



HPE Backup and Recovery Solution for SAP HANA using HPE Recovery Management Central, HPE Superdome Flex Servers, and HPE 3par StoreServ Storage

Configuration and Integration Guide

CONTENTS

| | |
|--|----|
| Executive summary..... | 3 |
| Introduction..... | 4 |
| Solution overview..... | 4 |
| Central Management Server | 4 |
| HPE Recovery Manager Central for SAP HANA | 5 |
| Configuration guidance..... | 10 |
| Prerequisites..... | 10 |
| Central Management Server re-cabling..... | 10 |
| Deployment of Recovery Manager Central on Central Management Server Hyper-V | 15 |
| Summary..... | 21 |
| Appendix A: Recovery Manager Central installation procedure..... | 22 |
| Appendix B: Blog on “SAP HANA backup & recovery as-a-service with RMC and HPE StoreOnce” | 24 |
| Resources and additional links | 25 |



EXECUTIVE SUMMARY

SAP HANA®, short for “High-performance Analytic Appliance,” is a data platform built for running in-memory transactional and analytical workloads. SAP HANA offers a faster and simplified architecture that consolidates both online analytic processing (OLAP) and online transaction processing (OLTP) landscapes into a single database.

Today, SAP customers are looking to SAP HANA to enable real-time data access, respond quickly to business needs and market trends with reduced administration. HPE Superdome Flex predefined appliance configuration offers a Single Rack (SR) or Multi Rack (MR) Solutions for SAP HANA with HPE 3PAR All-Flash Storage and it is designed to support medium to large Scale-up or Scale-out environments with the ability to grow in future. The solution starts from 4 sockets and can be scaled up to 32 socket servers to host SAP HANA databases in the size of 1.5TB up to 24.OTB.

In general, the backup related challenges faced by existing SAP HANA customers are:

- Need to backup large SAP HANA databases in a formal way and within a short period
- Customers struggling with slow backup
- Customers want to keep their backup costs under control
- Customers feel snapshot based backups are a management nightmare
- Customers want to have a reasonably low recovery time objective (RTO) and also zero recovery point objective (RPO) for an application in case of a disaster

Efficient backup and restore are key to ensure that an organization can meet recovery time (RTO) and recovery point objectives (RPO). All database backups generally involve backing up its data and log volumes. A database recovery mostly involves a restoration of the latest data file backup and optionally apply log information generated after the last data backup. It is therefore critical to have a reasonably high frequency of data file backups available. This ensures a minimum of log information to be applied to roll forward to the desired HANA database status.

This Technical White Paper describes the integration of HPE Recovery Manager Central (RMC) with HPE Superdome Flex- based predefined solutions for SAP HANA. This should be viewed as a complementary solution, highlighting recognizable benefits in addition to standard SAP HANA backup.

HPE Recovery Manager Central a complementary solution

Hewlett Packard Enterprise has developed the HPE Recovery Manager Central (RMC) tool as a software solution which integrates HPE 3PAR StoreServ Storage with HPE StoreOnce as a backup appliance for integrated snapshot based backups of SAP HANA databases.

HPE Recovery Manager Central meets most of the customer expectations such as:

- No additional license required
- Reduced administrative efforts to backup and restore SAP HANA databases
- Reasonably low recovery time objective (RTO) and also zero recovery point objective (RPO)
- Avoids manual intervention during the backup and recovery phases

Document purpose: This document describes the implementation and configuration of Recovery Manager Central for backing up HPE Superdome Flex Scale-up and Scale-out configurations for SAP HANA with the operating system choice of SUSE Linux® Enterprise Server (SLES) or Red Hat® Enterprise Linux® (RHEL) using HPE 3PAR StoreServ Storage snapshots.

Target audience: This document is intended to assist chief information officers (CIOs), chief technology officers (CTOs), IT directors, data center managers, SAP solution architects, SAP HANA database and basis administrators, IT professionals, and customers wishing to learn more about HPE's backup and recovery solution on HPE Superdome Flex for SAP HANA. This document assumes the reader has a basic understanding of data center infrastructure technologies like servers, storage, networking, power, solution management, virtualization, Linux operating systems, and HPE solutions for SAP HANA.

This Technical White Paper describes the solution testing performed in May 2020.



INTRODUCTION

The configurations include hardware and software solutions that integrate HPE 3PAR StoreServ and HPE StoreOnce backup server with the HPE Superdome Flex servers, configurations for large-sized businesses typically consist of multiple systems in each category such as Production (PRD), Quality Assurance (QA), and Test & Development (DEV) systems.

As SAP landscapes are getting larger and complex, SAP HANA customers are looking for quick and seamless backup and restore solutions to address their business needs with a reduced administration overhead and at the same time keeping backup costs under control.

HPE Recovery Manager Central is a complementary solution offered by Hewlett Packard Enterprise. It has seamless integration with HPE 3PAR StoreServ, and efficiently makes use of HPE 3PAR Virtual Copy Software which creates a snapshot volume. A storage snapshot captures the content of the SAP HANA DATA area at a particular point in time, which offers additional data protection. Snapshots have a negligible impact on SAP HANA database performance and snapshot backups are much faster compared to complete data backup.

The key benefits include:

- Easy deployment with simple and intuitive GUI for database administrators
- RMC facilitates policy-driven copy data management
- Automatic, application-consistent snapshots
- Express Protect - additional protection for the existing snapshots
- Cloud Protect - allows you to leverage public cloud for long term retention of backups
- Integration with RMC REST APIs

SOLUTION OVERVIEW

This solution describes the snapshot backups of SAP HANA databases using Recovery Manager Central for HPE 3PAR StoreServ Storage on HPE Superdome Flex based Scale-up and Scale-out environments. The Technical White Paper tells about the integration of RMC with HPE solutions for SAP HANA.

Central Management Server

HPE Superdome Flex solution for SAP HANA comes with a Central Management Server (CMS). This is an HPE ProLiant DL360 Server running Microsoft® Windows 2019 and used to configure and manage the solution components such as LAN switches, SAN switches, server nodes, and HPE 3PAR Storage.

NOTE

Central Management Server comes with 2x Intel® Xeon® 4208 processor / 12 x 16GB Memory, 6 x 1.2 TB HDD/ 1x HPE SN1100Q 16Gb 2p FC HBA/ 1x HPE Ethernet 10Gb 2-port 530SFP+ Adapter installed with Windows Server edition.



Figure 2 describes an HPE RMC solution for SAP HANA application environment.

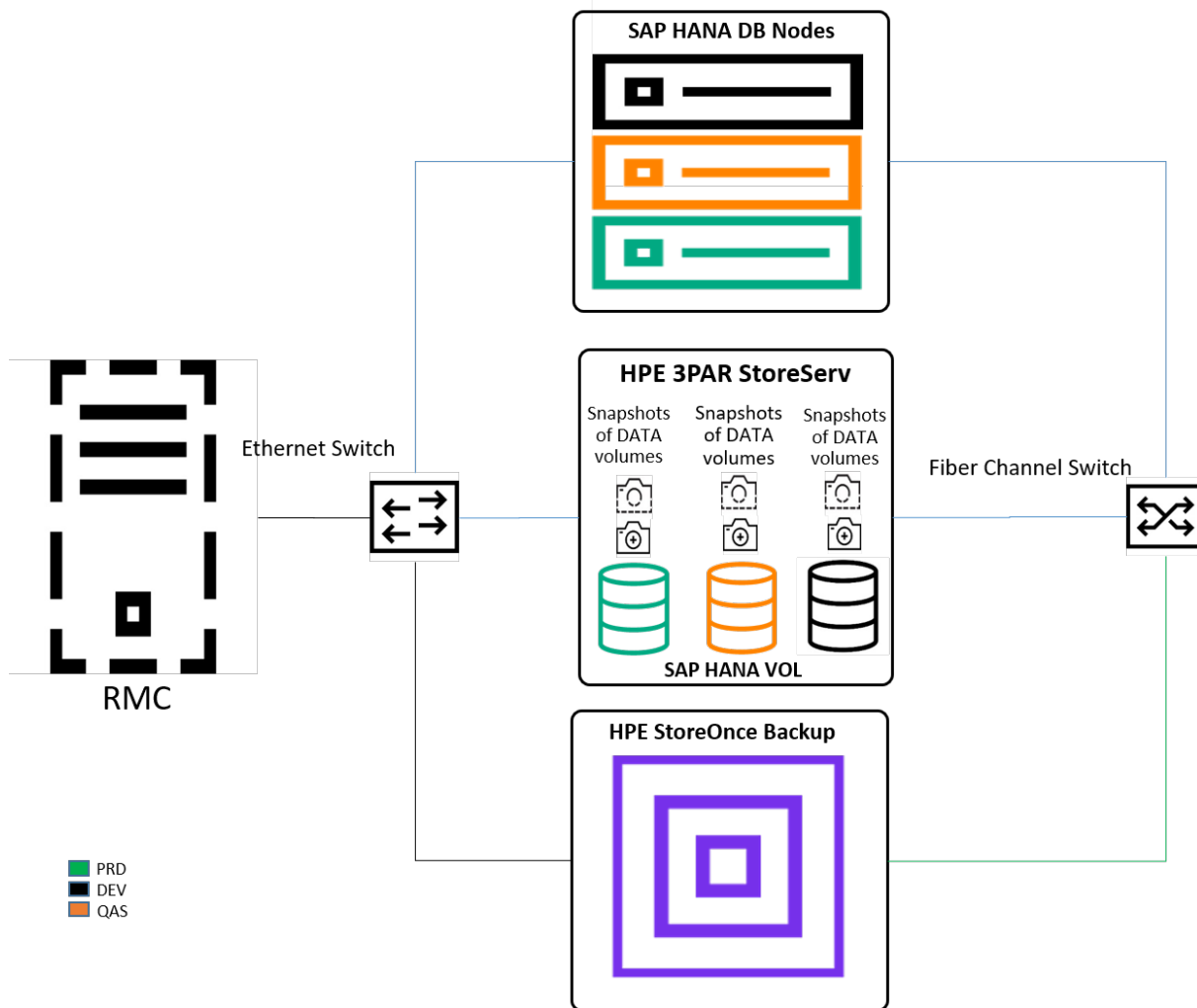


FIGURE 2. RMC solution for SAP HANA application environment



Recovery Manager Central snapshot

Recovery Manager Central snapshot feature provides data protection for an SAP HANA database as it initiates a point-in-time copy of the data volumes. When the snapshot job is triggered, HPE RMC communicates with SAP HANA to determine the location of the data volumes. An HPE 3PAR snapshot on the related Virtual Volumes is created. HPE Recovery Manager Central creates SAP HANA application consistent snapshots that are easy to restore in case of any failures.

DEFINITION

When a snapshot is first created, all of its data is mapped indirectly to the parent volume’s data. When a block is written to the parent, the original block is copied from the parent to the snapshot data space, and the snapshot points to this data space instead. Similarly, when a block is written in the snapshot, the data is written in the snapshot data space, and the snapshot points to this data space. These snapshots are copy-on-write (COW) snapshots.

Figure 3 represents Recovery Management Central snapshot.

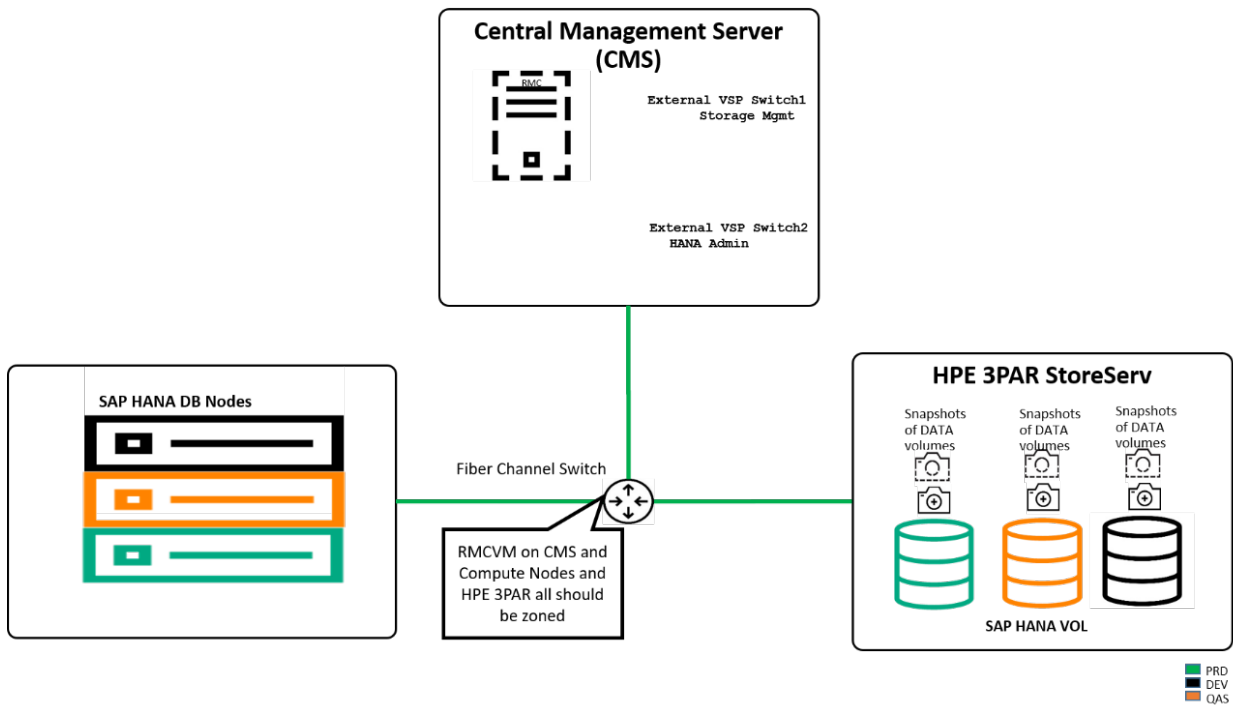


FIGURE 3. Recovery Manager Central snapshot



Recovery Manager Central Express Protect

HPE Recovery Manager Central extends the data protection capability for SAP HANA databases with the Express Protect feature. Express Protect makes use of technologies in HPE 3PAR and HPE StoreOnce to create low-bandwidth backups of snapshot sets to HPE StoreOnce Catalyst stores. For more details, refer to the [HPE Recovery Manager Central for SAP HANA configuration and best practices guide](#) under section Express Protect Page 9.

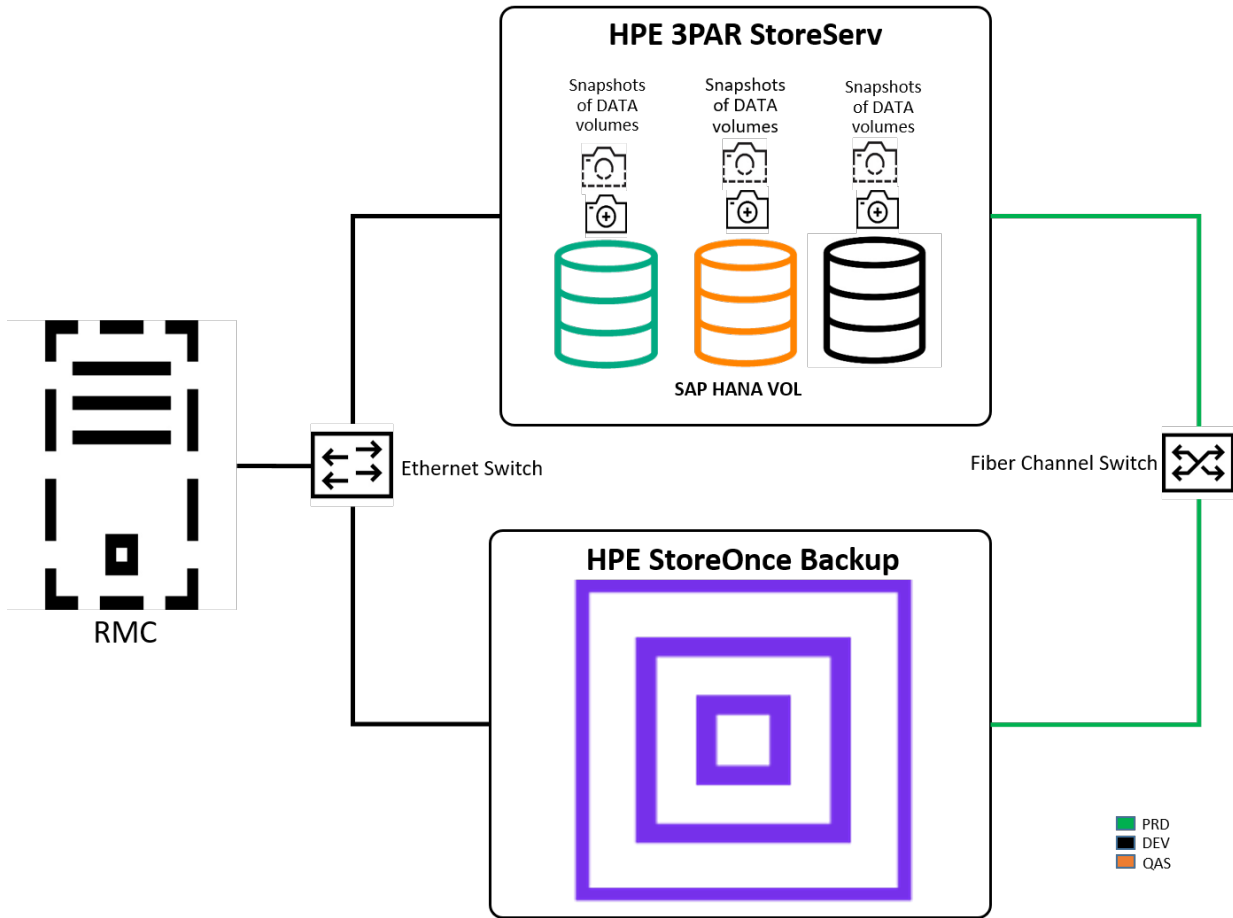


FIGURE 4. Recovery Manager Central Express Protect



Recovery Manager Central Restore process

KEY POINT

The SAP HANA database must be shut down and data and log volumes must be unmounted before initiating the recovery process in Scale-up installation. In Scale-out, the data and log volumes need to be unmounted from each worker node.

To recover the SAP HANA database from any previous snapshots or Express Protect backup using the Recovery Manager Central GUI, select from action to restore the system. Once the restore is completed, the volumes can be remounted on the HANA host, and for the recovery process switch to SAP HANA Cockpit.

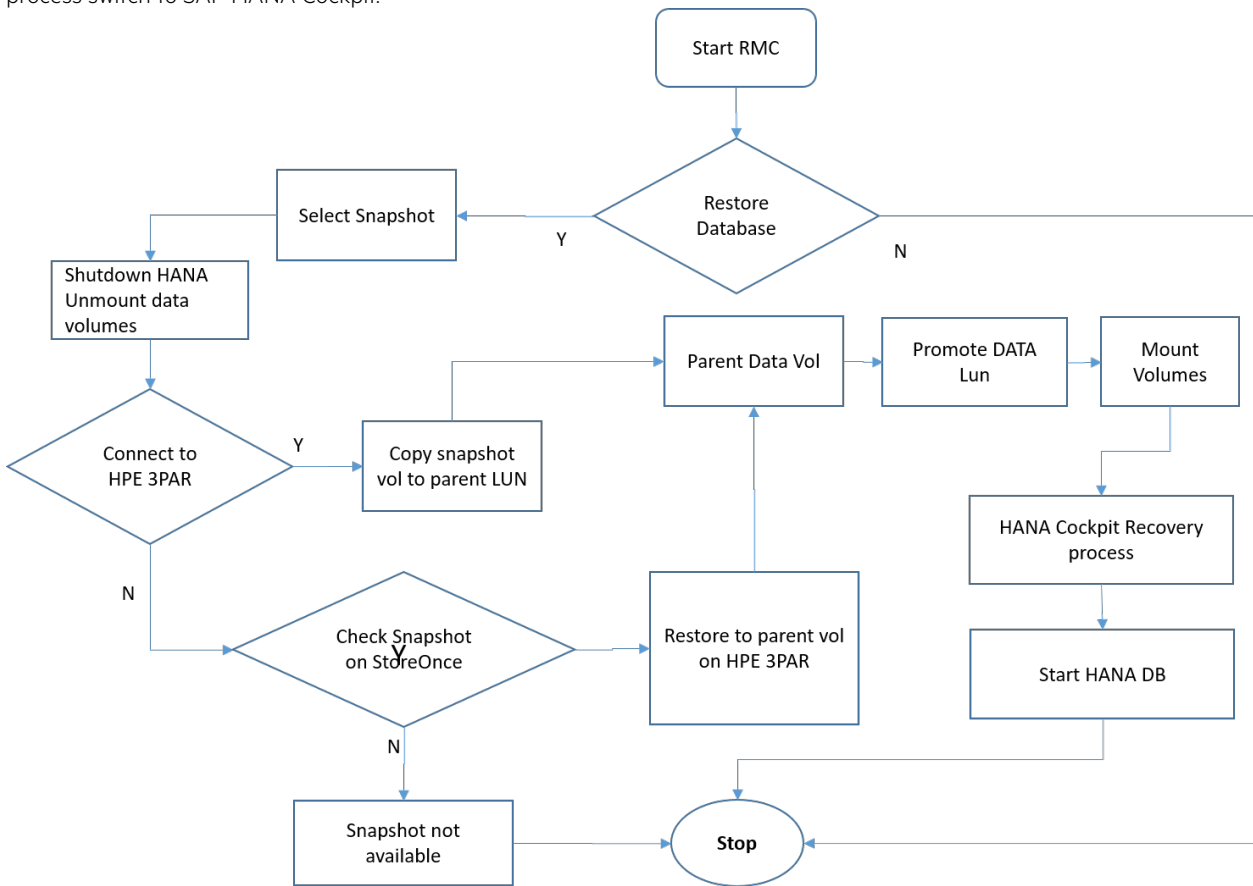


FIGURE 5. Recovery Manager Central Snapshot Restore process data flow

Figure 5 explains the restore process followed by RMC for the SAP HANA database. At a high level, the restore process is to first look for a suitable snapshot on the 3PAR storage and if unavailable on 3PAR, then to look for a snapshot-based backup on the StoreOnce. After restoring the snapshots, the volumes are mounted, and the recovery process needs to be started on HANA Cockpit. Post recovery, the HANA database is started.

In most cases, the restore is done from the last successful backup. If multiple snapshots are stored on the 3PAR storage itself, then the restore can be extremely fast. Recovery from snapshots is also fast because like backups, all that is happening in the background is re-aligning of the pointers from new changed blocks to the older status of those blocks in the storage. This helps to ensure RTO is achievable. Multiple snapshot backup enables close RPOs to be met.



NOTE

Refer to the White Paper “[HPE Recovery Manager Central for SAP HANA configuration and best practices guide](#)”. This document explains in detail about the best practices for configuring such as adding SAP HANA hosts, SAP HANA database and also all the different scenarios supported in snapshot backup and recovery solutions.

CONFIGURATION GUIDANCE

Prerequisites

Before starting any configuration setup with Recovery Manager Central, verify for the latest information on updated versions, limitations, and bug fixes etc., from the below links.

Recovery Manager Central (RMC),

https://techhub.hpe.com/eginfolib/storage/docs/StoreOnceBackup/RMC6_0Help/index.html#doc_overview.html.

[HPE Solutions for SAP HANA SD Flex 3PAR 6.0 Configuration Guide](#)

HPE Recovery Manager Central for SAP HANA configuration and best practices guide,

https://support.hpe.com/hpesc/public/docDisplay?docId=emr_na-a00016092en_us.

Central Management Server re-cabling

In a factory build, the Central Management Server has no connection to SAN switches. To bring CMS server into SAN zoning, re-cabling of HBA ports is required. Optionally, add additional HBA card to CMS sever and bring into SAN zoning as shown in Figure 6.

NOTE

In scale-out environment, HPE 3PAR File Persona (A4) Storage provides NFS share and also provides 2.0TB of block storage to Central Management Server to host multiple virtual machines for larger configuration.

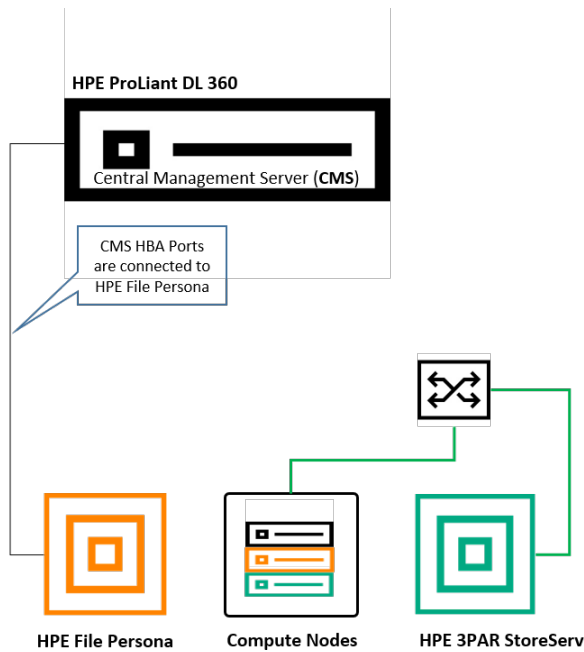


FIGURE 6. Factory build cabling to File Persona



NOTE

In Figure 6, HPE 3PAR File Persona is connected directly to Central Management Server whereas in Figure 7 HPE 3PAR File Persona is connected via SAN to Central Management Server (CMS).

Shutdown all the virtual machines running on the Central Management Server (CMS) before cabling change.

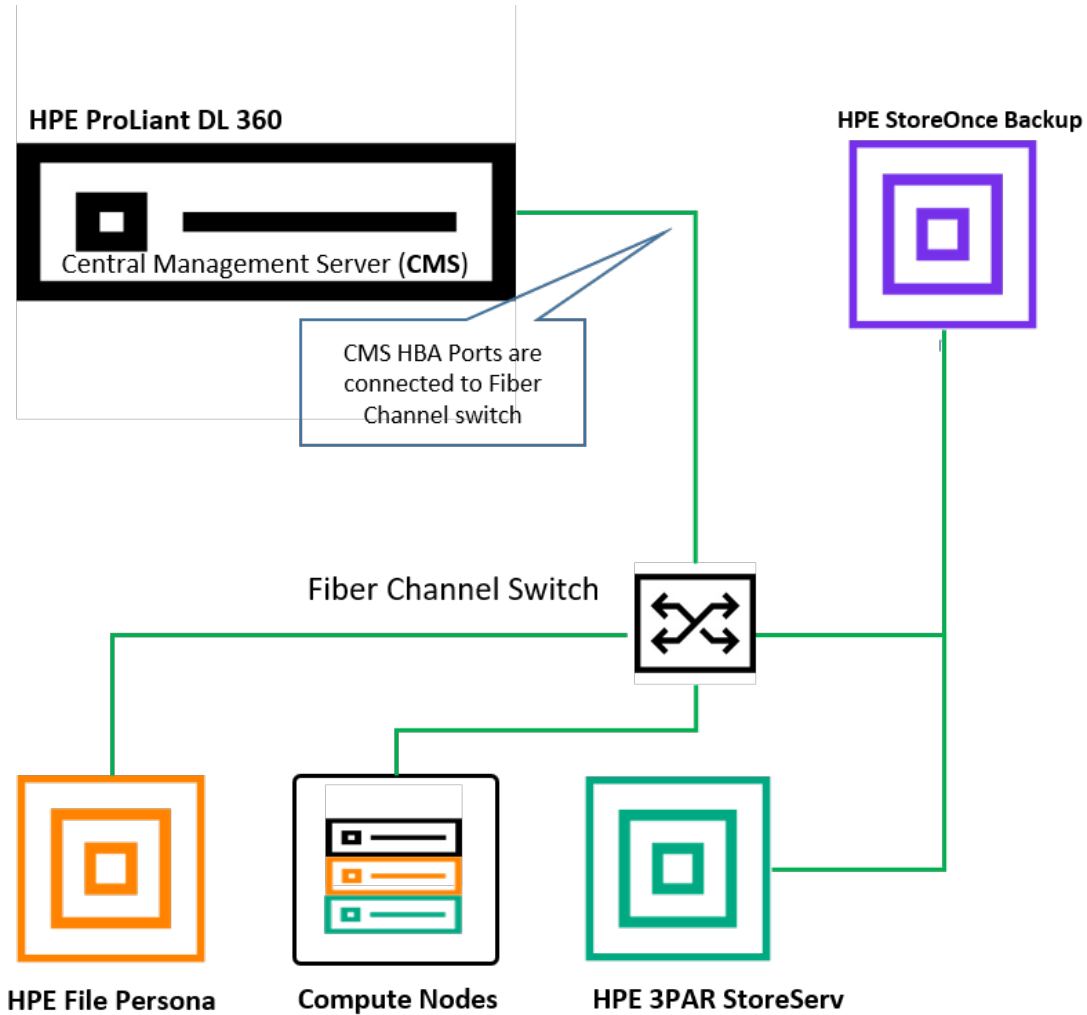


FIGURE 7. Multi rack re-cabling CMS, A4 File persona, and HPE StoreOnce to SAN Switch ports

Under factory shipment, pre-defined configurations have scale-up and scale-out environments for HPE Superdome Flex Single Rack / Multi Rack solutions. Both Single/Multi Rack scale-out setups will have HPE File Persona as shown in Figure 7, wherein both Single/Multi Rack scale-up does not require the HPE File Persona.



Figure 8 shows a Single rack re-cabling CMS to SAN Switch ports.

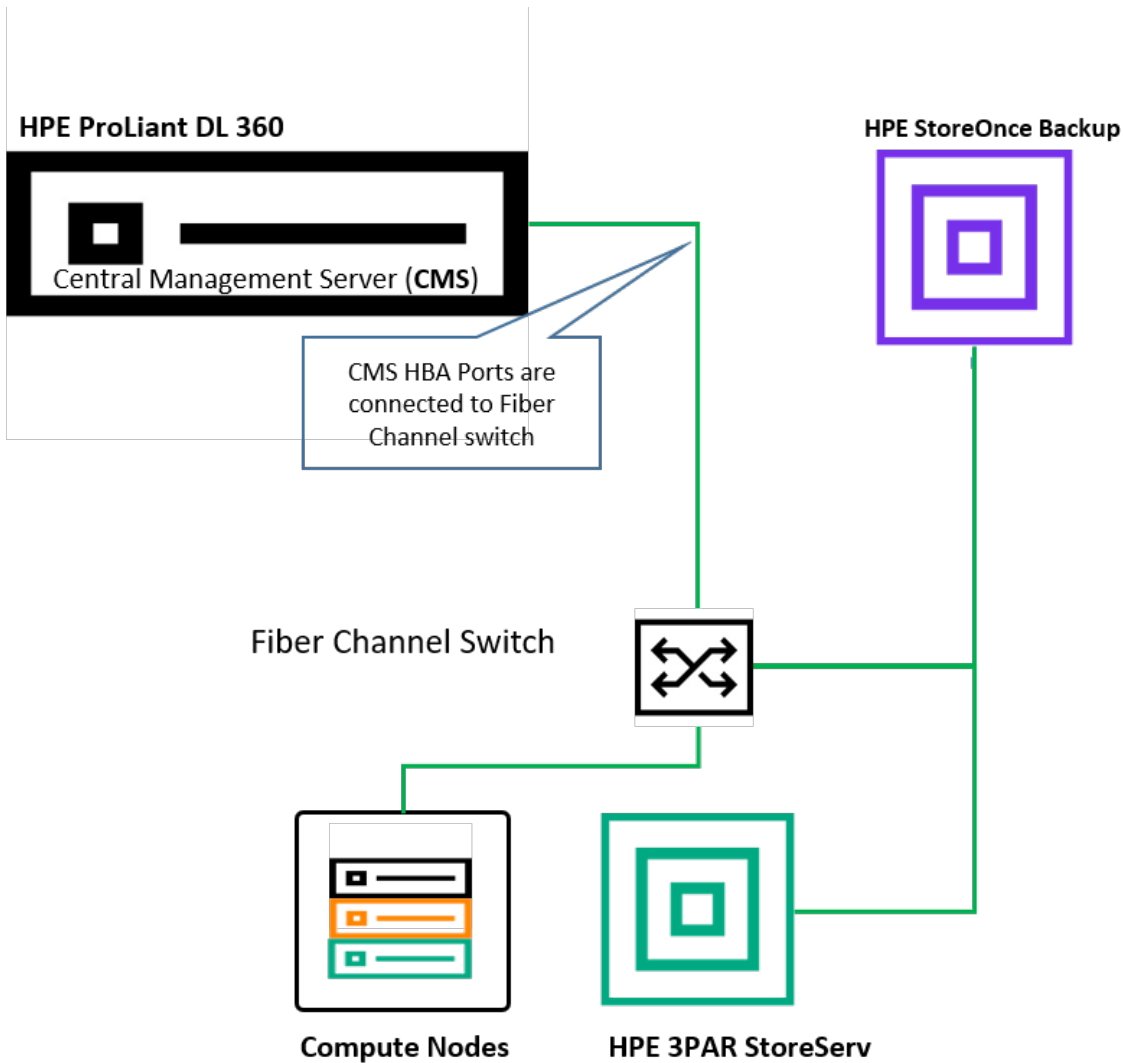


FIGURE 8. Single rack re-cabling CMS to SAN Switch ports

Configuration of virtual adapter on CMS

Perform the following steps to configure the adapter on CMS:

1. Configure virtual SAN adapter on Central Management Server Hyper-V once cabling is completed as shown in Figure 7 and 8.

```
PS C:\> Get-InitiatorPort | Format-Table -Property NodeAddress,PortAddress
NodeAddress      PortAddress
-----
51402ec001c89d61 51402ec001c89d60
51402ec001c89d63 51402ec001c89d62
PS C:\> New-VMSan -Name "VSAN1" -Note "VSAN1 RMC" -NodeAddress "51402ec001c89d61" -PortAddress
"51402ec001c89d60"
```



```
PS C:\> New-VMSan -Name "VSAN2" -Note "VSAN2 RMC" -NodeAddress "51402ec001c89d63" -PortAddress "51402ec001c89d62"
```

2. Verify the initiators created in the CMS server that have logged in to the switches.

```
S33-RG01-S2:FID128: admin> switchshow
SwitchName:      S33-RG01-S2
SwitchType:      162.1
SwitchState:     Online
SwitchMode:      Native
SwitchRole:      Subordinate
SwitchDomain:    2
SwitchId:        fffc02
SwitchWwn:       10:00:88:94:71:45:33:b0
Zoning:          ON [Config_SAN2]
SwitchBeacon:    OFF
FC Router:       OFF
HIF Mode:        OFF
Allow XISL Use:  OFF
LS Attributes:   [FID: 128, Base Switch: No, Default Switch: Yes, Ficon Switch: No, Address Mode 0]
```

| Index | Port | Address | Media | Speed | State | Proto |
|-------|------|---------|-------|-------|-----------|---|
| 0 | 0 | 020000 | id | N16 | Online | FC F-Port 20:02:00:02:ac:01:e8:42 |
| 1 | 1 | 020100 | id | N16 | Online | FC F-Port 21:02:00:02:ac:01:e8:42 |
| 2 | 2 | 020200 | id | N16 | Online | FC F-Port 22:02:00:02:ac:01:e8:42 |
| 3 | 3 | 020300 | id | N16 | Online | FC F-Port 23:02:00:02:ac:01:e8:42 |
| 4 | 4 | 020400 | -- | N32 | No_Module | FC [Ports on Demand license not assigned or reserved yet] |
| 5 | 5 | 020500 | -- | N32 | No_Module | FC [Ports on Demand license not assigned or reserved yet] |
| 6 | 6 | 020600 | -- | N32 | No_Module | FC [Ports on Demand license not assigned or reserved yet] |
| 7 | 7 | 020700 | -- | N32 | No_Module | FC [Ports on Demand license not assigned or reserved yet] |
| 8 | 8 | 020800 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:dc:cc |
| 9 | 9 | 020900 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:de:cc |
| 10 | 10 | 020a00 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:dc:b4 |
| 11 | 11 | 020b00 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:de:7c |
| 12 | 12 | 020c00 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:db:28 |
| 13 | 13 | 020d00 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:de:d0 |
| 14 | 14 | 020e00 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:e0:a0 |
| 15 | 15 | 020f00 | id | N16 | Online | FC F-Port 51:40:2e:c0:01:c7:de:b4 |
| 16 | 16 | 021000 | id | N16 | Online | FC F-Port 20:02:00:02:ac:01:cb:a5 |
| 17 | 17 | 021100 | id | N16 | Online | FC F-Port 21:02:00:02:ac:01:cb:a5 |
| 18 | 18 | 021200 | id | N16 | Online | FC F-Port 22:02:00:02:ac:01:cb:a5 |
| 19 | 19 | 021300 | id | N16 | Online | FC F-Port 23:02:00:02:ac:01:cb:a5 |
| 20 | 20 | 021400 | -- | N32 | No_Module | FC [Ports on Demand license not assigned |
| 21 | 21 | 021500 | -- | N32 | No_Module | FC [Ports on Demand license not assigned |
| 22 | 22 | 021600 | id | N16 | Online | FC F-Port 21:01:00:02:ac:01:e8:43 |
| 23 | 23 | 021700 | id | N16 | Online | FC F-Port 1 N Port + 1 NPIV public |
| 24 | 24 | 021800 | id | N16 | Online | FC F-Port 20:02:00:02:ac:01:ba:42 |
| 25 | 25 | 021900 | id | N16 | Online | FC F-Port 21:02:00:02:ac:01:ba:42 |
| 26 | 26 | 021a00 | id | N16 | Online | FC F-Port 22:02:00:02:ac:01:ba:42 |
| 27 | 27 | 021b00 | id | N16 | Online | FC F-Port 23:02:00:02:ac:01:ba:42 |
| 28 | 28 | 021c00 | id | N16 | Online | FC F-Port 20:22:00:02:ac:01:ba:42 |
| 29 | 29 | 021d00 | id | N16 | Online | FC F-Port 21:22:00:02:ac:01:ba:42 |
| 30 | 30 | 021e00 | id | N16 | Online | FC F-Port 22:22:00:02:ac:01:ba:42 |

HPE 3PAR File
persona A4

CMS HBA
Port



3. Follow these steps to configure SAN zoning for Central Management Server. This will expose block storage from **HPE 3PAR File Persona (A4) and SAN Switch (S1)**.

```
admin:>alicreate "RG01_A4_NO_S0_P1","1,22"
admin:>alicreate "RG01_CMS_P1","1,23"
admin:>zonecreate --peerzone "Zone_RG01_A4_NO_S0_P1" -principal "RG01_A4_NO_S0_P1"
admin:>zoneadd --peerzone "Zone_RG01_A4_NO_S0_P1" -members "RG01_CMS_P1"
admin:>cfgadd "Config_SAN1","Zone_RG01_A4_NO_S0_P1"
admin:>cfgsave
admin:>cfgenable "Config_SAN1"
```

SAN Switch (S2)

```
admin:>alicreate "RG01_A4_NO_S0_P2","2,22"
admin:>alicreate "RG01_CMS_P2","2,23"
admin:>zonecreate --peerzone "Zone_RG01_A4_NO_S0_P2" -principal "RG01_A4_NO_S0_P2"
admin:>zoneadd --peerzone "Zone_RG01_A4_NO_S0_P2" -members "RG01_CMS_P2"
admin:>cfgadd "Config_SAN2","Zone_RG01_A4_NO_S0_P2"
admin:>cfgsave
admin:>cfgenable "Config_SAN2"
```

NOTE

Zoning of RMC VM virtual SAN port is described in [SAN Zone Configuration](#) section.

Network configuration

The default networking does not allow the HPE Recovery Manager Central virtual machine to communicate with SAP HANA nodes which are on the VLAN (example - vlan112). If the communication is not allowed, then SAP HANA nodes cannot register and manage to take snapshots. To allow this communication to happen, follow the procedure.

Update the L1/L2 LAN switch configuration file, HPE Solutions for SAP HANA SD Flex 3PAR

6.0\SD_Flex_3PAR_6.0_16x4S_BWoH_SO_DP_20200106_131911\Rack_Group_01\Rack_A\10_HPE_FlexFabric_5900AF_48G_4XG_2QSFP_Plus_IRF_L1L2.

```
Interface Bridge-Aggregation20
  description Downlink RG01 CMS Team2
  port access vlan 112 [This is a represented value it may be different]
link-aggregation mode dynamic
PS C:\> New-VMSwitch -Name "External VSP Switch2" -NetAdapterName "TeamNIC2" -AllowManagementOS:
```



Figure 9 shows the two external VSP switches for RMC VM.

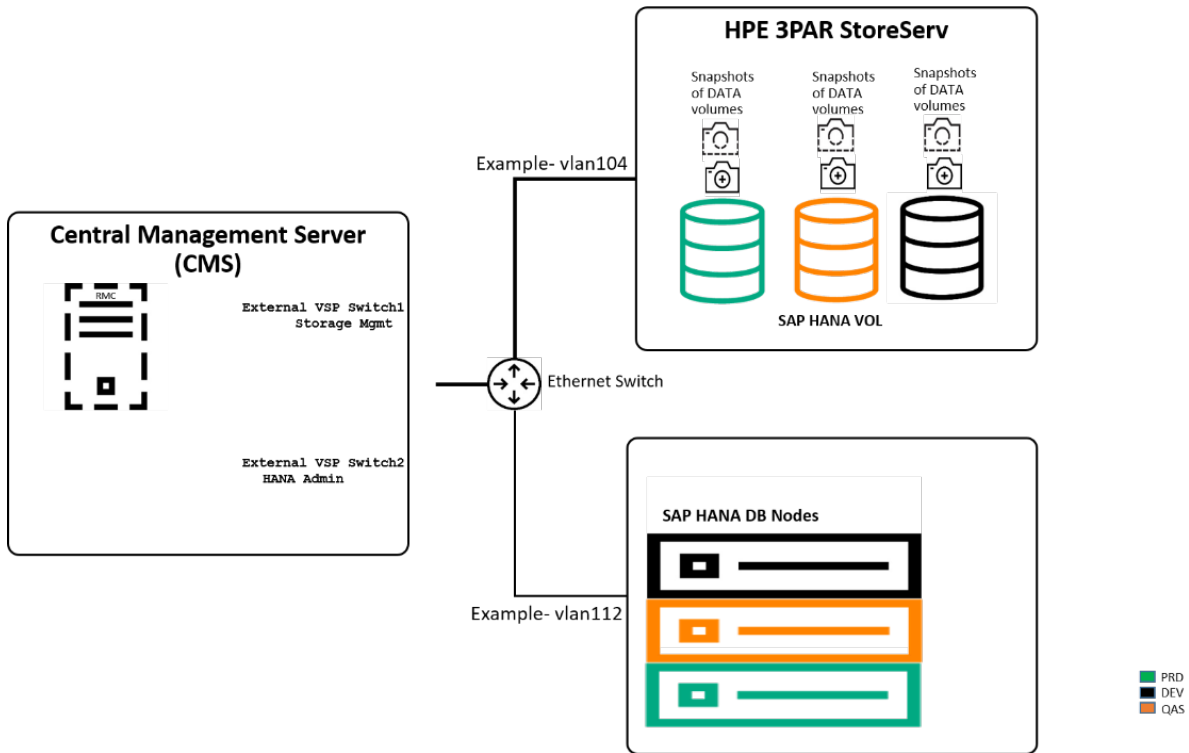


FIGURE 9. Two external VSP switches for RMC VM

Deployment of Recovery Manager Central on Central Management Server Hyper-V

1. Login to the Central Management Server with administrator privileges to install RMC on Hyper-V.
2. Download RMC-Hyper-V-Installer.zip file from <http://www.hpe.com/storage/rmc/swdepot> or <https://myenterpriselicense.hpe.com/>.

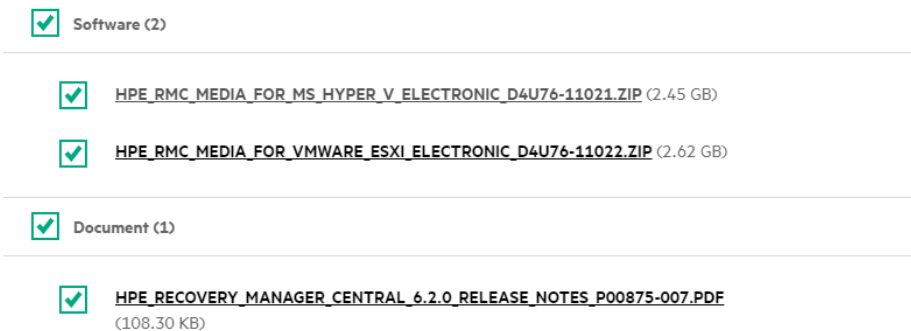


FIGURE 10. RMC download



3. Extract the ZIP file <Installationdirectory>.

NOTE

Installation directory is where the HPE_RMC-6.2.0-1937.1_Hyper-V_Installer.zip is downloaded and extracted.

| | | | |
|--|----------------------------|--------------|----|
|  HPE_RMC_6.2.0-1937.1_Hyper-V_VHD.zip | Compressed (zipped) Fol... | 1,673,506 KB | No |
|  HPE_RMC-6.2.0-1937.1.e17.noarch.rpm | RPM File | 735,452 KB | No |
|  HPE_RMC-6.2.0-1937.1_Hyper-V_Installer.zip | Compressed (zipped) Fol... | 57 KB | No |

FIGURE 11. Downloaded package

4. Copy HPE_RMC_6.2.0-1937.1_Hyper-V_VHD.zip into the installation directory.
5. Extract the HPE_RMC-6.2.0-1937.1_Hyper-V_Installer.zip.

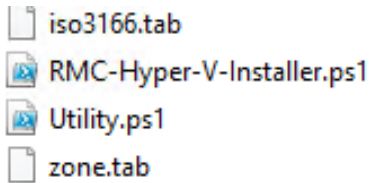


FIGURE 12. Extract of HPE_RMC-6.2.0-1937.1_Hyper-V_Installer.zip

6. Run the PowerShell script. Set the environment for PowerShell to execute the script.

```
Open PowerShell
Cd <Installationdirectory>
Set-ExecutionPolicy UnRestricted or Bypass
.\ RMC-Hyper-V-Installer.ps1
```

NOTE

For installation screenshots see [Appendix A](#) section in the document.

SAN zone configuration

This section provides information about SAN zone configuration between the RMC VM, HPE 3PAR StoreServ Storage, target backup storage, and HPE StoreOnce.

```
PS C:\> Get-VMFibreChannelHba -VMName RMC62GA

SanName           : VSAN1
WorldWideNodeNameSetA : C003FF0000FFFF00
WorldWidePortNameSetA : C003FF8C681D0000
WorldWideNodeNameSetB : C003FF0000FFFF00
WorldWidePortNameSetB : C003FF8C681D0001
IsTemplate        : False
Name               : Fibre Channel Adapter
Id                 : Microsoft:5CB21CF0-EF0C-48A0-BC54-19F648458659\837BE948-31D7-4E60-85D9-6DED32E00747
VMId              : 5cb21cf0-ef0c-48a0-bc54-19f648458659
```



```

VMName           : RMC62GA
VMSnapshotId     : 00000000-0000-0000-0000-000000000000
VMSnapshotName   :
CimSession       : CimSession: .
ComputerName     : S33-RG01-CMS
IsDeleted        : False
VMCheckpointId   : 00000000-0000-0000-0000-000000000000
VMCheckpointName :

SanName          : VSAN2
WorldWideNodeNameSetA : C003FF0000FFFF00
WorldWidePortNameSetA : C003FF8C681D0002
WorldWideNodeNameSetB : C003FF0000FFFF00
WorldWidePortNameSetB : C003FF8C681D0003
IsTemplate       : False
Name             : Fibre Channel Adapter
Id               : Microsoft:5CB21CF0-EF0C-48A0-BC54-19F648458659\0C560416-4A1A-438C-963B-20DEDB8C9AA1
VMId             : 5cb21cf0-ef0c-48a0-bc54-19f648458659
VMName          : RMC62GA
VMSnapshotId     : 00000000-0000-0000-0000-000000000000
VMSnapshotName   :
CimSession       : CimSession: .
ComputerName     : S33-RG01-CMS
IsDeleted        : False
VMCheckpointId   : 00000000-0000-0000-0000-000000000000
VMCheckpointName :
    
```

Figure 13 shows the SAN Zoning between RMCVM, HPE 3PAR StoreServ, and HPE StoreOnce backup.

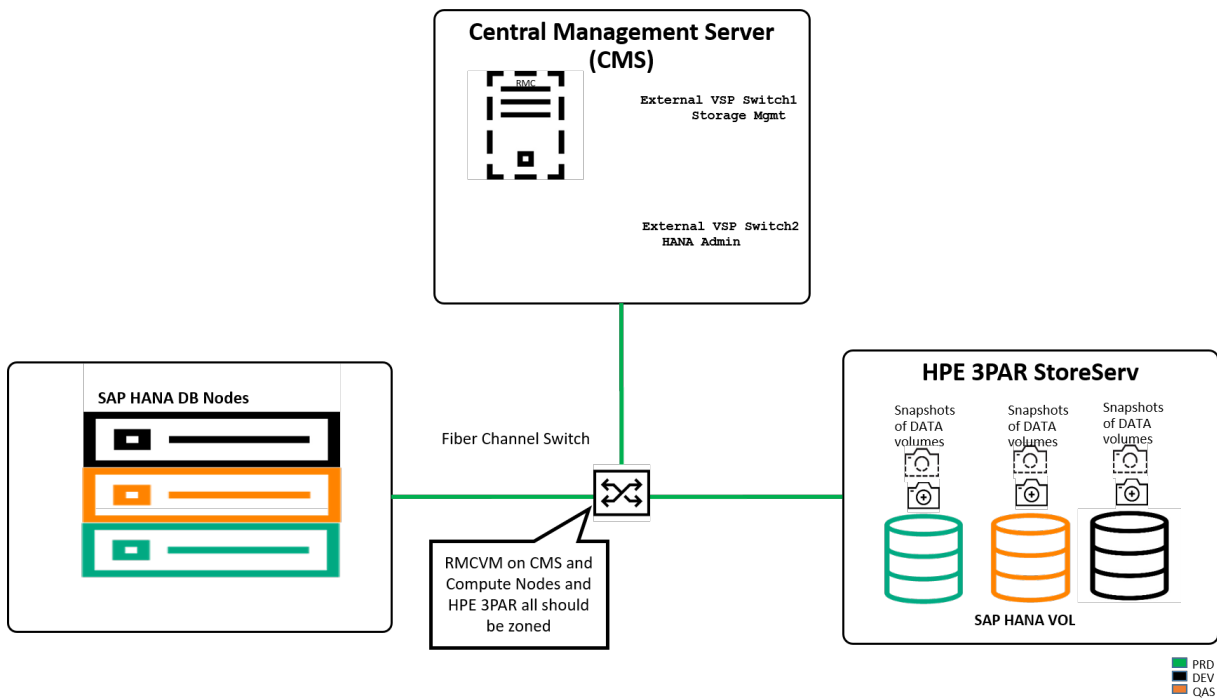


FIGURE 13. SAN Zoning between RMCVM, HPE 3PAR StoreServ and HPE StoreOnce backup



SAN Switch (S2)

```
admin> zonecreate rmc_vm_8400, c0:03:ff:8c:68:1d:00:02
admin> zoneadd rmc_vm_8400, 20:02:00:02:ac:01:80:fc
admin> cfgadd Config_SAN2, rmc_vm_8400
admin> cfgsave
admin> zoneshow rmc_vm_8400

                c0:03:ff:8c:68:1d:00:00
                20:02:00:02:ac:01:80:fc
                51:40:2e:c0:01:c8:9d:62
```

This is HPE 3PAR StoreOnce backup server connected via uplink port

SAN Switch (S1)

```
admin> zonecreate rmc_vm_8400, c0:03:ff:8c:68:1d:00:00
admin> zoneadd rmc_vm_8400, 20:02:00:02:ac:01:80:fc
admin> cfgadd Config_SAN1, rmc_vm_8400
admin> cfgsave
admin> zoneshow rmc_vm_8400

                c0:03:ff:8c:68:1d:00:02
                20:02:00:02:ac:01:80:fc
                51:40:2e:c0:01:c8:9d:60
```

HPE 3PAR StoreServ virtual copy license

A snapshot license (Virtual Copy) is required for each HPE 3PAR array.

HPE 3PAR StoreServ web services API enablement

NOTE

HPE 3PAR StoreServ by default the “Web Service API” is disabled. This will not allow to register HPE 3PAR StoreServ to Recovery Manager Central, hence enable “wsapi” service on every 3PAR.

Login to HPE 3PAR StoreServ.

```
S33-RG01-A1 cli% showwsapi
-Service- -State -HTTP_State -HTTP_Port -HTTPS_State -HTTPS_Port -Version- API_URL-----
Enabled   Active   Disabled 8008      Enabled   8080 1.6.3    https://xx.x.33.12:8080/api/v1

S33-RG01-A1 cli% startwsapi
The Web Services API Server will start shortly.
```

NTP server

Deploying an NTP server is highly recommended. The system time for the SAP HANA servers, HPE Recovery Manager Central VM, HPE 3PAR StoreServ, HPE StoreOnce, and the server hosting SAP HANA Cockpit server must be synchronized to avoid any issues during backup and recovery. It is best to configure an NTP server on the CMS Server.



HPE Recovery Manager Central GUI

Once the installation is completed successfully, login to the RMC dashboard using the username and password given during the installation https://<RMC_IP_address>.

NOTE

If you are unable to login with the given password during the Installation, that implies password standards are not met, then please login with default username and password (Admin/admin) and set a new password.

HPE RMC-SH client installation on SAP HANA Nodes

Installation of RMC-SH client is mandatory requirement to register the SAP HANA nodes into Recovery Manager Central. Perform the following steps:

1. Download the installation file, https://<RMC_IP_address>/files/rmsaphana/client/rmchana_installer.tar.gz.
2. Extract the `rmchana_installer.tar.gz` file using tar command with `-xvf` command.
3. Run `./rmchana_install.sh` or `sh rmchana_install.sh` command in the current directory

Register HPE 3PAR storage system(s)

To register the HPE 3PAR StoreServ, login to Recovery Manager Central GUI https://<RMC_IP_address> and select the storage devices from the main menu as shown in Figure 14. Enter the IP address of the systems to register the storage systems.

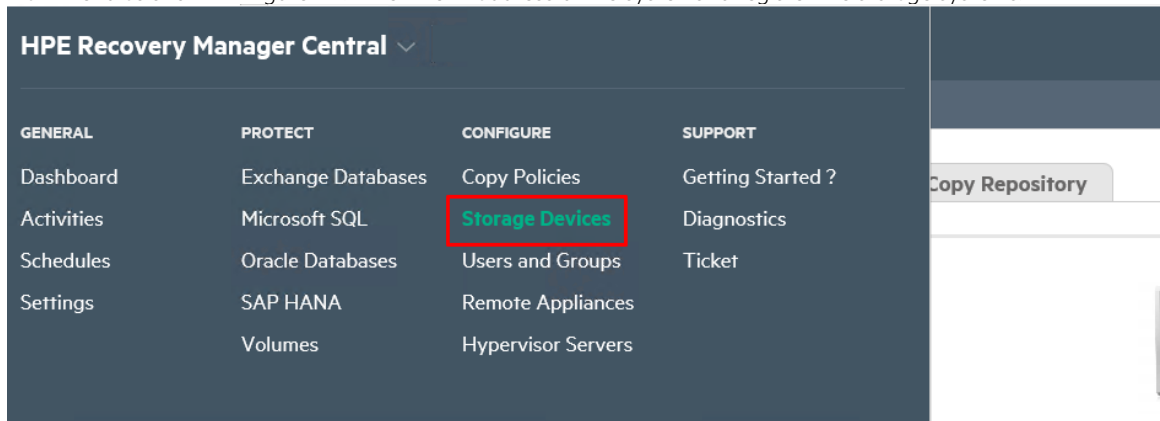


FIGURE 14. Recovery Manager Central storage devices



Figure 15 shows registered storage devices in RMC.

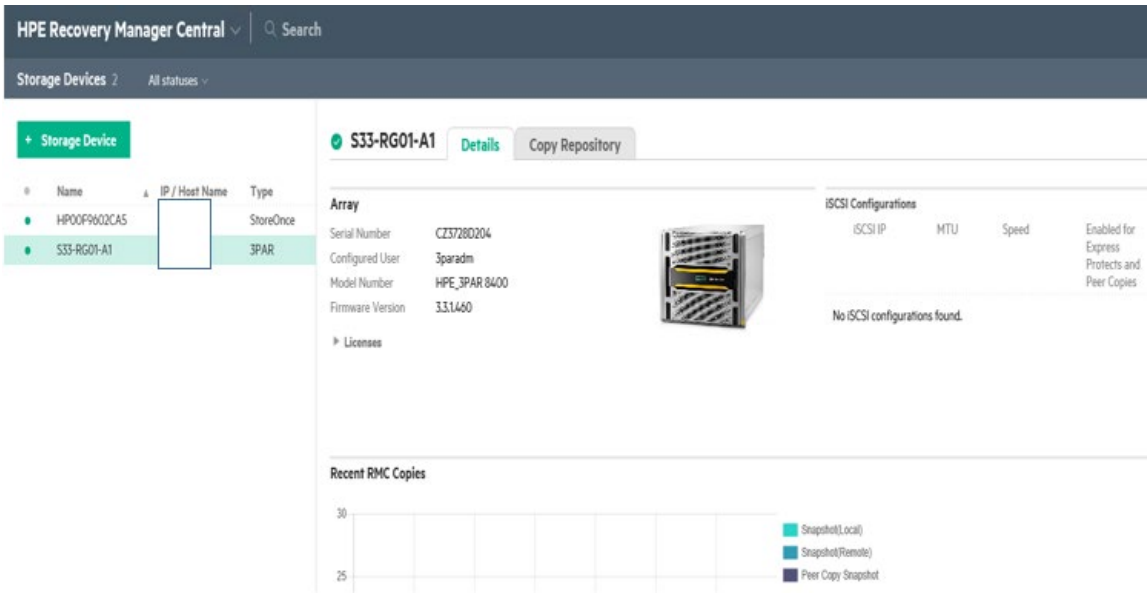


FIGURE 15. Recovery Manager Central registered HPE 3PAR StoreServ

Register SAP HANA host(s) for the database to be protected

To register the SAP HANA hosts, login to Recovery Manager Central GUI https://<RMC_IP_address> and select SAP HANA from the main menu as shown in Figure 16. Enter the IP address of the SAP HANA host systems to register first and then register the SAP HANA database from the listed menu.

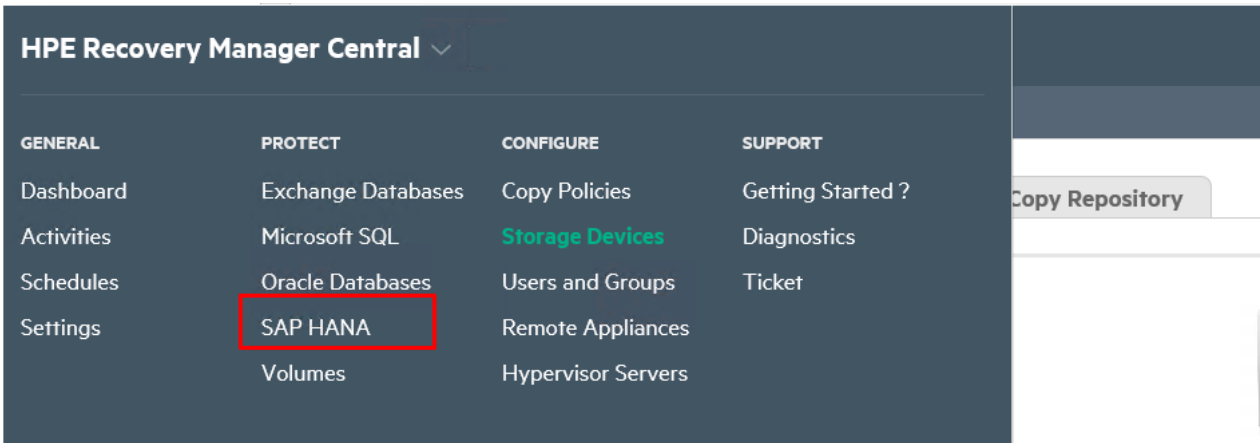


FIGURE 16. Recovery Manager Central SAP HANA



Figure 17 shows host registration page in RMC.

Register Host

IP Address or Host Name

Alias Optional

Username

Authentication Type Password Secure Key

Password

RMC SAP HANA Client Location RMC Client should be installed

Description Optional

FIGURE 17. Recovery Manager Central SAP HANA host registration

Register HPE StoreOnce systems for Express Protect

To backup the snapshots which are created on HPE 3PAR storage to store then for longer time, then we need to integrate HPE StoreOnce backup server into RMC. Figure 18 shows how to register the HPE StoreOnce or any HPE Virtual Storage Appliance (VSA).

HPE Recovery Manager Central | Search

Storage Devices 2 | All statuses

| Name | IP / Host Name | Type |
|--------------|----------------------|-----------|
| HP00F9602CA5 | <input type="text"/> | StoreOnce |
| S33-RG01-A1 | | 3PAR |

HP00F9602CA5 Details Copy Repository

Array

| | |
|------------------|----------------------------|
| Serial Number | 00F9602CA5 |
| Configured User | Admin |
| Model Number | HPE StoreOnce VSA Software |
| Firmware Version | 3.16.5-1746.4 |
| WAN Enabled | false |
| Catalyst License | Fetching... |

CoEth Configurations

| CoEth IP | Service Set | Enabled for Express Protects |
|-------------|-------------|------------------------------|
| 10.4.33.253 | 1 | Yes |

FIGURE 18. Recovery Manager Central for HPE StoreOnce backup server

SUMMARY

This document should help in the simplified deployment of HPE Recovery Manager Central in HPE Superdome Flex solutions for SAP HANA. It addresses the challenges of maintaining multiple snapshots and backups for a complex SAP HANA database portfolio of systems that are running on HPE Superdome Flex Single Rack (SR)/Multi Rack (MR) server. This document should be used in conjunction with “HPE Recovery Manager Central for SAP HANA configuration and best practices guide”.



APPENDIX A: RECOVERY MANAGER CENTRAL INSTALLATION PROCEDURE

This section describes about the installation procedure of Recovery Manager Central on the window server along with screen shot for some of the important steps and inputs to be given during the installation, the entire installation is done in PowerShell window.

```
\HPE_RMC-6.2.0-1937.1_Hyper-V_Installer> .\RMC-Hyper-V-Installer.ps1_
```

FIGURE 19. Invoking Recovery Manager Central wizard

NOTE

These pictures are taken in the lab while working on the solution, hence these should be considered as representative screenshots and the output could vary with different versions of application and browsers.

Provide the installation directory location with enough storage on it

```
Configuration Step: 2 of 17
-----

VM File and Configs Location
-----

Enter a new directory name where you want to create the VM Image (type 'x' to end): F:\Hyper-V_
```

FIGURE 20. Recovery Manager Central installation directory

```
Network Configuration for Interface: eth0
-----

Choose IP configuration mode for Interface: eth0
You can choose between DHCP and Static IP Configuration
[D] DHCP [S] Static [E] Exit [?] Help S

You selected Static IP configuration

You will need the following information: IP Address, Netmask, Domain Name
Do you want to continue?
[Y] Yes [N] No [?] Help Y

Static IP configuration

Enter IP Address : 10.10.10.18
Enter Subnet Mask: 255.255.0.0_
```

FIGURE 21. Input data for IP address and Subnet Mask

NOTE

Virtual switch selection should be based on the VLANs and corresponding IP address should be given.



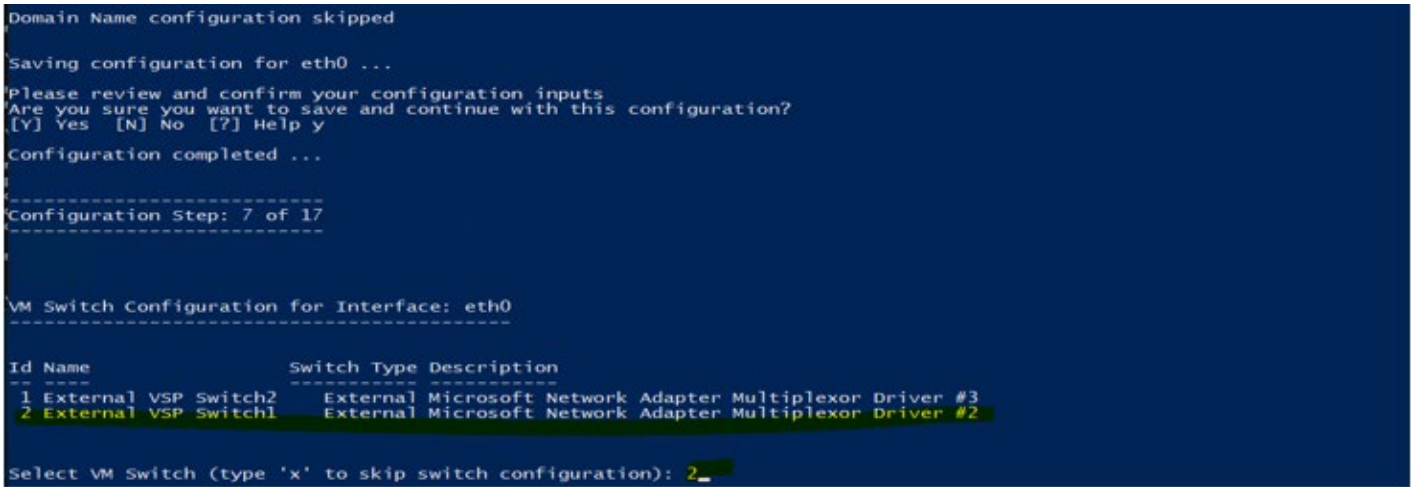


FIGURE 22. Selection screen for networks

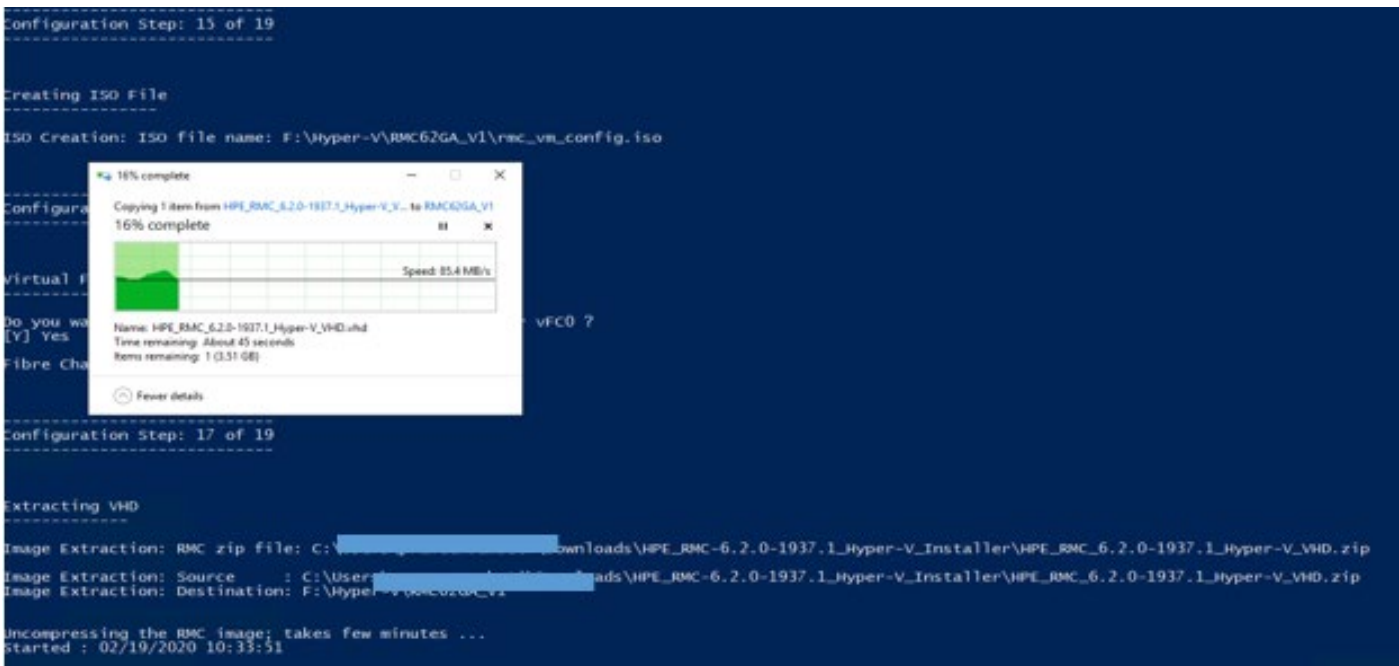


FIGURE 23. Installation process of Recovery Manager Central VM



APPENDIX B: BLOG ON “SAP HANA BACKUP & RECOVERY AS-A-SERVICE WITH RMC AND HPE STOREONCE”

<https://community.hpe.com/t5/Around-the-Storage-Block/SAP-HANA-Backup-amp-Recovery-as-a-Service-with-RMC-and-StoreOnce/bap/6878096#XldTcggzaUk>



SAP HANA Backup & Recovery as a Service with RMC and StoreOnce Plug-in: Innovative Data Protection

StorageExperts | 07-15-2016 11:20 AM

Tired of failing backups or crashing [SAP HANA](#) during backups? Worried about recovering your mission-critical database fast enough? Here’s how Backup and Recovery as a Service deployed with [HPE Recovery Manager Central](#) (RMC) and StoreOnce Plug-in delivers an innovative approach to SAP HANA data protection.

We all know about the typical data protection issues that your organization encounters for each of your applications. But let’s face it – SAP HANA backup and recovery has its own unique challenges:

- Online backup and recovery process is heavily script-based today and it’s mostly a two-step process.
- Third-party online backup products supported with *Backint* require dedicated backup media servers, involve complex backup scheduling.



RESOURCES AND ADDITIONAL LINKS

HPE Reference Architectures, <https://www.hpe.com/docs/reference-architecture>

HPE Servers, [hpe.com/servers](https://www.hpe.com/servers)

HPE Storage, [hpe.com/storage](https://www.hpe.com/storage)

HPE Networking, [hpe.com/networking](https://www.hpe.com/networking)

HPE GreenLake Advisory and Professional Services, <https://www.hpe.com/us/en/services/consulting.html>

To help us improve our documents, please provide feedback at [hpe.com/contact/feedback](https://www.hpe.com/contact/feedback).

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