1.rubrik.lab	--	1	Connected	Unprotected	Off [Default]

Click **All DBs**. The **All DBs** window appears.

The screenshot shows the Rubrik management interface. On the left, there's a sidebar with various navigation options like Dashboard, SLA Domains, Virtual Machines, Servers & Apps, and SQL Server DBs. The 'SQL Server DBs' option is currently selected. The main area has a search bar at the top labeled 'Search by Name or Location'. Below it, there are tabs for 'Hosts/Instances', 'All DBs' (which is highlighted with a red box), 'Failover Clusters', 'Availability Groups', and 'Log Shipping Targets'. A green button 'Manage Protection' is on the right. Under the 'All DBs' tab, there's a table with columns: Name, Location, Log Backup, Copy Only, SLA Domain, and Assignment. The table lists four databases: AdventureWorks, master, model, and msdb. AdventureWorks is located at 'sql-s1.rubrik.lab/MSSQLSERVER', while the others are at 'sql-s1.rubrik.lab/MSSQLSERVER'. Log Backup intervals are 15 min for AdventureWorks, N/A for master and model, and -- for msdb. Copy Only is set to No for all. SLA Domain is 'Gold' for AdventureWorks and 'Unprotected' for the others. Assignment is 'Direct' for AdventureWorks and 'Unassigned' for the others.

In the **Name** column, select the `AdventureWorks` database. Alternatively, enter `AdventureWorks` in the search field or use the filters at the top left of the list.

This screenshot is similar to the previous one, but the 'AdventureWorks' database row is now highlighted with a red box. The 'Name' column for AdventureWorks has a checked checkbox. The rest of the table and interface elements are identical to the first screenshot.

The **Local** page for the database appears; on the right hand side, the **Recovery Points** pane displays the **Month** view.

On the **Recovery Points** pane, select a day that has a green dot. The green dot indicates that at least one successful snapshot was created on that day.

The screenshot shows the 'Recovery Points' pane. At the top, there are tabs for 'Today', 'Year', 'Month' (which is highlighted with a blue underline), and 'Day'. Below that is a calendar for June 2020. The days of the week are labeled S, M, T, W, T, F, S. The days are numbered from 1 to 13. Days 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, and 13 have small green dots in their center, indicating they have successful snapshots. Days 6 and 13 have small grey dots, indicating they do not have successful snapshots. To the left of the calendar, there's an 'Overview' section with details about the host/instance 'sql-s1.rubrik.lab' (MSSQLSERVER), its recovery model ('Full Recovery Model'), its SLA domain ('Gold'), and its next scheduled snapshot ('6/17/20 10:57 PM').



Trail Map: While Rubrik always sends incremental backups of SQL Server databases, the green dot indicates the synthetically created Full to match the assigned policy. The points in time between fulls are offered for databases in Full Recovery mode using automatically rolling transaction logs. Restoring to a Full (blue dot) will be somewhat faster than choosing a point in time in between Fulls due to the time savings of not rolling transaction logs.

The **Recovery Points** card displays the **Day** view for the selected calendar date. Move the Recovery point slider to select a recovery point.

Recovery Points

Today

Year Month **Day**

< June 17, 2020 >



12:00 AM 6:00 AM 12:00 PM 6:00 PM 12:00 AM

▶ 11 : 51 : 08 AM ▼

Expiration Date
Computing

Mount

Export

Restore

Download Files

Delete

Place on Legal Hold

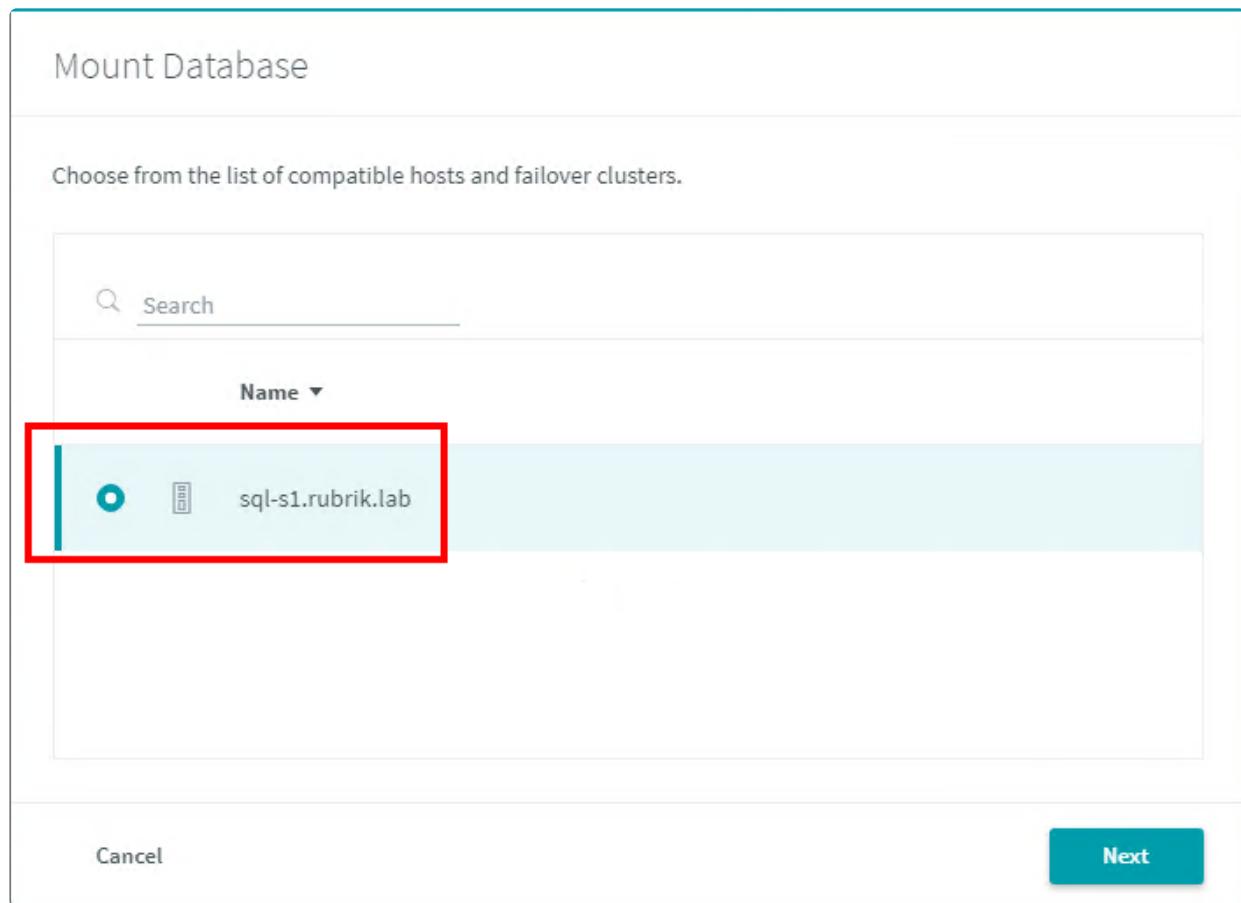
Change Retention

To select a recovery point other than a snapshot time, move the slider to choose that time. The time appears in the time field and the selected time icon changes. Alternatively, type a specific time into the time field.

Open the ellipsis (. . .) menu and select **Mount**.

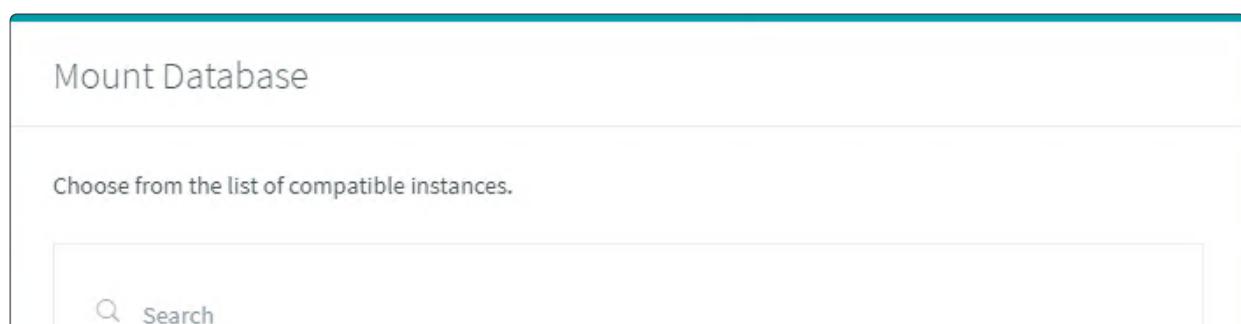
The Mount Database dialog box appears.

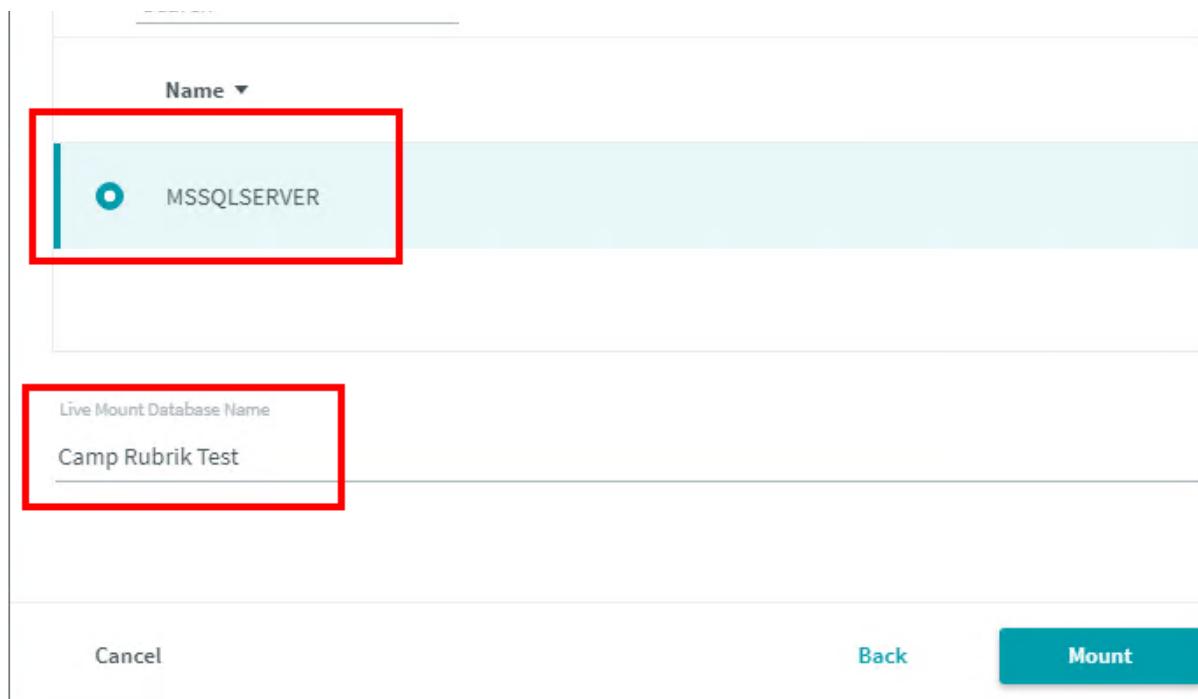
In **Name**, select a Windows Server host, and click **Next**. You will automatically see all SQL Servers with the Rubrik connector installed. Alternatively, enter the name of a host in the search field.



In **Name**, select a SQL Server instance. Alternatively, enter the name of an instance in the search field.

In **Live Mount Database Name**, type a unique name.





Click **Mount**.

The Rubrik cluster shares the Live Mount over the SMB/CIFS protocol and automatically sets the protection state of the new database to **Do Not Protect**. This ensures the Rubrik cluster does not backup data stored on itself. The Rubrik cluster then mounts the share to the specified Windows Server host and attaches the Live Mount database to the specified SQL Server instance.

On the left-side menu of the web UI, click **Live Mounts > SQL Server DBs**. The SQL Server DB Live Mounts page appears. Wait until the **Status** changes to **Available**. This may take approximately one minute.

Name	Host	Instance	Status
Camp Rubrik Test	sql-s1.rubrik.lab	MSSQLSERVER	Available

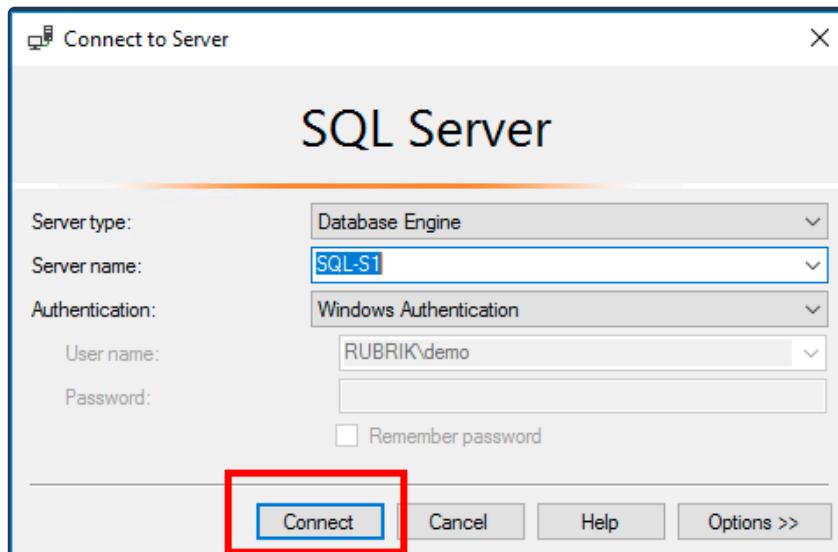
On the desktop of Jump1, you will find a Remote Desktop icon labeled **SQLServer**. Double-click on the icon to open it.



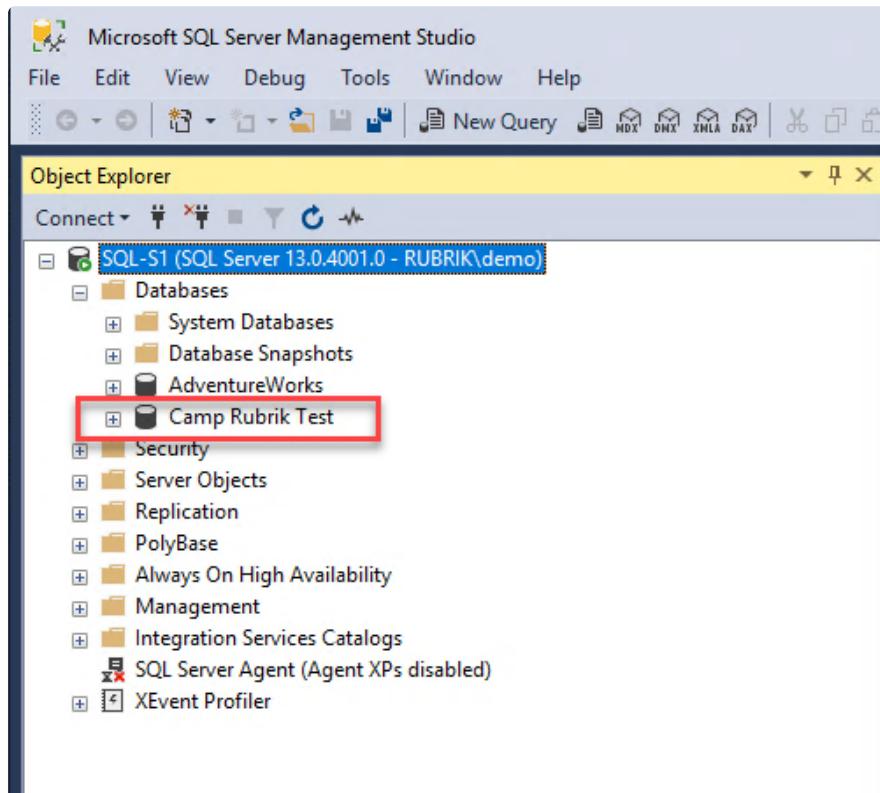
Open Microsoft SQL Server Management Studio by clicking the icon on the bottom menu.



Click **Connect** at the login prompt.

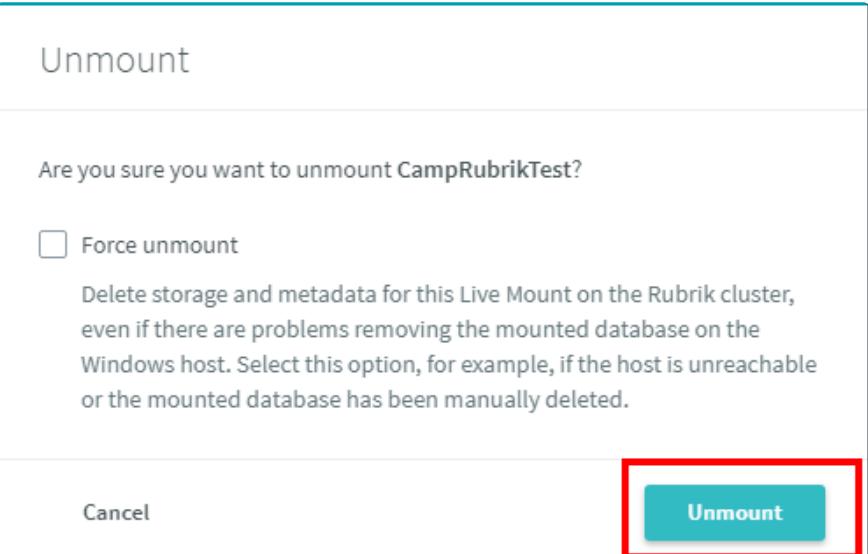


In the left-hand column, expand the **Instance name > Databases**. The Live Mounted Database should be listed.



Minimize the SQL Server RDP window and return to the Rubrik UI tab.

On the SQL Server DB Live Mounts page and open the ellipsis (. . .) menu next to the entry for your Live Mount database and select **Unmount**. A confirmation message appears.



Click **Unmount** once more to confirm. The Rubrik cluster detaches the database from the SQL Server instance and unmounts the share from the Windows Server host.

Oracle

Rubrik offers the same protection for Oracle as Microsoft SQL. Oracle backups are preserved in an immutable format and managed via the same Rubrik policy that applies to all other datasets. Live Mount enables near-zero RTOs to ensure organizations are able to recover from an outage in near instant fashion. A virtual read-write copy of Oracle data files is generated on-demand and served directly to the production Oracle host via NFS. Rubrik's Live Migration capability enables Oracle data files to be migrated back to production while Oracle database files are still being actively served by the Rubrik cluster, thus eliminating additional downtime.

Nephology

Objective: Unleash the Power of Hybrid Cloud

In this lab, you will perform the following tasks:

- Navigate CloudOut archival functionality
- Explore CloudOn and Cloud Conversion options
- Understand Cloud-Native Protection

This section will provide you the opportunity to explore some of the Rubrik functionality for public cloud. This section provides more of an overview rather than a guided lab experience.

Getting Started

The word nephology means the study or contemplation of clouds. Rubrik enables enterprises to utilize public cloud (i.e. Amazon AWS, Microsoft Azure, and Google Cloud Platform) or private cloud for all aspects of data management – backup, replication and DR, archival, test/dev, and more. Backups can be used to convert VMs into cloud instances for on-demand application migration and cloud test/dev.

Rubrik Polaris Cloud-Native Protection can be used to protect and manage applications such as Microsoft Office 365, AWS EC2 instances, and cloud databases.

CloudOut

CloudOut is Rubrik's ability to cost effectively archive data to the cloud for long-term retention. An SLA Domain can include an archival policy that instructs Rubrik to copy protected data to an archival location. The archival policy specifies the archival location to use, how soon after a backup the data is copied, and how long the data is retained.

Rubrik supports a number archival location types, including:

- Amazon S3
- Amazon Glacier
- Google Cloud Platform
- Azure
- Object Store
- NFS

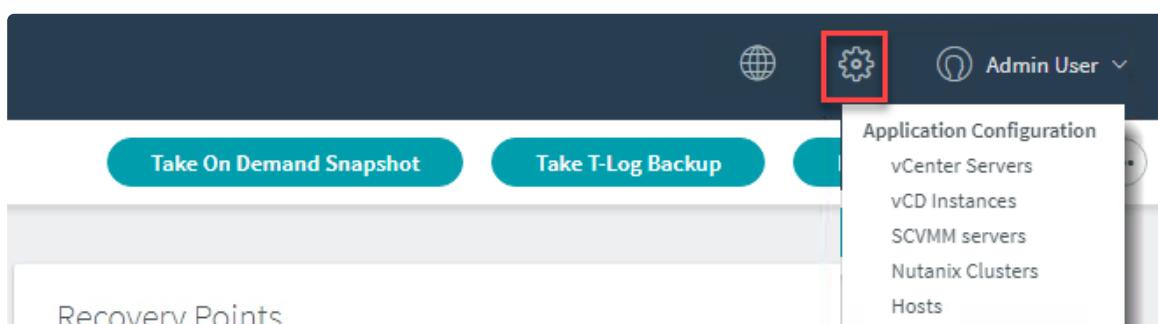
A Rubrik cluster can have multiple archival locations and types. The archival policy of an SLA Domain can only specify one archival location but each SLA Domain can specify a different archival location.

Adding a Cloud Archive Location

Using Amazon S3 as an example, let's walk through adding an archive location:

Click on the gear icon located on the top right bar of the web UI.

The Settings menu appears.



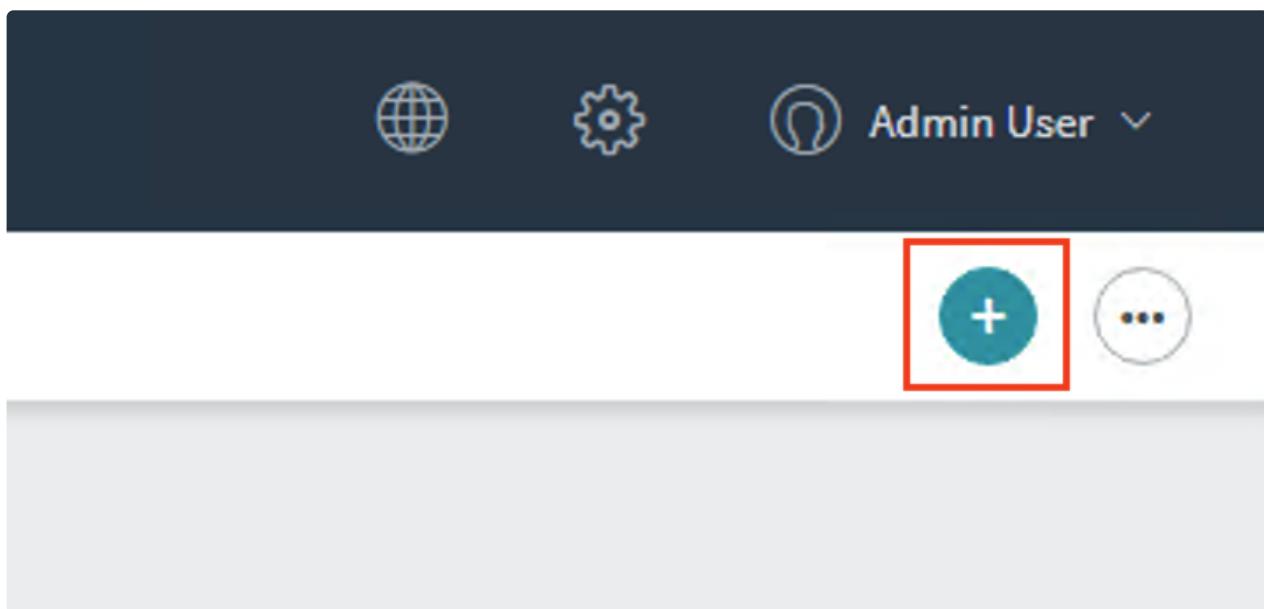
The screenshot shows the Rubrik interface. On the left is a calendar for March 2019. The days are labeled from Sunday (S) to Saturday (F). Specific dates (5, 6, and 7) are highlighted with blue dots. On the right is a vertical navigation menu with several sections:

- Cloud Sources
- Guest OS Settings
- System Configuration**
- Replication Targets
- Archival Locations** (highlighted with a red box)
- Storage Arrays
- Adaptive Backup
- Pause Protection
- TLS Certificates
- iSCSI Sources
- Cluster Settings
- Syslog Settings
- SMB Security
- Network Configuration
- Proxy Settings
- Network Settings
- Network Throttling
- Notification Settings
- Access Management
- Users
- Organizations
- Support
- Support Bundle
- Support Tunnel
- About Rubrik

From the **Settings** menu, select **Archival Locations**.

The Archival Locations page appears.

Click the blue + icon.



The Add Archival Location dialog box appears.

In **Archival Type**, select **Amazon S3**.

The Amazon S3 archival location fields appear.

Add Archival Location

Archival Type
Amazon S3

Region

Storage Class

AWS Access Key

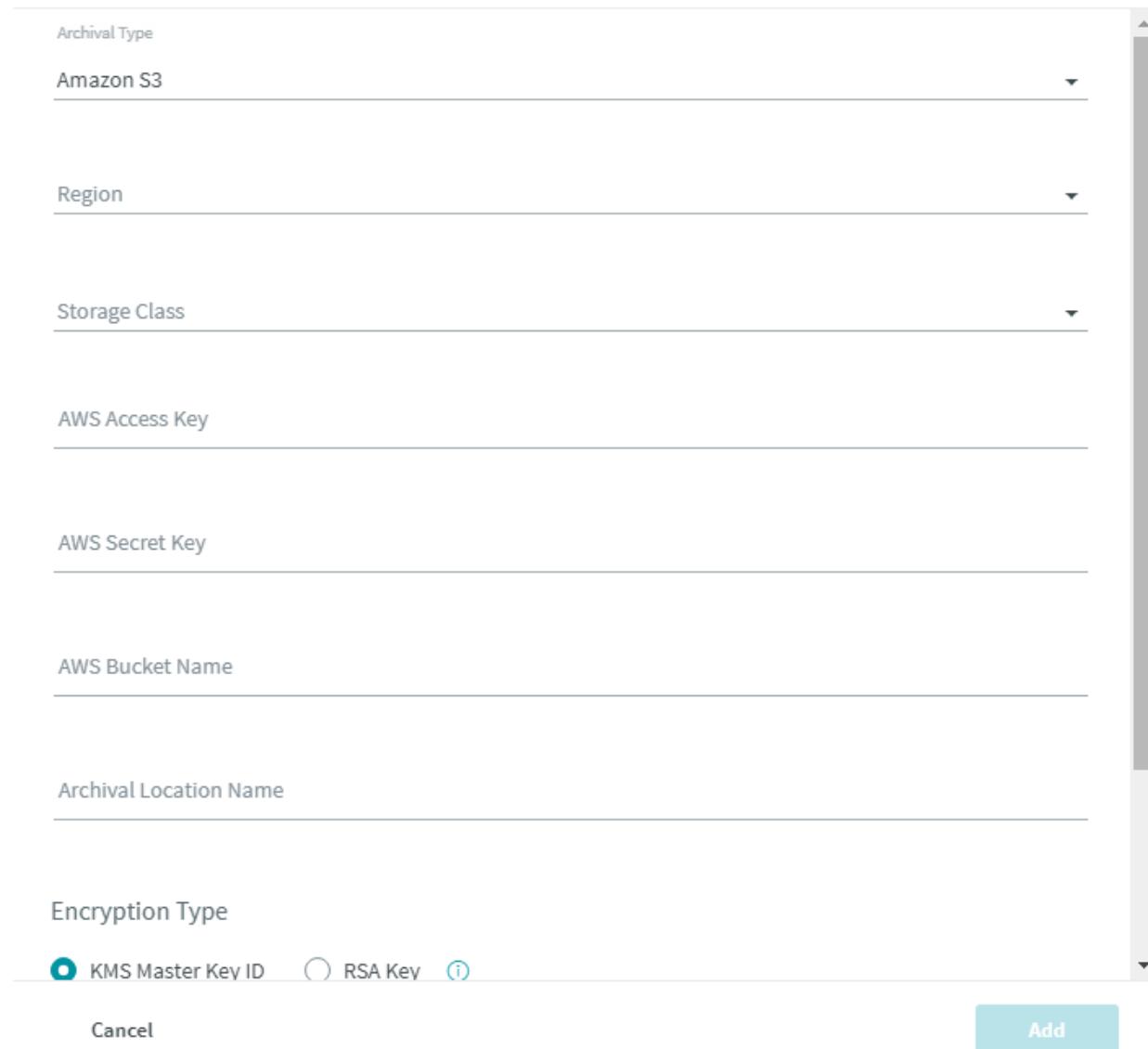
AWS Secret Key

AWS Bucket Name

Archival Location Name

Encryption Type
 KMS Master Key ID RSA Key

Cancel **Add**



Review the different inputs required for Amazon S3 as an archive. Feel free to browse other archive types to view required settings.

Press **Cancel** when finished.

On the left pane of the web UI, select **SLA Domains > Local Domains**. The Local SLA Domains page appears.

Select the Camp Rubrik SLA Domain that you previously created. The SLA Domain page will load.

Click the ellipses (. . .) at the top right corner of the SLA Domain page. Select **Edit**.

Click **Next** to view the **Set Archiving and Replication** pane.

In Archiving, click the toggle (if not already done). Notice the **Enable Instant Archive** option. Do not select it at this time although you can click the circled “ i ” to read what it does.

Edit SLA Domain

Set Frequency and Retention

Set Archiving and Replication (Optional)

Review Impact

Retention On Brik



Archiving

NFS:myarchive ▾

Enable Instant Archive

Archiving starts after 60 days, and is retained on the archival location for 305 days.

Replication

A replication target has not been set up yet. Please [add a replication target](#) to configure retention.

[Cancel](#)

[Back](#)

[Next](#)

The Instant Archive feature can be enabled to instruct a Rubrik cluster to immediately queue a task to copy a new snapshot to a specified archival location.

Press **Cancel**.

CloudOn

Cloud instantiation allows users to migrate existing on-premises workloads to the cloud for test/development or even disaster recovery purposes. This feature converts the workload data (VM image) sent to the cloud into a compute instance. Using Rubrik CloudOn, workloads can be migrated at a VM level from on-premises to AWS or Azure.

Rubrik offers three options that can be applied to on-premises workloads that customers choose to instantiate in AWS or Azure:

- **On-Demand** - The default configuration in which Amazon Machine Images (AMIs) or Azure Virtual Hard Drives (VHDs) are created only at the time of a “power on in the cloud” request.
- **Auto Convert Latest Snapshot - Keep One** - Rubrik will automatically construct an AMI or VHD reflecting the latest snapshot to be archived into S3 or Azure. When a new snapshot is sent to the archive, a new AMI or VHD is constructed with the new archive data. Once completed, the older AMI or VHD is removed.
- **Auto Convert Latest Snapshot - Keep All** - Rubrik will automatically construct an AMI or VHD reflecting the latest snapshot to be archived into S3 or Azure. When a new snapshot is sent to the archive, a new AMI or VHD is constructed with the new archive data. The older AMI or VHD is retained if desired (configurable via policy) creating a series of AMIs or VHDs representing each snapshot.

Launch on Cloud

On the local page for a selected virtual machine, a snapshot is selected and then **Launch on Cloud** is chosen (You will not do this in the lab, shown is an example screenshot).

The screenshot shows the Rubrik interface with the 'Snapshots' tab selected. A search bar is present. Below it, a date selector shows 'September 20, 2018'. A list of snapshots is displayed, each with a camera icon and a timestamp. The fourth snapshot, taken at 10:42 PM, has a context menu open. The menu items are: Mount, Instantly Recover, Export, and Browse Files. The 'Browse Files' option is highlighted with a red border.

Timestamp	Action Icons
4:41 AM	Mount, Instantly Recover, Export
10:42 AM	Mount, Instantly Recover, Export
4:42 PM	Mount, Instantly Recover, Export
10:42 PM	Mount, Instantly Recover, Export, Browse Files

Launch on Cloud

The Launch on Cloud dialog appears, as shown in the following screenshot.

Toggling the Cloud Provider between AWS and Azure will result in being prompted for the vendor appropriate elements for instantiation. The following screenshot demonstrates the required inputs for both AWS and Azure.

Launch on Cloud

Cloud Provider

AWS AZURE

Location Name

Instance Type

m4.xlarge (Recommended)

Subnet(VPC)

Security Group

[Cancel](#) [Submit](#)

Launch on Cloud

Cloud Provider

AWS AZURE

Location Name

Virtual Machine Size

A2m v2 (Recommended)

VNet

Network Security Group

[Cancel](#) [Submit](#)

The conversion time varies depending on the size of the VM being converted into a cloud instance.

Cloud Conversion

Once connectivity has been established to AWS and/or Azure, the **Overview** pane will display the **Cloud Conversion** field in which you may click **Configure**.

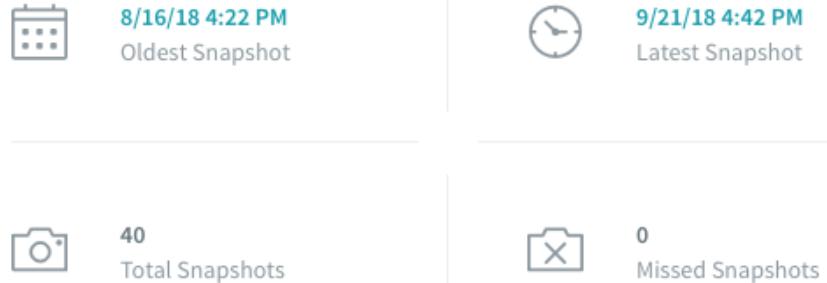
Overview

S3:rubrik-tm-s3-ca
Cloud Conversion
[Configure](#)

vcsa.rubrik.us
vCenter

CloudOn AWS DND
SLA Domain

0
Live Mounts



A **Configure Cloud Conversion** dialog will appear, in which you may toggle the choice between:

- Auto Convert Latest Snapshot - Keep One
- Auto Convert Latest Snapshot - Keep All

Configure Cloud Conversion

It will convert latest snapshots into AMI and delete older AMIs by default, unless there is an instance created from that AMI.

Cloud Conversion

Cloud Location
S3:rubrik-tm-s3-ca

Keep older AMIs

Cancel
Submit

This configuration results in the latest snapshot being converted into a cloud image, for example, an AMI or VHD. This image can be used to spin up as many instances of the workload as desired.

Cloud-Native Protection

Rubrik Cloud-Native Protection eliminates painful scripting and manual job scheduling. Cloud-Native Protection is a Software as a Service (SaaS) based data protection platform that provides automated backup, recovery, and replication schedules across regions, and even across clouds with a single global policy engine. It also allows the customer to quickly find and recover snapshots or files with predictive search. Ultimately, customers reap the benefits of rapid innovation and reduced management complexity with data protection delivered as an easy-to-consume service.

Signs, Signals & Codes

Objective: Work with Envision Reporting, Activities, and Notifications

In this lab, you will perform the following tasks:

- Explore System Overview
- Create a Custom Report
- Filter the Activity Log and Notifications

Use Rubrik to stay informed and laser-focused on the horizon ahead when protecting your critical data.

Getting Started

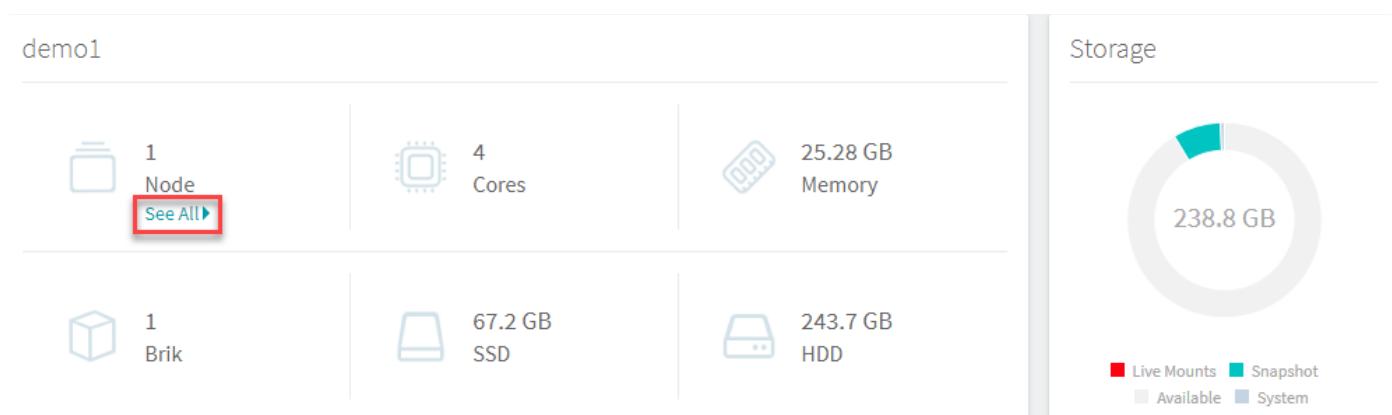
Envision is Rubrik's feature for custom reporting that is useful for day-to-day operations and management. System, Activities, and Notifications provide insight around specific tasks and management activities performed by the Rubrik cluster.

System

The System page is where you can see various hardware and storage metrics at a glance. This is useful to see system utilization levels, hardware health or failure, and more.

In the Rubrik UI, in the left-hand pane, click **System**.

Note the resource configurations for the entire cluster: # of nodes, cores, memory, and more.



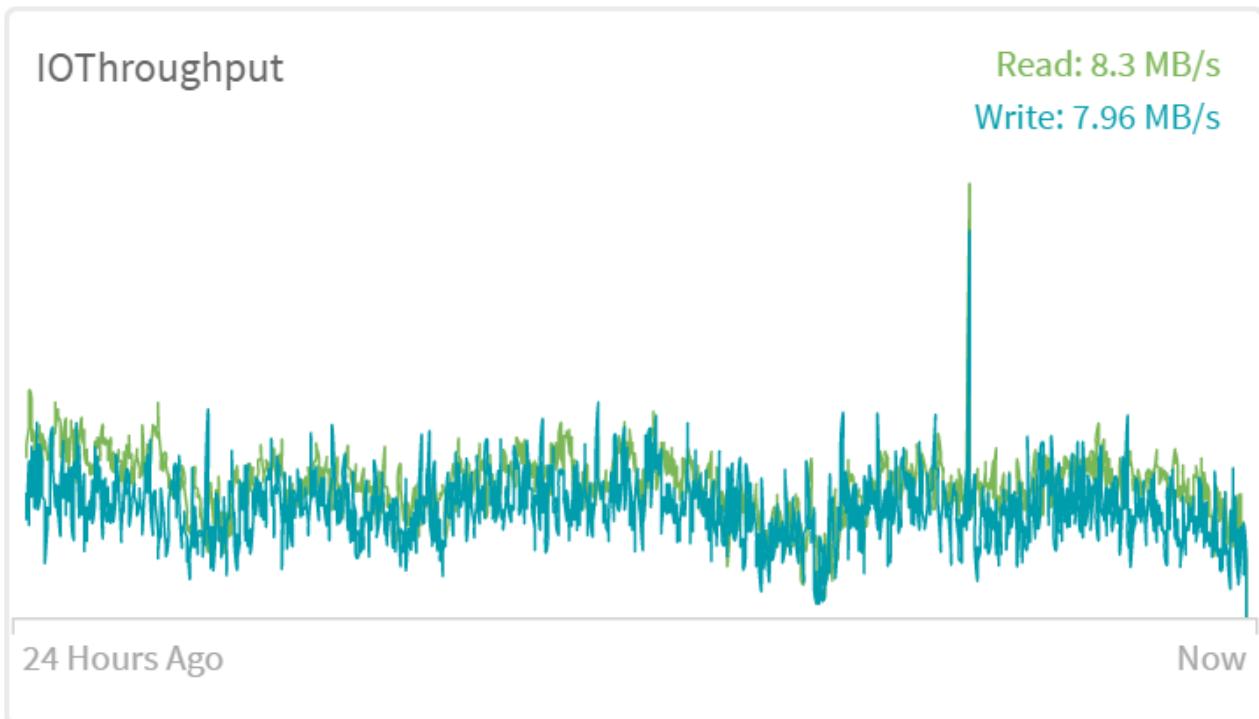
Click **See All** underneath the node count to see individual node information. Then click on an individual node to see detailed information for that node.

Name ▾	Status	IP Address	Brik ID
VRVW564D26A19	OK	10.0.2.10	RUBRIK

Go back to the **System** screen.

Note the other metrics available - I/O Throughput, IOPs, and Storage.

To determine whether the I/O Throughput is trending optimally based on your network you can view it easily here and make a decision to investigate further.



Envision

Rubrik Envision provides customizable data protection reports with valuable information from the Rubrik cluster. Envision gives insight into historical information based on Protection Tasks, SLA Compliance, and System Capacity.

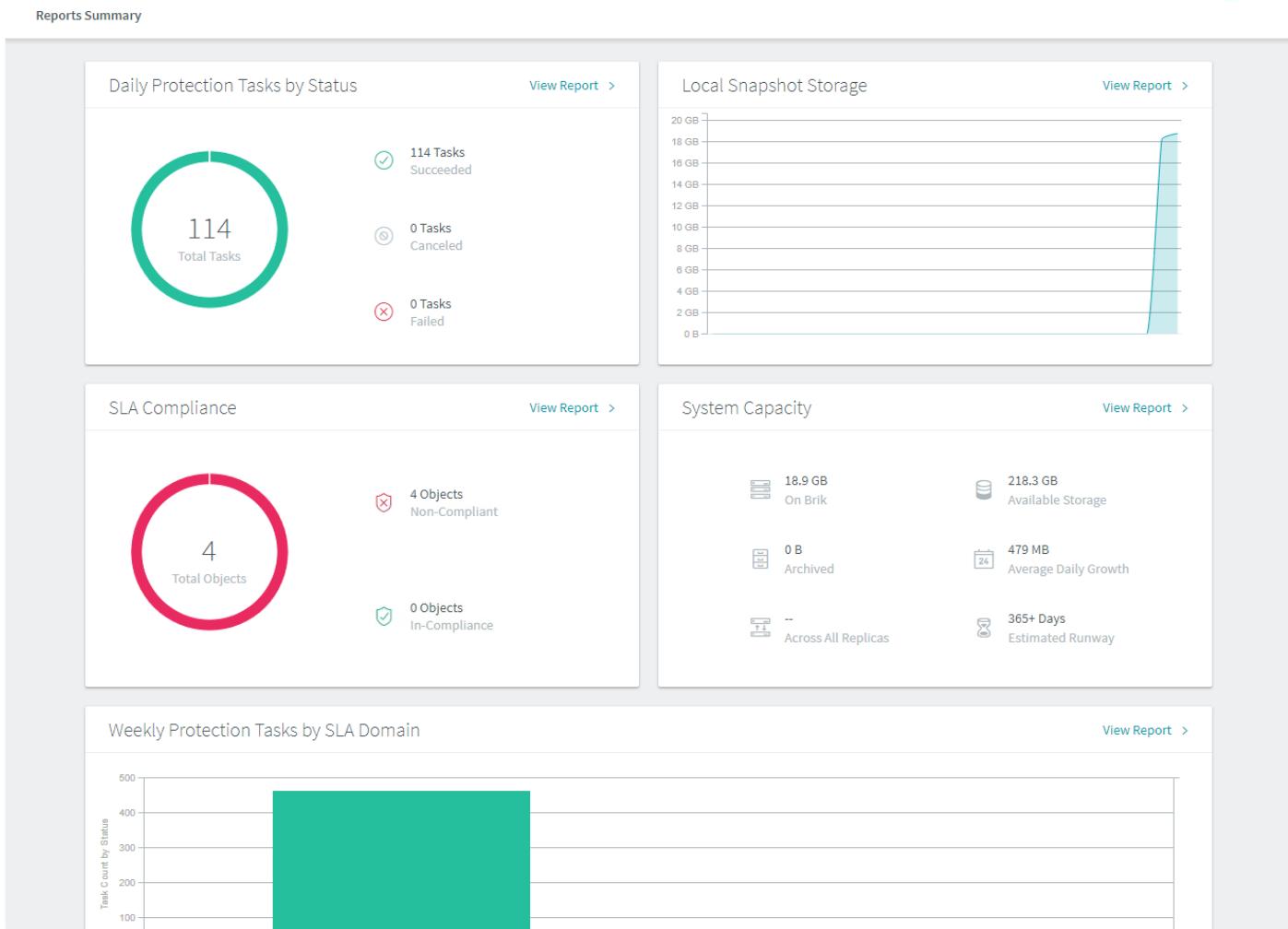
You can explore Envision in two formats:

- Reports Summary
- Reports Gallery

In the **Reports Summary** you can view or create individual reports in the Daily Protection Tasks by Status, SLA Compliance, Local Snapshot Storage, System Capacity, or Weekly Protection Tasks by SLA Domain sections. Let's explore that section:

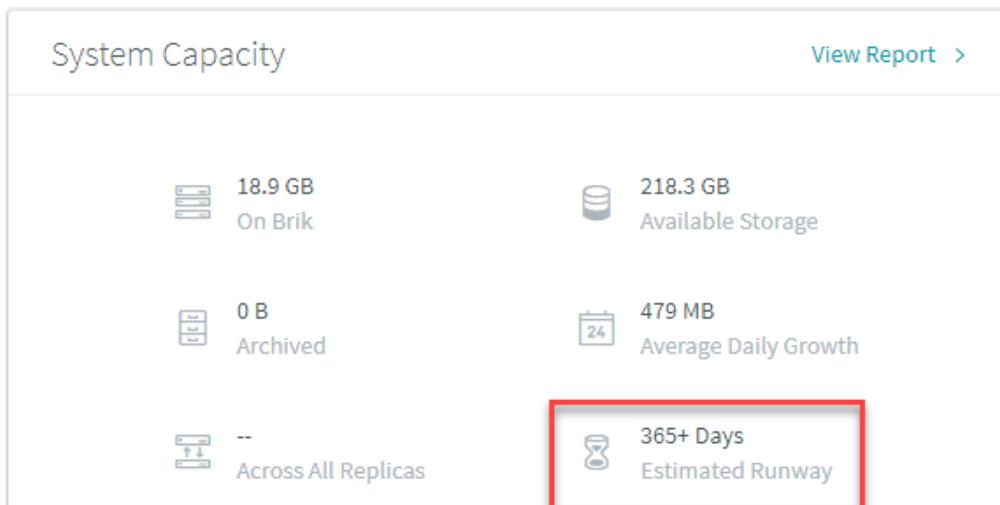
In the Rubrik UI, in the left-hand pane, select **Reports > Summary**.

The Protection Tasks Details page appears.

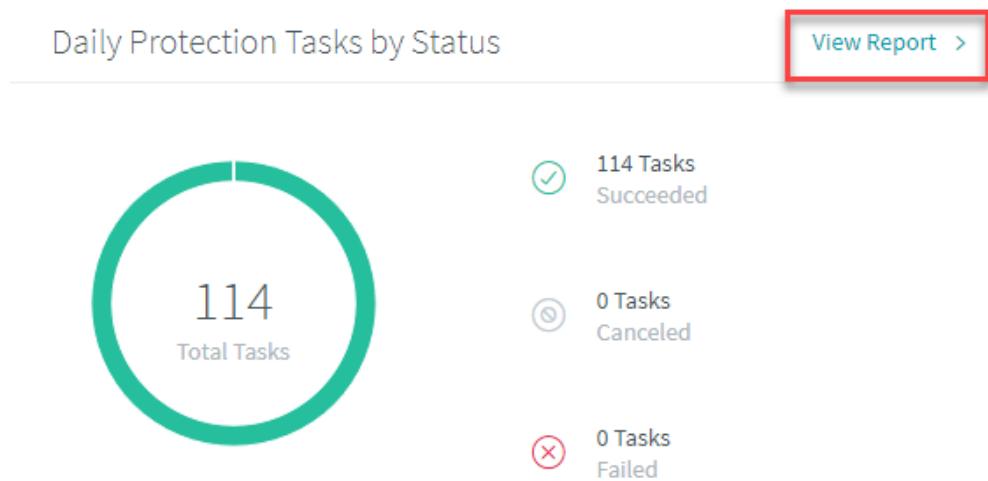


Scroll down to **System Capacity** and you will notice: On Brik, Available Storage, Archived, Average Daily Growth, Across All Replicas, and Estimated Runway.

One of the most critical details here is the **Estimated Runway** that reports the estimated number of days remaining before additional data storage space is required on the Rubrik cluster. This is a critical metric to have available on any system that leverages data reduction combining incremental forever, deduplication, and compression.



Scroll back up to **Daily Protection Tasks by Status** and click **View Report >**



The **Protection Tasks Details** page appears. Scroll down to where you can **Search by Object Name** and supply dynamic filters.

Type **win** to search for all objects that have been protected with the word **win** in it.

Search by Object Name									
Task Status	Task Type	Object Name	Object Type	Location	SLA Domain	Start Time	End Time	Duration	Data Transferred
Succeeded	Backup	Win2016-vm1	vSphere VM	vc1.rubrik.lab	Gold	6/17/20 5:46 PM	6/17/20 5:52 PM	5 mins 57 secs	42.9 GB

Now select **Filter SLA Domain** and select the Gold SLA Domain to view.

Search by Object Name									
Task Status	Task Type	Object Name	Object Type	Location	SLA Domain	Start Time	End Time	Duration	Unprotected
Succeeded	Backup	Win2016-vm1	vSphere VM	vc1.rubrik.lab	Gold	6/17/20 5:46 PM	6/17/20 5:52 PM	5 mins 57 secs	Bronze
									Camp Rubrik

Now click **Gallery** on the left-side menu under Reports and the Reports Gallery appears.

Click the **Create Report** button in the right-side top corner.

The figure shows the "Report Gallery" section of the interface. It includes a search bar, a table header with columns for Name, Template, Type, and Status, and a single row for "SLA Compliance Summary". In the top right corner of the main area, there is a red box highlighting the "Create Report" button.

	Snapshot Retention	--	Default	Refreshed at 8:45 am on 3/14/19
	Live Mounts	--	Default	Refreshed at 8:44 am on 3/14/19
	Cloud Mounts	--	Default	Refreshed at 8:44 am on 3/14/19
	System	--	Default	Refreshed at 8:44 am on 3/14/19
	Reports	--	Default	Refreshed at 8:44 am on 3/14/19
Summary		--	Default	Activate Windows Go to Settings to activate Windows.
Gallery		--	Default	

The Create Report dialog appears where you can create your own Custom Report.

Name the report **Example Report** and select **Protection Tasks Details** as the Report Template.

Create Report

1 Name & Template ————— 2 Top Left Chart ————— 3 Top Right Chart ————— 4 Table ————— 5 Filter

Report Name

Report Template

- SLA Compliance Summary
Compliance status of protected objects
- Object Backup Task Summary
Summary of scheduled backup tasks for each object
- Protection Tasks Summary
Summary of backup, replication, and archival over a time period
- Protection Tasks Details
Detailed information of specified protection tasks
- Recovery Tasks Details
Detailed information of specified recovery tasks
- Object Protection Summary
Protection status and capacity details of all objects across sites
- Capacity Over Time
System capacity usage over time
- System Capacity
Current system capacity details of all objects

[Cancel](#) [Next](#)

There are several different combinations of reports that you can create to provide you with useful information such as:

- Data Reduction Summary - Last 30 Days
- Average Job Durations - Last 7 Days

- System Capacity by Object Type - Last 30 Days
- Daily Backup Administrator Report (You will create this one)
- Daily DBA Report

Select the following items to create a Daily Backup Administrator Report. You will need to click Next to get to each new report.

Report Type	Created from "Protection Tasks Details"
Top Left Chart	Daily Protection Tasks by Status
Attributes	Task Type
Measures	Task Count by Status
Chart Type	Stacked Horizontal
Top Right Chart	Daily Failed Tasks by Object Name
Attributes	Object Name
Measures	Failed Tasks
Chart Type	Vertical
Table	Protection Tasks Details
Search by Attribute	SLA Domain, Task Status, Task Type, Location, Object Name, Object Type
Search by Measure	Start Time, End Time, Duration, Data Transferred, Data Stored, Dedup Ratio, Logical Dedup Ratio
Filter	
Date	Past 24 hours
Task Status, Task Type, SLA Domain, Object Type, Object Name, Location, Cluster Location	none

Observe the report once it has been generated (note that it could take a few moments to generate).

Activities & Notifications

The **Activity Log** and **Notifications** is where you can view and monitor the current state of time-sensitive tasks. This is useful to determine success, warning, and failures of any backup or archival related tasks within the Rubrik cluster.

In the top right hand bar of the Rubrik UI is the Activity Log world icon.

Click the world icon to see all task related activity in progress and completed on the cluster.

The screenshot shows the Rubrik UI's Activity Log page. At the top, there's a navigation bar with a globe icon (highlighted with a red box) and a gear icon. Below the bar, there are two buttons: "Activity Log" and "See All ▶". The "See All" button is in blue. The main area displays a list of activity logs. The first item is a completed VDI-based transaction log backup. The second and third items are both "admin started a job to refresh report 'Example Report'" entries, each with a green checkmark icon. The fourth item is partially visible. A vertical scrollbar is on the right side of the list.

Click **See All** and it will take you to a page with only activity details.

Select **Filter by type** and choose **Backup** to view only backup related tasks.

This screenshot shows the same Activity Log page as above, but with a filter applied. On the right side of the screen, there's a sidebar with a "Filter Object" dropdown menu. The "Backup" option is highlighted with a red box. Other options in the menu include Archive, Configuration, Conversion, Diagnostic, Discovery, Instantiate, and Recovery. The main table lists four backup-related tasks: a scheduled backup of a VM and two completed backups of a Microsoft SQL Server database named AdventureWorks2017. The "Filter Status" dropdown is set to "All".

Scroll through and determine any recent warnings or failures that may require your attention.

Take note of the status, name, message, and date/time stamp of any tasks that require further investigation.

API Weaving

Objective: Explore Rubrik APIs

In this lab, you will perform the following tasks:

- Access Rubrik API documentation
- Make an API using the API playground

APIs provide a programmatic method to query, configure, and control nearly all of the operations of the Rubrik software.

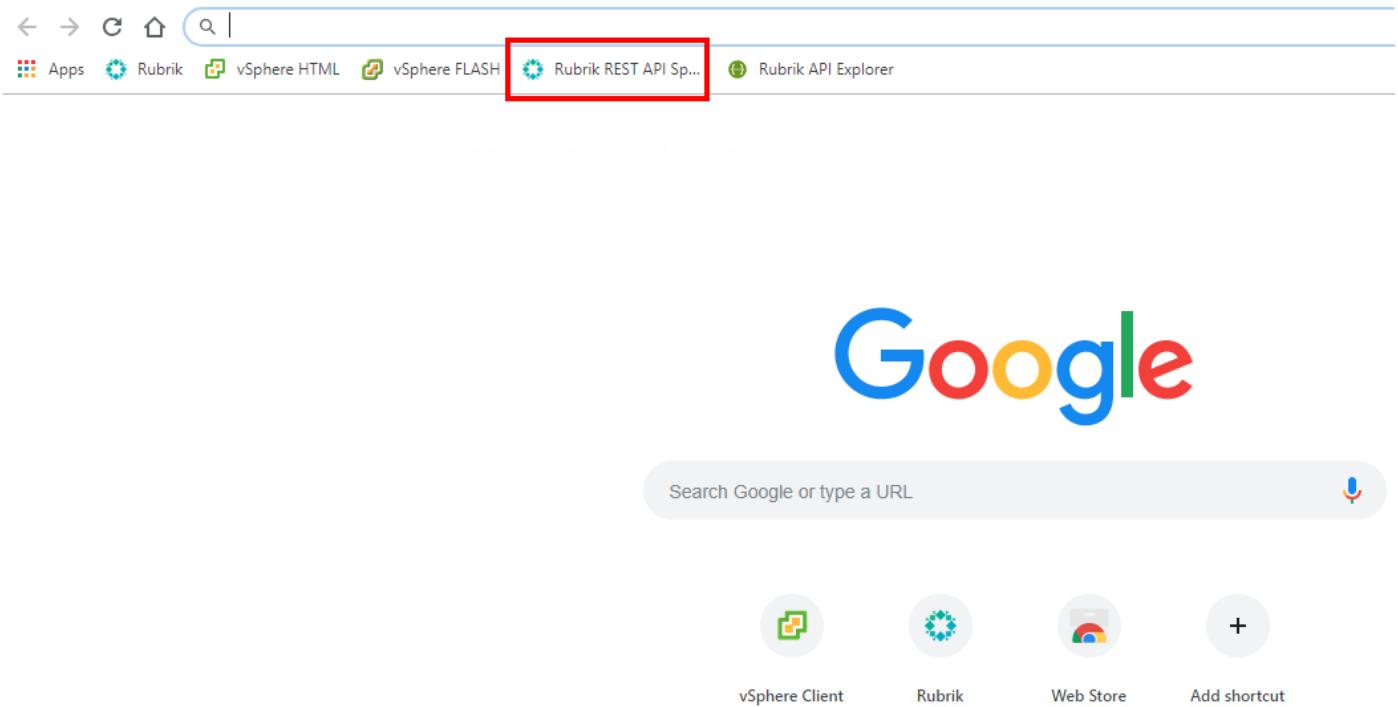
Getting Started

Rubrik is built on an API-first platform to integrate seamlessly with third party solutions to achieve as-a-Service delivery. SDKs are available for users to build their own integrations or users can plug into configuration management tools (i.e. Puppet, Chef, SaltStack, Ansible) to simplify deployments across hundreds of servers or VMs. Customers commonly integrate backup with service catalogs (i.e. ServiceNow, vRealize Automation, and vCloud Director) to automate manual processes and deliver self-service access and recovery.

API Documentation

To view Rubrik's built-in API documentation:

Open a new tab in your web browser and navigate to Rubrik REST API Specifications bookmark (bookmarked in the Chrome web browser).



Browse through the documentation to learn more about Rubrik APIs and how they may be used.



Rubrik REST API (v1)

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Introduction

 Search

Introduction

Welcome to the Rubrik™ REST API documentation.

Changelog

The Rubrik REST API provides a RESTful interface for working with Rubrik clusters and Rubrik Edge virtual appliances. The Rubrik REST API can be used to query, configure, and control nearly all of the operations of the Rubrik software.

Overview
OpenAPI

Through authenticated and encrypted interaction with the Rubrik REST API server, perform any of the operations that are available through the Rubrik web UI and many bulk-type operations that might otherwise be difficult or impossible to perform.

Authentication
Rubrik cluster management
SLA Domains
Virtual machines
Hosts

This documentation provides reference information and examples of typical workflows for the Rubrik REST API. For more detailed information about working with Rubrik clusters and Rubrik Edge virtual appliances refer to the *Rubrik User Guide*.

A quick way to become familiar with the Rubrik REST API, is to use the Rubrik REST API Explorer. [OpenAPI](#) describes this tool.

Refer to the [changelog](#) to see information about changes within this version of the Rubrik REST API.

Changelog

Revisions are listed with the most recent revision first.

Scroll down to **SLA Domains > Retrieving SLA Domains**. Take a look at the information provided in this section.

Retrieving SLA Domains



 Search

Authentication

Rubrik cluster management

SLA Domains

Retrieving SLA Domains

Working with SLA Domains

Creating SLA Domains

Modifying SLA Domains

Patching SLA Domains

Deleting SLA Domains

Inherited protection

SLA Domain assignments

Before assigning snappables to SLA Domains, get a list of the SLA Domains that exist on a Rubrik cluster. For a new Rubrik cluster, the list shows only the default SLA Domains. When custom SLA Domains are added to the Rubrik cluster, the list is modified to include those SLA Domains.

Example: Retrieving SLA Domains from a Rubrik cluster

Send a GET request to `/sla_domain`.

```
curl -X GET "https://$cluster_address/api/v1/sla_domain"
```

The Rubrik REST API server returns a `ListResponse` object of all SLA Domains. At a minimum, the `ListResponse` object includes the default SLA Domains: Gold, Silver, and Bronze.

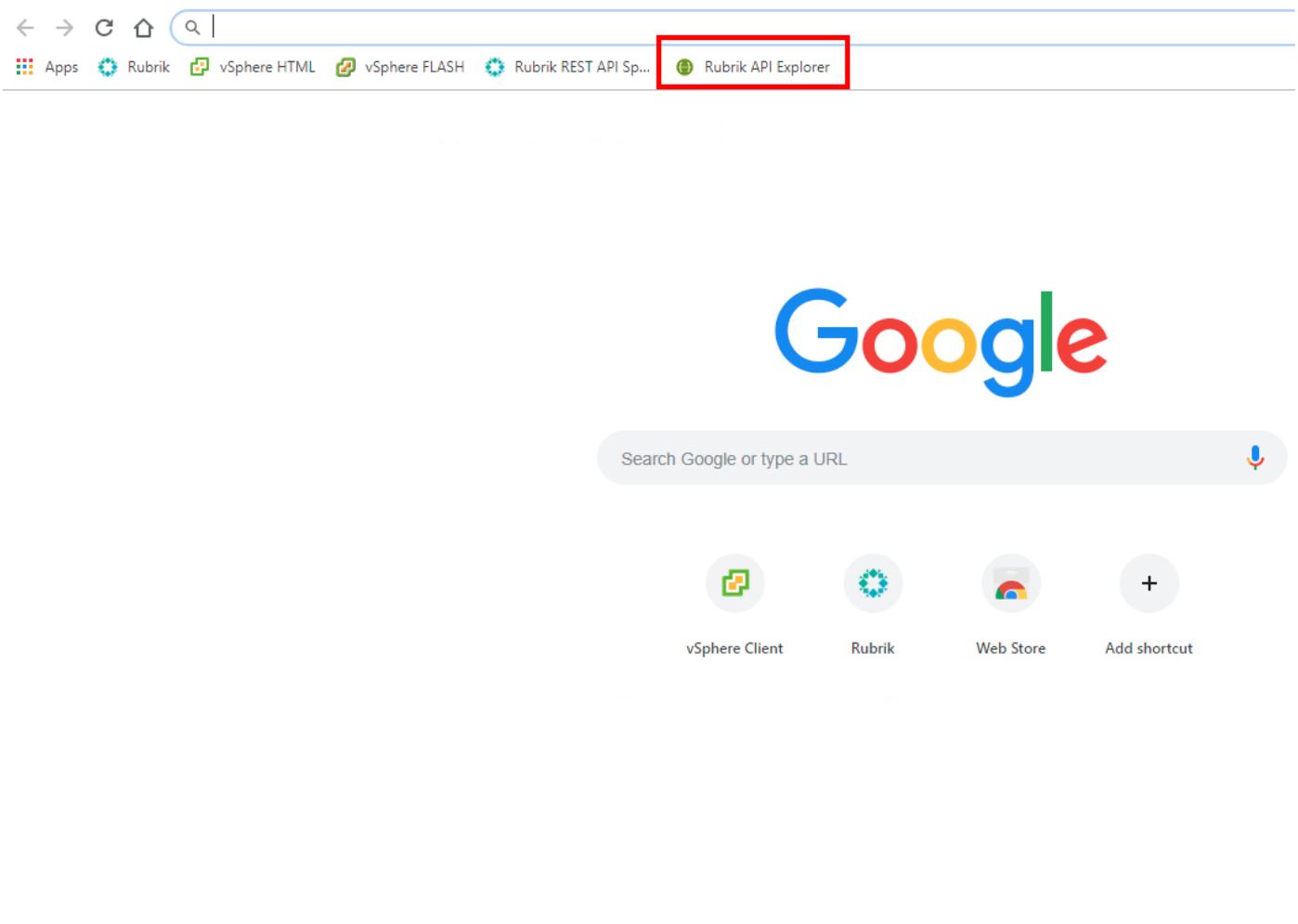
```
{
  "data": [
    {
      "id": "$gold_sla_id",
      "name": "Gold"
    },
    {
      "id": "$silver_sla_id",
      "name": "Silver"
    },
    {
      "id": "$bronze_sla_id",
      "name": "Bronze"
    }
  ]
}
```

The documentation provides code snippets and parameters to make it easy for you to learn and use our APIs.

API Explorer

To use the Rubrik API Explorer:

Open a new tab in your web browser and navigate to the Rubrik API Explorer bookmark (bookmarked in the Chrome web browser).



In the top right-hand corner, click **Authorize**.

The screenshot shows the Rubrik REST API Explorer interface. At the top, there's a dark header bar with the 'Rubrik REST API Explorer' title and an 'Authorize' button (which is highlighted with a red box). Below the header, the main content area displays a list of API endpoints. Each endpoint row includes three buttons on the right: 'Show/Hide', 'List Operations', and 'Expand Operations'. The endpoints listed are:

- /cluster : Cluster configuration and health
- /fileset : File system filesets
- /fileset_template : File system fileset templates
- /host : Linux hosts and Windows hosts
- /mssql : SQL Server instances and databases
- /session : User session management
- /sla_domain : SLA Domains
- /vmware/host : VMware hypervisor hosts

/vmware/vcenter : VMware vCenter

Show/Hide | List Operations | Expand Operations

/vmware/vm : VMware virtual machines

Show/Hide | List Operations | Expand Operations

/windows_cluster : Windows clusters

Show/Hide | List Operations | Expand Operations

Authenticate using the following credentials:

- Username: admin
- Password: Welcome10!Rubrik

Navigate to `/sla_domain` and click **Show/Hide**. Click **Get list of SLA Domains**.

/sla_domain : SLA Domains		Show/Hide	List Operations	Expand Operations
GET	/sla_domain			Get list of SLA Domains
POST	/sla_domain			Create SLA Domain
DELETE	/sla_domain/{id}			Remove SLA Domain
GET	/sla_domain/{id}			Get SLA Domain details
PATCH	/sla_domain/{id}			Patch SLA Domain
PUT	/sla_domain/{id}			Update SLA Domain

Under **Parameter**, enter the **Value Gold** for name.

Click **Try it out!**

Parameters

Parameter	Value	Description	Parameter Type	Data Type
primary_cluster_id		Limits the information retrieved to those SLA Domains that are associated with the Rubrik cluster ID that is specified by primary_cluster_id. Use local for the Rubrik cluster that is hosting the current REST API session.	query	string
name	gold	Limit the list information to those SLA Domains which match the specified SLA Domain 'name' value.	query	string
sort_by		Attribute to use to sort the SLA Domains summary information. Optionally use sort_order to specify whether to sort in ascending or descending order	query	string
sort_order		Sort order, either ascending or descending. If not specified, SLA Domain summary results will be sorted in ascending order	query	string

Try it out!

Notice the **Response Body**. There should be at least one response for Gold. This details the configuration of the Gold SLA Domain. If you scroll down you can even determine how many and what type of machines are protected by the Gold SLA.

Response Body

```
        "maxLocalRetentionLimit": 63072000,
        "archivalSpecs": [],
        "replicationSpecs": [],
        "numDbs": 1,
        "numOracleDbs": 0,
        "numFilesets": 0,
        "numHyperVms": 0,
        "numNutanixVms": 0,
        "numManagedVolumes": 0,
        "numStorageArrayVolumeGroups": 0,
        "numWindowsVolumeGroups": 0,
        "numLinuxHosts": 0,
        "numShares": 0,
        "numWindowsHosts": 0,
        "numVms": 3,
        "numEc2Instances": 0,
        "numVcdVapps": 0,
        "numProtectedObjects": 4,
        "isDefault": true,
        "uiColor": "#f8c044"
    }
```

Use Cases

The use cases for a published, open, and documented API are endless. A few common customer use cases include:

- **Self-Service Automation** - Integrate with your favorite IT service management (ITSM) tool or service portal, such as ServiceNow or vRealize Automation. Leverage your ticketing system to assign SLA Domains, perform restores, or monitor your backups. You can even build your own custom dashboards. One of Rubrik's service delivery providers created their own service portal offering completely by themselves using only Rubrik API documentation.
- **Infrastructure as Code and Configuration Management** - Use automation tools like Ansible, Terraform, Puppet, and SaltStack to set up, configure, and update the Rubrik platform. Simplify your infrastructure into just a few lines of code. Customers use Rubrik APIs to deploy and bootstrap Edge instances at remote locations, create and manage SLA Domains, and automate recovery processes.
- **Centralized Monitoring & Logging** - Eliminate console hopping and use the same observability services to monitor your data protection solution. Easily integrate with Nagios, Prometheus, Splunk, vRealize Log Insight, and more. This allows you to manage Rubrik monitoring, logging, and alerting with the same tools you already use across your environment.
- **Test Automation** - Rubrik can be used to accelerate application test and development by instantly providing multiple copies to developers without a storage penalty. With Rubrik, users can integrate Live Mount functionality into test automation continuous integration (CI) workflows for virtualized, Microsoft SQL Server, and Oracle environments.

Command-Line Management and Scripting - Customers enjoy command-line interaction with Rubrik through the use of rdkcli and PowerShell. Commands can be used to target specific configurations or workloads with ease. Use simple commands or scripts to automate repetitive tasks easily.

 **Trail Map:**

[Rubrik Build](#) is a developer portal and community where contributors can leverage existing SDKs, tools, and use cases or contribute their own ideas, code, documentation, and feedback.