

EMC VIPR SRM: VAPP BACKUP AND RESTORE USING COMMVAULT[®] SIMPANA[®] VIRTUAL SERVER PROTECTION

ABSTRACT

This white paper provides a working example of how to back up and restore an EMC ViPR SRM vApp using Commvault Simpana Virtual Server Protection.

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EXECUTIVE SUMMARY

This white paper provides a working example of how to use Commvault® Simpana® software, version 10 R2, and includes guidelines for configuring Simpana on Microsoft® Windows Server® to backup EMC ViPR SRM vApp Appliances. For full installation procedures and product details, refer to documentation from the [Commvault 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 Commvault Simpana. 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 Commvault Simpana 10 software running in a Windows environment used to backup and restore data for a ViPR SRM vApp deployment. Readers should have a working knowledge of ViPR SRM and Commvault Simpana 10 in Windows environment.

INTRODUCTION

KEY COMPONENTS

Commvault Simpana 10

Commvault Simpana 10 offers scalable data protection via snapshot, replication and persistent copies that are secure and deduplicated. The Simpana platform is an enterprise level, integrated data and information management solution. Data can be protected and managed through a single, unified platform.

Virtual Server Protection (VSP) for VMware

Virtual Server Protection (VSP) for VMware is a comprehensive solution to protect virtual machines running in a vCenter or ESX server. The VSP package contains all components that are required to protect virtual machines, in a compact configuration that can be used for evaluation and to provide ongoing protection.

CommCell®

A CommCell is the basic organizational unit of a data management system. A CommCell contains one CommServer Storage Manager, at least one client, and at least one MediaAgent.

CommServe®

The CommServe server is the central management system within a CommCell group, coordinating and managing all activity. It maintains a Microsoft SQL metadata database which contains all critical configuration information. The CommServe server communicates with all clients and MediaAgent and coordinates all operations such as backups, restores, copies, media management,

and so on within a CommCell. There is only one CommServe server per CommCell. Typically, the CommServe GUI is installed on the CommServe server.

MediaAgent

A MediaAgent manages the transmission of data between clients and backup media and manages the data stored in the media. The backup and recovery system uses agents to interface with file systems, applications, and databases to facilitate the protection of data on production systems.

Note: A MediaAgent installation is required to back up a server. For details on installing MediaAgent, including custom installation options, see [MediaAgent Installation](#).

Virtual Server Agent

A Virtual Server Agent backs up a complete image of each virtual machine. This is required only on CommServe server.

CommCell Sizing

There are hardware requirements and considerations to be taken into account for environments of different sizes, and each environment has different hardware requirements.

Note: For sizing details, refer to [CommCell Sizing](#).

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 COMMVAULT SIMPANA

Review the following prerequisites:

- Commvault Simpana is installed. CommServe and Media Servers (proxy if configured) should be reachable from the ViPR SRM vApp appliances.
- Reverse DNS lookup should work between all hosts participating in backup and restore.
- The Media Server should have enough space to hold backup images. Space can be allocated based on backup frequency and the type of backup policy configured.
- The Simpana MediaAgent must be installed on the target backup hosts. For details, see [MediaAgent Installation](#).
- Make sure the Simpana services are running on all associated hosts.
- All firewall ports between the Simpana processes on backup client/server should be configured to ensure connectivity. For details on firewall settings see [Firewall: Best Practices](#). If needed, add the components in the firewall exclusion list.

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 Commvault Simpana 10.

CONFIGURE STORAGE

Storage devices (tape or disk devices) controlled by the MediaAgent help you to effectively store and protect your data. This section guides you through the process of configuring your storage media.

Go to the Getting Started tab under Home menu and select Configure Storage and fill the appropriate details. After configuring the Disk Library, you can select it while configuring the storage policies for backing up images and files.



Figure 1: Add storage disk for backup

ADD VMWARE VCENTER CLIENT

Add VMWare vCenter in the CommCell console for discovering virtual machines for backup. You can either add it through the:

- Getting Started tab, in which there will be an option to add vCenter details under Virtualization section.
- Tools menu and select to add New Client and then select to add VMWare vCenter under Virtualization.

Ensure that you use admin privileges to avoid any discovery/backup related issues.

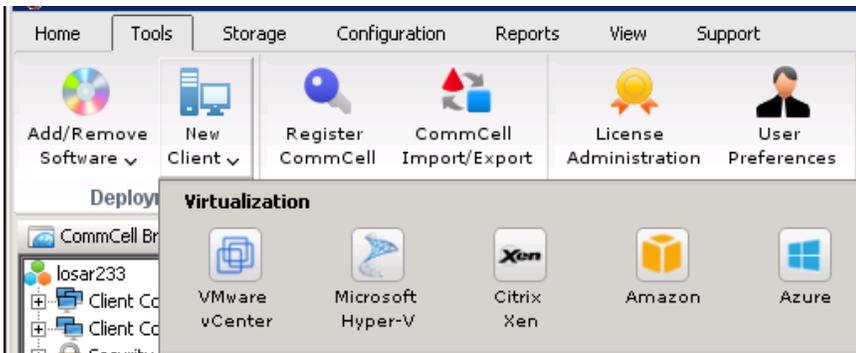


Figure 2: Adding vCenter client to CommCell

Do the following:

- Enter the fully-qualified DNS name of vCenter server and provide the admin credentials.
- Add proxies to the VMware vCenter client. You can add any computer as a proxy if it has Virtual Server iDataAgent installed. You must add at least one proxy to the VMware vCenter client and delete if you do not want to include selected proxies from the virtualization client.

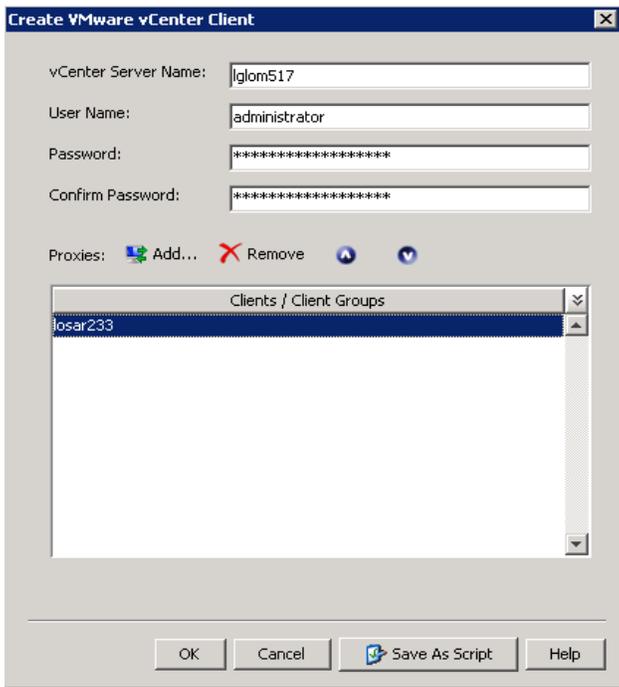


Figure 3: Create VMware vCenter Client

CREATE STORAGE POLICIES

A library must be configured on the CommServe server before creating a storage policy. Follow the steps given below to create a storage policy:

1. From the CommCell browser, expand **Policies**.
2. Right-click **Storage Policies** and then click **New Storage Policy**.
3. The Create Storage Policy Wizard page appears.
4. In the What will this storage policy be used for page, select **Data Protection and Archiving**, and click **Next**.

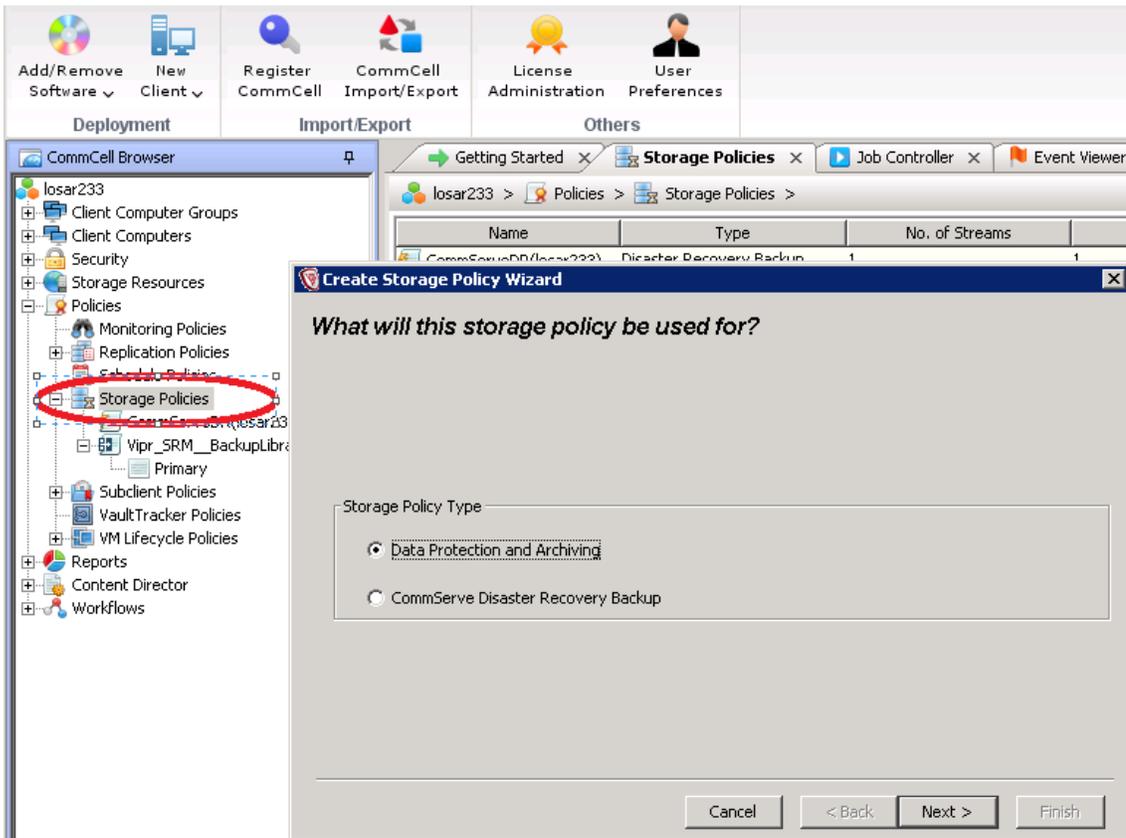


Figure 4: Create Storage Policy Wizard – Storage Policy Type

5. In the Storage Policy Name box, type a name for the storage policy.
6. Select the **Incremental Storage Policy** checkbox only, and then select an appropriate storage policy from the list.

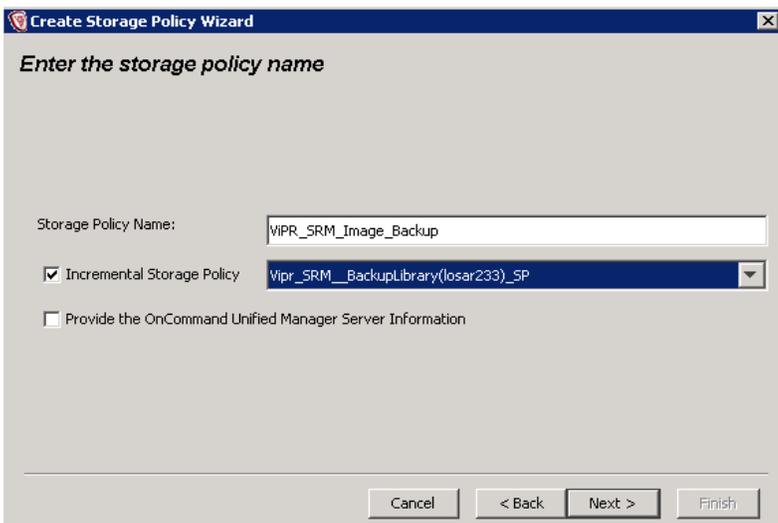


Figure 5: Create Storage Policy Wizard – Storage Policy Name

The selected storage policy will be used to run incremental backups.

7. Select the library and in next window select the MediaAgent responsible for backing up the client.

- In the Enter the streams and retention criteria for this policy page, specify appropriate settings according to your business requirements.
- In the Do you want to enable Deduplication for the primary copy page, you may select the **Enable Client Side Deduplication** as well, and click **Next**.

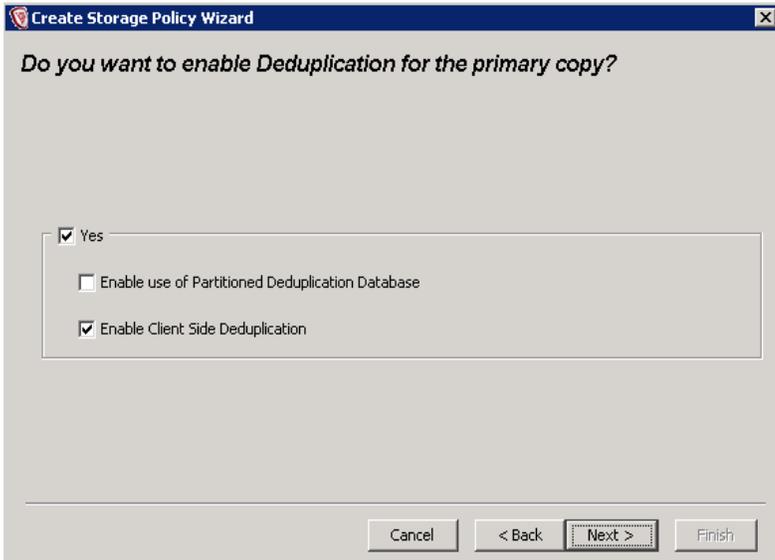


Figure 6: Create Storage Policy Wizard - Enable Deduplication

- In the Specify the location to store the Deduplication Database page, specify the appropriate Name of Deduplication database and respective MediaAgent, and enter a valid path for deduplication database directory.

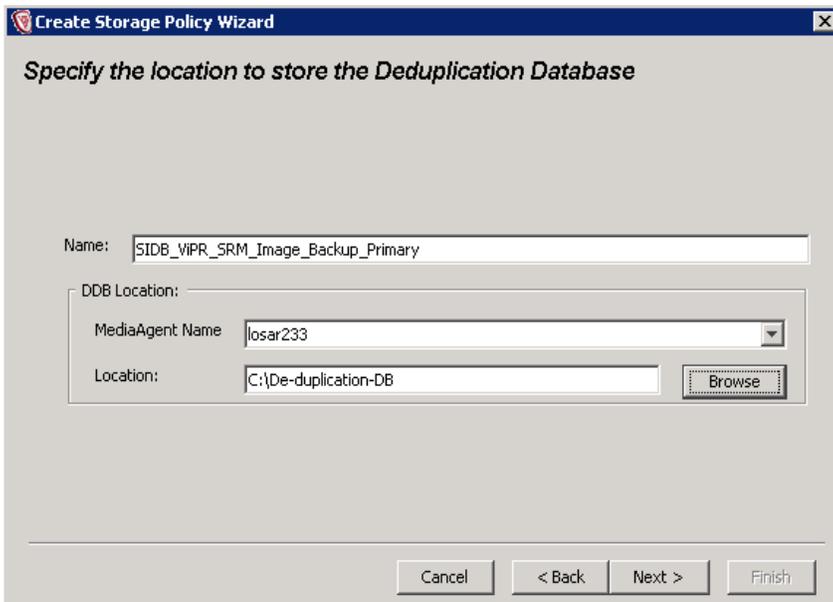


Figure 7: Create Storage Policy Wizard - Deduplication Database Location

- Review your selection and click **Finish** creating the storage policy.

After successful creation of Storage policy you can create extended retention rules as well, such as creating rules to perform backup weekly and on which specific day. To create extended retention rules right-click on the policy and select **Properties**. On the properties window, go to the Retention tab and select **Extended Retention Rules**.

You can create several policies based on your specific requirements for retaining the data and frequency of backup.

VIPR SRM VAPP IMAGE BACKUP

Once the Storage Policy is associated with the subclient, you can back up the default images, which are pre-defined as the subclient content as follows:

1. From the CommCell browser, navigate to **Client Computers | <Client> | File System | Default Backup Set**. Right-click the default subclient in the right-pane and click **Properties**. Click the **Content** tab and browse through the vCenter to select the virtual machines for Image Backup.

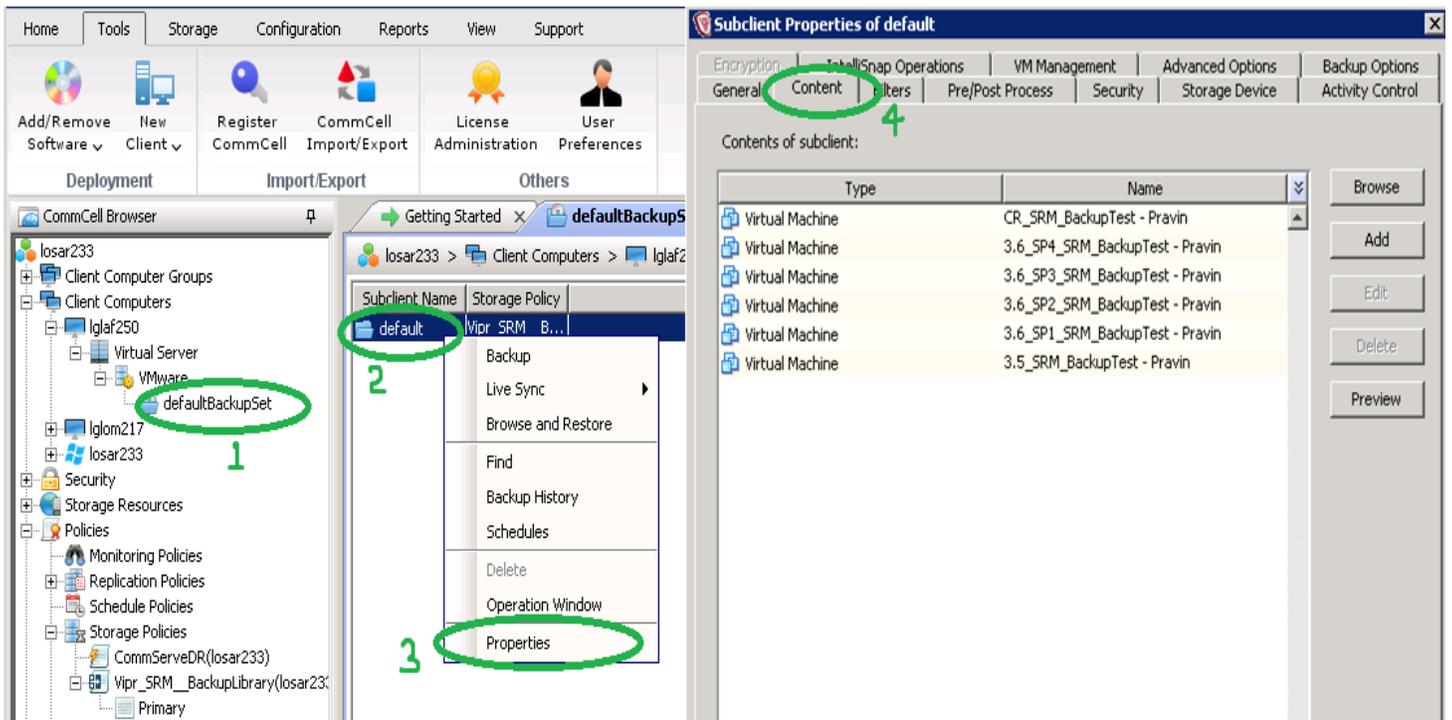


Figure 8: Select Virtual Machines for Backup

2. Assign/create the storage policy. The option is available under Storage device tab in the above shown subclient properties of default window. Leave all other options at default.
3. If you do not select the content/virtual machine, by default it will back up all of the virtual machines which exist in the respective vCenter client. Preview once after the selection.
4. Right-click the default subclient and click **Backup**.

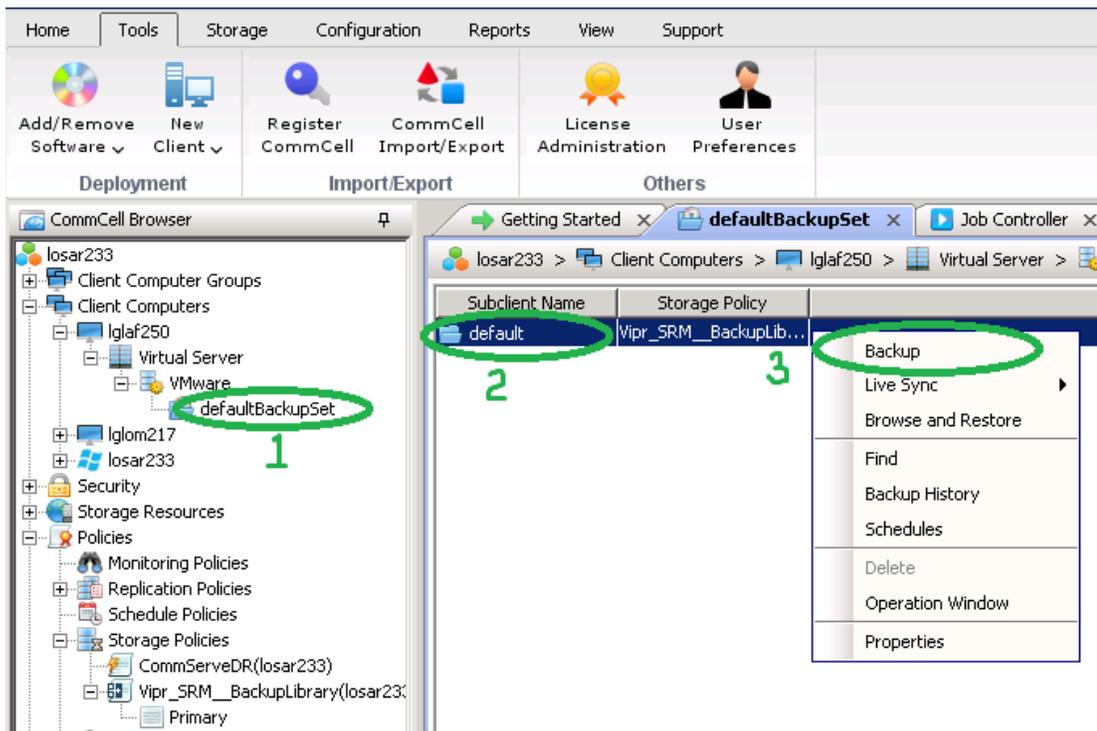


Figure 9: Select Backup

5. If the storage policy is configured for incremental backup, then by default incremental backup is selected. Otherwise a full backup is selected to run immediately. By default, the first backup will always be a full backup.

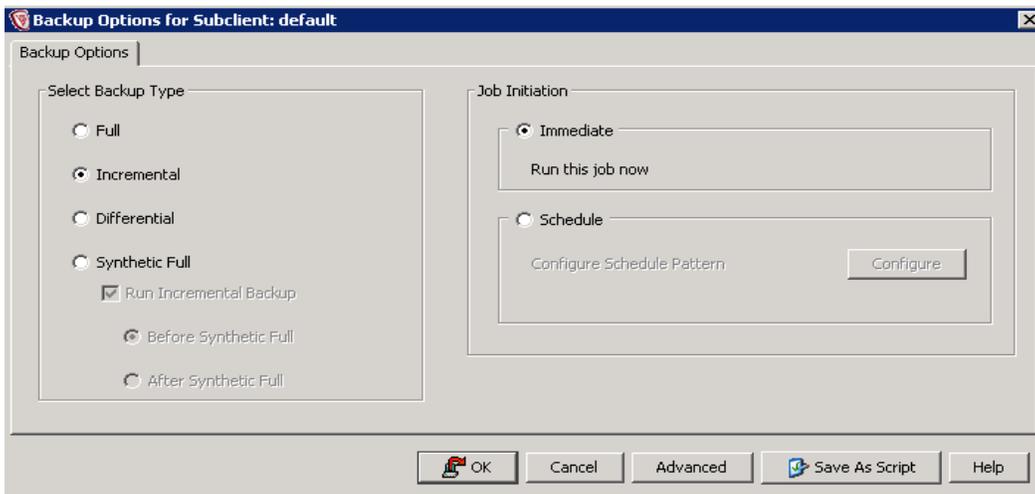


Figure 10: Backup Options for Subclient

6. You can schedule to run this backup policy according to your business requirements. To create the schedule plan, select **Schedule** on the Back Options for Subclient window and click **Configure**. A separate window will display in which you can name the schedule and set the timing parameters.

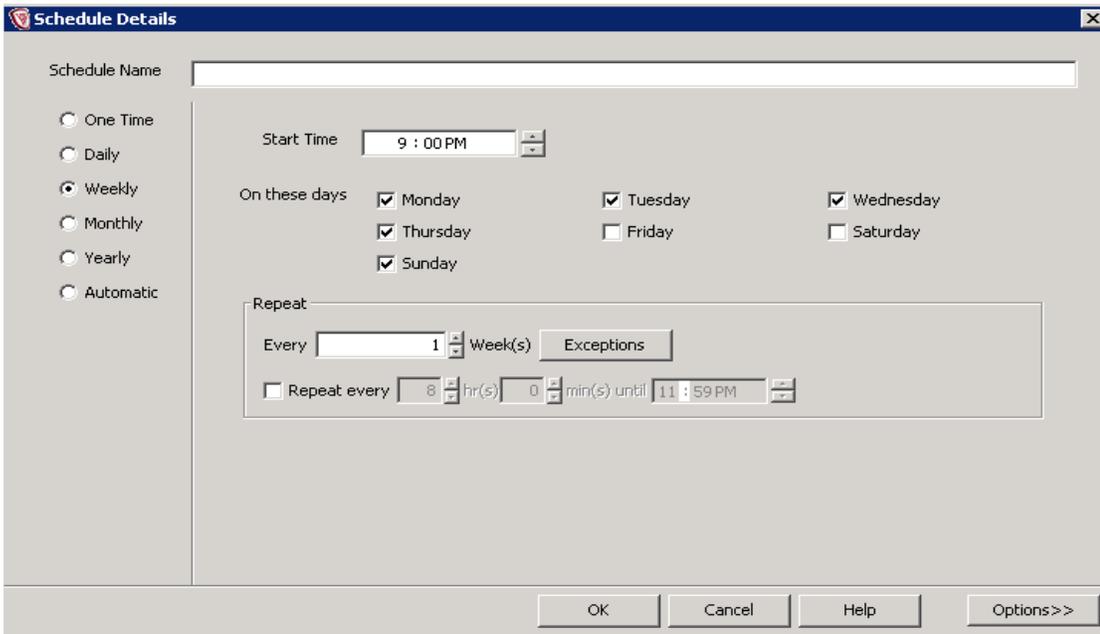


Figure 11: Schedule Details

7. Click **OK**. The backup job starts and you can check the status under Job Controller tab.

NOTE: You can either add all of the virtual machines under one defaultBackupSet, or create a new Subclient under defaultBackupSet and assign them different policies. This way you can manage virtual machines with different policy sets. The defaultBackupSet utilizes the built-in “standard” policy.

VIPR SRM VAPP IMAGE RESTORE

1. From the CommCell browser, navigate to **Client Computers | <Client name > | Virtual Server | VMware** and select either the defaultBackupSet or the subclient (if any are created). Right-click and select **Browse and Restore**.

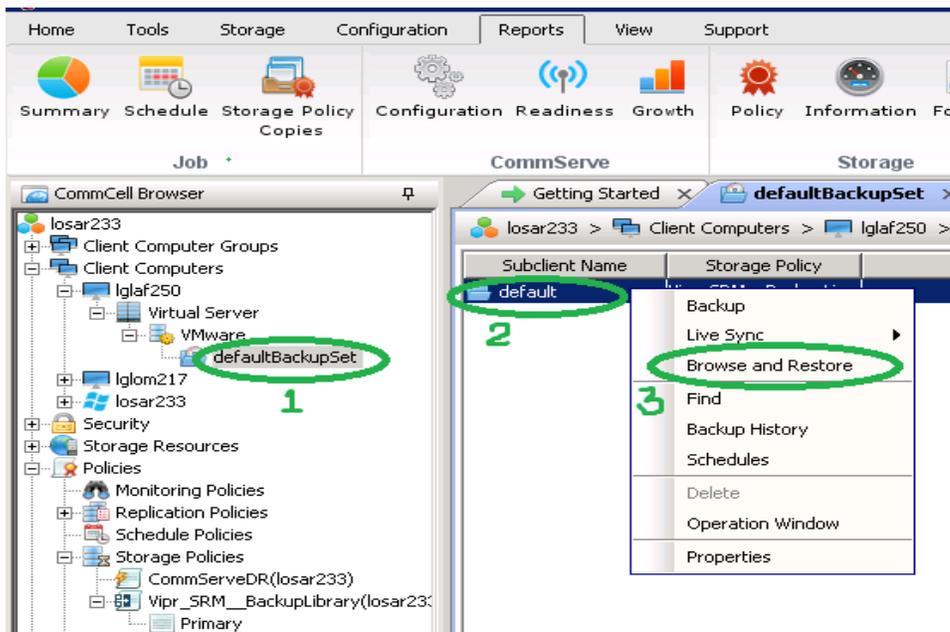


Figure 12: Select Backup and Restore

2. On the next window, select **Full Virtual Machine** and click **View Content**.

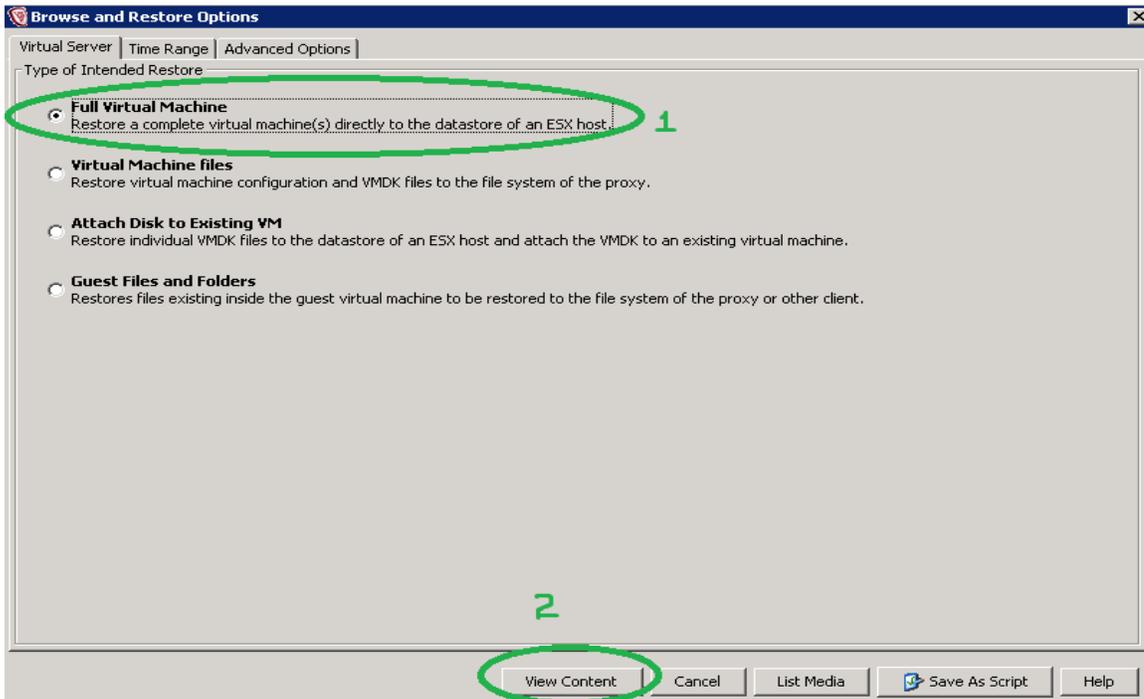


Figure 13: Browse and Restore Options

3. A list of available image backup displays. You can select the required virtual machine to be restored and click **Recover All Selected**.

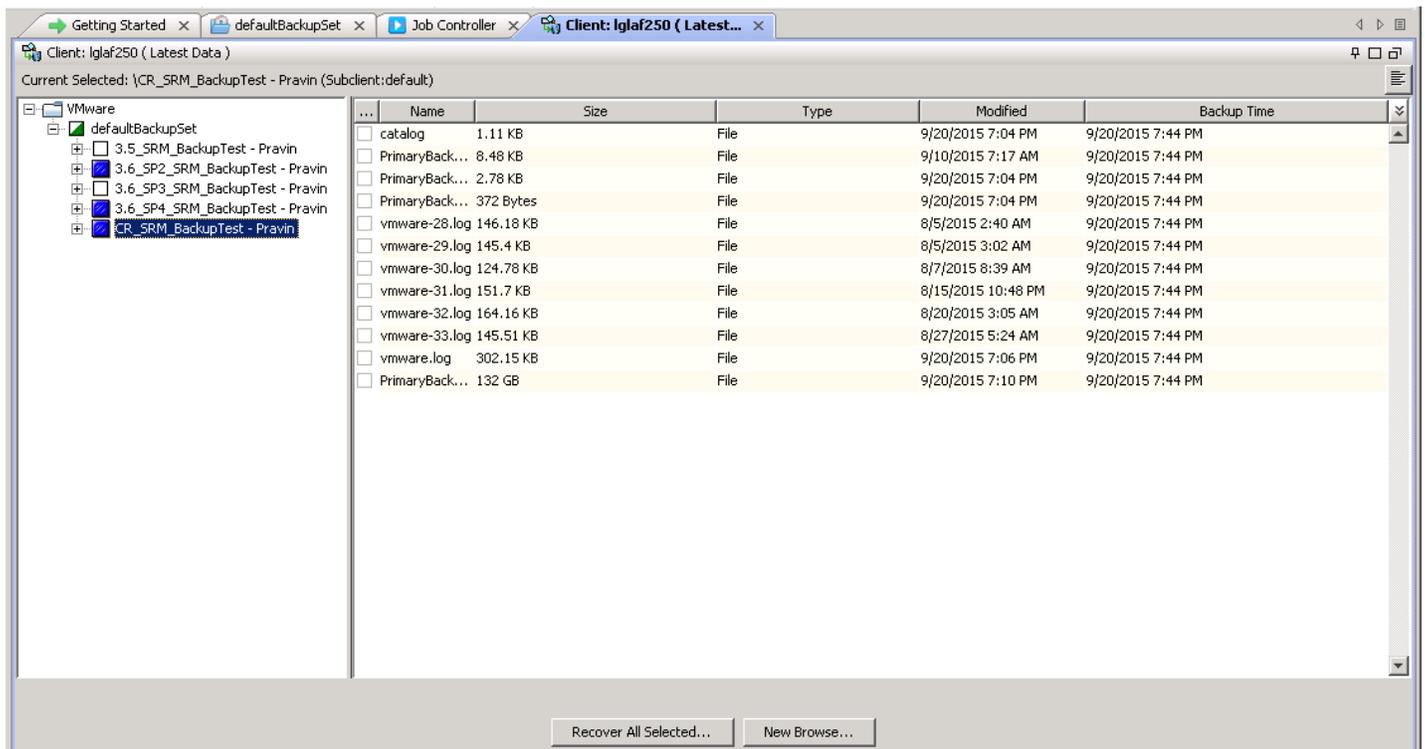


Figure 14: Select VMs

4. On the next window, Restore options are displayed for all selected VMs. Uncheck the **Restore in place** option and optionally change the name of the VM that will be restored. Remember to delete the existing virtual machine to retain the IP configuration.

5. Select **Power ON Virtual Machine after restore**, and leave other default options unchanged.

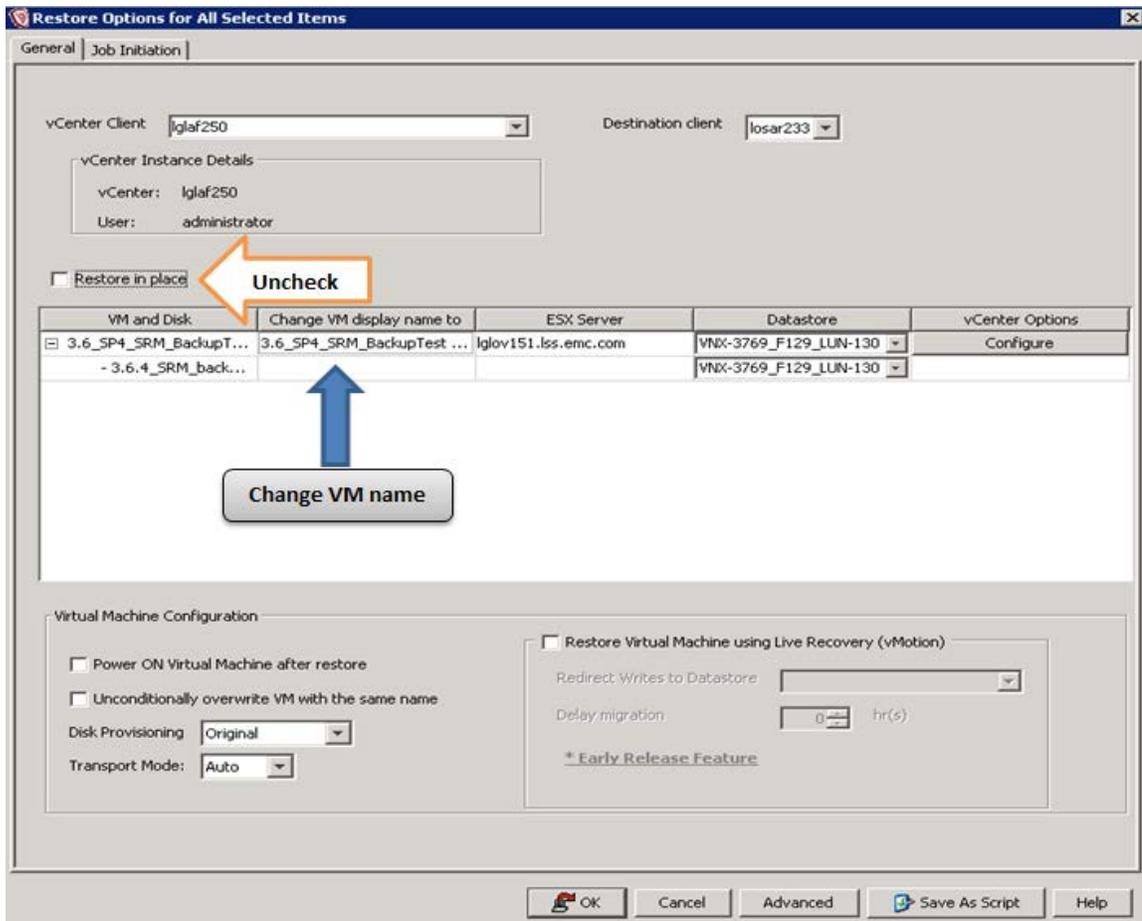


Figure 15: Restore Options for All Selected Items

You can see the restore progress on Job Controller.

VIPR SRM FILE BACKUP

Once the storage policy is configured, you are ready to perform file backup. To understand the Linux file system, MediaAgent needs to be installed on the computer that you want to backup. This scenario was developed using ViPR SRM on SUSE Linux 11 SP3 (x86_64).

Install MediaAgent on ViPR SRM vApp

Do the following:

1. The installation package must be created using the Download Manager application. You need to use the Simpana Express installer. Select to download the package in .tar format. Select the OS as Unix, and package as Linux x86_64 only.
2. For more details about Linux package creation, see [Download Manager - Creating a UNIX/Linux/Macintosh Installation Package](#).
3. After creating the installation package in .tar format, copy the .tar file to your ViPR SRM host and untar the file.
4. Run the ./cvpkgadd executable file, which takes you to the interactive mode. Fill in the required details. It will require you to pass the CommCell server name along with the policy details.
5. Do not create any policy for agent installation and do not assign this to any particular client group.

- For detailed information on MediaAgent installation, see [Install Media Agent](#).
- The computer will be added as a client in the CommCell as soon as the installation completes successfully, as shown in the following figure. If you do not see the client, use the **Refresh** option available under the View menu.

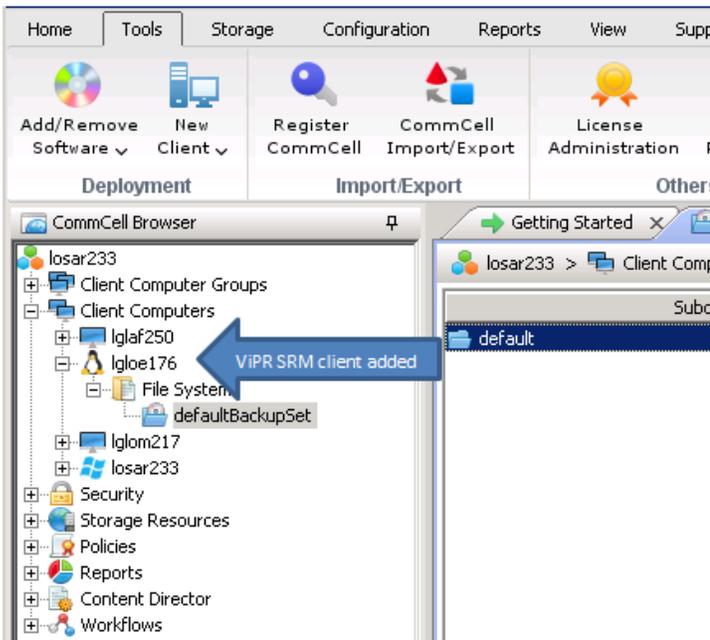


Figure 16: Comcell Browser

Initiate File Backup

- The File backup can be done using the defaultBackupSet. Navigate to the properties of DefaultBackupSet and under the Content tab and click **Browse** to select the required paths to be backed up.
- You can select the policy you created in the Create Storage Policies section earlier in this document.

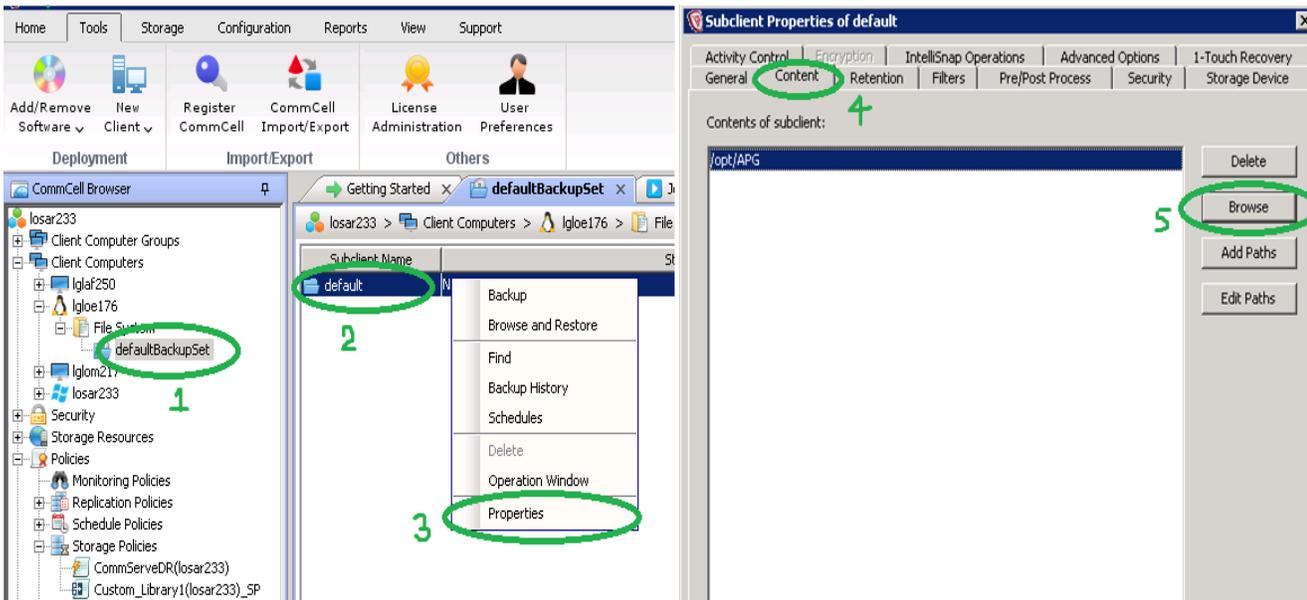


Figure 17: Browse Subclient Properties

- Right-click on default and select **Backup**.

- If the storage policy is configured for incremental backup, then by default incremental backup is selected. Otherwise a full backup is selected to run immediately. By default the first backup will always be a full backup.

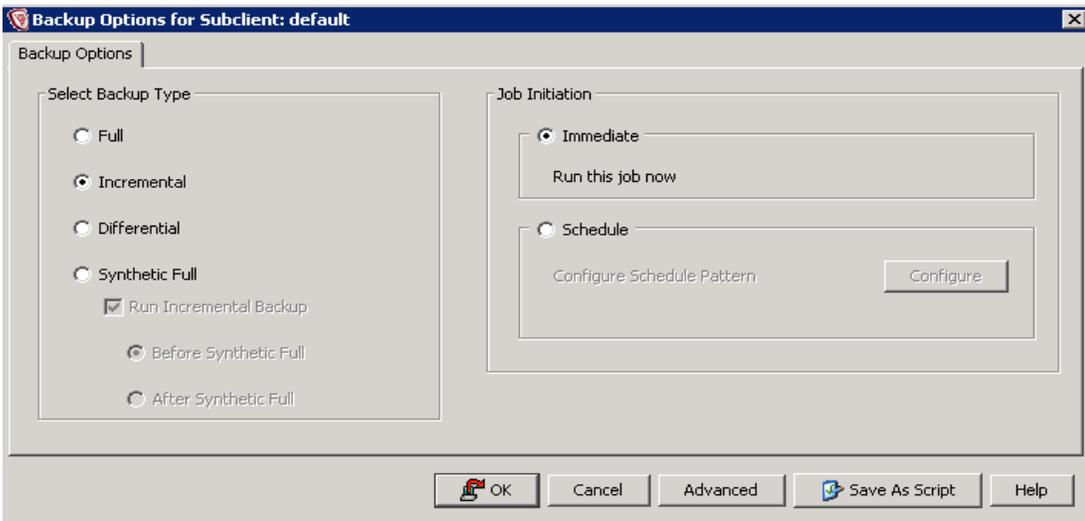


Figure 18: Backup Options for Subclient

- You can schedule to run this backup policy according to your business requirements. To create the schedule plan, select **Schedule** on Backup Options for Subclient window and click **Configure**. A separate window displays in which you can name the Schedule and set the timing parameters. After setting and clicking OK, you can see this policy under Schedule Policies.

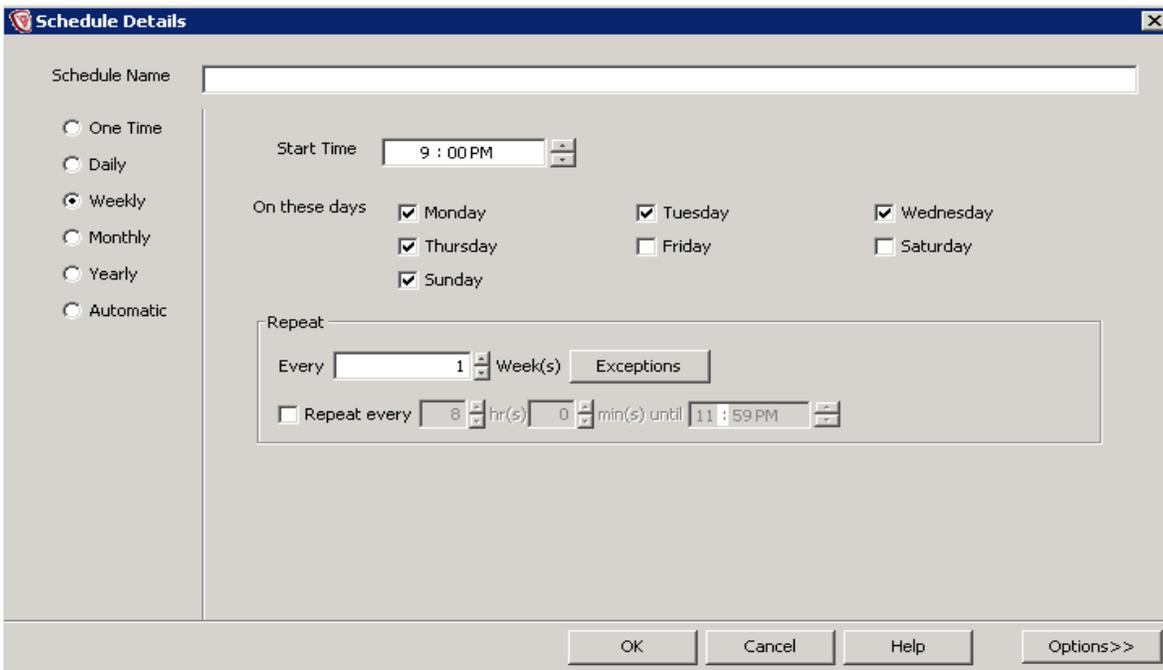


Figure 19: Schedule Details

- Click **OK**. The backup job starts and you can check the status under Job Controller tab.

VIPR SRM FILE RESTORE

- Navigate to **defaultBackupSet**, right-click **default** and click **Browse and Restore**.

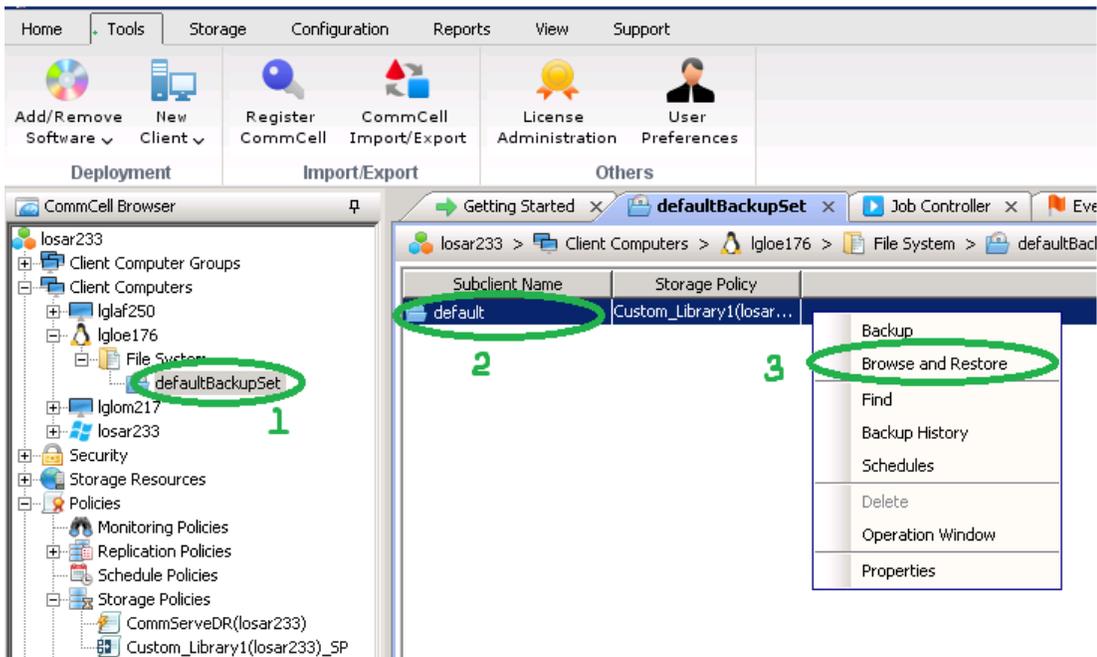


Figure 20: Browse and Restore

- On the Browse and Restore Options window, leave the default settings unchanged and click **View Content**.

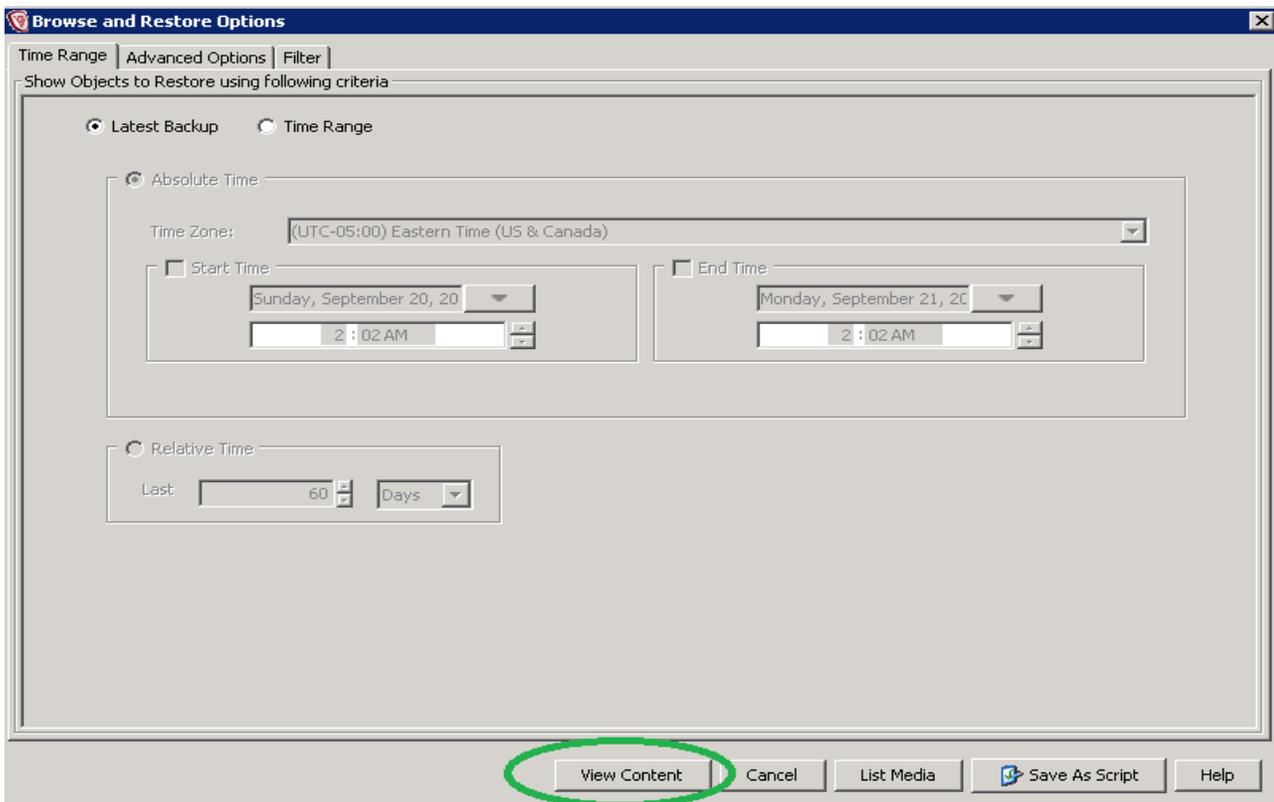


Figure 21: Browse and Restore Options

- On the next window, select the file path to be restored, and click **Recover All Selected**.

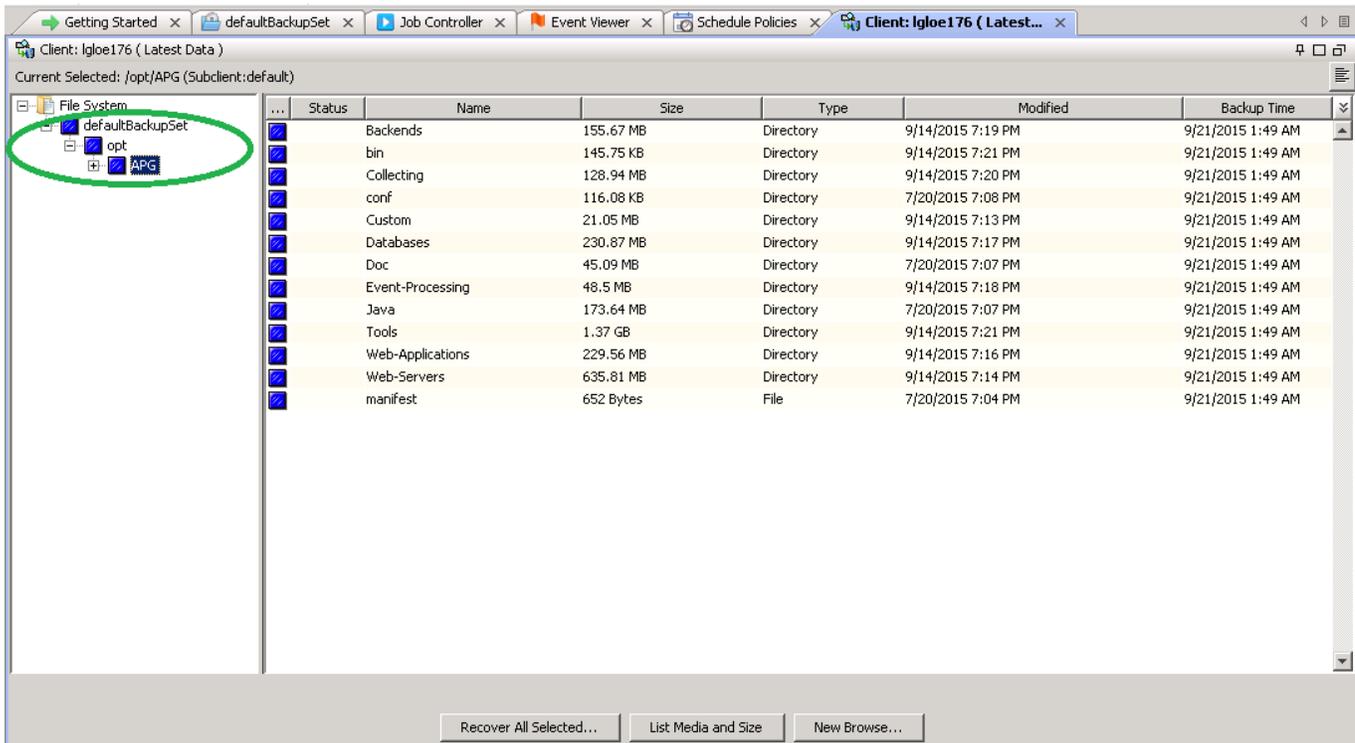


Figure 22: File Path to Be Restored

- On the Restore Options for All Selected Items window, keep all of the default settings. You can also schedule the Restore job, as this option is available under the Job Initiation tab.

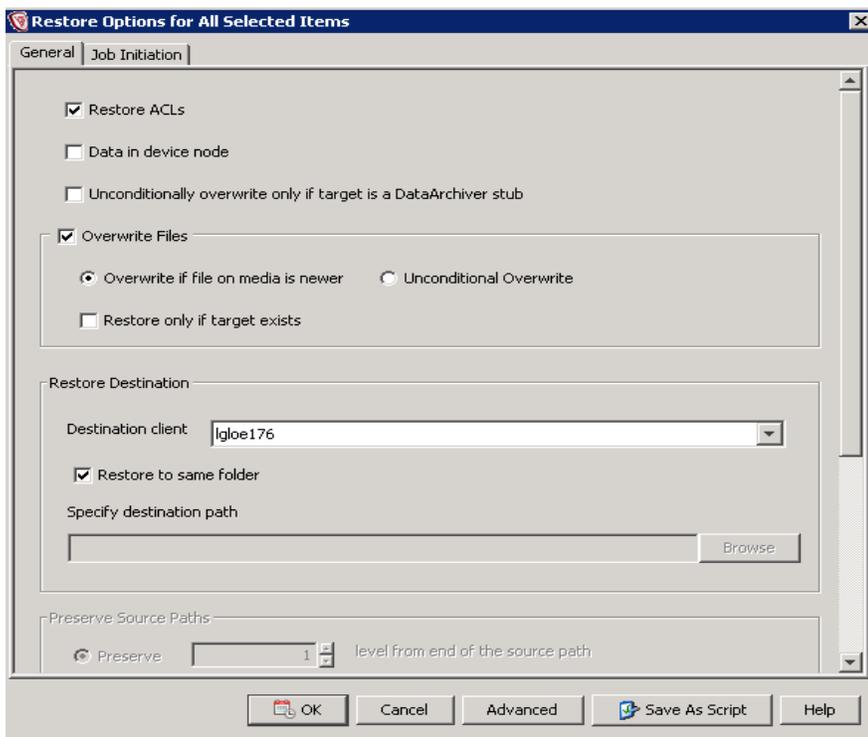


Figure 23: Restore Options for All Selected Items

You can see the progress of restore job under Job Controller.

SCHEDULE A POLICY FOR IMAGE OR FILE BACKUP

1. From CommCell browser, navigate to **Policies > Schedule Policies**, right-click and select **New Schedule Policy**.
2. On the New Schedule Policy window, provide a name to the schedule policy.
 - o **Type** - Select **Data Protection**.
 - o **Agent Type** – If you are scheduling a policy for file backup, select only **Linux File System**. If you are scheduling a policy for image backup then select only **Virtual Server**.
 - o Provide an appropriate **Description**.

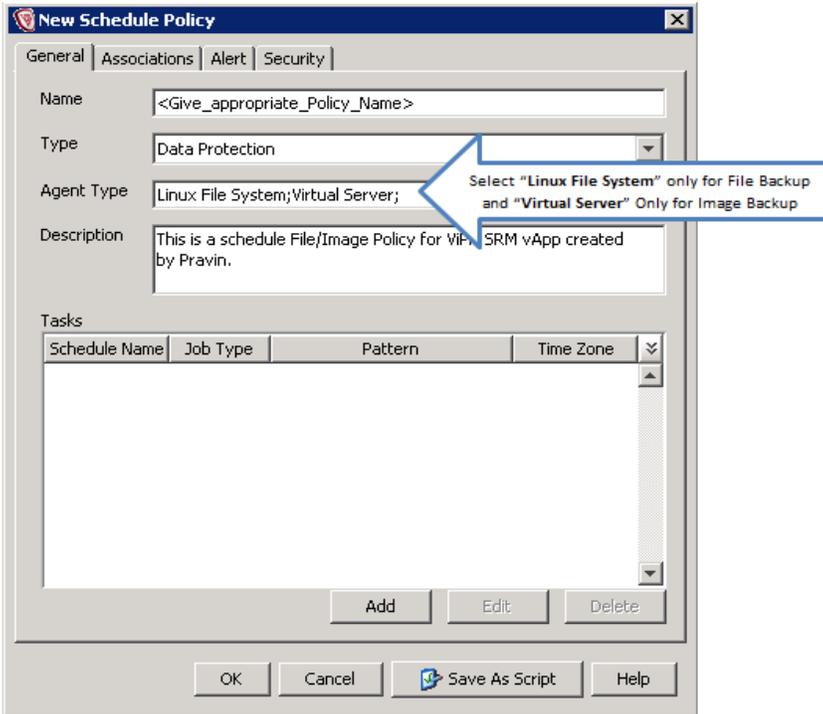


Figure 24: New Schedule Policy

3. Click **Add**. The Backup Tasks Options window displays.

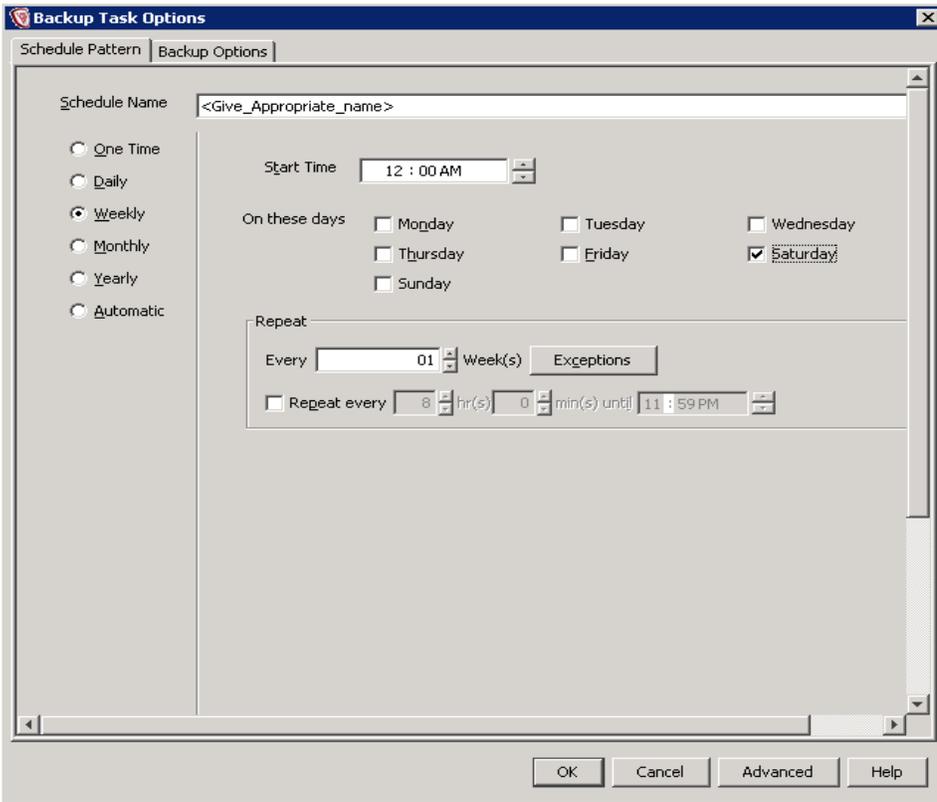


Figure 25: Backup Task Options

4. On the Schedule Pattern tab, provide a **Schedule Name** and set the schedule pattern based on your business requirements.
5. Click the **Backup Options** tab and select **Backup Type** as **Incremental**.
6. Click **Advanced**. The Advanced Backup Options window displays.
7. Click the **Data Path** tab and set the **Use MediaAgent** and **Use Library** fields. You can select to use **Drive Pool** and **Drive** as well if you have multiple drive pools available. Leave other default options unchanged and click **OK**.

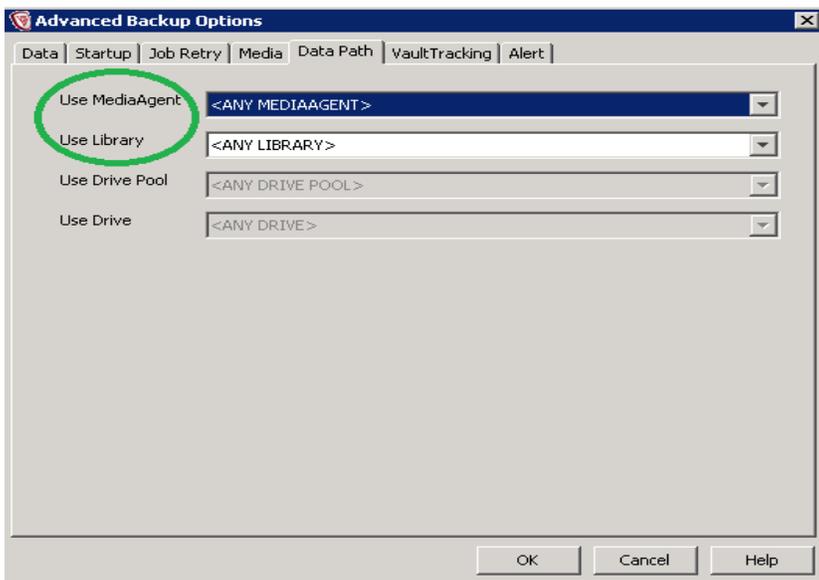


Figure 26: Advanced Backup Options

8. Click **OK**. The New Schedule Policy window displays.

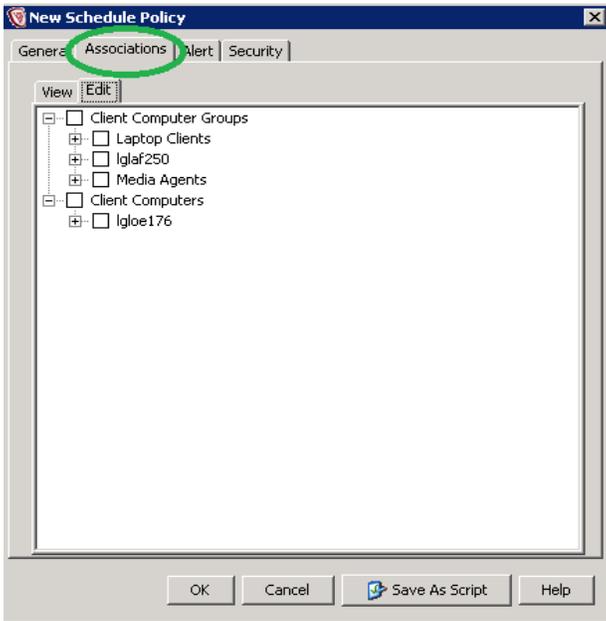


Figure 27: New Schedule Policy Associations

9. Click the **Associations** tab and select the client(s) to associate with this scheduled policy.

10. Click the **General** tab, review the settings and click **OK**. This scheduled policy is now visible under Scheduled Policies under the Policies tab of CommCell browser.

11. To run this policy immediately, right-click the policy in the list of scheduled policies and click **Run Immediately**.

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.