VMware Replacement Case1

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About This Document

This document describes the a complete project delivery process.

Intended Audience

This document is intended for:

- FAE

Note Icons

English Icon	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.
	Indicates a hazardous situation, which if not avoided, could result in settings failing to take effect, equipment damage, or data loss. NOTICE addresses practices not related to personal injury.
	Calls attention to important information, best practices, and tips. NOTE addresses information not related to personal injury or equipment damage.

Change Log

Date	Change Description
Jun. 2025	This is the first release of this document.

Contents

1 Project Introduction

XX is one of the most influential and largest integrated business groups in the region. They have many business groups such as real estate, investment corporation, cinema, malls, etc. They are currently using HPE GreenLake together with VMware and Hyper-V. The licenses are going to be expired and looking for a server tech refresh to move away from the existing hardware.

We have proposed 9 + 9 DC-DR solution to host all 400 VMs currently residing on the existing infrastructure with built-in backup, DR solution, 3rd party backup, Existing SAN Storage.

2 Requirement Analysis

The project requirements mainly include two aspects.

1. Migrate all 400 VMs within a month
2. Built two new Sangfor HCI clusters — one is used for DC, and the other is used as a DRC

2.1 VMware Infrastructure Information

In DC site the customer uses

-13 servers of VMware with 692 Cores (30 sockets), 5.76TB RAM hosting 104 VMs.

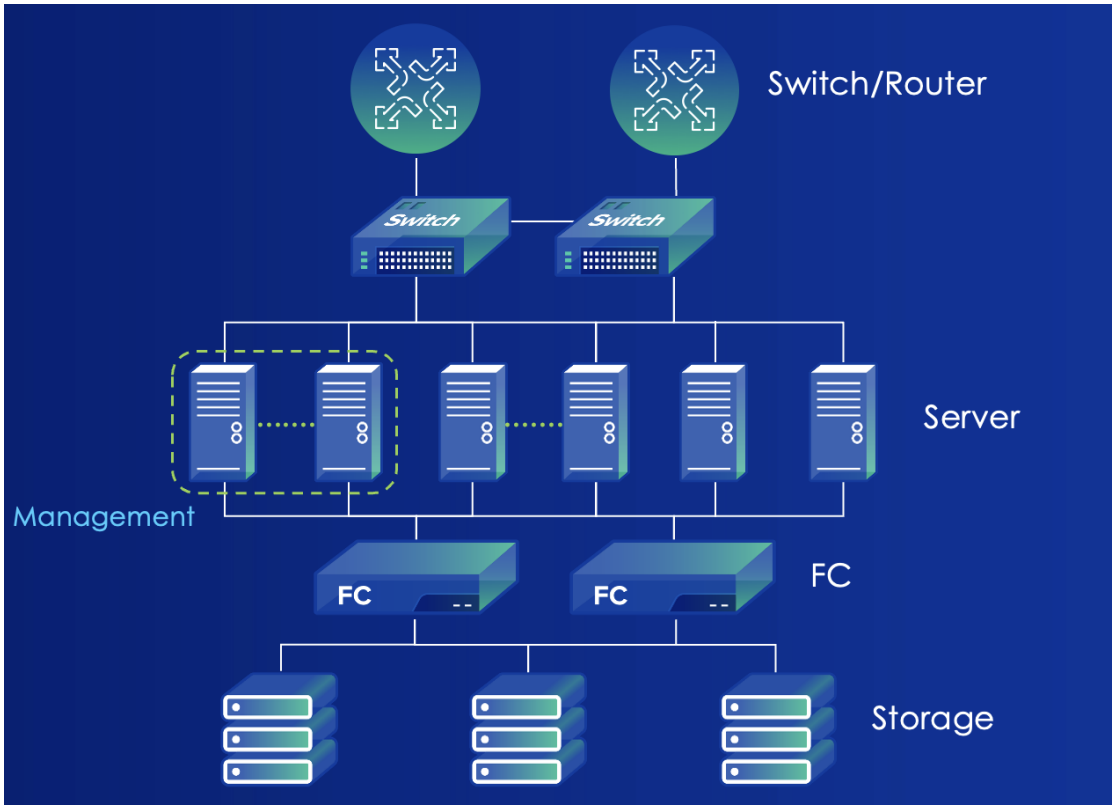
-12 servers of Hyper-V with 416 Cores (24 sockets), 7.14TB RAM hosting 271 VMs.

In DRC site the customer uses

-14 servers of VMware with 804 Cores (34 sockets), 6.51TB RAM hosting 80 VMs.

-10 servers of Hyper-V with 300 cores (20 sockets), 2.26 TB RAM hosting 108 VMs.

The servers connect to two FC switch then SAN storage via HBA 16GB network. Huawei Dorado Storage have 500TB storage on each site.



Application System Research

Currently, the VMs running on the VMware and Hyper-V platform's application systems are divided into four types for 5 business group: one is the SAP application, and the others are Web, Infrastructure and Database.

The SAP applications will be their core application system where they have own dedicated SAP team. As for other 3 types also include system like sharepoint, outsystems, etc.

2.2 Business Association Research

By analyzing business systems, comparing the dependencies between business systems, the complexity of each system, the external impact that may be caused by business interruptions, whether the migration source allows shutdown and other factors and recording them, determine the migration priority and migration method of the systems involved.

2.3 VM Migration Solution

We have decided to use SCMT as a main method for migration. Due to the flexibility of able to switch over on the schedule time, and it also support both VMware, Hyper-V and some physical server. The migration management can be done on one platform. Customer made a list of all VM divide into batches depending on priorities and business group.

The following is the schedule:

Objective	Timeline
Server Arrival	Feb 26
Start implementation in DR site	March 05 ~ 06
HAT Test in DR site and Start implementation in HO site	March 06 ~ 07
HAT Test in HO Site and migration start in DR Site	March 10
All Critical SAP migrated (Batch 1 and 5 total of 20 VM)	March 12
Continue migration (Batch 2 ~ 18)	April 15

Batch	Count of server
DR site	**91**
1	14
2	37
3	20
4	20
Site HO	**302**
5	16
6	21
7	22
8	21
9	19
10	18

11	20
12	21
13	22
14	17
15	25
16	26
17	50
18	4
Total	**393**

The information about some of the virtual machines is as follows:

VM_information.xlsx

2.4 HCI Cluster Solution

According to the information get in the chapter 2.1, we deploy a HCI cluster as following:

Node Specification: CPU:2*8558P 32C, 3.1Ghz per CPU (able to adjust to 48C, 2.7Ghz per CPU), MEM: 24* 64G, HBA, 1*Dual ports-16G

Cluster Size: 9 + 9 DC-DR

Storage: Huawei Dorado San Storage

Network:

2x TOR Switch; 1GB Ethernet for MGMT, 1GB Ethernet for VXLAN, 10GB Fiber for Edge Uplink, 10GB Fiber for Edge.

1x Switch for IPMI

2.5 Risk Item

1. Can not get all VM information before migration.
2. Didn’t do site survey for the implementation site.

3 Project Review

3.1 Summary Of Project Experience

1. The CPU frequency shown within the VM OS is 2.7 GHz, while the frequency shown on the HCI interface is 3.2 GHz, some software vendors question the provided CPU performance. Attempts have been made to enable CPU passthrough and other settings, but there has been no change.

   Solution:

   The CPU frequency seen in the guest OS is obtained from the host’s TSC, which corresponds to the base frequency of the host CPU. When the host enables Turbo Boost, the CPU's real-time frequency will adjust dynamically, resulting in a mismatch between the guest OS frequency and the host’s real-time frequency, Additionally, the vCPU in a virtual machine is emulated by KVM and is not a physical CPU—it corresponds to a thread on the host. Therefore, the CPU frequency shown in the guest OS is merely a display issue and does not impact the performance of applications running inside the VM. VMware also exhibits similar behavior.

2. When a Windows virtual machine is migrated to the HCI platform, the first boot takes a long time—approximately 20 to 30 minutes, and large disks may take over an hour.

   Solution:

   The main reasons are adaptation to the new hardware and transition from IDE to Virtio

3. The virtual machine statistics on the SCP homepage are inconsistent with those on the large screen display. The homepage does not include disaster recovery (DR) virtual machines, whereas the large screen does. This will be supported in a future version.

Solution:

The RnD team will integrate it in a future version.

4. Email notifications are only sent when a failure occurs. The customer requires a daily notification if a backup policy starts executing and completes successfully, including details such as duration and data volume.

   Solution:

   There is no solution available currently.

5. The administrator roles are very limited and not finely separated, for example, there is no role that is restricted to only performing backups. Administrator accounts can only be configured locally and cannot be integrated with an AD domain.

   Solution:

   There is no solution available currently.

6. The hot migration to another node speed is slow. There are options to choose which network we will use to do hot migration to another node typically using storage network 10GB for faster but due to current project using external storage HBA, it cannot use that network. Edge network also cannot use as it doesn't have IP address. Therefore, management network or VXLAN network which is both 1GB Ethernet are the only one left.

   Solution:

   There is no solution available currently.

3.2 Project Issue Analysis

1. During migration SCMT Platform become slow and all the current synchronization stop. It was discovered that the data partition of platform got full and cannot be able to accommodate anymore migration. After consulting to R&D, it was recommended to use separate SCMT platform for large VM migration. Suggested 100 VMs for one platform. The issue was resolve by increasing adding new disk in platform as well as increasing CPU and RAM.
2. Linux VM especially Rocky Linux due to migration the LVM system changes unable to detect boot disk or some disks and the VM goes into emergency mode.

After referring to https://support.sangfor.com.cn/cases/list?product_id=33&type=1&category_id=30757 this document, the VM was able to boot up normally.

3. Virtual Machine have an alert of having more than 100,000 session and although it is just an alert, but the alert keeps popping up every minutes. On 6.11.1, the VM session alert adjustment was hidden on Web UI unlike 6.10.0R2. After consulting to R&D, it was confirmed that the adjustment was hidden on purpose and need to disable the detection alert from backend. The alert doesn't pop up anymore after changing the detection.

3.3 Customer Feedback/Suggestion

3.3.1 Customer Feedback/Suggestion

Customer technical group feedback that we worked together as a team sometime resolving issue throughout the whole night together as well as providing immediate response for any inquiry. Although there are some functions that got changed due to adjustment in the migrating different platform, it added some additional workload to their team, otherwise for overall, customer is satisfied with our service as we managed to meet their deadline of migrating the VMs before the expiration of existing infrastructure thus decommissioning it in time save a lot of cost for customer.

3.3.2 Your Feedback/Suggestion

1. For future large-scale migration projects, it is highly recommended to conduct a comprehensive site survey and collect detailed VM information ahead of time to avoid delays and last-minute adjustments.
2. The SCMT platform encountered performance issues during heavy migration loads. It is advisable to plan the deployment of multiple SCMT platforms in advance for similar projects with more than 300+ VMs.
3. Documentation can be improved by including migration limitations and platform requirements earlier in the project delivery guide to help

engineers prepare better.

4. For large cluster sizes and scenarios using 3rd party external storage, it is suggested to add an additional 10Gb fiber network dedicated for DR transmission and hot migration across nodes to avoid network congestion and improve performance.

4 Attachments

You can post the patch packages used in the project or the relevant technical documents (Information collection form, implementation plan, acceptance report, etc.) you wrote for this project here.

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