SAP ASE DBA's Guide to Actifio GO

Updated August 24, 2022





Copyright, Trademarks, and other Legal Matter

Copyright © 2022 Google LLC. All rights reserved.

Actifio[™], OnVault[™], and VDP[™] are trademarks of Google LLC.

All other brands, product names, goods and/or services mentioned herein are trademarks or property of their respective owners.

Contents

Preface	V
The ActifioNOW Customer Portal	V
Actifio Support Centers	v
Chapter 1 - SAP ASE DBA's Introduction to Actifio Copy Data Management	1
Actifio Data Virtualization	1
Capturing Data	3
Replicating Data	3
Accessing Data	4
SAP ASE Configurations Support	5
Chapter 2 - Preparing an SAP ASE Instance for Protection	7
Before You Begin	7
Adding an SAP ASE Host and Discovering the Instance	9
Adding the Host to AGM	9
Discovering the SAP ASE Instance Application from the App Manager	11
Finding the Discovered SAP ASE Instance in the App Manager	11
Chapter 3 - Configuring the SLA, Including the Backup Method	
Ensuring that the Staging Disk Format is Set Correctly	14
Configuring the Backup Capture Method and Other SLA Settings	15
Setting the Schedule for Dumps	17
Chapter 4 - Protecting an SAP ASE Instance and its Logs	
Protecting an SAP ASE Instance	19
Protecting SAP ASE Database Logs	
Chapter 5 - Accessing an SAP ASE Instance as a Standard Mount or as a Virtual Database	23
Mounting an SAP ASE Instance as a Standard Mount	
Mount a Virtual Database from a Block-Based Volume Snapshot Image to the Source or to an Existing	J SAP ASE
Instance	
Refreshing a Virtual Database Using an Actifio Workflow	
Chapter 6 - Restoring and Recovering an SAP ASE Instance Back to the Source	
Recovering an SAP ASE Instance from a Volume-Based Snapshot	

Recovering a Single SAP ASE Database from a Volume-Based Snapshot	33
Recovering from a Full+Incremental Snapshot	36
Recovering to a New Target from a Full+Incremental Snapshot	37
Chapter 7 - Migrating an SAP ASE Instance for Instant Access or Recovery	39
Mount and Migrate Back to the Source Instance	39
Mount and Migrate to a New Instance	41

Preface

The information presented in this guide is intended for users who are familiar with basic Actifio processes as described in **Getting Started with Actifio GO** and who are qualified to administer SAP ASE databases.

The ActifioNOW Customer Portal

During the configuration and initialization of your Actifio Appliance your Actifio representative provided you with a user name and password for the ActifioNOW customer portal.

From the customer portal you can obtain detailed reports about your Actifio Appliance as well as search the portal's knowledge base for answers to specific questions.

To log into the ActifioNOW customer portal:

- 1. Go to: https://now.actifio.com
- 2. When prompted, enter the user name and password provided by your Actifio representative.

1 SAP ASE DBA's Introduction to Actific Copy Data Management

This chapter introduces Actifio concepts and the procedures used to capture and access databases. It includes:

Actifio Data Virtualization on page 1 Capturing Data on page 3 Replicating Data on page 3 Accessing Data on page 4 SAP ASE Configurations Support on page 5

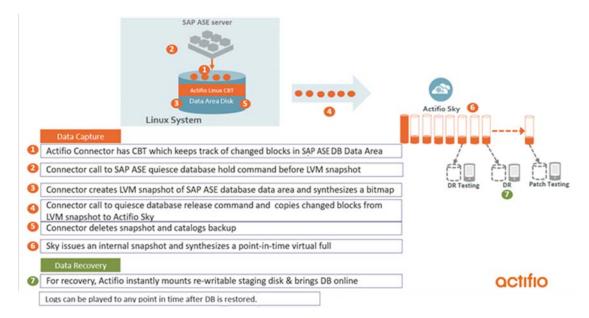
Actifio Data Virtualization

An Actifio Appliance is a highly scalable copy data management platform that virtualizes application data to improve the resiliency, agility, and cloud mobility of your business. It works by virtualizing data in much the same way other technologies have virtualized servers and networks. This enables you to capture data from production systems, manage it in the most efficient way possible, and use virtual copies of the data however they are needed.

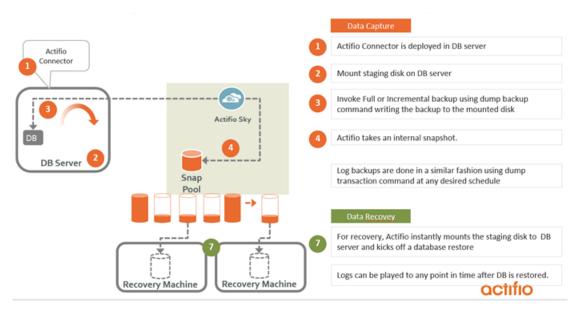
SAP ASE (formerly Sybase ASE) is a is a family of relational database management systems within SAP Information Management division that is centered on several relational database management system offerings. This DBA Guide explains how to protect SAP ASE application consistent database data with Actifio VDP in a Linux environment.

Actifio VDP uses these SAP ASE backup APIs:

- Linux CBT and LVM snapshot: SAP ASE "quiesce database hold and quiesce database release" API with Linux CBT and LVM snapshot
- **File-based backups**: SAP ASE "dump database" File-based backups API. This provides the full and incremental backups of the database in backup format. On recovery, the restore db API will recover the database by physically overwriting the data area.
- **Log backup**: During a log backup the "dump transaction" API called to dump logs to an Actifio log staging disk.



SAP ASE Volume-Based Backup with Linux Change Block Tracking



SAP ASE full+incremental File-Based Backup

Capturing Data

Capturing data consists of four simple steps:

- 1. Add servers that host databases.
- 2. Discover the databases.
- 3. Define Actific Policy Templates and Resource Profiles according to your RPOs and RTOs.
- 4. Assign Actific Policy Templates and Resource Profiles to discovered databases. The jobs will run on schedule defined in the policy template.

The Actifio Connector

The Actific Connector is used to capture selected databases. The Actific Connector is a small-footprint, lightweight service that can be installed on either virtual or physical servers.

Specifically, the Actifio Connector:

- Uses Linux changed block tracking to capture data at block level in incremental forever fashion.
- Identifies changes to database data for VDP's incremental forever capture strategy.

Replicating Data

Data can be replicated to a second Actifio Appliance or to the cloud for recovery, disaster recovery, or test/development purposes.

Data replication has traditionally been an inhibitor to efficient data management in a geographically distributed environment. VDP replication addresses these issues with a global deduplication and compression approach that:

- Drives down overall network usage.
- Eliminates the need for a dedicated WAN accelerator/optimizer.
- Does not require storage array vendor licenses as data is sent from one Actifio Appliance to another.
- Is heterogeneous from any supported array to any supported array: Tier 1 to Tier 2 and/or Vendor A to Vendor B.
- Preserves write-order, even across multiple LUNs.
- Is fully integrated with Actifio Resiliency Director.
- Encrypts data using the AES-256 encryption standard. Authentication between Actifio Appliances is performed using 1024-bit certificates.

Replication is controlled by Actifio Policy Template policies:

- Production to Mirror policies have several options to replicate data to a second Actifio Appliance.
- Dedup Backup to Dedup DR policies use a fixed, Actifio-proprietary replication engine to replicate data to a second Actifio Appliance. In addition, Dedup Backup to Dedup DR policies allow you to replicate data to two locations.
- Production to Vault policies use a fixed, Actifio-proprietary replication engine to replicate data to the cloud.

Accessing Data

The Actifio Appliance can instantly present a copy of the database rolled forward to a specific point of time. The roll forward operation is performed from the Actifio Global Manager (AGM). Accessing protected data is discussed in Chapter 5, Accessing an SAP ASE Instance as a Standard Mount or as a Virtual Database.

Access options include:

- Mounts LiveClones Restores
- Workflows

Mounts

The VDP mount function provides instant access to data without moving data. Captured copies of databases can be rolled forward via the Actifio user interface and mounted on any database server. Application Aware mounts are described in Chapter 5, Accessing an SAP ASE Instance as a Standard Mount or as a Virtual Database.

LiveClones

The LiveClone is an independent copy of data that can be refreshed when the source data changes. The advantage of LiveClones is that they are independent copies of data that can be incrementally refreshed and masked before being made available to users. This allows teams such as development and test to ensure they are working on the latest set of data without having to manually manage the data and not access or interfere with the production environment.

Restores

The restore function reverts the production data to a specified point in time. Restore operations actually move data. Typically restore operations are performed to restore a database to a valid state after a massive data corruption or storage array failure. The amount of time required to complete a restore operation depends on the amount of data involved. Restores are described in Chapter 6, Restoring and Recovering an SAP ASE Instance Back to the Source.

Workflows

While SLAs govern the automated *capture* of a production database, Workflows automate *access* to the captured database.

Workflows are built with captured data. Workflows can present data as either a direct mount or as a LiveClone:

- Direct mounts (standard or application aware) work well for data that does not need to be masked prior to being presented. A mounted copy of data can be refreshed manually or on automatically on a schedule. Direct mounts allow you to instantly access captured data without actually moving the data.
- A LiveClone is a copy of your production data that can be updated manually or on a scheduled basis. You can mask sensitive data in a LiveClone prior to making it available to users.

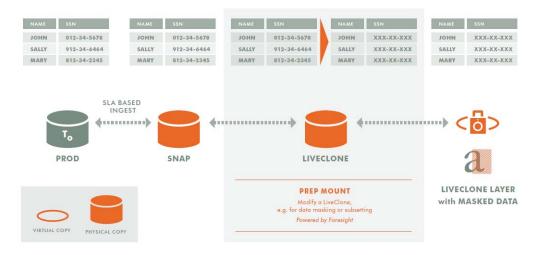
Combining VDP's automated data capture and access control with Workflows and their optional data masking capabilities allows you to create self-provisioning environments. Now, instead of having to wait for DBAs to update test and development environments, users can provision their own environments almost instantly.

For example, an Actific administrator can create an SLA Template Policy that captures data according to a specified schedule. Optionally, the administrator can mark the captured production data as sensitive and only accessible by users with the proper access rights.

After access rights have been defined and data has been captured, the administrator can create a Workflow that:

- Makes the captured data available as a LiveClone or as a direct mount
- Updates the LiveClone or mountable data on a scheduled or on-demand basis
- (Optional) Automatically applies scripts to the LiveClone's data after each update. This is useful for masking sensitive data.

Once the Workflow completes, users with proper access can provision their environments with the LiveClone or mountable data via the AGM.



Workflow With Masked Social Security Data

Activity	Actifio Benefits
Backup	Manual and/or scheduled online backups (incremental forever full snapshots).
Test/Dev Copy	Multiple point in time copies and instant Test/Dev refresh.
	Accelerate and automate Test/Dev provisioning.
	Migration of SAP ASE from a physical to a virtualized environment.
Recovery	Recovery of a database to its most recent state.
	Recovery of a database to a specific point in time of data backup, or log backup.
	Recovery to the original host or an alternate host.
Backup Catalog View	Actifio Global Manager (AGM)

Table 1: Actifio Benefits: SAP ASE Platform

SAP ASE Configurations Support

SAP ASE Primary and Standby protection can be set from Primary or the Standby. Protection is at the instance level residing on protected LVM. Transaction log protection is from the Primary instance only.

2 Preparing an SAP ASE Instance for Protection

This section details the steps involved in preparing an SAP ASE instance for Actifio protection and management:

Before You Begin on page 7 Adding an SAP ASE Host and Discovering the Instance on page 9

Before You Begin

Before you begin, on the SAP ASE server:

• The Actifio backup and recovery process requires a single ASE database user account with these privileges.

For backup operation	Quiesce Any Database (to quiesce databases for LVM backups)
	Dump Any Database (for log backup and dump based backups)
	Manage Server Configuration (to enable dump history if required)
	Manage Dump Configuration (to execute sp_dump_history)
For restore operation	Load Any Database (for log recovery and dump based backup restore)
	Online Any Database (to bring database online after LVM or dump restore)
	Shutdown (in case of LVM based backup restores)
	Unmount Any Database
	Mount Any Database

 The backup username/password must be configured with host configuration. Create the user without a password to run the quiesce command on the source with sa_role or with quiesce privileges.
 To create the user, run:

isql -Usa -P<password> -S<SAP ASE_Server_Name>
1>sp_addlogin actuser, '<password>'
2>go
1>grant role sa_role to actuser
2>go

To configure the user login without a password requirement, set the password to null, then run:

```
1>sp_configure "minimum password length", 0
2>go
1>sp_modifylogin actuser, "min passwd length", "0"
2>go
3>exit
isql -Uactuser -P'<password>' -S<server_name>
> sp_password '<password>', NULL
>go
>sp_configure "minimum password length", 8
>go
```

Note: If there are multiple SAP ASE instances running on a server, then the backup username/ password must be common for all SAP ASE instance running on that server.

- Install the Actific Connector on the SAP ASE server (see Network Administrator's Guide to Actific GO.)
- To enable transaction log backup, TRUNCATE ON CHKPT FALSE must be set at the database level for each database of the SAP ASE instance.
- For volume level backups:
 - o the SAP ASE instance must reside under LVM and it must not be the boot volume.
 - o The LVM volume from which the SAP ASE volumes are provisioned should have at least 20% free space.

Adding an SAP ASE Host and Discovering the Instance

Before you can protect an SAP ASE instance, you must add the host and discover the instance. This requires:

- 1. Adding the Host to AGM on page 9
- 2. Discovering the SAP ASE Instance Application from the App Manager on page 11
- 3. Finding the Discovered SAP ASE Instance in the App Manager on page 11

Adding the Host to AGM

Add the host from the Manage, Hosts list. If the host is already added, then edit the host and make sure to set the Staging Disk Format correctly as detailed in Ensuring that the Staging Disk Format is Set Correctly on page 14.

1. From the AGM Manage, Hosts list, click +Add Host.

actifio	Dashboa	ırd	Backup & Recover 🗸	Test	Data Management 🗸	Арр	o Manager 🗸	SLA Architect	 Manage - 	Report	Monitor 🗸				▼ 👤 admin 📫 😧	
FILTER BY	Î	Но	sts												+ ADD HOST)
HOST NAME	•															
filter by host name			e filters e to search		Q										Ø Ⅲ 25 v C &	
IP ADDRESS	•				~											•
filter by IP address			NAME	\diamond	FRIENDLY PATH	\diamond	APPLIANCE	0	IP	\diamond	TYPE	Ŷ	OS RELEASE	¢	VIRTUAL MACHINE	
OS RELEASE	•		Vca5.5c2		VCA5.5C2		CDS139-C2	SKY8.0-226	172.17.139.151		vCenter				No	Â
Enter OS like Linux			vca5.5c1		VCA5.5C1		CDS139-C2		172.17.139.150		vCenter				No	
OS TYPE	•		agvc		agvc		CDS139-C2		172.24.1.160		vCenter		Microsoft Windows	Se	No	

2. On the Add Host page:

- o **Name**: Provide the SAP ASE server name.
- o **IP Address**: Provide the SAP ASE server IP and click the + sign on the right corner.
- o Appliances: Select the check box for the Actifio Appliance.
- o Host Type: Make sure this is Generic.
- o Provide Application Discovery Credentials to discover SAP ASE instances.

actifio	Dashboar	d Backup &	Recover 🗸	Test Data Mana	gement 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸
Ad	ld Host									
h	lame *									
F	riendly Name									
	Other Dashboard Recover v Test Data Management v App Manager v SLAArchitect v Mara Addd Host									
C	escription									
A	ppliances*	type	to search		Q					
			APPLIANC	E			IP			
			caf-source				172.17.206.77			
			sky9_caf_au	ıto			172.17.206.76			
G	lost Type	Gen	eric	•)					
► A	pplication Discove	ry Credentials								
► C	onnector Settings									
• 0	rganizations									
								Cancel		Add

- 3. Click Add at bottom right to add the host. The Host will be added.
- 4. Right-click the host and select Edit.
- 5. On the Edit Host page, select the staging disk format:
 - o **Block**-based staging disks are the most useful for both backup/recovery and TDM usage. Actific changed-block tracking (CBT) is only available on block-based staging disks, and virtual databases can only be mounted to block-based staging disks.
 - o **NFS** staging disks permit only traditional file-based backup with Full+Incremental file system backup. Select NFS only if Block is not an option in your network.
- 6. Select **Save** at the bottom of Edit Host page.

OCTIFIO Dashboard Backup & Recover - Test Data Mana	gement 🗸 App Manager 🖌 SLA	Architect - Manage - Report	Monitor +	🝸 👤 admin 🌲 💡
j-sybase-1	Edit Host			
IP 172.16.20258 FRIENDLY PATH j sybase.1 UNIQUE NAME j sybase.1,2292737, null OS RELEASE Red Hat Enterprise Linux Server release 7.2	Name *	J-sybase-1 J-sybase-1		
OS VERSION 3.10.0-327.et7x86_64 OS TYPE Linux STAGINO DISK BLOCK FORMAT	IP Address *	• 172.16.202.58		
	Description			
	Appliances*	type to search	Q	
		APPLIANCE caf-source	IP 172.17.206.77	_
		sky9_caf_auto	172.17.206.76	
	Host Type	Generic •		
	Staging Disk Format	Block * Block NFS		

Discovering the SAP ASE Instance Application from the App Manager

To discover the SAP ASE instance:

1. From the App Manager, Applications list, select + Add Application in the upper right corner.

ctifio	Dashboard		& Recover 🗸		agement 🗸			tect 🖌 🛛 Manage	Report	Monitor	·		Y	🔄 👤 adır	nin 🐥	8
FILTER BY	Â	Applica	tions										(+ ADD	APPLICA	лю
ICATION NAME	•															
NAME		 hide filters type to sear 			۹										25 - []	3
ILE NAME			APPLICATION		0	ID	TEMPLATE	0 PRO (FRIENDL	у ра ¢	HOST NAME	○ APPLI ○	TYPE	Ŷ	APPLIA	
TATUS			▶ j-auto-1			1972181			j-mysql-1		j-mysql-1	caf-source	SystemSt	ate	94727	
Managed			▶ maria-2			1588336			maria_2		maria_2	sky9_caf	SystemSt	ate	115731	17
Jnmanaged	he Or					Color		с г								
2. T	ne Or	nboar	aing w	izara (opens.	Selec	t SAP A	5E.								
ctifio	Dashboa	nd Red	kup & Recove	Test	Data Managa		A	r 🗸 SLA Arch	hank 1	4	Depart	Monitor 🗸		admin		
CIIIIO	Dashboa	ard Baci	KUP & Recove	v lest	Data Manage	ement v	App Manage	r 🗸 SLA Arch	tect v i	Manage 🗸	Report		· · ·	admin	÷ 6	<u> </u>
	Ti	p: Hover or		elect th			-		up for an a	lready pro	tected appli	ication click her e	e.			
	Tij	p: Hover or		more infor	mation. To b		-			lready pro	otected appli	ication click here	e.			
	Ti	p: Hover or	n the icon for	more infor		learn how	to trigger an o	on-demand back					e.			
	Ti	p: Hover or	n the icon for	more infor	mation. To la MaríaDB	learn how	to trigger an o	mysqc		DRACLE			e.			
			n the icon for IBM DB2 Db2	more infor	mation. To l MoríaDB MariaDB	learn how	to trigger an o DB longoDB	MySQL		Oracle		Generic Apps	e.			
	Sei Applia	rvers & cations	n the icon for	more infor	mation. To la MaríaDB	learn how	to trigger an o	mysqc		DRACLE			e.			
(Conne	Se	rvers & cations	n the icon for IBM DB2 Db2	more infor	mation. To l MoríaDB MariaDB		to trigger an o DB longoDB	MySQL		Oracle	B	Generic Apps	e.			
(Conne	Sei Applia	rvers & cations	n the icon for DE2 Db2 PostgreSQ	more infor	MariaDB MariaDB		mongo DB longoDB	MysqL		Oracle Oracle	B	Generic Apps	e.			
(Conne	Sei Applia	rvers & cations	n the icon for 1816 052 Db2	more infor	MariaDB MariaDB		mongo DB longoDB	MysqL		Oracle Oracle	B	Generic Apps	e.			
(Conne	Sei Applia	rvers & cations	n the icon for DE2 Db2 PostgreSQ	L	MariaDB MariaDB		mongo DB longoDB	MysqL		Oracle Oracle	B	Generic Apps	e.			

3. Select the host and click **Next** in the bottom right corner. Discovery may take a while. Then follow the Onboarding Wizard to completion.

Finding the Discovered SAP ASE Instance in the App Manager

To find the newly-discovered instance, go to the App Manager Applications List. All applications known to the AGM of all types are listed. Use the Type application filter on left pane to show only SAP ASE instances and databases.

actifio	Dashbo	ard	Backup	o & Recover 🗸 👘 Test Data Manageme	nt 🗸	App Manage	SLA Architect 🗸	Manage 🗸	Report Monitor	۳		T 1	, admin	≜ 9
🙁 clear all filters		Ap	plic	ations								+	ADD A	PPLICATION
APPLICATION NAME	•													
HOST NAME	•	< hide	efilters	O Application Type: SAP ASE Database	O Ap	pplication Type:	SAP ASE Instance							
TEMPLATE NAME	•			rch Q									11 25	~ C ±
PROFILE NAME	•			4										C7 80
FRIENDLY PATH	•			APPLICATION	\diamond	ID	TEMPLATE 0	PRO 🗘	FRIENDLY PA 🗘	HOST NAME 🗘	APPLI 🗘	TYPE	Ŷ	APPLIA
SLA STATUS	•		•	one		1588450	Sybase_Dump_bug	LocalPr	Sybase_2	Sybase_2	sky9_caf	SAP ASE Insta	nce	1159755
Managed Unmanaged			0	inst1		1972585			j-sybase-3	j-sybase-3	caf-source	SAP ASE Insta	nce	894840
ТҮРЕ	•		0	one		1588226	Sybase_LVM	LocalPr	sybase-3	sybase-3	sky9_caf	SAP ASE Insta	nce	1143211
Select: ALL NONE			•	DB2		1588254			sybase-3	sybase-3	sky9_caf	SAP ASE Data	base	1143225

3 Configuring the SLA, Including the Backup Method

After the instance is prepared and discovered as explained in Chapter 2, Preparing an SAP ASE Instance for Protection, you must configure the Actifio SLA for the instance, including the backup method.

The procedures for developing SLAs are detailed in the AGM online help. This chapter provides additional information of value to the ASE DBA.

The backup method is limited by the staging disk format set in Adding an SAP ASE Host and Discovering the Instance on page 9:

- **Block**-based staging disks are the most useful for both backup/recovery and TDM usage. Actifio changed-block tracking (CBT) is only available on block-based staging disks, and virtual databases can only be mounted to block-based staging disks. Block-based staging disks can be used for both volume-level and full+incremental file-based backups.
- **NFS** staging disks permit only traditional file-based backup with Full+Incremental file system backup. Select NFS only if Block is not an option in your network.

You choose between two very different backup methods in the Application Details & Settings:

- **Use volume level backup**: Use volume level LVM snapshots with CBT on Linux to a block-based staging disk. This option enables you to create application-aware virtual database copies from the snapshot images. The production instance/database must be present on the LVM volume.
- **Use full+incremental backup**: This is the traditional file-based backup and recovery. This "file dump" method does not support the creation of virtual databases. You can select this for both Block and NFS staging disks. This method only supports traditional backup a physical recovery.

Note: With one exception, protection is set for the entire SAP ASE Instance. You can include/exclude specific databases during the process using a Database Inclusion Rule from the Manage SLA pages. The exception: A virtual database can be protected individually.

Whichever method you select involves these steps:

Ensuring that the Staging Disk Format is Set Correctly on page 14 Configuring the Backup Capture Method and Other SLA Settings on page 15

Ensuring that the Staging Disk Format is Set Correctly

To check the staging disk format:

1. From Manage, Hosts list, right-click the host and select **Edit**.

actifio	Dashboar	d Bi	ackup & Recover 🗸	Test Data	Managemen	t 🗸 🛛 App Manag	er → Sl	LA Architect 🗸	Manage +	Report	Monito	r•			Y	👤 admin	<u>ه</u> (
FILTER BY	Î	Hos	ts													+ /	NDD HO	IST
IOST NAME	•																	
filter by host name		< hide fi	ilters															
ADDRESS	_	ase			Θ								□ SHO	W SELECTED (1)	C	III 100 ~	0	4
filter by IP address		Ξ	ID	NAME		FRIENDLY I	PATH 🗘	APPLIANCE	0	IP	٥	TYPE	\$	OS RELEASE	0	VIRTUAL	MACHI	NE
S RELEASE	-		1587986	Sybas	P. <u>2</u>	Sybase_2		sky9_caf_auto		172.17.205.10		Generic		SUSE Linux Ente	rpri			
inter OS like Linux			1972173	j-sybi	Edit			caf-source		172.16.202.58		Generic		Red Hat Enterpr	ise	No		
S TYPE	•		1972171	j-sybi	Edit Orga	anizations		caf-source		172.27.13.223		Generic		Red Hat Enterpr	ise	No		
Enter OS like Linux			1587980	syba	Delete			sky9_caf_auto		172.17.205.254		Generic		SUSE Linux Ente	rpri	No		
YPE	•		2111599	sybase	e_auto1	sybase_auto	51	sky905		172.17.205.10		Generic		SUSE Linux Ente	rpri	No		

2. Halfway down the Edit Host page, the Staging Disk Format is either NFS or Block:

- o **Block**-based staging disks are the most useful for both backup/recovery and TDM usage. Actific changed-block tracking (CBT) is only available on block-based staging disks, and virtual databases can only be mounted to block-based staging disks.
- o **NFS** staging disks permit only traditional file-based backup with Full+Incremental file system backup. Select NFS only if Block is not an option in your network.

CTIFIO Dashboard B	ackup & Recover 🗸 👘	Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage +	Report	Monitor 🗸		🝸 👤 admin 🌲
Syt	base_2	E	dit Host						
IP 172.17.205.10 FRIENDLY PATH Sybase, 2 UNIQUE NAME 372-314-3-645-4 OS RELEASE SUSE Linux Enter OS VERSION 4.4.21-69-default OS VTPFE Linux STACINO DSK BLOOK FORMAT	prise Server 12 SP2	5778	Name * Friendly Name IP Address *	Sybase_2 Sybase_2 172.17.2	05.10	0			
			Description Appliances*	type to s	earch		٩	IP	
					y10ESP			172.27.63.98 172.27.34.96	*
				sk	y10sp1 y905			172.17.205.90 172.17.202.11	
			Host Type	Generic		٠			
		(Staging Disk Format	Block Block NFS		•)		

3. If the staging disk format is set incorrectly, change it now and click **Save** before continuing.

Configuring the Backup Capture Method and Other SLA Settings

To configure the instance SLA settings:

1. In the App Manager, Applications list, right-click the SAP ASE instance and select Manage SLA.

octifio Dashi	poard		sackup	& Recover 🗸	Test Data Manag	ement 🗸 🔰	App Manage	SLA Architect	• Manage •	Report Monitor	Ť		Y	👤 adm	iin 🌲 🤅	3
😆 clear all filters	Î	Арр	olica	ations										+ ADD	APPLICATI	ION
PPLICATION NAME																
IOST NAME		< hide	filters	O Application	Type: SAP ASE Datab	O A	pplication Type:	SAP ASE Instance								
TEMPLATE NAME					0							SHOW SEL	ECTED (1)		25 - 23	4
ROFILE NAME																-
RIENDLY PATH		Ξ		APPLICATIO	N	0	ID	TEMPLATE	○ PRO ○	FRIENDLY PA 🗘	HOST NAME 🗘	APPLI 🗘	TYPE	Ŷ	APPLIA.	
LA STATUS 👻			•	one			1588450	Sybase_Dump_bug	LocalPr	Sybase_2	Sybase_2	sky9_caf	SAP ASE In	stance	1159755	5
Managed Unmanaged		Ø	0				1972585			j-sybase-3	j-sybase-3	caf-source	SAP ASE In	stance	894840	
YPE 👻			•	o Manage	SLA		1588226	Sybase_LVM	LocalPr	sybase-3	sybase-3	sky9_caf	SAP ASE In	stance	1143211	1
elect: ALL NONE			0	D Access			1588254			sybase-3	sybase-3	sky9_caf	SAP ASE D	atabase	1143225	5
			•	Edit Org	anization Memb	ership	1588242			sybase-3	sybase-3	sky9_caf	SAP ASE D	atabase	1143219	9

2. At the top of the Manage SLA page, select the **Details & Settings** link:

actifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager +	SLA Architect 🗸	Manage 🗸	Report	Monitor -	T	👤 admin	?
🔅 MANAGE SLA	• •	mariadb_3410 j-maria	2 j-maria_2 Details & Set	tings							
TEMPLATE Cho	iose a template		PROFILE Choose a	profile							
Database In								O Policies			
TOTAL DATABASE	LE All Databases ES 7		, \U					Direct to Dedup 0			
DATABASES INCLUDE	D 7		PRODUCTION			MIRROR	0	Direct to OnVault 0			

This opens the details and settings for this specific instance. Of particular importance is **Backup Capture Method**:

- o **Use volume level backup**: Use volume level LVM snapshots with CBT on Linux to a blockbased staging disk. This highly-efficient option enables you to create application-aware virtual databases from the snapshot images
- Use full+incremental backup: This is traditional file-based backup and recovery. This "file dump" method does not support creation of virtual databases. If you are required to use NFS staging disks, then you must use this backup method. You can select this method for use with Block staging disks, which also support the better volume-level backup method.

OCTIFIO Dashboard Backup & Recover C+ MANAGE SLA Sinst1 j-sybase-3 j		anager 👻 SLA Architect 🗸	Manage 🗸 Report Monitor 🗸	_
TEMPLATE Choose a template	Application Details & Setti	ngs	Settings Help	•
	CONNECTOR OPTIONS			^
	PERCENTAGE OF RESERVE SPACE IN VOLUME GROUP	20		_
Database Inclusion Rule RULE All Databases	BACKUP CAPTURE METHOD	 Use volume level backup Use full+incremental backup)	
TOTAL DATABASES 7 DATABASES INCLUDED 7	FORCE FULL FILESYSTEM BACKUP	🔘 Yes 🖲 No		
DATABASES EXCLUDED 0 INELICIBLE DATABASES 0	DATABASE FILESYSTEM STAGING DISK SIZE IN GB			
Edit	LOG BACKUP STAGING DISK SIZE IN			- 8
	SCRIPT TIMEOUT	172800		
	NUMBER OF STRIPES	4		
	SYBASE COMPRESSION LEVEL	0		
			Cancel Save Ch	anges

3. Fill in the details and settings according to the backup method that you need:

SottingLinux CBT and LVM Snapshot (glock only)File-Based Backup & Recovery (glock only)Use Staging Disk Granularity as Minimum Staging Disk SizeUse this for applications that are under the size of the granularity setting and that tend to periodically graw. This application is useful to avoid frequent cashiful a lost ups a daging disk that is larger than required for immediate use. The default values are 0 for No and the Staging Disk Granularity setting of lisk Granularity setting disk are used for an application. The default value is 1000CB.Staging Disk GranularityMaximum size of each staging disk werturble staging disks are used for an application. The default value is 2008.Last Staging Disk Minimum SizeMinimum size of the last staging disk care-used for an application with multiple staging disks. This value is also used for additional disks allocated to accommodate growth. The default value is 250GB.Connector OptionsUse this only under the direction of Actifor temporary space. Not applicable for protecting virtual databases. Not applicable for protecting virtual databases.Not applicableForce Full Filesystem Backup Disk Size in GBNot applicableUse for an on-demand backupStaging Disk Size in GBNot applicableUse the calculator: (instance size *15) + 0% Disks will grow dynamically.Script TimeoutThis value is applied to internal backup staging disk will not grow dynamically.Script TimeoutThis value is applied to internal backup to actific support.Compression LevelNot applicableUse the calculator: (instance size *15) + 0% Disks will grow dynamically.Staging Disk Size in GBSylefault, VDP calculat		••	
Granularity as Minimum Staging Disk Sizethe do periodically grow. This option is useful to avoid frequent costly full backups. Because the staging disk is thin provisioned, there is no initial cost to use a staging disk that is larger than required for immediate use. The default values are 0 for No and the Staging Disk GranularityStaging Disk GranularityMaximum size of each staging disk when multiple staging disks are used for an application. The default value is 1000GB.Last Staging Disk Minimum SizeMinimum size of the last staging disk created for an application with multiple staging disks. This value is also used for additional disks allocated to accommodate growth. The default value is 250GB.Connector OptionsUse this only under the direction of Actifue temporary space. Not applicable for protecting virtual databases.Backup Capture MethodUse volume level backupUse full+incremental backupForce Full Filesystem Backup Disk Size in GBNot applicableUse tor an on-demand backup use with grow dynamically. Disks will grow dynamically.Log Backup Staging Disk Size in GBNot applicableUse the calculation: (instance size *15) + 10% Disks will grow dynamically.Script TimeoutThis value is applied to internal backup. tedfault value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dum to unlipe files. Increase stripes used by the backup server to increase I/O. The derout value is 4.	Setting	Linux CBT and LVM Snapshot (Block only)	File-Based Backup & Recovery
And Controlapplication. The default value is 1000GB.Last Staging Disk Minimum SizeMinimum size of the last staging disk created for an application with multiple staging disks. This value is also used for additional disks allocated to accommodate growth. The default value is 250GB.Connector OptionsUse this only under the direction of Actifio 	Granularity as Minimum	tend to periodically grow. This option is us Because the staging disk is thin provision disk that is larger than required for imme	seful to avoid frequent costly full backups. ed, there is no initial cost to use a staging diate use. The default values are 0 for No
Minimum Sizedisks. This value is also used for additional disks allocated to accommodate growth. The default value is 250GB.Connector OptionsUse this only under the direction of Actifio-Support.Percentage of Reserve Space in Volume Group20% recommended for LVM snapshot temporary space. Not applicable for protecting virtual databases.Not applicableBackup Capture MethodUse volume level backupUse full+incremental backupForce Full Filesystem BackupNot applicableUse for an on-demand backupDatabase Filesystem Staging Disk Size in GBNot applicableUse thif ou provide a value, then it will override the default calculation and the log disk will not grow dynamically.Script TimeoutThis value is applied to internal backup and the log disk will not grow dynamically by Actifio Support.Number of StripesStriping is reading or writing a single dum to multiple files. Increase stripes used by the backup server to increase I/O. The detault value is 4.	Staging Disk Granularity		multiple staging disks are used for an
Percentage of Reserve Space in Volume Group20% recommended for LVM snapshot temporary space. Not applicable for protecting virtual databases.Not applicableBackup Capture MethodUse volume level backupUse full+incremental backupForce Full Filesystem BackupNot applicableUse for an on-demand backupDatabase Filesystem Staging Disk Size in GBNot applicableUse the calculation: (instance size * 1.5) + 10% Disks will grow dynamically.Log Backup Staging Disk Size in GBBy default, VDP calculates this as (daily term it will override the default calculation and the log disk will not grow dynamically. This will become a fixed size. Use the default value unless instructed by Actifio Support.Script TimeoutThis value is applied to internal backup and recovery scripts called by the Actifio Connector. Use the default value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dump to multiple files. Increase stripes used by the backup server to increase I/O. The default value is 4.		disks. This value is also used for additiona	
Space in Volume Grouptemporary space. Not applicable for protecting virtual databases.Securit Volume level backupUse full+incremental backupBackup Capture MethodUse volume level backupUse full+incremental backupForce Full Filesystem BackupNot applicableUse for an on-demand backupDatabase Filesystem Staging Disk Size in GBNot applicableUse the calculation: (instance size * 1.5) + 10% Disk will grow dynamically.Log Backup Staging Disk Size in GBBy default, VDP calculates this as (daily log generation * retention of log backup SLA) + 20% for a buffer. If you provide a value, then it will override the default calculation and the log disk will not grow dynamically. This will become a fixed size. Use the default value unless instructed by Actifio Support.Script TimeoutThis value is applied to internal backup and recovery scripts called by the Actifio Connector. Use the default value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dump to multiple files. Increase stripes used by the backup server to increase I/O. The default value is 4.Compression LevelNot applicableSelect a compression level (0-9, or 100 or	Connector Options	Use this only under the direction of Actific) Support.
Force Full Filesystem BackupNot applicableUse for an on-demand backupDatabase Filesystem Staging Disk Size in GBNot applicableUse the calculation: (instance size * 1.5) + 10% Disks will grow dynamically.Log Backup Staging Disk Size in GBBy default, VDP calculates this as (daily log generation * retention of log backup SLA) + 20% for a buffer. If you provide a value, then it will override the default calculation and the log disk will not grow dynamically. This will become a fixed size. Use the default value unless instructed by Actifio Support.Script TimeoutThis value is applied to internal backup and recovery scripts called by the Actifio Connector. Use the default value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dump to multiple files. Increase stripes used by the backup server to increase I/O. The default value is 4.Compression LevelNot applicableSelect a compression level (0-9, or 100 or		temporary space. Not applicable for protecting virtual	Not applicable
BackupNot applicableUse the calculation: (instance size * 1.5) + 10% Disks will grow dynamically.Log Backup Staging Disk Size in GBBy default, VDP calculates this as (daily log generation * retention of log backup SLA) 	Backup Capture Method	Use volume level backup	Use full+incremental backup
Staging Disk Size in GB(instance size * 1.5) + 10% Disks will grow dynamically.Log Backup Staging Disk Size in GBBy default, VDP calculates this as (daily log generation * retention of log backup SLA) + 20% for a buffer. If you provide a value, then it will override the default calculation and the log disk will not grow dynamically. This will become a fixed size. Use the default value unless instructed by Actifio Support.Script TimeoutThis value is applied to internal backup and recovery scripts called by the Actifio Connector. Use the default value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dump to multiple files. Increase stripes used by the backup server to increase I/O. The default value is 4.Compression LevelNot applicable		Not applicable	Use for an on-demand backup
Size in GB+ 20% for a buffer. If you provide a value, then it will override the default calculation and the log disk will not grow dynamically. This will become a fixed size. Use the default value unless instructed by Actifio Support.Script TimeoutThis value is applied to internal backup and recovery scripts called by the Actifio Connector. Use the default value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dump to multiple files. Increase stripes used by the backup server to increase I/O. The default value is 4.Compression LevelNot applicableSelect a compression level (0-9, or 100 or		Not applicable	(instance size * 1.5) + 10%
Connector. Use the default value unless instructed by Actifio Support.Number of StripesStriping is reading or writing a single dump to multiple files. Increase stripes used by the backup server to increase I/O. The default value is 4.Compression LevelNot applicableSelect a compression level (0-9, or 100 or		+ 20% for a buffer. If you provide a value, t and the log disk will not grow dynamicall	hen it will override the default calculation y. This will become a fixed size. Use the
the backup server to increase I/O. The default value is 4.Compression LevelNot applicableSelect a compression level (0-9, or 100 or	Script Timeout		
Compression LevelNot applicableSelect a compression level (0-9, or 100 or 101, any other value is read as 0.)	Number of Stripes		
	Compression Level	Not applicable	Select a compression level (0-9, or 100 or 101, any other value is read as 0.)

Table 1: SAP ASE Application Details & Settings

Note: Only volume-based snapshots can be mounted as virtual databases. Snapshots taken using the full+incremental backup method are filesystem based; these cannot be mounted as virtual databases.

Note: System databases on a root partition can be backed up and later mounted as virtual databases, but they cannot be used in a traditional Restore operation as the root partition cannot be unmounted. This will need manual restore and recovery from a simple mount back to the same host.

Note: File-based backup also requires the DB dump schedule be configured. See Setting the Schedule for Dumps.

Setting the Schedule for Dumps

The dump schedule is set by the Actifio CLI policy parameter dumpschedule. The default value of dumpschedule="FIIIIII":

- The string must be seven characters either an 'F' or an 'l'
- Each position within the string represents a weekday, starting with Sunday.
- **F** represents a full db dump
- I represents an incremental db dump

For example, "FIIIIII" results in:

- Sunday: Full backup
- Monday through Saturday: Incremental backups
- The following Sunday: Full backup again

To check the dump schedule, run this CLI command from the Actifio Appliance:

udsinfo lspolicyoption -filtervalue appid=<appid> | grep dumpschedule If this does not return any value, then the dumpschedule is set to default.

To modify the dump schedule run this CLI command from the Actifio Appliance:

udstask mkpolicyoption -appid <appid> -name "dumpschedule" -value "FIIIIII" Replace <appid> with the application id of the SAPHANA application. Replace "FIIIII" as needed.

Example

To run full backup on Saturday and Tuesday, set dumpschedule="IIFIIIF"

For more information, refer to the **Actifio CLI Reference**.

4 Protecting an SAP ASE Instance and its Logs

Protecting an SAP ASE instance includes both:

Protecting an SAP ASE Instance on page 19 Protecting SAP ASE Database Logs on page 21

Note: With one exception, protection is set for the entire SAP ASE Instance. You can include/exclude specific databases during the process using a Database Inclusion Rule from the Manage SLA page. The exception is that virtual databases can be protected separately from the instance when created.

Protecting an SAP ASE Instance

To protect the instance:

1. From the App Manager, Applications list, right-click the instance and select **Manage SLA**. You can use the Type filter to restrict the list to SAP ASE Instances, and set SLA Status to Unmanaged.

actifio	Dashboa	ard	Backu	p & Recove	r 👻 🛛 Test Data Managemi	int 🗸 🌔	App Manage	sLA Architect	• Manage •	Report Monitor	•		🝸 👤 adm	in 🐥 ?
🙁 clear all filters	i	Â	pplic	ations									+ ADD	APPLICATION
APPLICATION NAME	•													
HOST NAME	•	< h	de filters	O Applic	ation Type: SAP ASE Database	0 /	pplication Type	SAP ASE Instance						
TEMPLATE NAME	•		e to se		Q							SHOW SEL	ECTED (1)	sv C ≛
PROFILE NAME	•													
FRIENDLY PATH	•	-		APPLIC	ATION	\diamond	ID	TEMPLATE	○ PRO ○	FRIENDLY PA 🗘	HOST NAME 🗘	APPLI 🗘	TYPE 🗘	APPLIA
SLA STATUS	•			one			1588450	Sybase_Dump_bug	LocalPr	Sybase_2	Sybase_2	sky9_caf	SAP ASE Instance	1159755
Managed Unmanaged		Ø	0				1972585			j-sybase-3	j-sybase-3	caf-source	SAP ASE Instance	894840
ТҮРЕ	•			o Ma	nage SLA		1,88226	Sybase_LVM	LocalPr	sybase-3	sybase-3	sky9_caf	SAP ASE Instance	1143211
Select: ALL NONE			۲	D Acc			1588254			sybase-3	sybase-3	sky9_caf	SAP ASE Database	1143225
Systems Hyper-V VM			۲	D	t Organization Member: ort OnVault Images	ship	1588242			sybase-3	sybase-3	sky9_caf	SAP ASE Database	1143219
System State			۲	s	nage Expirations		1972573			j-sybase-3	j-sybase-3	caf-source	SAP ASE Database	894834
□ VM			-	Ma	nage expirations		4500464			Colored D	Endoren D	dad of	CAD ACT Database	4460400

2. On the Manage SLA page, select a template and a resource profile, then click Apply SLA.

actifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager +	SLA Architect 🗸	Manage 🗸	Report	Monitor •	🖌 👤 admin	٠	8
CHANAGE SLA	• 0	cand iq3_test iq3_te	st Details & Settings								
	logpurge		PROFILE onval_auto	profile_72401	•	C	ancel Change	s Apply -			

3. On the Apply SLA page, make sure that the backup capture method matches the type of backup set in Chapter 3, Configuring the SLA, Including the Backup Method. Click **Apply SLA** or **Save Changes**. The instance appears in the Application Manager with a green shield icon.

OCTIFIO Dashboard Backup & Recover +	Test Data Management 🖌 🛛 App Ma	anager + SLA Architect + M	lanage 🗸 Report Monitor 🗸	
ANAGESLA • Sinst1 j-sybase-3 Jee				
TEMPLATE Choose a template	Application Details & Setti	ngs	Settings Help	· •
	CONNECTOR OPTIONS			·
	PERCENTAGE OF RESERVE SPACE IN VOLUME GROUP	20		
Database Inclusion Rule RULE All Databases	BACKUP CAPTURE METHOD	 Use volume level backup Use full+incremental backup 		
TOTAL DATABASES 7 DATABASES INCLUDED 7	FORCE FULL FILESYSTEM BACKUP	🔘 Yes 🖲 No		
DATABASES EXCLUDED 0 INELICIBLE DATABASES 0	DATABASE FILESYSTEM STAGING DISK SIZE IN GB			
Edit	LOG BACKUP STAGING DISK SIZE IN GB			
	SCRIPT TIMEOUT	172800		
	NUMBER OF STRIPES	4		
	SYBASE COMPRESSION LEVEL	0		
			Cancel Save Change	s

The instance will be protected when the snapshot job runs according to the schedule in the template.

4. You can include or exclude specific databases during backup. From the App Manager, Applications list, select the SAP ASE Instance. You can use the SAP ASE Instance checkbox to filter the list. Select **Manage SLA**.

actifio	Dashboa	nd	Back	tup & Recover	▪ Test	Data Managemen	t 🗸	App Manage	SLA Arch	itect 🗸	Manage 🗸	Report Monitor	•		Υ.	👤 admi	n 🌲 🤇	2
clear all filters	Í	A	ppli	cations												+ ADD	APPLICATI	ION
APPLICATION NAME	•																	
HOST NAME	•	.∉ h	ide filte	SLA: U	inmanaged	O Application Typ	pe: Mar	iaDB Database	O Application	fype: Mai	riaDB Instance							
TEMPLATE NAME	•		pe to s			Q											25 ¥	*
PROFILE NAME	•					-												-
FRIENDLY PATH	•			APPLIC/	TION		0	ID	TEMPLATE	\diamond	PRO 🗘	FRIENDLY PA 🗘	HOST NAME 🗘	APPLI 🗘	TYPE	Ŷ	APPLIA.	
SLA STATUS	•	Ø	0	mariadb	3410		_	1879809				j-maria_2	j-maria_2	caf-source	MariaDB Inst	ance	566562	-
Managed Unmanaged			8	mariadb,	Manag	2 SLA		8338				maria_2	maria_2	sky9_caf	MariaDB Inst	ance	1157318	3
ТҮРЕ	•		8	mariadb,				9795				j-maria_2	j·maria_2	caf-source	MariaDB Inst	ance	566555	
				mariadh	Edit Or	ganization Mer	mbers	hip				maria 7	maria 2	dad caf	Maria DB lock	2000	1359504	

5. Under Database Inclusion Rule, click **Edit**. If you do not see the Database Inclusion settings, you have selected a database, not an instance.

OCTIFIO Dash	ooard 🛛 Backup & Recover 🗸 🔷 Test Data Mana	igement • App Manager • SLA Archite	ect 🗸 🛛 Manage 🗸	Report Monitor -		🝸 👤 admin	≜ 0
C MANAGE SLA TEMPLATE sn_dd_st_rd	Manage Membership Eligible Databases Incussion RULE: Include All Include All Include Selected Instance. Databases & Exclude Selected snapholy automaticnty.	thou if a policy template is applied to this option will be included in data capture (or	Ineligible di Managemei DB2 • The data	e Databases atabases cannot be included in DB2 Instance nt for one of the following reasons: abase in amether of a consisting group abase was created by an spa-aware mount			
RULE AII DA TOTAL DATABASES 1 DATABASES INCLUDED 1	type to search Q	TABASES	type to	search Q DATABASES	٥		
DATABASES EXCLUDED 0 INELIGIBLE DATABASES 0 Edit	e systst			No Databases Found			

6. Select an Inclusion Rule (Include All, Include Selected, or Exclude Selected). Select the databases to include or exclude, then click **Save**.

Protecting SAP ASE Database Logs

To enable and set up the SAP ASE database log backup:

1. From the SLA Architect, Templates list, right-click the template for SAP ASE instance protection. Click **Edit**.

actifio	Dashboar	d	Backup & Recover 🗸	Test Data Management	t 🗸 🛛 App Mar	nager 🗸 🛛 S	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸			Y	👤 ad	lmin 4	¢ 6	
🙁 clear all filte	ers	Te	mplates										- 1	+ CR	EATE TI	empla	TE
TEMPLATE NAME																	
iq	0	4 hid	le filters O Name: Iq														
DESCRIPTION											SH0	W SELECTED (1)	g	Ш	25 🗸	0	Ŧ
Search by description	n		NAME		DESCRIPTION	PTION		٥	OVERRIDE			MANAGED BY A	GM				
OVERRIDE		Ø															
			iqdblog Edit						Yes			Yes					
			iq_dum Clone						Yes			Yes					
			Edit Org	anizations					Vor			Ver					

2. Click the arrow beside the Snapshot policy to open up the details, then click **Edit Policy**.

actifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager	LA Architect 🗸 🔹 Manage	• → Report	Monitor 🗸	🍸 👤 admin 🌲 😯
TEMPLATE	IQ_LVM		ALLOW OVERRIDES ON	POLICY SETTINGS?*	YES 🗍 NO		Save Templat	e
DESCRIPTIO	Descript	ion						
							○ Policies	
		PRODUC		MIRR	OR .		SCHEDULING Windowed FREQUENCY Everyday TIME WINDOW 19:00 to 07:00	
		SNAPS		•			REPEAT VALUE Once per window EXPIRE AFTER 2 days POLICY ID 1157397 Edit Policy	
							Direct to Dedup 0	
								33) 33)
		· · E	0					
		DED	UP	DEDUP	DR		Dedup DR 0	113
							Mirror (0)	33)

3. Near the bottom, select Advanced Policy Settings.

actifio	Dashboard	Backup & Recover 🗸	Test Data Manageme	ent 🗸 🛛 App Manager 🗸	SLA Architect +	Manage 🗸	Report	Monitor 🗸	
			Production T	o Snapshot					
		Crea	ate/Edit Policy						
		POL	ICY NAME* SI	пар					
⊖ Poli	cies	SCH	EDULING	indowed					
- Snapshot	1	(•Add	ON THESE DAYS EVERY	<u>lay</u>					
🔍 snap			EXCEPT Never ×						
SCHEDU	LING Windowed		Intern S						
	NCY Everyday		WITHIN THIS WINDOW	19:00 то	07:00				
	DOW 19:00 to 07:0								
	ALUE Once per win FTER 2 days	wob	RUN ONCE PER WINDO						
	TYID 1157397			0 24 0					
	Edit	Policy		2 🕂 Day(s					
Direct to De	dup 0	(TAB)			_				
Direct to Or	Vault 0	SLA	COMPLIANCE Def.	autt					
OnVault Re	plication 0	PRIC		edium 🔻					
Dedup 0			_						
Dedup DR		(113)		Adva	nced Policy Settings				
Mirror 0		(Add							

- 4. Set the log policy options (you will have to scroll to see them all):
 - o Enable Truncate/Purge log after backup.
 - o Set Enable Database Log Backup to Yes.
 - o For **RPO (Minutes)**, enter the desired frequency of log backup.
 - o Set Log Backup Retention Period (in Days) for point in time recovery.
 - o Set **Replicate Logs (Uses StreamSnap Technology)** to **Yes** if you want to enable StreamSnap replication of log backup to a DR site.
 - o Set **Send Logs to OnVault Pool** to **Yes** if you want the database logs to be sent to an OnVault Pool, enabling for point-in-time recoveries from OnVault on another site.
 - o **Log Staging Disk Growth Size (in percent)**: Grow the log staging disk by the specified percentage as needed. The value must be between 5 and 100 percent.
 - o **Compress Database Log Backup**: Set this to Yes if you want the SAP ASE host to perform compression during log backup.

OCTIFIO Dashboard Backup & Recover ~	Test Data Management 🖌 🛛 App M	lanager 🐱 SLA Architect 🐱	Manage 🖌 🛛 Report	Monitor 🗸	🝸 👤 admin 🌲 😧
	Policy Settings	Unmap staging disks after ea	Settings Help	•	
c	TRUNCATE/PURGE LOG AFTER BACKUP	 Do not truncate/purge log af Truncate/Purge log after bac 	'ter backup	Reset to Default	
O Policies	SKIP OFFLINE APPLICATIONS	 Fail backup when offline app Skip offline applications duri 			
snapshot snap	MAP STAGING DISK TO ALL ESX HOSTS IN A CLUSTER	 Map staging disk to ESX host Map staging disk to all ESX h Map staging disk to 2 ESX ho 	osts in the cluster		
SCHEDULING Windowed FREQUENCY Everyday TIME WINDOW 19:00 to 07:00	NODE BACKUP PREFERENCE FOR SQL AVAILABILITY GROUP	 Use Availability Group Backup Primary Node Secondary Prefer Secondary Node 	Node Only		
REPEAT VALUE Once per window EXPIRE AFTER 2 days POLICY ID 1157397	ALLOW MIGRATING FROM OUT-OF- BAND TO IN-BAND DATA MOVEMENT	🔘 Yes 🔘 No			
Edit Policy	FORCE OUT-OF-BAND BACKUP	🔘 Yes 🛞 No			
	BACKUP SQL SERVER USER LOGINS	🔘 Yes 🛞 No			
Direct to Dedup 0 mass	ENABLE DATABASE LOG BACKUP	🖲 Yes 🔘 No		Reset to Default	
OnVault Replication 0			Cancel	Save Changes	
Dedup 0		Advanced Delicy Settings	Concer		

5. Click Save Changes.

5 Accessing an SAP ASE Instance as a Standard Mount or as a Virtual Database

There are several ways to access a protected SAP ASE instance:

Mounting an SAP ASE Instance as a Standard Mount on page 23 Mount a Virtual Database from a Block-Based Volume Snapshot Image to the Source or to an Existing SAP ASE Instance on page 25

Refreshing a Virtual Database Using an Actifio Workflow on page 28

Mounting an SAP ASE Instance as a Standard Mount

This is the procedure for a standard mount. To make a virtual database (application aware mount), see the procedure in Mount a Virtual Database from a Block-Based Volume Snapshot Image to the Source or to an Existing SAP ASE Instance on page 25.

To mount the database image as a standard mount:

1. From the App Manager Applications list, right-click the protected database and select Access.

C clear all filters APPLICATION NAME APPLICATION NAME FOST NAME FOST NAME FOST NAME FRIENDLY PATH FRIENDLY PATH G Managed Unmanaged Unmanaged Unper Select: ALL NONE Systems B () Lyper V VM Databases C) Db2 Database C) Db2 Database C) MariaDB Database C) MariaDB Instance C) MariaDB I	lications					
HOST NAME + hede fitters TEMPLATE NAME + PROFILE NAME + PRO	Iters O SI & Managed O Application Type: SAP A					+ ADD APPLICATION
Interprivate NAME	iters SLA: Managed Application Type: SAP A					
PROFILE NAME PRIENDLY PATH PRIENDLY PATH SLA STATUS Managed Unmanaged Unmanaged TYPE Select: ALL NONE Systems Bystems State VM Databases Db2 Database Db2 Database Db2 Instance Db2 Instance	Compared of Application Type. and A	ASE Instance				
PROFILE NAME	o search Q					500 🗸 🎍
SLA STATUS Constraints of the second						500 ♥ 🛣
Managed Unmanaged Unmanaged Unmanaged Select: ALL NONE Systems Hyper-V-VM System State VM Databases Db2 Database Db2 Instance Db2 Instance MariaDB Database	APPLICATION ID TEMP	PLATE PROFILE	♦ FRIENDLY PATH ♦	HOST NAME 🗘 🖟	APPLI 🗘 TYPE 🗘	APPLIANCE APP ID
Managed Unmanaged Unmanaged Vome Select: ALL NONE Systems Dtyper/VVM System State VVM Databases Db2 Instance Db2 Instance Db2 Instance	one 1588226 Sybas	se_LVM LocalProfile	sybase-3	sybase-3 s	ky9_caf SAP ASE Instance	1143211
elect: ALL NONE systems Dyper V VM System State VM Natabases Db2 Dotabase Db2 Instance MariaDB Database	one Manage SLA	Dump_bug LocalProfile	Sybase_2	Sybase_2 s	ky9_caf SAP ASE Instance	1159755
Systems Hyper V VM System State VM Databases Db2 Database Db2 Instance MariaDB Database	Access					
□ Hyper V VM □ System State □ VM Databases □ Db2 Database □ Db2 Instance □ Db2 Instance	Edit Organization Membership					
System State VM Valabases Db2 tabasee Db2 instance MariaDB Database	Import OnVault Images					
 ↓ VM Databases □ Db2 Database □ Db2 Instance □ MariaDB Database 	Manage Expirations					
Db2 Database Db2 Database Db2 Instance MariaD8 Database	Manage Workflows					
□ Db2 Database □ Db2 Instance □ MariaDB Database						
Db2 Instance MariaDB Database	Add To Logical Group					
	Mark Sensitive					
MariaDB Instance		-				
MaxDB						
MySQL Database						
□ MySQL Instance 1 - 2 of 2		144	44 1 of 1 page ⇒>			Manage SLA 🛛 🔺

Note: You can use the Managed SLA Status filter to show only protected databases.

2. Select a snapshot image and choose Mount.

actifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸		🕇 上 admin 🌲 😧
ACCESS	- 🦁	inst2 DB2_test_delete	DB2_test_delete Detail	s & Settings						TIMELINE TABLE
Jump to: 💼 2019	2019-11-13									0-11-15 15:40:52 oshot Image
	2019-11-14								STATUS	Image_0240779 Available
2019	M1-45								IMAGE SIZE	
2019-11-16									APPLIANCE	2019-11-17 16:05:51 Caf-Source 11-15 11:35 To 11-15 11:59
2019-11-17										Snap1 Not-Applicable
										Act_per_pool000
↑ ↓ Sn	apshot	Dedup	Remote Dedup	Remote Snapshot	OnVault				Live C Restor	

- 3. On the Mount page, from **Target**, choose the desired target SAP ASE server from the dropdown.
- 4. Under Application Options, **disable** Create New Virtual Application.

Note: If you do not see the Create New Virtual Application option, then the image is from a file-based full+incremental snapshot, so a virtual database is not possible.

5. Under Mapping Options, select a local or external **Storage Pool** and enter a **Mount Location**.

actifio	Dashboard	Backup 8	& Recover 🗸	Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸	🝸 👤 admin 🌲 😲
ACCESS	- 🦁	one Syba	ase_2 Syba	se_2 Details & Settings	-					TIMELINE TABLE
	-01-31 17:28:44 shot Image		I	Mount						
STATUS	Image_1160863 Available SAN Based, Out-O Storage	Of-Band		TARCET*	LABEL					
	1.61GB 2020-02-02 17:45 Sky9_caf_auto	5:29		 Application Optio INCLUDED DATABASES 					Database Options * are mandatory	
RANGE	01-31 17:22 To 01	1-31 17:38		type to search		۹			SHOW SELECTED (1)	
CATALOG STATE POOL NAME	Not-Applicable Act_per_pool000	•		SELECT ITEM	IS					
Mo	ount 🚽			☑ D81						
				 Mapping Options 						
				STORAGE POOL*		act_per_p	ool000 (478G 🔻			
				MOUNT LOCATION						
								G	ancel Submit	

6. Click **Submit**. You can monitor the job progress from the Monitor, Jobs page.

Mount a Virtual Database from a Block-Based Volume Snapshot Image to the Source or to an Existing SAP ASE Instance

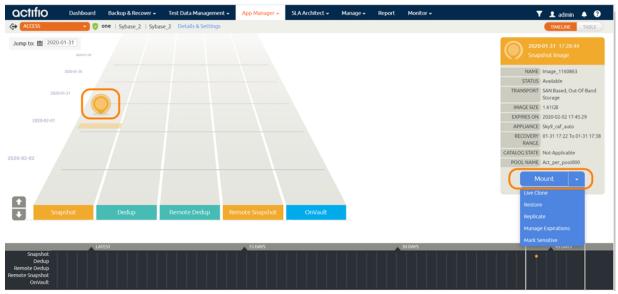
This is the procedure to mount a virtual database (an application-aware mount). To make a standard mount, see Mounting an SAP ASE Instance as a Standard Mount on page 23. To restore an instance back over a corrupted version at the source, see Chapter 6, Restoring and Recovering an SAP ASE Instance Back to the Source.

To mount a virtual database (application aware mount) to an existing target:

1. From the App Manager, Applications list, right-click the protected instance and select **Access**. You can use the Managed SLA Status filter to show only protected instances.

APPLICATION NAME APPLICATION NAME Nost NAME PROFILE NAME	lmin 🌲 ?	¥ 1		Monitor 🗸	Manage 🖌 🛛 Report	SLA Architect 🗸	App Manager +	st Data Management 🗸	cover 🗸 🛛 Te	Backup & Reco	rd	Dashboar	actifio
Hote Filters Application Type: SAP ASE Database Application Type: SAP A	D APPLICATION	+							ns	plicatior	Ap	rs	🙁 clear all filters
TEMPLATE NAME PROFILE NAME <th></th> <th>•</th> <th>APPLICATION NAME</th>												•	APPLICATION NAME
Reference (Participation of the service) Open to search Open to sea						SE Instance	Application Type: SAP #	SAP ASE Database	Application Type:	filters O Ap	< hid	•	OST NAME
Nonlex Awake Image: Control of the second secon	25 ¥ 🕻 🛃	W SELECTED (1)						0			type	•	EMPLATE NAME
Image: Control of the second secon	1.5 · [1]	in secces (i)	0.5110					~			Gpc	•	ROFILE NAME
Managed Managed issues	PLIANCE A	TYPE 🗘	APPLIANCE 🗘	HOST NAME 🗘	FRIENDLY P 🗘	PROFILE 🗘	TEMPLATE 🗘	ID	LICATION 🗘	APPL	Ξ	•	RIENDLY PATH
Image of the system Image of the system<	59755	SAP ASE Instance	sky9_caf_auto	Sybase_2	Sybase_2	LocalProfile	Subase Dump	1588450	~	🥑 one	Ø	-	LA STATUS
Image: System State Image: System State Image: System State System	4840	SAP ASE Instance	caf-source	j-sybase-3	j-sybase-3					😒 inst1			
select: ALL NONE Ø DB2 Import OnVault Images sybase-3 sybase-3	43211	SAP ASE Instance	sky9_caf_auto	sybase-3	sybase-3	LocalProfile				🥏 one		•	YPE
Image System State Image Expirations sybase-3 syba	43225	SAP ASE Datab	sky9_caf_auto	sybase-3	sybase-3		rship			🤣 DB2			
System State i v sybsyste Manage Workflows j-sybase-3 j-sybase-3 i-sybase-3 i-s	43219	SAP ASE Datab	sky9_caf_auto	sybase-3	sybase-3					🥏 DB1			
Add To Logical Group Sybase_2 Sybase_2 Sky9_caf_auto SAP ASE Datab 111 Db2 Database Sybase_3 Sybase-3 Sybase-3 Sybase-3 SAP ASE Datab 111 MarkaDB Instance Sybase Sybase-3 Sybase-3 Sybase-3 Sap ASE Datab 111 MarkaDB Instance Sybase Sybase-3 Sybase-3 Sap ASE Datab 111 Ob2 Instance Sybase-1 Sybase-3 Sybase-3 Sap ASE Datab 111 MarkaDB Instance Sybase-1 Sybase-3 Sybase-3 Sap ASE Datab 111 MarkaDB Instance Sybase-1 Sybase-3 Sybase-3 Sap ASE Datab 111	4834	SAP ASE Datab	caf-source	j-sybase-3	j-sybase-3				system	🦁 sybsy			System State
Ob2 Instance Image: Sybase-3	50493	SAP ASE Datab	sky9_caf_auto	Sybase_2	Sybase_2			To Logical Group	syster Add 1	🦁 sybsy			
MarkaDB Detabase Sybmgmidb 1972591 J-sybase-3 j-sybase-3 caf-source SAP ASE Datab 89 MarkaDB Instance Ø master 1588470 Sybase_2 Sybase_2 sky9_caf_auto SAP ASE Datab 111	43221	SAP ASE Datab	sky9_caf_auto	sybase-3	sybase-3			Sensitive	syster Mark	🦁 sybsy			_
L V master 1588470 Sybase_2 Sybase_2 Sky9_car_auto SAP ASE Datab 110	4843	SAP ASE Datab	caf-source	j-sybase-3	j-sybase-3			1972591	ngmtdb	🔋 sybmi		se	
□ MvSOL Database	50496	SAP ASE Datab	sky9_caf_auto	Sybase_2	Sybase_2			1588470	ter	🤣 maste			_
									u urba — dh			2	
	4842	SAP ASE Datab	car-source	J-sybase-3	J-sybase-3			1972589	systemdb	Sybsy:			
	4844	SAP ASE Datab	caf-source	j-sybase-3	J-sybase-3			1972593	ter	🙁 maste			_
SAP ASE Database SAP ASE Instance 1 - 25 of 37 applications ₩ ≪ 1 of 2 pages ₩ ₩ Manage	e SLA 🔺	Man		PH .	of 2 pages 🕨	H			oplications	- 25 of 37 app	1		_

2. Select a snapshot image and choose Mount.



3. On the Mount page, from Target, choose the desired target SAP ASE server from the dropdown.

4. Under Application Options, enable **Create New Virtual Application**.

Note: Only volume-based snapshots can be mounted as virtual databases. Snapshots taken using full+incremental are filesystem based; these cannot be mounted as virtual databases.

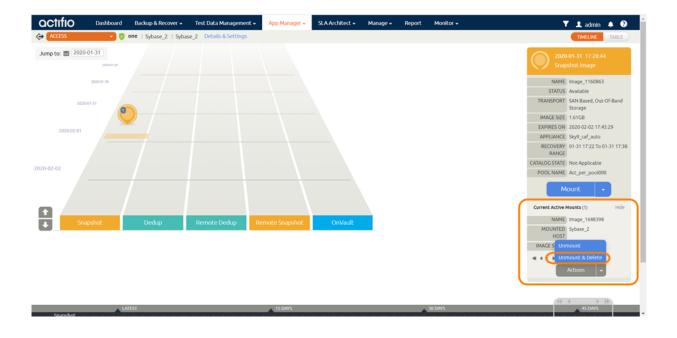
CTIFIO Dashboard Backup & Re	ecover • Test Data Management • App Man	ager 🖌 SLA Architect 🗸	Manage 🖌 Report	: Monitor v	🝸 👤 admin 🐥 🤇
ACCESS VICESS ASE sybase-	qavm1 172.16.125.99 Details & Settings				TIMELINE TABLE
2020-03-04 13:06:30	Mount				
StreamSnap Image					
NAME Sky10c_Image_0145974	TARGET*	ABEL			
STATUS Available	Choose Host 🗸				
TRANSPORT SAN Based, Out-Of-Band Storage					
IMAGE SIZE 33.00GB	 Application Options 				
EXPIRES ON Never			<u> </u>		
APPLIANCE Sky-Phase2	CREATE NEW VIRTUAL APPLICATIO				
CATALOG STATE None	INCLUDED DATABASES			Database Options * are mandator	y .
POOL NAME Act_per_pool000	type to search	۹		SHOW SELECTED (1)	
Mount 👻					
	SELECT ITEMS				
	🗹 punedb			Database Options	
	TARGET SYBASE INSTANCE USER	targetuser			
	TARGET SYBASE INSTANCE PASSW	ORD *			
	TARGET SYBASE ASE INSTANCE NA	ME *			
		targetinsta	ince		
	MANAGE NEW APPLICATION				
	TEMPLATE *	sybase_d	ump_remote 🔻	/	
	PROFILE *			• `•	
	1 1001 100	Choose a	profile 🔻	6 6 6 6 6	

- 5. At Included Databases, Select Items, choose one or more databases to virtualize:
 - o A single database will be managed as standalone virtual copy
 - o Multiple databases will be managed as a consistency group
- 6. Click each selected database to specify the target database details for the new virtual copy.
- 7. For a database protected with log roll-forward, choose a target point in time.

NAME OF CONSISTENCY GROUP: This option appears if more than one database is selected. Provide a unique name to manage the selected databases as a virtual copy. TARGET SAP ASE INSTANCE NAME: From the drop down, select a target SAP ASE instance to attach the selected database as a virtual copy.

Manage New Application:

- o To protect the new virtual database, click and enable Manage New Application.
- o Choose a template and a resource profile to protect the database.
- 8. In Advanced Options:
 - o Enter the Home Directory of the database (optional).
 - Overwrite Existing Database, indicate when to overwrite a database on the target server that has the same name as the new database(s) being mounted: Yes, No, or Only if it's Stale.
- 9. The Mapping Options depend upon the target. Both physical hosts and VMs require a Mount Location; specify a target mount point to mount the new virtual database to. VM targets also have VM-specific requirements that are detailed in the AGM online help.
- 10. Click Submit.
- 11. Perform Unmount+Delete for the database mount-point.



Refreshing a Virtual Database Using an Actifio Workflow

You can use a workflow to automate the process of mounting and refreshing an SAP ASE instance's databases from a snapshot.

- 1. From the AGM App Manager, right-click the SAP ASE Instance and select **Manage Workflows**.
- 2. In the upper right corner of the Workflows: Application Dashboard page, click + Add Workflow.

actifio	Dashboard	Backup & Recover +	Test Data Management	App Manager +	SLA Architect +	Manage +	Report	Monitor +			۲	1 admin	A 0
MANAGE WORKFLOWS	💽 🔿 ASE1 Syb	aseASE-vm1 SybaseA	SE-vm1 Details & Setting	5									
Workflows: Ap	plication Da	shboard								* Specified time is in the tim	e some of the a	+ ADO W	
												3 III 25 v	- C 4
WORKFLOW NAM	AE.	APPLIANCE	т	PE	5	CHEDULE TYP	8	PRI	REVIOUS RUN STATUS	CURRENT STATUS		NEX	T RUN TIM

- 3. Specify:
 - o Workflow Name: Enter a name for this workflow.
 - o Workflow Type: Select Direct Mount.
 - o Schedule Type: Choose Scheduled or On Demand based on your requirement. For a scheduled workflow, specify the frequency as well.

Add Workflow : Configure

WORKFLOW NAME *	WORKFLOW TYPE	APPLIANCE localhost.localdom	
IMAGE	0		MOUNT
SCHEDULE TYPE *	FREQUENCY . Monthly ON 1	AT 00:01	

- o Source Image: Select based on requirements.
- o Mount Label: (Optional) Specify a mount label for the mounted image.
- o Hosts: Select the target host or hosts where the virtual SAP ASE Instance databases copy will be created.

	T LABEL			
STS	•	0		
2	ноѕт		IP	
	SybaseASE-vm1		192.168.18.203	
	SybaseASE-vm2		192.168.18.205	

- o Mount Location: Specify a mount point to mount the data volumes and log volumes of the target.
- o Pre-Script (optional): Specify a prescript name to be run before refresh. Pre scripts are detailed in **Network Administrator's Guide to Actifio VDP**.
- o Post-Script (optional): Specify a postscript name to be run at the end of refresh. Post scripts are detailed in Connecting Hosts to Actifio Appliances.
- o Create New Virtual Application: Enable Create New Virtual Application.

MOUNT LOCATION	/wfMnt	
Script Options		
PRE-SCRIPT		TIME OUT (SECONDS)
		TIME OUT (SECONDS)

- o Select Items: Select the databases to refresh on target and specify the target dbname from 'Database Options' for each database.
- o Target SAP ASE Instance User and Password: Enter credentials for the target ASE instance
- o Target SAP Instance Name: If the target instance is visible, select it. Otherwise specify the target instance name.

type to search	Q			SHOW SELECTED (1)
SELECT ITEMS				
🛛 CU1			Clea	Database Options
ARGET SAP ASE INSTANCE USER	sa	i.		
ARGET SAP ASE INSTANCE PASS	WORD .			
ARGET SAP ASE INSTANCE NAM	E.	SE1		
	A	SE1		
IANAGE NEW APPLICATION				
EMPLATE *	0	Choose a template	*	
ROFILE *		thoose a profile		
EMOVE MOUNTED IMAGE AFTE				

- o Manage New Application: Enable Manage New Application.
- o Template and Profile: Choose a template and a profile to protect the database.
- 4. Click **Add**. This will create an on-demand or scheduled workflow to create or refresh the SAP ASE Instance's databases virtual copy.

6 Restoring and Recovering an SAP ASE Instance Back to the Source

Depending on how you protected the instance, you need the procedure for:

Recovering an SAP ASE Instance from a Volume-Based Snapshot on page 31 Recovering a Single SAP ASE Database from a Volume-Based Snapshot on page 33 Recovering from a Full+Incremental Snapshot on page 36 Recovering to a New Target from a Full+Incremental Snapshot on page 37

Note: This chapter details how to restore an instance back over a corrupted version at the source. To access an SAP instance or database as a new virtual database that can be refreshed, see Chapter 5, Accessing an SAP ASE Instance as a Standard Mount or as a Virtual Database.

Note: If multiple instances share the same volume/filesystem(s), then restoring back to the source is not supported. To restore such applications, mount the image to the host and use the procedure to perform single database recovery detailed in Recovering a Single SAP ASE Database from a Volume-Based Snapshot on page 33.

Recovering an SAP ASE Instance from a Volume-Based Snapshot

Use this procedure to restore and recover the source SAP ASE instance. This procedure uses physical recovery of the source data area. This procedure requires that the image was captured using volume-level backup for Backup Capture Method in the application Details & Settings.

Note: System databases on a root partition backed up as LVM snapshots can be mounted as virtual databases, but they cannot be used in a traditional Restore operation as the root partition cannot be unmounted. This will need manual restore and recovery from a simple mount back to the same host.

To recover back to the source:

1. From the App Manager, Applications list, right-click the protected instance and select **Access**. You can use the Managed SLA Status filter to show only protected instances.

actifio	Dashbo	ard	Backup	a & Recover	👻 Test Da	ta Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🖌 🛛 Repor	t Monitor -		T.	👤 admin	۹
clear all filters		Âp	oplica	ations									+ ADD API	PLICATION
APPLICATION NAME	•													
HOST NAME	•	< hid	de filters	O Applic	ation Type: SAP	ASE Database	Application Type: SAP	ASE Instance						
TEMPLATE NAME	•					Q					□ sH	OW SELECTED (1)	111 25 ¥	0 1
PROFILE NAME	•					~								C 3 10.5
FRIENDLY PATH	•	Θ		APPLIC	ATION 🗘	ID	TEMPLATE 🗘	PROFILE	\$ FRIENDLY P 🗘	HOST NAME 🔅	APPLIANCE 🗘	TYPE 🗘	APPLIAN	ICE A
SLA STATUS	•	₽	0	one	<u> </u>	1588450	Subase <u>Dump_</u>	LocalProfile	Sybase_2	Sybase_2	sky9_caf_auto	SAP ASE Instance	1159755	
Managed				inst1	Manage :	SLA			j-sybase-3	J-sybase-3	caf-source	SAP ASE Instance	894840	
Unmanaged					Access									
ТҮРЕ	•			one	Edit Ora	nization Memb	LVM ership	LocalProfile	sybase-3	sybase-3	sky9_caf_auto	SAP ASE Instance	1143211	

2. Select a snapshot image and choose **Restore**.

actifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸	Y	🖌 👤 admin	▲ 19
ACCESS	- 🔍	cand iq3_test iq3_te	st Details & Settings							TIMELINE	TABLE
Jump to: 💼 2020-0	2020-02-23									02-27 11:51:17 oshot Image	
	2020-02-26									Image_1415322	
2020-0 2020-02-28	227								TRANSPORT IMAGE SIZE EXPIRES ON	2020-02-29 11:53	
											28 11:12
2020-02-29									POOL NAME	Act_per_pool000	
	oshot	Dedup	Remote Dedup	emote Snapshot	OnVault				Restor		μ
									Manag		
	LA	TEST	44 4 3 33	15 DAYS				30 DAYS	Mark S	ensitive	
Snapshot Dedup Remote Dedup Remote Snapshot OnVault											

3. On the Restore page choose a point in time for the protected instance to recover to.

actifio	Dashboard Backup 8	k Recover 🖌 🛛 Test D	ata Management 🗸 🛛 Ap	p Manager 🖌 🛛 S	LA Architect 🗸	Manage -	Report	Monitor 🗸	🝸 👤 admin 🌲 😧
ACCESS	🚽 🧻 one 🛛 syba	ise_auto1 sybase_au	to1 Details & Settings						TIMELINE TABLE
	04-09 12:36:00 shot Image	Resto Use this p		peration. A restor	e will take the	existing data	base offline a	nd overwrite their data files.	
STATUS TRANSPORT	Image_0180105 Available SAN Based, Out-Of-Band Storage		FORWARD TIME	=	2020-04- d 9	Q 12:58 pril 2020	50 ® H	OST TIME 🔘 USER TIME	
	2020-04-10 12:59:43		e to search	Q	Su Mo Tu	We Th 1 2	Fr Sa 3 4	SHOW SELECTED (3)	
APPLIANCE RECOVERY RANGE	Sky10sp1 04-09 12:35 To 04-09 12:58		DB1		5 6 7 12 13 14		10 11		
LABEL CATALOG STATE	None				19 20 21				
	Act_per_pool000		DB2 DRE WITH RECOVERY		26 27 28		lose		

- 4. Enable **Restore With Recovery** to apply recovered logs.
- 5. Click **Submit**.

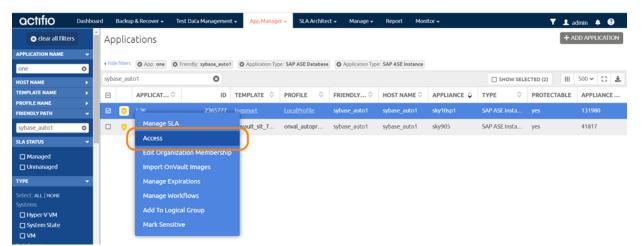
Recovering a Single SAP ASE Database from a Volume-Based Snapshot

Use this procedure to restore and recover a single database from the source SAP ASE instance. This procedure uses physical recovery of the source data area. This procedure requires that the image was captured using volume-level backup for Backup Capture Method in the application Details & Settings.

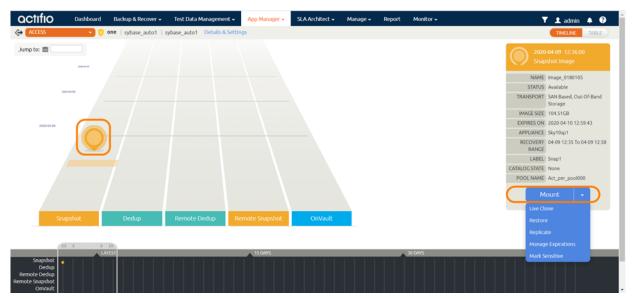
Note: System databases on a root partition backed up as LVM snapshots can be mounted as virtual databases, but they cannot be used in a traditional Restore operation as the root partition cannot be unmounted. This will need manual restore and recovery from a simple mount back to the same host.

To recover a single database from an LVM image of an instance:

1. From App Manager, Applications list, right-click the instance that has the database to be recovered and select **Access**.



2. On the timeline, select the latest snapshot to recover, and choose Mount.



3. In the Application Options, **disable** Create New Virtual Application. In Mapping Options, provide the mount-point location. Click **Submit**.

actifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸	🝸 👤 admin	A 🕄
ACCESS	🔹 🤨 o	ne sybase_auto1	sybase_auto1 Details & Settin	gs					TIMEUNE	TABLE
	04-09 12:36:00 hot Image		Mount							
STATUS / TRANSPORT S	mage_0180105 Available SAN Based, Out-Of Storage	Band	TARGET • sybase_auto1 •	LABEL						
APPLIANCE	2020-04-10 12:59:4		Application Option CREATE NEW VIRTUAL INCLUDED DATABASES				C	Natabase Options * are mandatory		
LABEL S			type to search		۹			SHOW SELECTED (3)		
	Act_per_pool000		SELECT ITEM	5						
Мо	unt 🔹									
			☑ 082							
			 Mapping Options 							
			STORAGE POOL*		act_per_po	ol000 (491G 🔻				
							Can	cel		

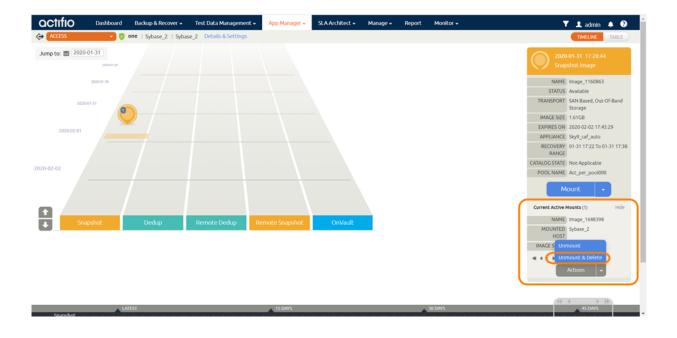
4. Check the Monitor, Jobs page to see when the mount job is finished. When the job is finished, return to the SAP ASE host, and change the directory to /act/custom_apps/sybase/restore. Run the script act_sybase_lvm_customdb_recovery.sh with the arguments below.

./act_sybase_lvm_customdb_recovery.sh OSUSER=sybase TARGET_SYBASE_SQLD=/home/sybase/ Sybase16Home/OCS-16_0 TARGET_MNT_PNT=/sngRst TARGET_SERVER_NAME=ASE1 TARGET_DB_USER=sa STRIPEON=4 TARGET_DBUSER_PASSWD=sybase SRC_DBNAME=CU1 LOG_BKP_MNTPT=/sngRst_archivelog UNTIL_TIME="2019-11-07 20:31:27" BEGIN_TIME="2019-11-07 19:31:27" JOBID="Job_2677627"

Arguments to the Script

OSUSER = SAP Ase OS owner name TARGET_SYBASE_SQLD = SAP ASE iSQL path on the target recovery host TARGET_MNT_PNT = SAP ASE Instance image mountpoint name TARGET_SERVER_NAME = SAP ASE data server name on the target recovery host TARGET_DB_USER = SAP ASE Instance username on the target recovery host TARGET_DBUSER_PASSWD = SAP ASE Instance user password on the target recovery host SRC_DBNAME = SAP ASE Database name to be recovered (Single) LOG_BKP_MNTPT = SAP ASE Log image mountpoint name BEGIN_TIME= Backup begin time (Format: "YYYY-MM-DD HH24:MI:SS") UNTIL_TIME = Point in time to recover the database (Format: "YYYY-MM-DD HH24:MI:SS") JOBID = Database mount Job name

- 5. Connect to the SAP ASE database and verify the data.
- 6. In the AGM, access the image again and Unmount+Delete the database mount-point.



Recovering from a Full+Incremental Snapshot

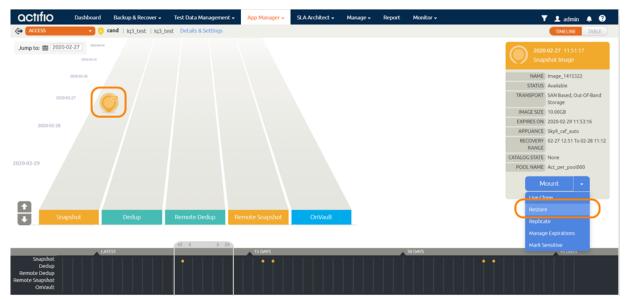
Use this procedure to restore and recover the source SAP ASE instance. This procedure overwrites the source data. This procedure requires that the image was captured using full+incremental backup for Backup Capture Method in the application Details & Settings.

To recover back to the source, overwriting it:

1. From the App Manager, Applications list, right-click the protected instance and select **Access**. You can use the Managed SLA Status filter to show only protected instances.

actifio	Dashboa	rd	Backup	& Recover	👻 🛛 Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage + Repo	ort Monitor -		Y.	👤 admin 🌲 😧
🙁 clear all filter	s î	Ap	plica	ations								+ ADD APPLICATION
APPLICATION NAME	•											
HOST NAME	•	< hid	le filters	O Applica	ation Type: SAP ASE Database	Application Type: SAP	ASE Instance					
TEMPLATE NAME	•				Q						OW SELECTED (1)	III 25 - C 🛃
PROFILE NAME	•				~							111 1.5 1 1.5 120
FRIENDLY PATH	•	Ξ		APPLICA	ID ID	TEMPLATE 🗘	PROFILE 🗘	FRIENDLY P 🗘	HOST NAME 🗘	APPLIANCE 🗘	TYPE 🗘	APPLIANCE A
SLA STATUS	•	Ø	0	one	1588450	Subase Dump	LocalProfile	Sybase_2	Sybase_2	sky9_caf_auto	SAP ASE Instance	1159755
Managed Unmanaged			0	inst1	Manage SLA			J-sybase-3	J-sybase-3	caf-source	SAP ASE Instance	894840
туре	•		•	one	Access	LVM	LocalProfile	sybase-3	sybase-3	sky9_caf_auto	SAP ASE Instance	1143211
Select: ALL NONE			0	DB2	Edit Organization Membe	rship		sybase-3	sybase-3	sky9_caf_auto	SAP ASE Datab	1143225
Systems	- 11		۲	DB1	Import OnVault Images Manage Expirations			sybase-3	sybase-3	sky9_caf_auto	SAP ASE Datab	1143219
System State			0	sybsystem				j-sybase-3	j-sybase-3	caf-source	SAP ASE Datab	894834
Databases			۲	sybsyster	Add To Logical Group			Sybase_2	Sybase_2	sky9_caf_auto	SAP ASE Datab	1160493
Db2 Database			0	sybsyster	Mark Sensitive			sybase-3	sybase-3	sky9_caf_auto	SAP ASE Datab	1143221
Db2 Instance	e		۲	sybmgmt	db 1972591			j-sybase-3	j-sybase-3	caf-source	SAP ASE Datab	894843





3. For an instance protected with logs, on the Restore page, choose a date and a point in time.

- 4. Use Select Items to choose one or more instances to restore.
- 5. Click **Submit**. This will start the source instance physical recovery using SAP ASE recover commands.

Recovering to a New Target from a Full+Incremental Snapshot

Use this procedure to restore and recover the source SAP ASE instance to a new, existing target server. This procedure requires that the image was captured using full+incremental backup for Backup Capture Method in the application Details & Settings.

To restore:

1. From App Manager, Applications list, right-click the instance that has the database to be recovered and select **Access**.

actifio	Dashboa	rd	Backup	p & Recover 🗸	Test Data M	lanagement ·	App Manag	er 🗸 🛛 SLA A	rchitect	👻 Manage 🗸	Report Mor	iitor ~			Y	1 a	admin 4	. 0
🙁 clear all filters	Î	Ap	plica	ations												+ /	NDD APPL	ICATION
APPLICATION NAME	•																	
one	•	< hide	e filters	O App: one	C Friendly: sy	/base_auto1	O Application Ty	pe: SAP ASE Da	tabase	Application Type	: SAP ASE Instance							
HOST NAME	•	syba	ise_aut	to1		Θ							🗆 ѕно	W SELE	CTED (2)	III	500 🗸	0 4
TEMPLATE NAME	•			APPLICAT	0	ID	TEMPLATE 🗘	PROFILE	0	FRIENDLY 0	HOST NAME 🗘	APPLIANCE 🗘	TYPE	0	PROTECT	ABLE	APPL	ANCE
PROFILE NAME	•	Ø		che		2365777	loormark	LocalProfile		sybase_auto1	sybase_auto1	sky10sp1	SAP ASE In	etter.			13198	•
FRIENDLY PATH	•		0	(2303777	ogsmart	LOCAIPTOTIIC		sybase_autor	sybase_autor	skyrospr	SAP ASE IN	SLd	yes		13190	0
sybase_auto1	0		0,	Manage S	LA		wault_sit_7	onval_autop	pr	sybase_auto1	sybase_auto1	sky905	SAP ASE In	sta	yes		41817	
SLA STATUS			-(Access														
Managed				Edit Orga	nization Me	mbership												

2. On the timeline, select the latest snapshot to recover, and choose Mount.

ctifio	Dashboard	Backup & Recover 🗸	Test Data Management 🗸	App Manager 🗸	SLA Architect 🗸	Manage 🗸	Report	Monitor 🗸		🕈 👤 admin 🌲 🔮
ACCESS	• 🖯 •	one sybase_auto1 s	ybase_auto1 Details & Set	tings						TIMELINE TABLE
mp to: 🗰										0-04-09 12:36:00 pshot Image
28									STATUS	Image_0180105 5 Available 1 SAN Based, Out-Of-Band Storage
									IMAGE SIZE	104.51GB
2020-04-09									EXPIRES ON	2020-04-10 12:59:43
	\mathbf{O}								RECOVERY	Sky10sp1 04-09 12:35 To 04-09 12:58
		· /							RANGE	L Snap1
									CATALOG STATE	
										Act_per_pool000
										Aount -
									Live C	lone
Sna	ipshot	Dedup	Remote Dedup	Remote Snapshot					Resto	re
									Replic	ate
10	(-()	10							Mana	ge Expirations
	LAT			15 DAYS				30 DAV/S		Sensitive
Snapshot Dedup										

- 3. Provide a mount point under mount location. For example: /dmpRstNew
- 4. DB backup will be mounted under /dmpRstNew and log backup will be mounted under / dmpRstNew_archivelog
- 5. JobID of the mount can be get form /var/act/log/UDSAgent.log. Run the below command, which will output some lines where we can see the jobid.
- grep "mount -t " /var/act/log/UDSAgent.log | grep -w "<mountPoint provided in step2>"|tail -1
 For example:

```
# grep "mount -t " /var/act/log/UDSAgent.log | grep -w "/dmpRstNew" |tail -1
2019-11-18 23:59:19.740 GEN-INFO [22488] Job_0404207 Spawning cmd: mount -t ext4 /dev/
act403764_DBDump_1574101677612/act_staging_vol /dmpRstNew 2>&1
```

6. BEGIN_TIME of the snapshot image can be found from /var/act/log/UDSAgent.log. Run:

```
grep <JobID> /var/act/log/UDSAgent.log | grep BEGIN_TIME |head -1
```

For example:

```
# grep Job_0404207 /var/act/log/UDSAgent.log | grep BEGIN_TIME |head -1
```

2019-12-06 18:10:59.868 GEN-INFO [6752] Job_0654683 UnixCustomApplication::setAppSpecificProperty - Setting app specific property BEGIN_TIME ==> 2019-12-06 16:55:39

- 7. LOG_BKP_MNTPT will be equals to <mountPoint provided in Step2>_archivelog. Refer Step3.
- 8. Login to the SAP ASE server as root. On the server, change the directory to /act/custom_apps/ sybase/dump

#cd /act/custom_apps/sybase/dump

9. Run the script from the command line (as root) ACT_SYBASE_dumprestore_newTarget.sh on target with arguments

#/act/custom_apps/sybase/dump/ACT_SYBASE_dumprestore_newTarget.sh SYBOSUSER=sybase SRC_SYBASE_SQLD=/home/sybase/Sybase16Home/OCS-16_0 TARGET_DB_USER=sa TARGET_DBUSER_PASSWD=sybase ACT_NAME=ASE1 TARGET_MNT_PNT=/dmpRstNew SRC_DBNAME=CU1 UNTIL_TIME="2019-10-22 22:13:40" BEGIN_TIME="2019-10-22 19:07:00" LOG_BKP_MNTPT=/ dmpRstNew archivelog SRC PAGE SIZE=2048

Arguments to the script

SYBOSUSER = <Target ASE OS user> SRC_SYBASE_SQLD = <Target ASE OCS location (\$SYBASE/\$SYBASE_OCS)> TARGET_DB_USER = <Target ASE instance username> TARGET_DBUSER_PASSWD = <Target ASE instance password> ACT_NAME = <Target ASE server name> TARGET_MNT_PNT = <Mount point specified during mount> SRC_DBNAME = <Comma separated db list to restore> BEGIN_TIME = <Dump backup begin time (Format: YYYY-MM-DD HH24:MI:SS)> UNTIL_TIME = <Recovery time (Format: YYYY-MM-DD HH24:MI:SS)> LOG_BKP_MNTPT = <Logbackup mount point name> SRC_PAGE_SIZE = <Source database page_size>

10. Connect to the SAP ASE instance and confirm that the databases are recovered and online.

#isql -U<username> -P<password> -S<ASE server name>
sp_helpdb

go

11. Unmount the mounted dump snapshot image.



7 Migrating an SAP ASE Instance for Instant Access or Recovery

A Mount and Migrate operation allows you to restore a database with near-zero downtime by first mounting it locally, and then migrating it to the original location or to a new location. Users have normal access to the database while it is mounted, and the migration step is very fast.

Once you have protected an SAP ASE database, you can mount it and migrate it:

Mount and Migrate Back to the Source Instance on page 39 Mount and Migrate to a New Instance on page 41

Note: Before running the migration, run the query sp_helpdevice and find device_names that are stale entries or have their physical_name pointing to the migrating mount points, and drop them using command sp_dropdevice device_name.

Mount and Migrate Back to the Source Instance

To mount a database from an image and migrate the mounted image back to the source:

1. Unmount the source databases, if you want to replace them with databases with the same name.

```
unmount database <DBNAME> to '<ManifestFile>'
```

Example

- 1> unmount database CU1 to '/tmp/CU1.mf'
- 2> go
 - 2. Login to AGM, select the application and mount a virtual database to the source as detailed in Mount a Virtual Database from a Block-Based Volume Snapshot Image to the Source or to an Existing SAP ASE Instance on page 25.

Note: Enable both Create New Virtual Application, and Manage New Application.

- 3. From the App Manager, Applications list, right-click the new protected instance and select **Access**. You can use the Managed SLA Status filter to show only protected instances.
- 4. Once the mount job is completed, run this script with parameters in Arguments to the Script.

/act/custom_apps/sybase/lvm_migrate/ACT_SYBASE_lvm_migrate_newTarget.sh DATAVOL_DISK_MAPPING=<DATAVOL_DISK_MAPPING> TARGET_SERVER_NAME=<TARGET_SERVER_NAME> TARGET_DB_USER=<TARGET_DB_USER> TARGET_DBUSER_PASSWD=<TARGET_DBUSER_PASSWD> TARGET_DBNAME_LIST=<TARGET_DBNAME_LIST> JOBID=<JOBID>

Arguments to the Script

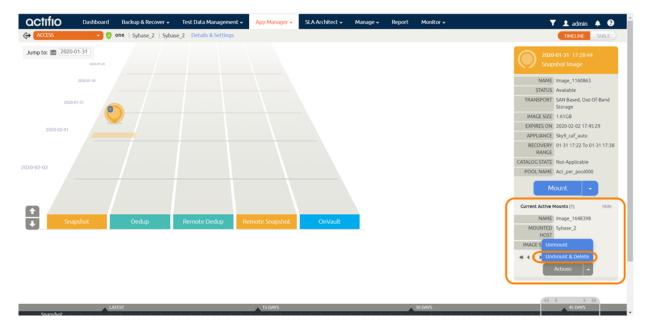
DATAVOL_DISK_MAPPING = Comma separated list of <Actifio_mount_point>:<equivalent target host lvm device name> TARGET_SERVER_NAME = Target ASE server name TARGET_DB_USER = Target instance db username TARGET_DBUSER_PASSWD = Target instance password TARGET_DBNAME_LIST = Comma separated list of <source_db_name>:<Target_db_name> / /Can be found in /var/act/log/customapp-sybaseinstance.log JOBID = Actifio mount job id

Note: Target lvm devices should be empty.

Example

/act/custom_apps/sybase/lvm_migrate/ACT_SYBASE_lvm_migrate_newTarget.sh DATAVOL_DISK_MAPPING=/
mntNT/log/CU1:/dev/mapper/vg2-lv2,/mntNT/data/CU1:/dev/mapper/vg2-lv1 TARGET_SERVER_NAME=ASE1
TARGET_DB_USER=sa TARGET_DBUSER_PASSWD=sybase TARGET_DBNAME_LIST=CU1:SU2 JOBID=Job_12345

5. Once the above script has completed successfully, go to AGM and perform Unmount+Delete.



Mount and Migrate to a New Instance

To mount a database image as a virtual database and the migrate it to a new target:

1. Login to AGM, select the application and perform the AppAware mount as detailed in Mount a Virtual Database from a Block-Based Volume Snapshot Image to the Source or to an Existing SAP ASE Instance on page 25.

Note: Enable both Create New Virtual Application, and Manage New Application.

2. Once the mount is completed, run this script with parameters in Arguments to the Script.

/act/custom_apps/sybase/lvm_migrate/ACT_SYBASE_lvm_migrate_newTarget.sh DATAVOL_DISK_MAPPING=<DATAVOL_DISK_MAPPING> TARGET_SERVER_NAME=<TARGET_SERVER_NAME> TARGET_DB_USER=<TARGET_DB_USER> TARGET_DBUSER_PASSWD=<TARGET_DBUSER_PASSWD> TARGET_DBNAME_LIST=<TARGET_DBNAME_LIST> JOBID=<JOBID>

Arguments to the Script

DATAVOL_DISK_MAPPING = Comma separated list of<Actifio_mount_point>:<equivalent target host lvm device name>

TARGET_SERVER_NAME = Target ASE server name

TARGET_DB_USER = Target instance db username

TARGET_DBUSER_PASSWD = Target instance password

TARGET_DBNAME_LIST = Comma separated list of <source_db_name>:<Target_db_name> //Can be found in /var/act/log/customapp-sybaseinstance.log

JOBID = Actifio mount job id

Note: Target lvm devices should be empty.

Example

/act/custom_apps/sybase/lvm_migrate/ACT_SYBASE_lvm_migrate_newTarget.sh DATAVOL_DISK_MAPPING=/
mntNT/log/CU1:/dev/mapper/vg2-lv2,/mntNT/data/CU1:/dev/mapper/vg2-lv1 TARGET_SERVER_NAME=ASE1
TARGET_DB_USER=sa TARGET_DBUSER_PASSWD=sybase TARGET_DBNAME_LIST=CU1:SU2 JOBID=Job_12345

3. Once the above script completed successfully, go to AGM, perform Unmount+Delete.

