TECHNICAL PAPER

Remote Office/Branch Office Deployment with Hitachi Hyperconverged Unified Compute Platform HC (UCP HC)

Tech Note

By Jeff Chen

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Hitachi Unified Compute Platform HC V240 (UCP HC) delivers compute, storage, virtualization, management and data protection in an agile, scalable and resilient hyperconverged infrastructure. The UCP HC hybrid and all-flash solutions deliver a reliable platform for business applications, databases, analytics, virtual desktop infrastructure, DevOps, and remote and branch office (ROBO) deployments. Visit the following link for more information about UCP HC:

https://www.hds.com/en-us/products-solutions/converged-infrastructure/ucp-hc.html

Hitachi Data Ingestor (HDI) is an elastic and backup-free cloud on-ramp and filer that enables an advanced edge-to-core storage solution. HDI with Hitachi Content Platform (HCP) creates an integrated offering that provides distributed consumers of IT, such as ROBO or cloud storage users, with a seamlessly scalable, backup-free storage solution. Deployed as a minimal-footprint or virtual appliance, HDI sends data from the edge to a core infrastructure, employing advanced storage and data management capabilities. Visit the following links for more information about HDI and HCP.

https://www.hds.com/en-us/products-solutions/storage/data-ingestor.html

https://www.hds.com/en-us/products-solutions/storage/content-platform.html

This paper focuses on HDI deployed on UCP HC in remote offices with limited IT resources or staff on-site. The following are some of the main benefits of this solution:

- Scale with small increments of cost-effective capacity and grow as needed with UCP HC

- Minimal IT experience is required to deploy, configure, and manage UCP HC appliances

- It significantly saves operational overhead with its smaller data-center footprint and reduced power and cooling expense

- HDI reduces the cost and complexity of management, backup, archiving, and compliance at the ROBO site

Figure 1 shows a simple overview of this solution. The HCP virtual machines (VMs) are deployed on Hitachi Unified Compute Platform 2000 in the corporate datacenter. The HDI VM is deployed on UCP HC in the ROBO site, and it provides CIFS share for Microsoft® Windows® desktop users. The user data in the HDI CIFS share is automatically backed up to HCP.

Visit the following link for more information about UCP 2000:

https://www.hds.com/en-us/products-solutions/converged-infrastructure/unified-compute-platform-for-vmware-vsphere.html
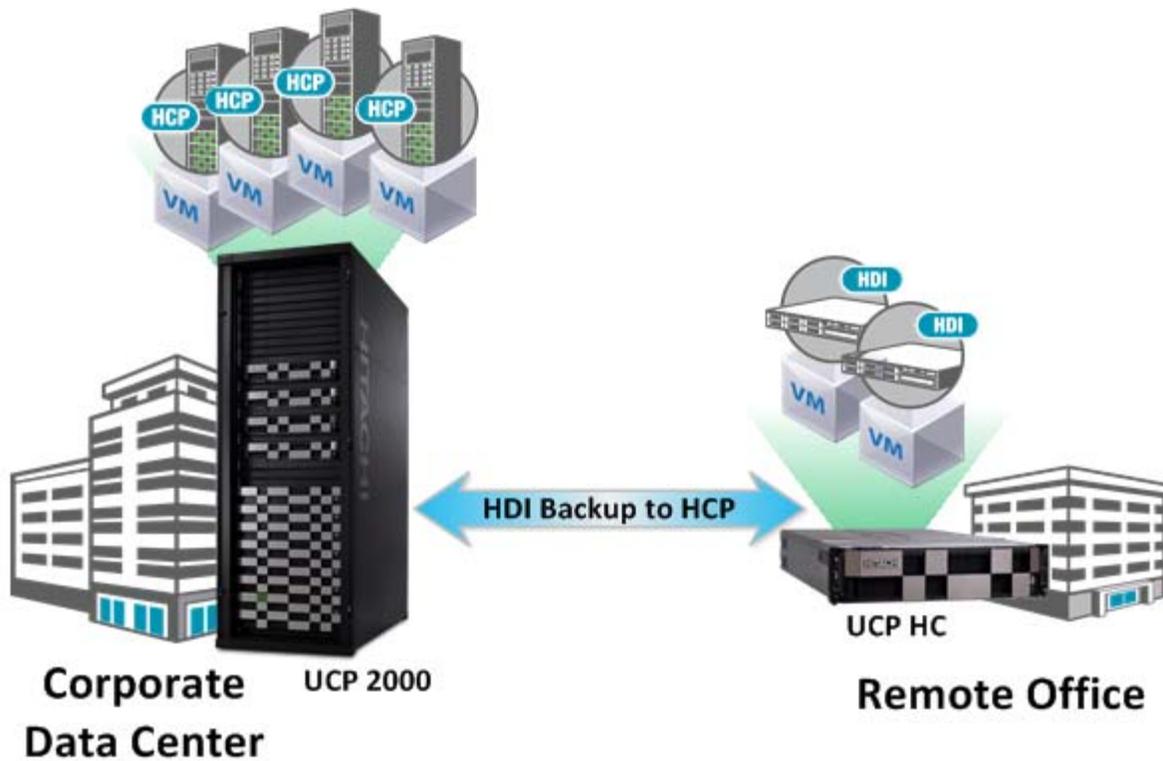
Figure 1

Table 1 lists the test cases used to validate this solution.

Table 1. Test Cases and Results Summary

Test Case	Pass/Fail Criteria	Result
Deploy an HDI VM on UCP HC appliance in a remote site and deploy HCP VMs on UCP 2000 on a data center site	▪ Validate deployment of an HDI VM on an UCP HC Virtual SAN (VSAN) datastore ▪ Validate deployment of UCP VMs on UCP 2000	Passed
Perform automated backup of a CIFS share hosted by HDI	▪ Validate automatic periodic backup of a CIFS share from HDI to HCP	Passed
Restore user data from HCP	▪ Validate restore of user data from HCP	Passed
Verify self-sustained HCP storage usage	▪ With appropriate HDI and HCP configuration, HCP storage usage should be able to self-sustain with very low maintenance	Passed

This document does not cover the following:

▪ Sizing information

▪ Best practice

▪ Implementation details

For implementation details, please contact your Hitachi Data Systems representative.

Note: Testing of this configuration was done in a lab environment. Many factors affect production environments beyond prediction or duplication in a lab environment. Follow the recommended practice of conducting proof-of-concept testing for acceptable results in a non-production, isolated, test environment that matches your production environment before your production implementation of this solution.

Tested Components

Table 2 shows the main hardware components used to conduct the test.

Table 2. Hardware Components

Hardware	Description	Version	Quantity
Hitachi Unified Compute Platform HC V240	▪ 2U four node chassis		1
	▪ 2 × Intel Xeon Processor E5-2620 v4 (8 core 2.1 GHz 85W) ▪ 192 GB cache memory ▪ 1 × 400 GB SSD, 2.5 inch SFF ▪ 4 × 1.2 TB 10k SAS, 2.5 inch SFF	BIOS: S2S_3B06 BMC: 3.42	4
Hitachi Unified Compute Platform 2000	▪ T41S-2U: 2U four node servers ▪ Hitachi Virtual Storage Platform G600 ▪ 1 × Brocade ICX 7450 switch ▪ 2 × Brocade VDX 6740 switch ▪ 2 × Brocade 6510 switch	G600: 83-03-24-40 ICX: 08.0.20c 6740: 6.0.1.a 6510: 7.3.1d T41S-2U BIOS: S2S_3B06 T41S-2U BMC: 3.42	1

Table 3 lists the major software components used.

Table 3. Software Components

Software	Version
VMware vCenter server	6.0 U2
VMware ESXi	6.0 U2
Hitachi Data Ingestor	6.0.3-00
Hitachi Content Platform	7.2.0.26

Test Infrastructure and Configuration

Figure 2 shows the high-level infrastructure and main virtual machines deployed on a remote office and a datacenter.
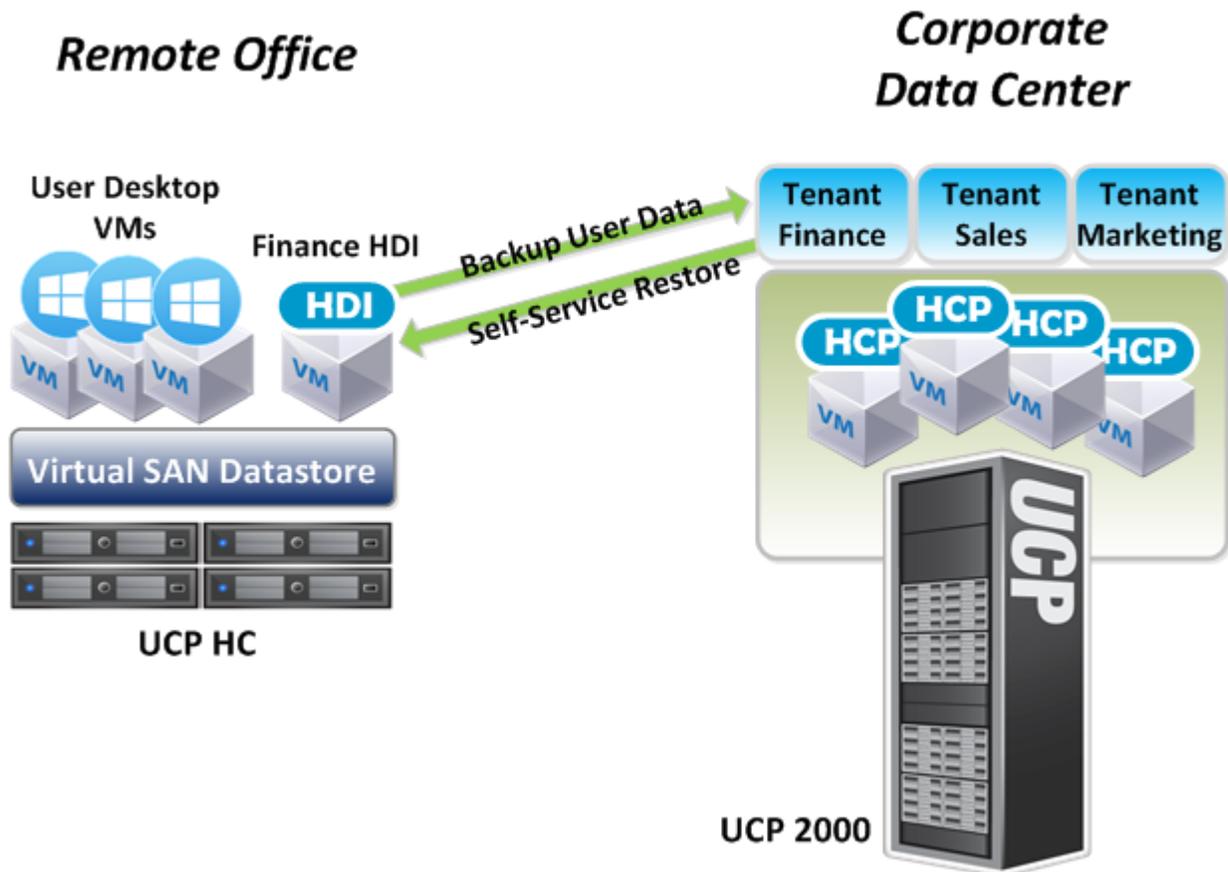

Figure 2

The configuration of each site is as follows.

Corporate Data Center

- Four HCP VMs are deployed with a standard configuration on UCP 2000

- An HCP tenant called *Finance* is created for the finance department

  - A 900 GB quota is allocated

Remote Office/Branch Office

- From one UCP HC appliance, a four node Virtual SAN cluster is configured

- One HDI VM is deployed on UCP HC Virtual SAN datastore and connected to the tenant called *Finance* on HCP

    - A file system is created with the following settings to provide a CIFS shared folder called *finance-shared* for Windows desktop users:

        - Namespace quota: 500 GB

        - Cache capacity: 100 GB

        - Enable file version restore and keep hourly versions for 8 hours (Keep small number of versioning for short period of time for testing purpose)

        - Migration/backup scheduling: every 30 minutes

- Multiple Windows 10 desktop VMs are also deployed on the UCP HC Virtual SAN datastore and accessing HDI CIFS shared folder.

Table 4 lists the basic configurations of the virtual machines.

Table 4. Virtual Machine Configuration

Virtual Machine	vCPU	Memory	Virtual Disk
Hitachi Data Ingestor	2	4 GB	200 GB
Hitachi Content Platform	4	16 GB	1 TB
Windows 10	1	2 GB	40 GB

Generating New Data to be Backed Up

The user's new data on the HDI CIFS shared folder is automatically backed up to the corresponding HCP tenant. To observe this behavior, new data is needed to be generated constantly to the HDI CIFS shared folder. The following is used to generate new user data:

- Use a Windows VM to access the *finance-shared* CIFS folder hosted by HDI

- Over 100 files are created with various file sizes from 1 KB to 50 MB and a total of 1.3 GB is used

- Among these files, 50 files are regularly written by a load generator

- Random data that is 64 KB in size is written to these files to generate over 3 GB of new data per hour

- The new data is backed up to the HCP tenant every 30 minutes for this test

Test Result

The test results are discussed in more detail in this section.

Deploy an HDI VM on an UCP HC Appliance in a Remote Site and Deploy HCP VMs on UCP 2000 on a Datacenter Site

- The HDI VM was successfully deployed on UCP HC Virtual SAN datastore

- Four node HCP VMs were successfully deployed on UCP 2000

Perform Automated Backup of a CIFS Share Hosted by HDI

For this test, new data on the HDI CIFS share is automatically backed up to the HCP tenant every 30 minutes. To observe this, the performance monitor from the vSphere web client can be used. Figure 3 shows the data transmit rate of the HDI VM. It is clear that the data is transmitted from HDI every 30 minutes.
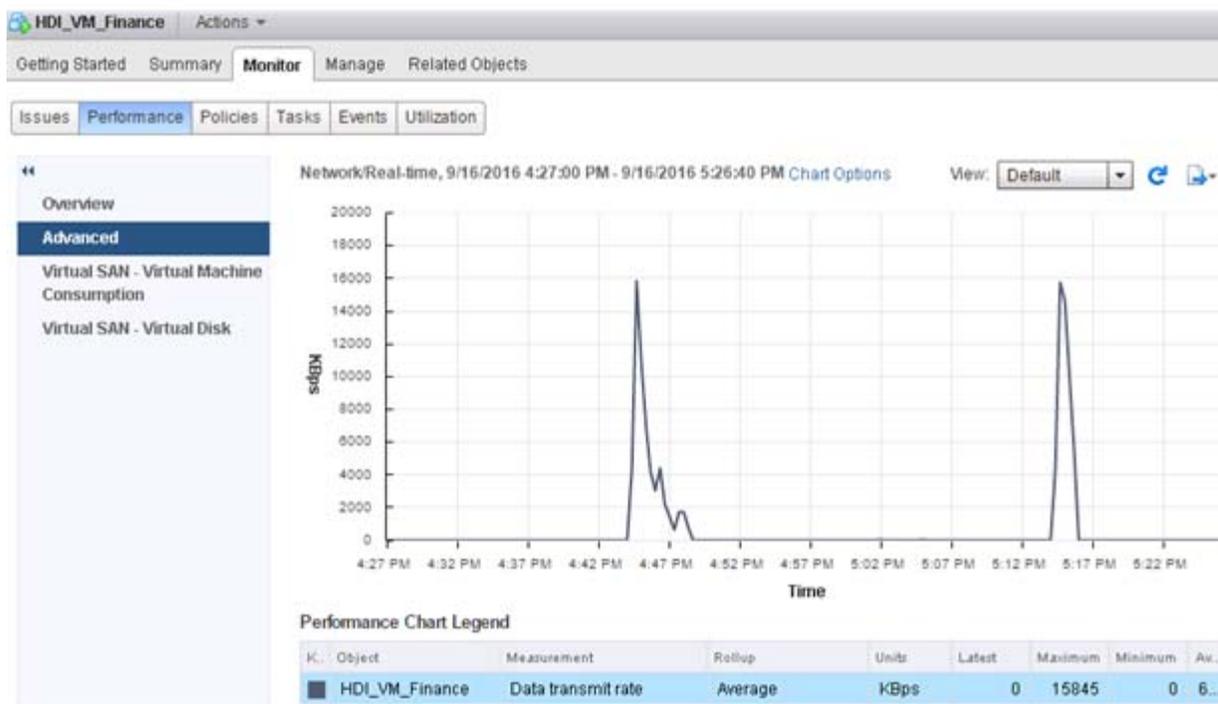

Figure 3

Restore User Data from HCP

If a file is deleted accidentally, or it is corrupted, users can restore these files from the *.history* folder. Under the *.history* folder, there is a list of folders with timestamps as shown in Figure 4. The desired version of the file can be restored from these folders.
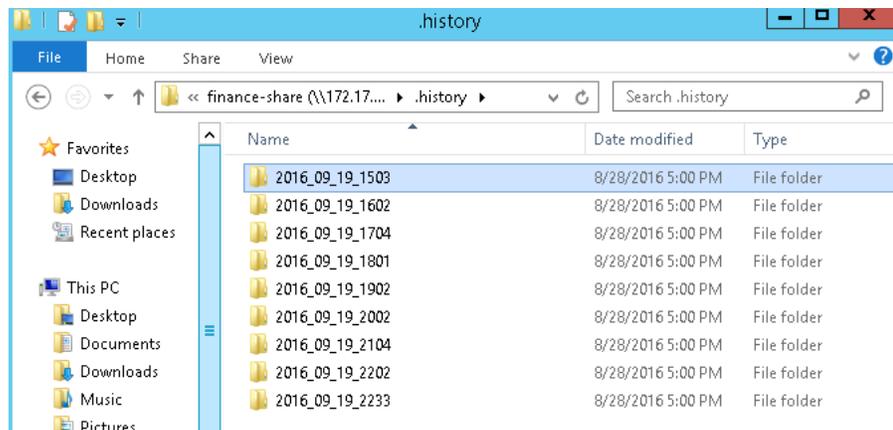

Figure 4

Self-sustained HCP Storage Usage

During HDI file system creation, when the *file version restore* option is enabled with *keep hourly versions for 8 hours*, the HCP tenant policy automatically enables versioning with *Purge versions older than 2 days*. This means any new writes and delta changes are kept in the HCP tenant quota for 2 days, and after that, are automatically deleted. For this test, the load generator was kept running for 7 days with over 3 GB per hour of new data backed up to HCP. After 2 days, the storage usage of the HCP tenant was maintained between 130 GB and 200 GB. This indicates that HCP storage can be self-sustained if the user data change rate does not increase.

Conclusion

Hitachi Unified Compute Platform HC is one of the best options for ROBO sites to deploy hyperconverged infrastructures. This paper delivers following proof-points:

- Validation of HDI deployment on UCP HC in a ROBO site

- Automated backup of HDI CIFS shares to HCP in a corporate data center

- With UCP HC, HDI, and HCP, a cost efficient, small foot print, and low maintenance ROBO site solution is provided with user data protection

For More Information

Hitachi Data Systems Global Services offers experienced storage consultants, proven methodologies and a comprehensive services portfolio to assist you in implementing Hitachi products and solutions in your environment. For more information, see the Hitachi Data Systems Global Services website.

Live and recorded product demonstrations are available for many Hitachi products. To schedule a live demonstration, contact a sales representative. To view a recorded demonstration, see the Hitachi Data Systems Corporate Resources website. Click the **Product Demos** tab for a list of available recorded demonstrations.

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Hitachi Data Systems

Corporate Headquarters
2845 Lafayette Street
Santa Clara, CA 96050-2639 USA
www.HDS.com   community.HDS.com

Regional Contact Information
Americas: +1 408 970 1000 or info@hds.com
Europe, Middle East and Africa: +44 (0) 1753 618000 or info.emea@hds.com
Asia Pacific: +852 3189 7900 or hds.marketing.apac@hds.com