

EMC VIPR SRM: VAPP BACKUP AND RESTORE USING IBM[®] TIVOLI[®] STORAGE MANAGER

ABSTRACT

This white paper provides a working example of how to back up and restore an EMC ViPR SRM vApp using IBM Tivoli Storage Manager.

October 2015

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Part Number H14572

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EXECUTIVE SUMMARY

This white paper provides a working example of how to use IBM® Tivoli® Storage Manager, version 7.1.2, and includes guidelines for configuring Tivoli Storage Manager to backup EMC ViPR SRM vApp Appliances. For full installation procedures and product details, refer to the Tivoli Storage Manager documentation from the [IBM Web site](#).

EMC ViPR SRM is a software solution that provides multi-vendor capacity, performance, and configuration dashboards and reports for traditional and software-defined storage resources. ViPR SRM leverages state-of-the-art visibility and forecasting from various devices and technologies processing and storing millions of indicators. When designing a ViPR SRM solution it should be taken into consideration how to avoid common availability pitfalls and in the case of a failure how to gracefully reestablish the services to maintain consistency and performance. This white paper is applicable to all current versions of ViPR SRM.

Backups have two distinct purposes. The primary purpose is to recover data after its loss, be it by data deletion or corruption. The secondary purpose of backups is to recover data from an earlier time, according to a user-defined data retention policy, typically configured within a backup application for how long copies of data are required. This white paper will provide general guidelines on how to perform backup for your existing ViPR SRM deployment using IBM Tivoli Storage Manager. Once established, you should periodically test data restoration to ensure backup works as intended to prepare your organization for when a disaster actually occurs and you need to recover data quickly.

AUDIENCE

This white paper is intended for system administrators, solution architects, system implementers, support and EMC Partners who are responsible for the setup and maintenance of TSM software used to backup and restore data for a ViPR SRM vApp deployment. Readers should have a working knowledge of ViPR SRM and IBM Tivoli Storage Manager.

INTRODUCTION

TERMINOLOGY

Term	Definition
Backup Policy	The methods, procedures, policies and rules that are used as guidelines to safeguard data. Typically involves detailed information on how a backup should proceed, what systems should the data be saved to, schedule for a backup window and to what sort of media and destination a backup should be delivered.
Backup Window	The time period required to finish a backup process.
Recovery Point Objective	Recovery Point Objective (RPO) is the maximum amount of data that an organization can tolerate to lose.
Recovery Time Objective	After a service disruption, the Recovery Time Objective (RTO) is the maximum period of time a business or process can endure for restoring data accesses.
Snapshots	A snapshot is the state of a system in a specific point in time. In a virtual environment, this could mean the state and data of a virtual machine, including the files that make the virtual machine disk and information about the state of the virtual machine (i.e.: powered off or powered on).

DATA PROTECTION STRATEGIES

BACKUP AND RESTORE

Your backup and restore strategy must take into account its Recovery Point Objective (RPO) and Recovery Time Objective (RTO) in order to comply with expected Service Level Agreements (SLA) and other regulatory components. Often, the lack of clear guidelines on a SLA contract will drive a backup and restore policy into a costly upward spiral. Understanding your RTO and RPO are key to avoiding this situation.

ASSUMPTIONS

The methods and strategies described in this white paper are framed with certain assumptions. Results may vary if these same conditions are not in effect in your environment. Assumptions include:

- Backup and restore should only be done within the same version of VIPR SRM. Mixing versions can lead to unknown results.
- These guidelines adhere to the Support Matrix for VIPR SRM.
- Specific components leveraged in this solution may require additional licensing to enable and use the full feature set of capabilities necessary for the multi-tiered data protection strategy outlined in this document.

Additionally, the implementation and test procedures outlined in this document do not give exact instructions for each step. It is assumed that the audience is familiar enough with the tools and interfaces of the different products in this solution to perform them without explicit guidance.

PREREQUISITES FOR IBM TIVOLI STORAGE MANAGER

Review the following prerequisites:

- IBM Tivoli Storage Manager is installed.
- Reverse DNS lookup should work between all hosts participating in backup and restore.
- The IBM Tivoli Storage Manager server should have enough space to hold backup images. Space can be allocated based on backup frequency and the type of backup policy configured.
- IBM Tivoli Storage Manager Backup-Archive client should be installed on target backup hosts. Refer to *IBM Tivoli Storage Manager for UNIX and Linux Backup-Archive Clients Installation and User's Guide* from the [IBM Web site](#).
- Firewalls should be turned off to avoid connection errors. All firewall ports between the IBM Tivoli Storage Manager processes on backup client/server should be configured to ensure connectivity. If you experience problems configuring the firewalls, turn them off. Refer to IBM Tivoli Storage Manager documentation from the [IBM Web site](#).
- Make sure IBM Tivoli Storage Manager Backup-Archive daemon processes are running on all the associated hosts.

VIPR SRM PRE-BACKUP CHECKS

Do the following:

- Verify and document the current environment before starting the backup process.
- Refer to EMC documentation on managing VIPR SRM system health for details about verifying the health of your system.
- Look for blank reports and graphs. Determine if there are any blank reports caused by collection errors. Resolve any issues or document them for later follow up.
- Look for broken links. Resolve any issues or document them for later follow up.
- Validate that the end-to-end topology is working. Resolve any issues found.

BACKUP AND RESTORE PROCEDURES

The following sections describe backup and restore procedures using IBM Tivoli Storage Manager.

ADD VCENTER DETAILS

Add vCenter credentials for successful discovery of VMs for Image Backup. Proper privileges are required for performing Backup and Restore using vCenter.

To add vCenter details:

1. Launch the Backup-Archive GUI on the vStorage Backup Server.
2. Navigate to **Edit > Client Preferences**
3. Select the **VM backup** tab on the left pane to display the current settings.
4. Enter the details in the VMware Virtual Center or ESX Server section.

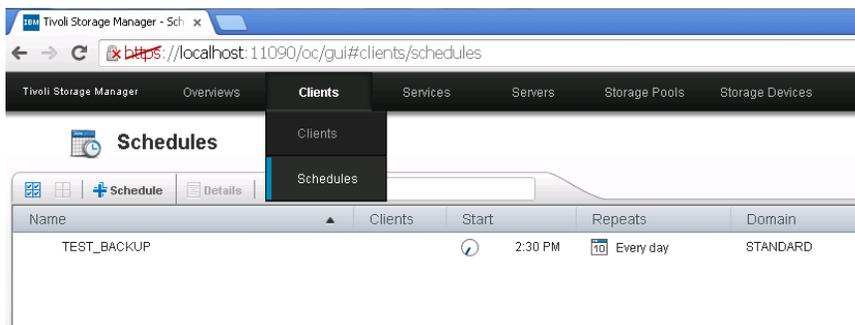
CONFIGURE THE BACKUP POLICY

You can perform ViPR SRM vApp backup using client schedules provided in the IBM Tivoli Storage Manager 7.1.1 Operations Center. To create scheduled policies:

1. Login to the Operations Center using the Web GUI.



2. From the Clients menu, select **Schedules**. The Scheduler page displays.



3. Click **+Schedule** to add a new schedule for backup. The Create Schedule page displays.

Create Schedule

Name

Service

Time

Summary

Name



Create a new schedule to automate client protection tasks. [Learn more](#) →

Server: LGLBB028

Domain: STANDARD

Type: Application

Subtype: IBM DB2

Name: *

Description:

Next > Cancel

4. Select the existing Domain for the ViPR SRM vApp. Select one of the following Types:

- Virtual for Image backup
- System for file backup.

5. When type Virtual is selected, use Subtype as VMware.

Create Schedule

Name

Service

Time

Summary

Name



Create a new schedule to automate client protection tasks. [Learn more](#) →

Server: LGLBB028

Domain: STANDARD

Type: Virtual

Subtype: Hyper-V (Windows 2012 or later)

Name: Hyper-V (Windows 2012 or later)

Description: VMware

6. When type System is selected, the Subtype is frozen.

Create Schedule

Name

Service

Time

Summary

Create a new schedule to automate client protection tasks. [Learn more](#) →

Server: LGLBB028

Domain: STANDARD

Type: System

Subtype: Choose..

Name: *

Description:

7. Provide a Name and Description for the schedule.
8. Select the type of Service to schedule and click Next.

Create Schedule

Name

Service

Service

Time

Summary

Select the type of service to schedule. [Learn more](#) →

Daily incremental backup
Recommended

Archive

File specification:

9. Select the Time at which the backup should run. You can also schedule a Run time alert to send an alert to the Operations Center console if a backup runs beyond expected backup window.
10. Click **Create** to see the summary of the newly created schedule.

Create Schedule

- ✓ Name
- ✓ Service
- ➔ Time
- Summary

Time

Name
TEST

Service
Daily incremental backup

Time

The start time specifies when the schedule can begin. [Learn more](#) →



Repeats: Every day

Start time: 8:00 AM

Run time alert:

Anticipated clients: 11-49

◀ Back Create ▶ Cancel

11. Click **Close & Assign Clients** to confirm the schedule and then assign clients to it.

Create Schedule

- ✓ Name
- ✓ Service
- ✓ Time
- ➔ Summary

Summary

Name
TEST

Service
Daily incremental backup

Time
8:00 AM

 **Succeeded**

1:20 AM	Creating client schedule...	
	Connected to TSM server LGLBB028	✓
	Created schedule TEST in domain STANDARD.	✓

✓ 2 succeeded

[Close & Assign Clients](#)

12. Select the client machines on the Clients page and click **Schedule Association**.

TSM Clients 10

Alerts 0 Applications 1 Virtual Machines 5

60%

Client Quick Look Details Back Up Set At Risk More Filter

Type	Name	At Risk	Schedule Association
Client	LGLBW244	Policy	LGLBB028
Client	LGLBW246	Policy	LGLBB028
Client	LGLBW247	Policy	LGLBB028

13. Choose the policy on the Schedule Association page and click **Save**.

Schedule Association

3 clients selected on LGLBB028 (UTC-4:00)

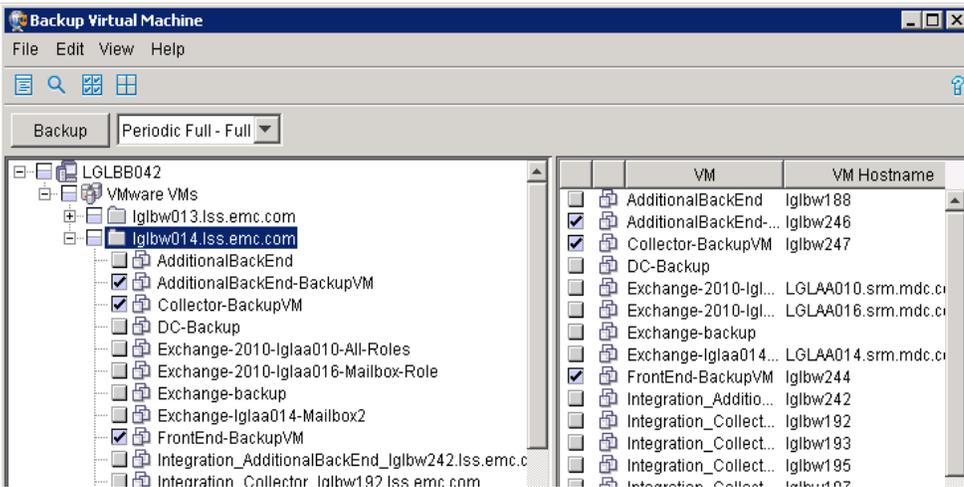
Assign	Name	Start	Repeats
<input checked="" type="checkbox"/>	TEST	8:00 AM	Every day
<input type="checkbox"/>	TEST_BACKUP	2:30 PM	Every day

14. The Update Association window displays and confirms that the association was successful.

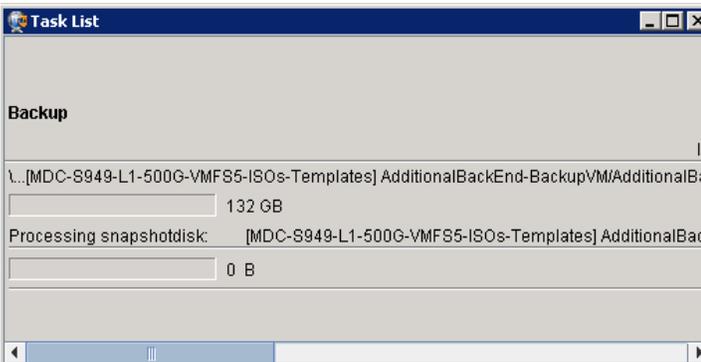
PERFORM MANUAL IMAGE BACKUP FOR THE VIPR SRM VAPP

1. Launch the Backup-Archive GUI on the vStorage backup Server.

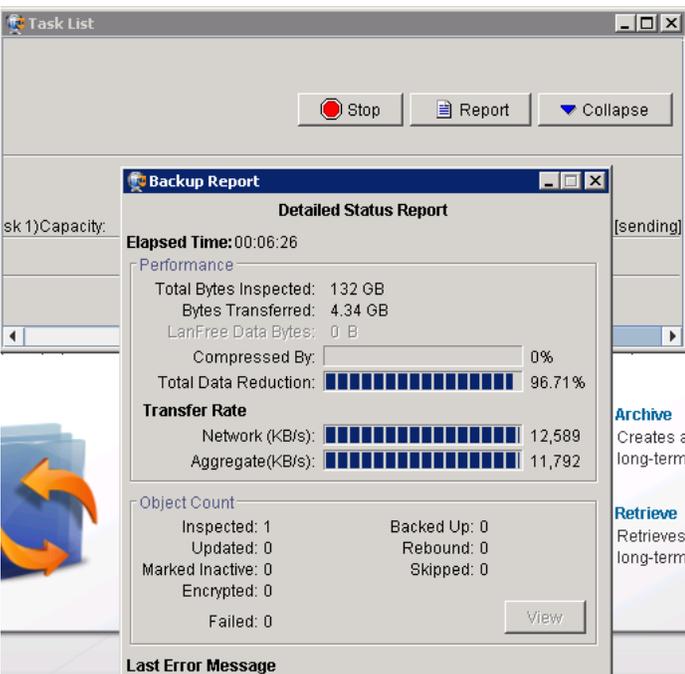
- From the Actions menu, select **Backup VM** to launch the Backup Virtual Machine window.
- On the Backup Virtual Machine window, navigate to the VIPR SRM vApp VM's and select each one of them.



4. Check that Periodic Full-Full backup type is automatically available once the VMs are selected.
5. Click **Backup** to initiate the backup of all the selected VMs. The Task List window displays.



6. To view additional details on the ongoing backup activity, you can click the Report button on the Task List window.



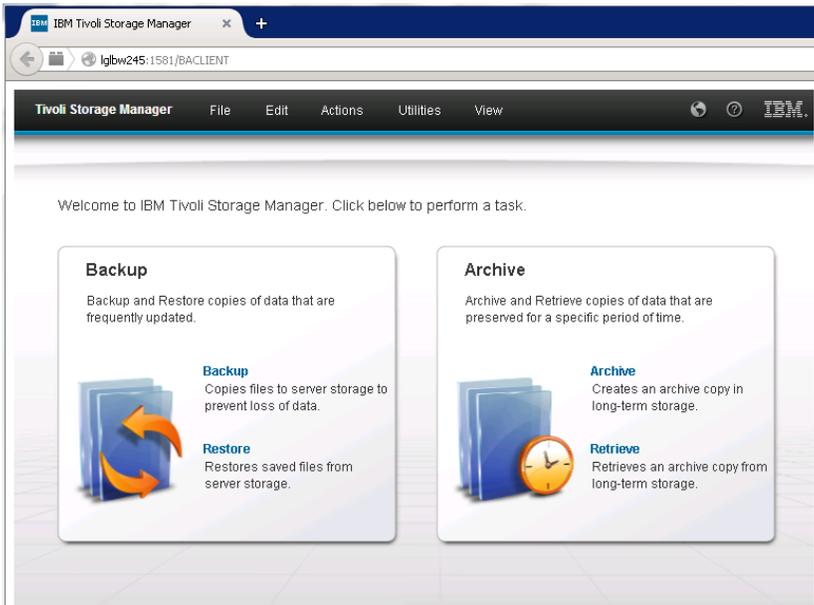
- Any errors encountered during the complete backup activity are displayed in the Last Error Message section.

PERFORM MANUAL FILE BACKUP FOR THE VIPR SRM VAPP

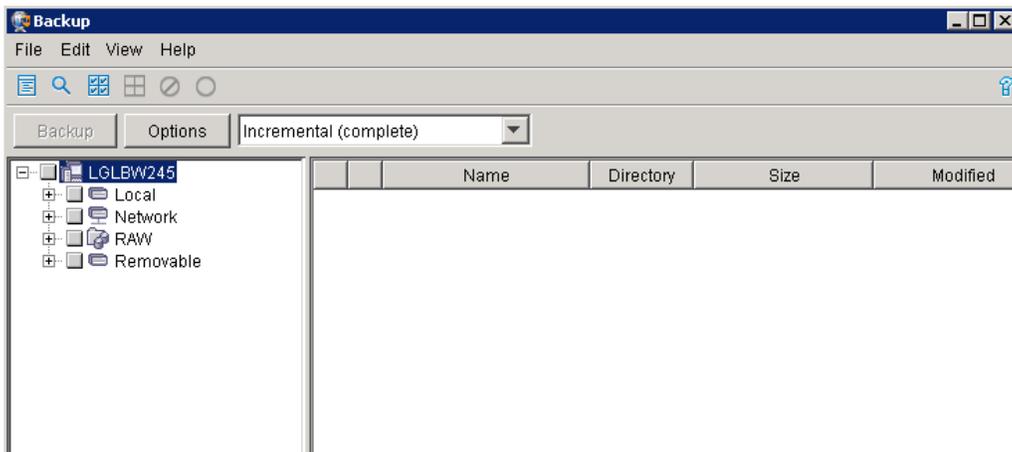
The file backup has to be initiated using the Backup –Archive client installed on the ViPR SRM vApp VMs.

- For each VM, the Backup-Archive client can be accessed using the the following URL:
- For each VM, the Backup-Archive client can be accessed using the the following URL:

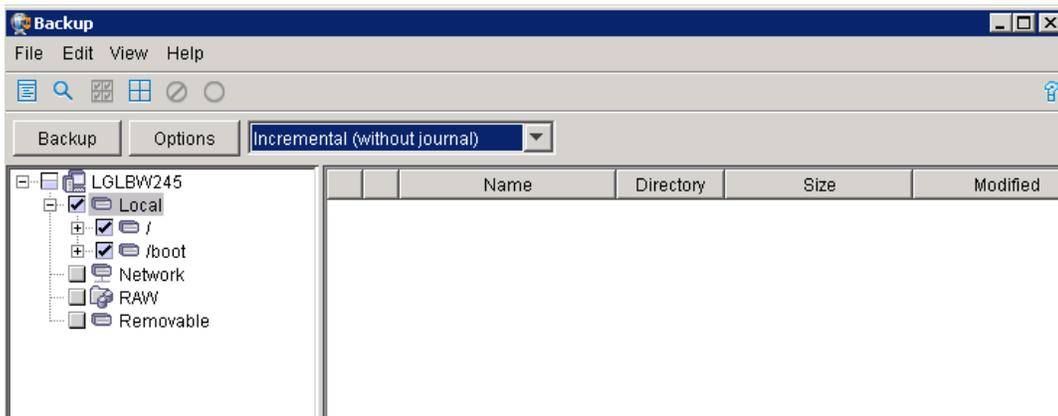
http://<hostname>:1581/BACLIENT



- Click **Backup**. The Backup window displays.

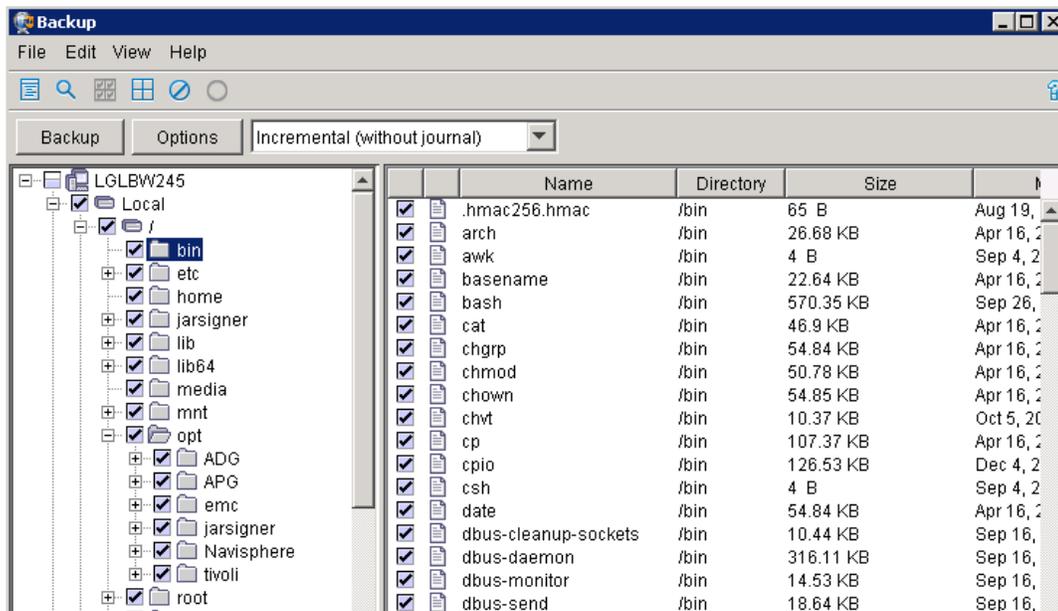


- Under the hostname, select **Local** to display listed drives. Select all of them and then chose the **Incremental (without journal)** option for backup.



Note: For further explanation of the options, refer to the online help provided with this window.

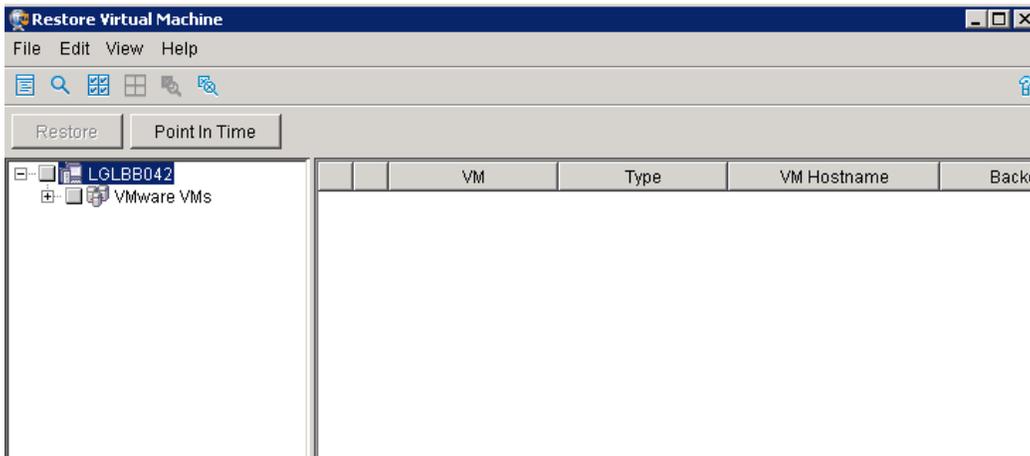
3. Click on each drive to provide a listing of the directories and files that you want to backup.



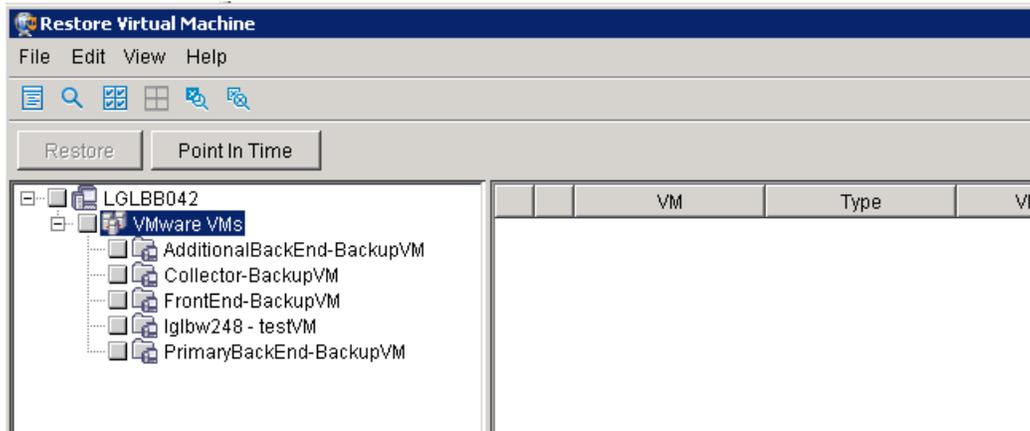
4. Click **Backup** to initiate the file backup for the host.
5. Repeat this procedure for each VM of the vApp for File backup.

RESTORE VIPR SRM IMAGES

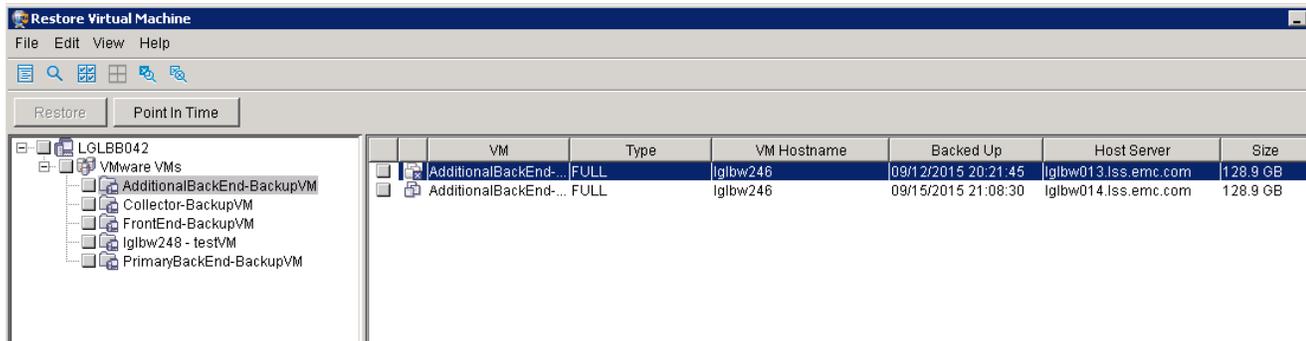
1. Launch Backup-Archive GUI from the vStorage Backup server.
2. From the Actions menu, click **Restore VM** to display the Restore Virtual Machine window.



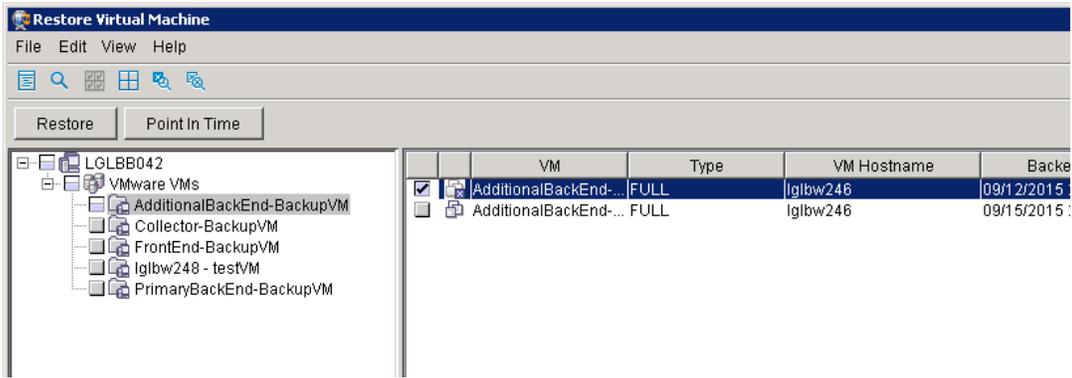
3. Expand the **VMware VMs** node to display the list of VMs available for restore.



4. Select the VM node to display the images available for restore for the VM.



5. Select the specific image from the list. This enables the **Restore** button which you can then click to start the restore activity.

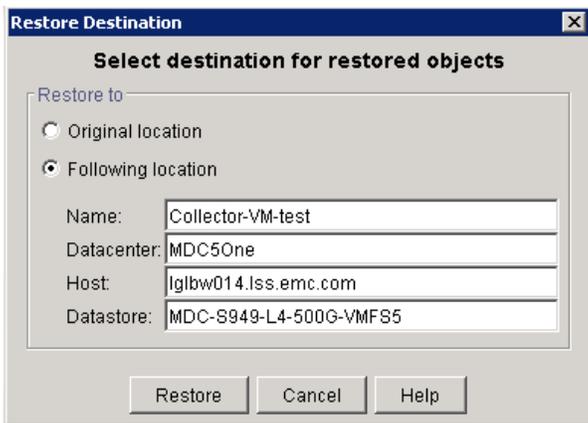


6. The Restore Destination window provides recovery destination options.



7. Depending on your requirements, use one of the following options:

- o **Original location** - Selecting **Original location** will result in the virtual machine being created at the exact same location in which it was present at the time of backup. Ensure that you delete the existing virtual machine before starting the restore.
- o **Following location** - Selecting **Following location** enables you to type location details including Name, DataCenter, Host, and Datastore.



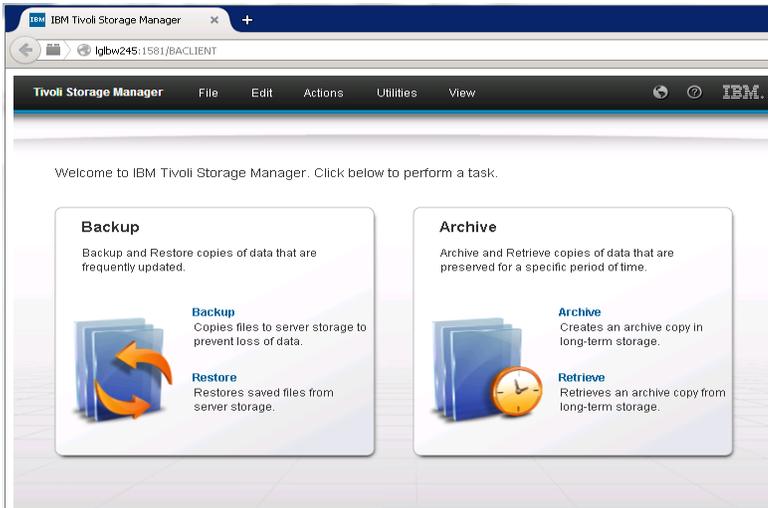
8. Click **Restore** to start the restore of the VM.

RESTORE VIPR SRM FILES

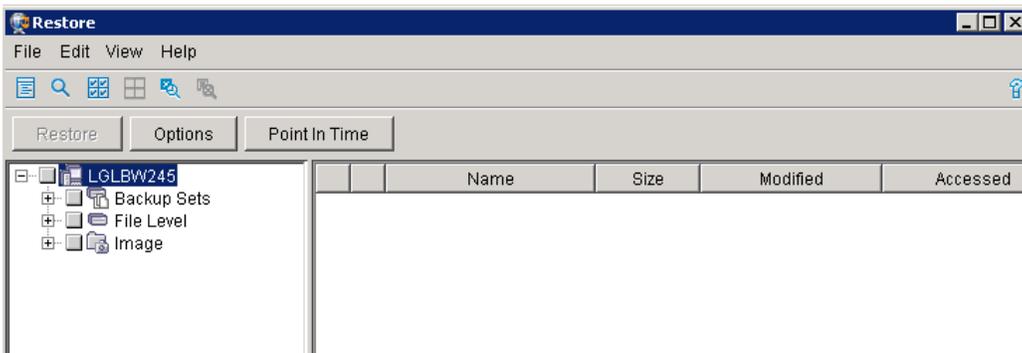
You initiate a file-level restore using the Backup–Archive client installed on the ViPR SRM vApp VMs.

- For each VM, the Backup–Archive client can be accessed using the the following URL:

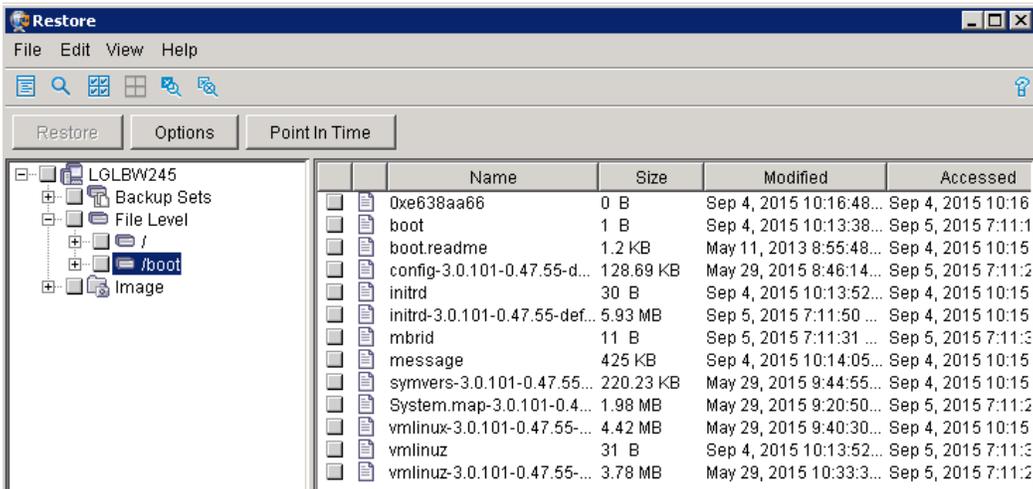
`http://hostname:1581/BACLIENT`



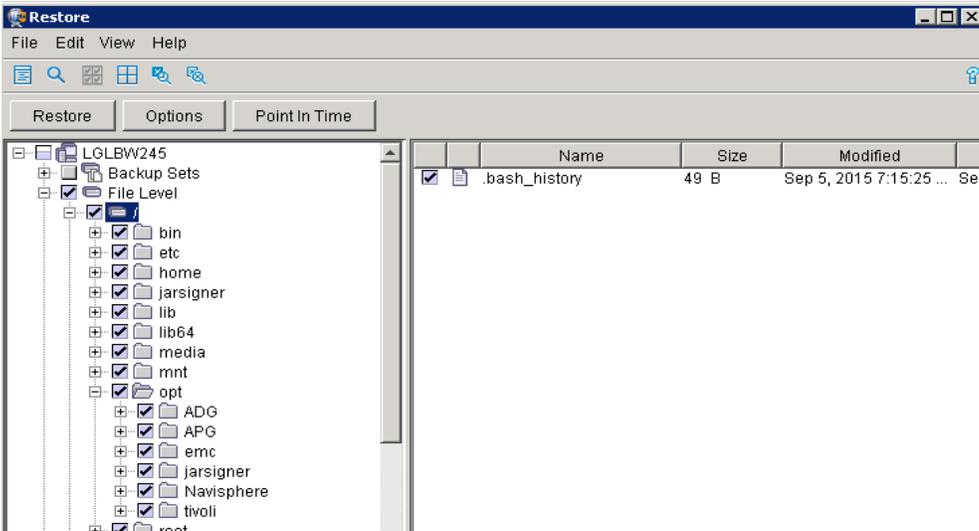
- Click **Restore** to display the Restore window.



- Expand the **File Level** node to display the drives available for file-level restore.



6. Select the **File Level** node to perform a complete file-level restore of the VM.



7. Click **Options** to display the restore options. Select the default options available for file restore.



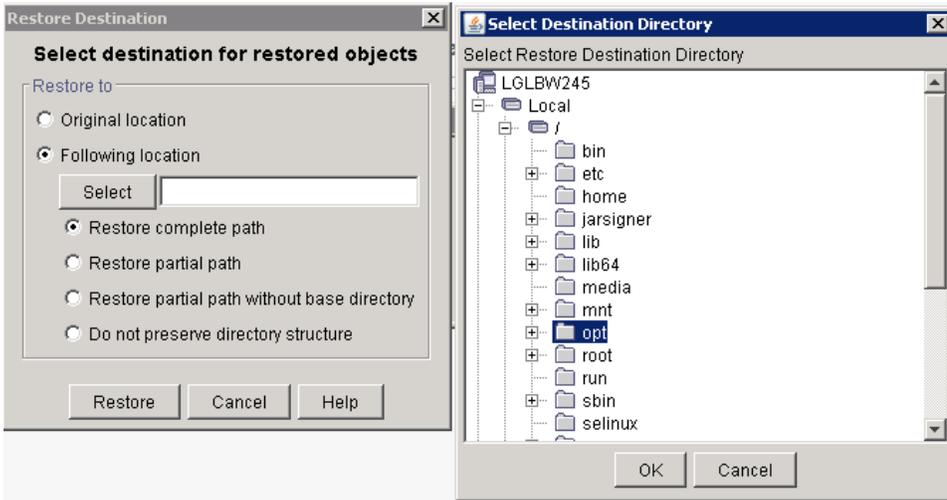
8. The Restore Destination window provides recovery destination options.



9. Depending on your requirements, use one of the following options:

- o **Original location** - Selecting **Original location** will perform the file restore on the existing VM.

- o **Following location** - Selecting **Following location** enables you to select the directory path to which you want to restore the files/directories.
 - Click **Select** to choose the destination directory.
 - Select **Restore complete path** to perform the restore.



10. Click **Restore** to restore the complete path.

VALIDATE OPERATIONAL STATUS

Do the following:

- Ensure that the VIPR SRM VM launches successfully with all of the APG services in a running state.
- Look for broken links. Resolve issues or document them for later follow up.
- Validate that the end-to-end topology is working. Resolve any issues.