

WHITE PAPER

Hitachi Content Platform Anywhere Disaster Recovery and System Migration

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Contents

Overview	2
Disaster Recovery and Data Center Migration Solution Overview	2
Disaster Recovery Phases	3
Data Center Migration Phases	3
Terminology.....	3
HCP Anywhere Disaster Recovery	4
Complete Site Failure	4
DR Planning	5
DR Testing.....	5
DR Maintenance.....	6
DR Failover Execution	6
DR Failback Execution.....	6
HCP System Failure	7
HCP Anywhere System Failure	8
Local Recovery	8
Remote Recovery	10
Data Center Migration Scenarios	10
Migration Case 1	11
Migration Planning	11
Migration Testing.....	11
Migration Execution	12
Migration Case 2	13
Migration Planning	13
Migration Testing.....	13
Migration Execution	14
Migration Case 3	15
Migration Planning	15
Migration Testing.....	15
Migration Execution	15
Conclusion	16

Overview

Hitachi Content Platform Anywhere (HCP Anywhere) is deployed by enterprises to mobilize, manage and protect data in environments that are available at all times (24/7, 365 days a year). Given the critical role HCP Anywhere plays, it is incumbent upon organizations to have a robust production environment for the systems. Furthermore it is vital to deploy a robust disaster recovery (DR) environment to recover quickly from an unplanned outage that results in the loss of the production site. Additionally, while disasters are rare, unplanned events, organizations must be prepared to flawlessly execute planned migration events, such as data center moves, that require the migration of production systems to the new site. This white paper covers the methodologies required to successfully implement disaster recovery and data center migration.

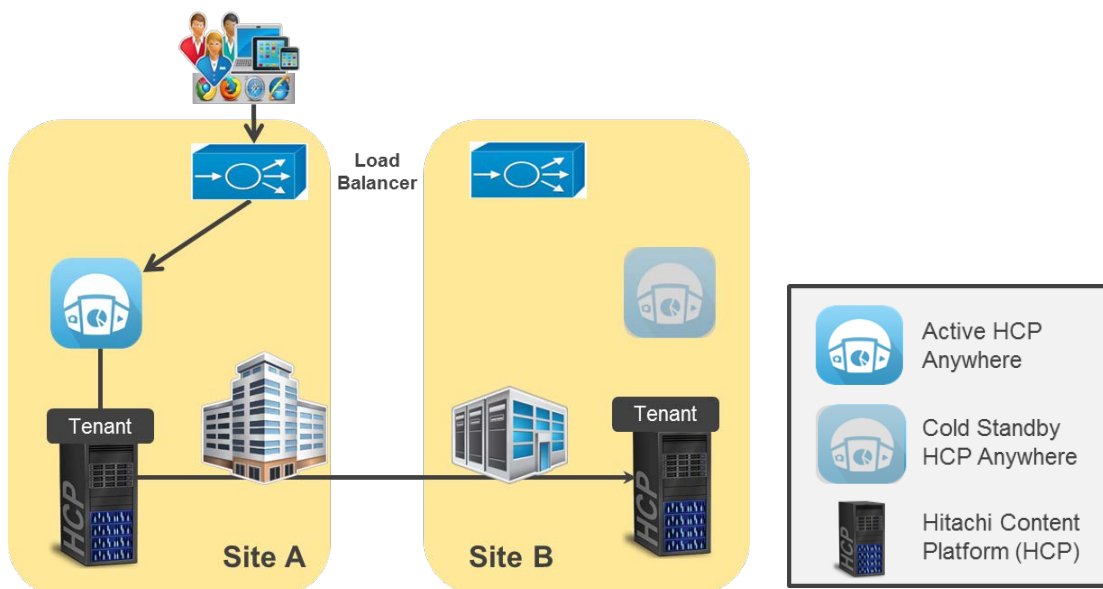
Disaster Recovery and Data Center Migration Solution Overview

The disaster recovery and migration solution for HCP Anywhere requires a secondary site that will serve as a recovery point in the event of a disaster or as the destination site for a planned migration.

The main components of the solution are shown in Figure 1:

- Load balancer.
- HCP Anywhere [either a physical or virtual machine (VM) system].
- Hitachi Content Platform (HCP) [either a physical or VM system].

Figure 1. HCP Anywhere DR Solution Architecture



The end users using HCP Anywhere clients access the HCP Anywhere server through a load balancer. HCP Anywhere keeps its data on an HCP system. The HCP on the primary site (Site A) is replicated to an HCP on a secondary site (Site B), as shown in Figure 1. A cold standby HCP Anywhere on a secondary site needs to be fully configured, though it is not actively running. It will need to be powered up for system recovery during a DR failover or data center migration process.

Disaster Recovery Phases

The disaster recovery project has multiple phases:

- **DR Planning.** The DR plan describes the specific steps and actions that must be performed before and after a disaster (incident) happens. It also must clearly identify the team members who will be responsible for the DR activities.
- **DR Testing.** It is highly recommended that you test the DR process in your environment. The goal of DR testing is to ensure that the data can be accessed via HCP Anywhere on a secondary site while keeping the primary site fully functioning.
- **DR Maintenance.** The goal of the DR maintenance phase is to make sure that DR steps are regularly reviewed and tested, and that all components of a DR solution are kept up to date.
- **DR Failover Execution.** The recovery team begins executing the recovery activities as they are specified in the DR plan. It is used when a disaster occurs, as well as a part of the DR maintenance to test the DR plan.
- **DR Failback Execution.** This phase follows after the disaster event has passed and it is time to go back to original state, if needed.

Data Center Migration Phases

A migration process has planning, testing and execution phases that are similar to the corresponding DR phases. It does not have maintenance or failback phases since the DR migration planning occurs shortly before the actual migration occurs and there is no restoration back to the original site.

- **Migration Planning.** The migration plan describes the specific steps and actions that must be performed to prepare the source and destination systems for the migration in a manner that will minimize the disruption to service during the actual HCP Anywhere migration window. It also must clearly identify the team members who will be responsible for the migration activities.
- **Migration Testing.** It is highly recommended to test the migration process in your environment. The goal of the migration testing is to ensure that the data can be accessed via a second HCP Anywhere system, while keeping the production site fully functioning.
- **Migration Execution.** The migration team takes the old production HCP Anywhere system offline, executes the migration of the existing production system to the new system, and restores HCP Anywhere service to the users.

Terminology

HCP Anywhere will be used to describe any supported HCP Anywhere system configuration: two physical systems, two VM nodes, or a single VM node.

HCP will be used to describe any supported Hitachi Content Platform system configuration: physical or VM nodes.

Cold Standby system is a backup system whose purpose is solely to be there in case the main server is lost. The cold server is basically turned on to have software installed and configured, and then as needed for any software upgrades and maintenance. Otherwise, it stays powered down.

Primary site refers to Site A, where the original systems are located.

Secondary site refers to Site B, where the data is being replicated and the cold standby HCP Anywhere system is located.

HCP Anywhere Disaster Recovery

HCP Anywhere supports a cold standby system on the secondary site, which allows for recovery during a site outage. If primary site goes down, the administrator will need to bring up a HCP Anywhere system on the secondary site using the system recovery process.

We will review three scenarios:

- DR Case 1: complete site failure.
- DR Case 2: HCP system failure (HCP Anywhere is still running).
- DR Case 3: HCP Anywhere system failure (HCP is still running).

Complete Site Failure

The possible scenarios for the complete site failure are:

- Power surge leading to a data center failure.
- Flooding leading to the damage of machines located in a building.
- Communications failure leading to loss of connectivity.
- Disgruntled staff member deliberately corrupting a system.
- Staff member accidentally shutting down the system.
- External events or actions leading to the loss of a building.

In this scenario, as shown in Figure 2, after a site or data center failure, the decision is made to have the HCP Anywhere fail over to a secondary site.

Figure 2. Complete Site Failure DR Case

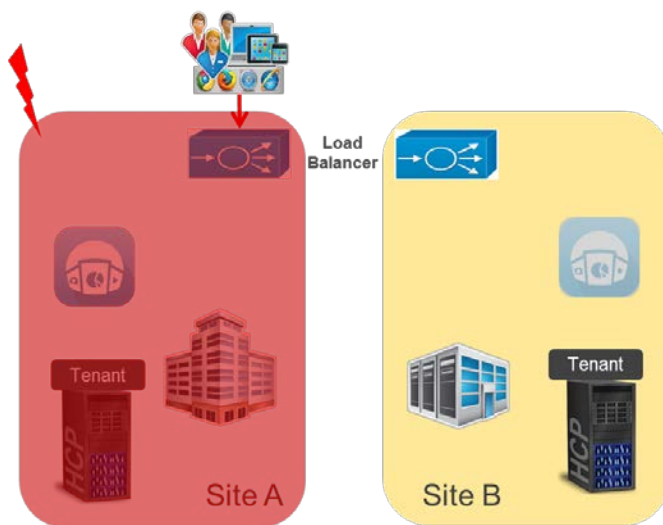
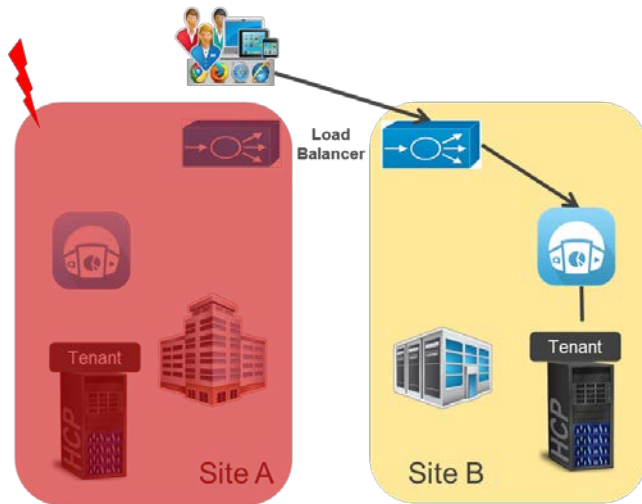


Figure 3 shows the end state, after the steps in the DR failover execution phase are completed.

Figure 3. Failover for Complete Site Failure DR Case



DR Planning

Key planning steps include:

1. Set up the physical nodes or VMs for HCP Anywhere on the secondary site. Install the software, load the license key and set the serial number. Make sure that you use the **same** license key and serial number from HCP Anywhere on the primary site and apply it to HCP Anywhere on the secondary site (cold standby). When you exit this step HCP Anywhere on the secondary site is now configured as a cold standby system for recovery during an actual DR failover event.
2. Configure HCP on the primary site to replicate HCP Anywhere data to HCP on the secondary site. Ensure sufficient bandwidth for replication to minimize the amount of data pending to replicate at any given time. This will be important for data recovery during a DR event.
3. Preconfigure the load balancer for failover to the secondary site.

DR Testing

It is highly recommended to test the DR process in your environment. The goal of the DR testing is to ensure that the DR process will work when needed. During this phase, data recovery and access will be tested on the secondary site while keeping the primary site fully functioning and available for users.

DR testing on the secondary site needs to be performed in a way that does not impact the system on the primary site or the replication to the secondary site in any way.

Key DR testing steps include:

1. Open a support call with HDS for HCP Anywhere system recovery.
 - Visit <https://support.HDS.com>.
 - HDS support will assist you with the remaining steps.
2. Power up HCP Anywhere on the secondary site and verify that it is healthy.
3. Create a copy of the replicated data on HCP on the secondary site for testing.

4. Perform a HCP Anywhere system recover on the secondary site using the copy of the data you created on the HCP system.
5. Login to the recovered HCP Anywhere and verify access to files and folders.
6. Clean up the copy of the data you had created on HCP on the secondary site.
7. Ensure you do **not** modify the HCP Anywhere and HCP systems on the primary site, as well as replication link to HCP on the secondary site.

DR Maintenance

The goal of the DR maintenance phase is to make sure that DR steps are regularly reviewed and tested, and all components of a DR solution are kept up to date.

The following steps will help ensure that the DR solution for HCP Anywhere is ready to be used when disaster strikes:

1. Whenever the HCP Anywhere primary site is upgraded, make sure to upgrade the HCP Anywhere system on the secondary site.
2. Regularly power up HCP Anywhere on the secondary site (cold standby) and make sure that the HCP Anywhere software version on the secondary site is the same as on the primary site, including hot fixes and patches.

DR Failover Execution

The steps in this phase are executed after a disaster (incident) happens, when a decision is made to have HCP Anywhere fail over to the secondary site.

Key DR failover steps include:

1. Open a support call with HDS for HCP Anywhere system recovery.
 - Visit <https://support.HDS.com>.
 - HDS support will assist you with the remaining steps.
2. Power up the HCP Anywhere on the secondary site and verify that it is healthy.
3. Work with HDS support to perform a HCP Anywhere system recovery on the secondary site using the replicated data on HCP.
4. Login as a user to the recovered HCP Anywhere system and verify access to files and folders.
5. Set up the load balancer to the secondary site and put the recovered HCP Anywhere system into production for the users.
6. The HCP Anywhere desktop clients will go through a recovery and data validation (reconciliation) process to ensure that both the server and the desktop clients have same data, and make any updates as needed.

DR Failback Execution

This phase follows after the disaster event has passed and it is time to go back to original state, if needed.

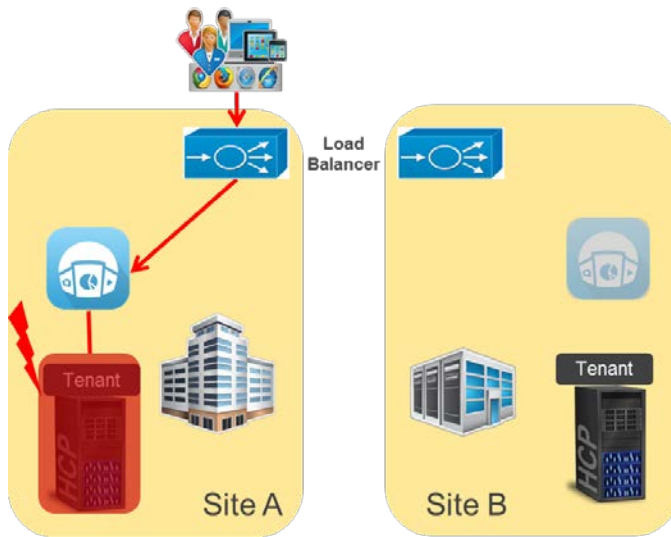
The DR failback process is identical to HCP Anywhere migration described in **Migration Case 1**, with one additional step:

1. Follow the steps outlined in Migration Case 1.
2. After the failback migration is complete, delete the HCP Anywhere data on the HCP system on the secondary site (site B), which is no longer being used.

HCP System Failure

The possible DR scenario is where HCP on the primary site fails completely, while HCP Anywhere survives the incident, as shown in Figure 4. This is a rare possibility, but it could happen. For example, the HCP and HCP Anywhere systems can be located in the same data center, but far away from each other: In the case of a power failure that affects only one side of the data center, it is possible that only one of them survives the incident.

Figure 4. HCP Failure DR Case

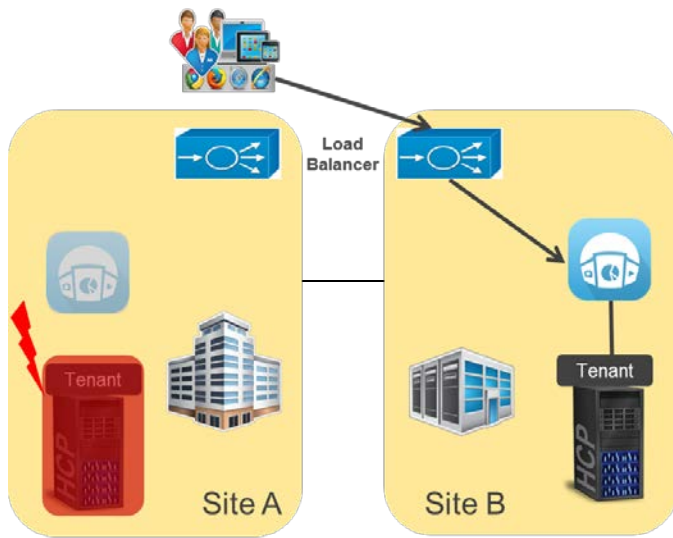


Even though the HCP Anywhere is still running on the primary site, the required solution is to have both HCP Anywhere and HCP systems fail over to a secondary site.

Cross-data center configurations, having HCP Anywhere on the primary site with HCP on the secondary site, are **not** supported. Both HCP and HCP Anywhere systems should be located in the same data center. In order to ensure system consistency, HCP Anywhere on the secondary site will need to go through system recovery process using the data located on the HCP on the secondary site.

Figure 5 shows the end state, after the steps of the DR failover execution phase are completed. The DR phases and steps are the identical to those described above in **Complete Site Failure**.

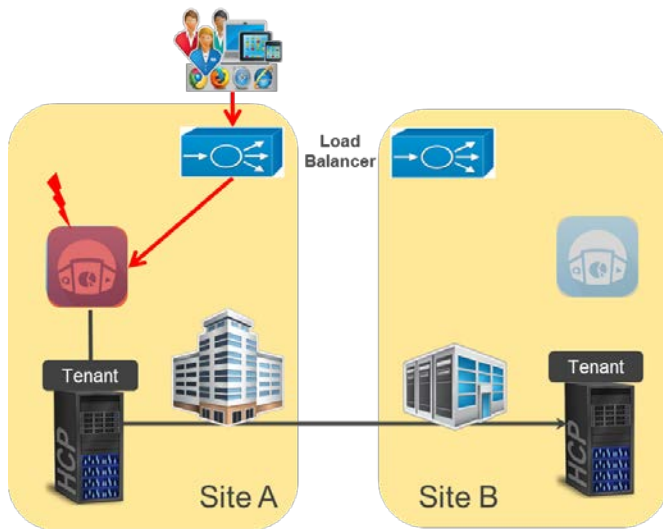
Figure 5. Failover for HCP Failure DR Case



HCP Anywhere System Failure

Another case of the partial failure scenario is where the HCP Anywhere fails, while HCP survives an incident (primary HCP is up and running), as shown in Figure 6.

Figure 6. HCP Anywhere System Failure DR Case

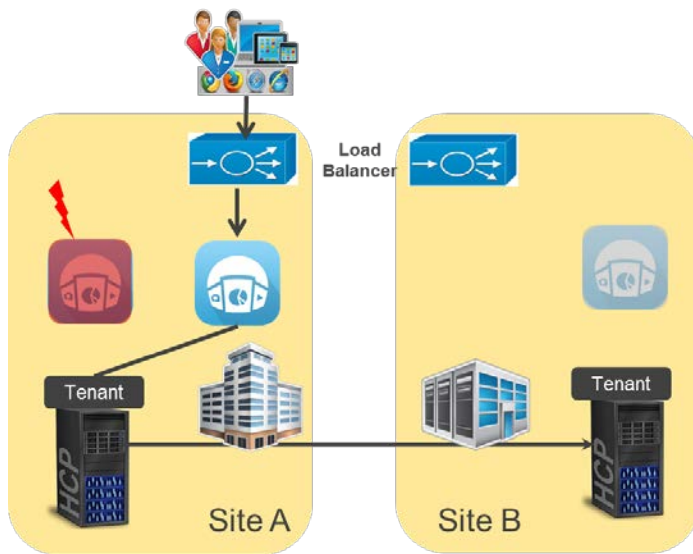


The recovery process depends on whether another HCP Anywhere system is available on the primary site or not.

Local Recovery

If the HCP Anywhere system has failed, while HCP survived, the best option is to recover HCP Anywhere on the primary site, either using a spare physical system or VMs, as shown in Figure 7.

Figure 7. Local System Recovery When HCP Anywhere Fails



Planning Phase

Set up the new physical nodes or VMs for the HCP Anywhere cold standby system on the primary site. Install the software, load the license key and set the serial number. Make sure that you use the **same** license key and serial number from the production HCP Anywhere system. When you exit this step, the HCP Anywhere is now configured as a cold standby system for recovery during an incident.

Maintenance Phase

The goal of the DR maintenance phase is to make sure that DR steps are regularly reviewed and tested, and that all components of a DR solution are kept up to date.

The following steps will help ensure that the DR solution for HCP Anywhere is ready to be used when disaster strikes:

1. Whenever the HCP Anywhere primary site is upgraded, make sure to upgrade the HCP Anywhere system on the secondary site.
2. Regularly power up HCP Anywhere on the secondary site (cold standby) and make sure that the HCP Anywhere software version on the secondary site is the same as the primary site, including hot fixes and patches.

Execution Phase

The steps in this phase are executed after a production HCP Anywhere system is down or not available.

Key execution steps include:

1. Open a support call with HDS for HCP Anywhere system recovery.
 - Visit <https://support.HDS.com>.
 - HDS support will assist you with the remaining steps.
2. Power up the HCP Anywhere cold standby system on the primary site and verify that it is healthy.
3. Work with HDS support to perform a HCP Anywhere system recover on the cold standby system using HCP.

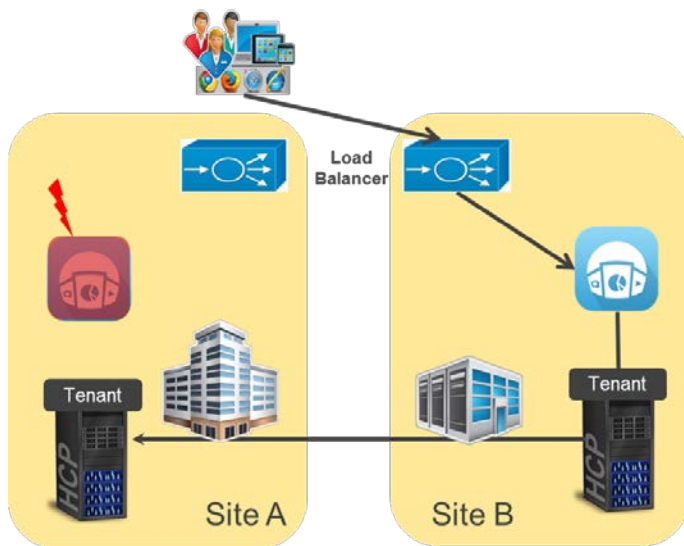
4. Login as a user to the recovered HCP Anywhere system and verify access to files and folders.
5. Put the recovered HCP Anywhere into production for the users.
6. The HCP Anywhere desktop clients will go through a recovery and data validation (reconciliation) process to ensure that both the server and the desktop clients have the same data, and make any updates as needed.

Remote Recovery

If an additional HCP Anywhere system on the primary site is not available, then the only solution available is to have both HCP and HCP Anywhere systems fail over to the secondary site.

Figure 8 shows the end state, after the steps of the DR failover execution phase are completed. The DR phases and steps are the identical to those described above in **Complete Site Failure**.

Figure 8. Failover for HCP Anywhere Failure DR Case



Data Center Migration Scenarios

This section will cover scenarios where an HCP Anywhere production system must be modified because a planned migration of the HCP Anywhere system is occurring. The following three scenarios will be covered:

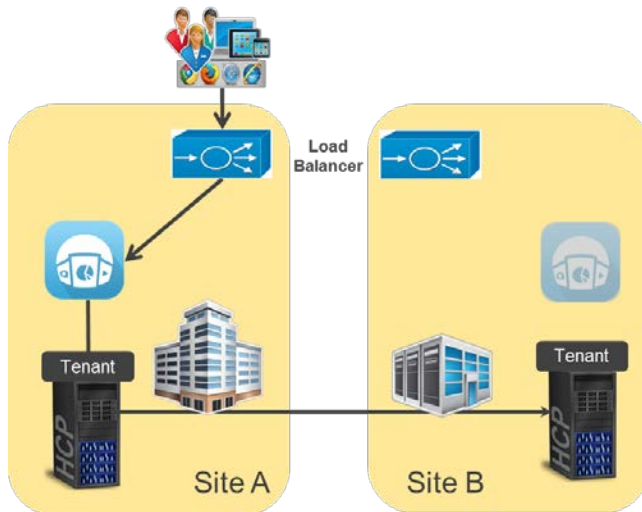
- **Migration Case 1:** Both HCP Anywhere and HCP systems are migrating to new system configurations within the same data center or to a different data center.
- **Migration Case 2:** The HCP system that stores HCP Anywhere data is being migrated to a new system configuration within the same data center; the HCP Anywhere system is unchanged.
- **Migration Case 3:** The HCP Anywhere system is being migrated to a new system configuration within the same data center; the HCP system is unchanged.

We do not support scenarios where either HCP Anywhere or HCP is being migrated to a different data center while the other is unchanged (cross-data center configuration).

Migration Case 1

In this scenario both the HCP Anywhere and HCP systems are migrating. It is analogous to DR Case 1, except that the migration is a scheduled event and no system failure has occurred (see Figure 9).

Figure 9. Configuration Before Migrating Both HCP Anywhere and HCP to Another Data Center



Migration Planning

Key planning steps include:

1. Set up the physical nodes or VMs for the destination HCP Anywhere system. Install the software, load the license key and set the serial number. Make sure that you use the **same** license key and serial number from the source HCP Anywhere and apply it to the destination HCP Anywhere system. Now the destination HCP Anywhere is configured for when the system recovery step is done later, during the actual production migration.
2. Configure the source HCP to replicate HCP Anywhere data to the destination HCP system. All of the data stored for HCP Anywhere in the source HCP must be replicated to the destination HCP system prior to the migration.
3. Ensure that the HCP replication is mostly complete and caught up. The goal is minimize the replication backlog. Since the source system will remain online until the beginning of the migration, the migration window must include time to complete any remaining replication backlog.
4. Configure the load balancer on the destination site.

Migration Testing

Key testing steps include:

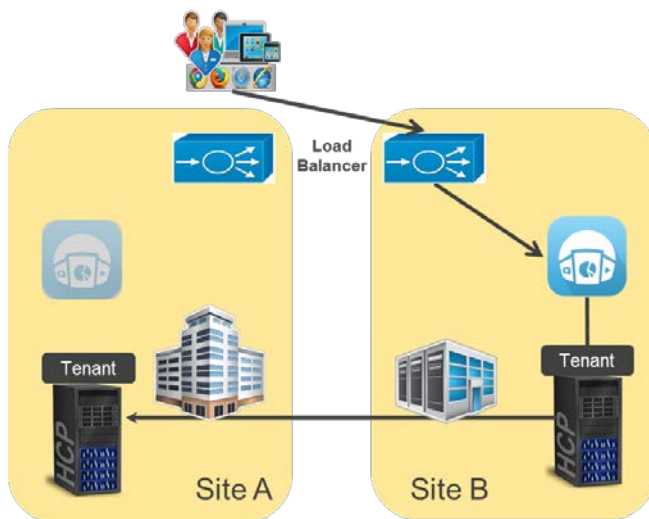
1. Run a test using a tool provided by HDS. This tool performs an HCP Anywhere system recovery on the destination system without perturbing the source system or the replication in any way.
2. Note the time required for the system recovery. With this information, the elapsed time required for the production migration window is determined and the migration window may now be scheduled.

Migration Execution

Once the testing is complete, the scheduled migration of the HCP Anywhere and HCP systems to the destination site is accomplished by the following steps:

1. Open a support call with HDS for HCP Anywhere system recovery.
 - Visit <https://support.HDS.com>.
 - HDS support will assist you with the remaining steps.
2. Do a graceful shutdown of the source HCP Anywhere production system.
3. Monitor the HCP replication. When all objects have been replicated from the source to the destination HCP, fail over the HCP system to make the destination HCP production ready.
4. Power up the destination HCP Anywhere system and verify that it is healthy.
5. With help from HDS support, start HCP Anywhere recovery on the destination system.
6. Once complete, login as a user to the recovered HCP Anywhere system and verify access to files and folders.
7. Set up the load balancer and put the recovered HCP Anywhere system into production for the users.
8. The HCP Anywhere desktop clients will go through a recovery and data validation (reconciliation) process to ensure that both the server and the desktop clients have the same data, and make any updates as needed.
9. Set up an HCP system to replicate data to a secondary site and set up a cold standby HCP Anywhere system for DR protection.

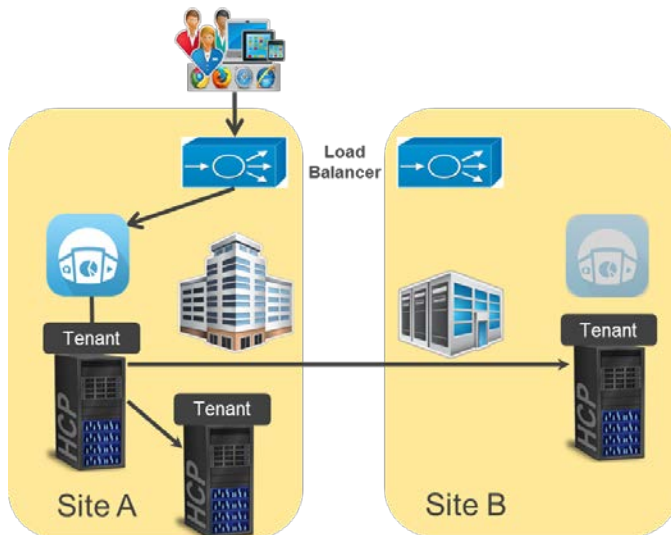
Figure 10. Configuration After Migrating Both HCP Anywhere and HCP Systems to Another Data Center



Migration Case 2

In this scenario, the HCP system containing the HCP Anywhere data is being migrated within the same data center, as shown in Figure 11.

Figure 11. Migrating the HCP System Within the Same Data Center



Even though HCP Anywhere did not experience a failure and is not being changed, HCP Anywhere system recovery must be performed due to the underlying HCP system changes. There are two possible options to perform Migration Case 2.

The first option handles Migration Case 2 identically to Migration Case 1. It requires that you provision a new HCP Anywhere production system and migrate to it. If you choose to do this, you perform Migration Case 2 using exactly the same steps as Migration Case 1.

Use the second option for Migration Case 2 if you do not want to provision a second production HCP Anywhere system as the target of the migration. That is, since HCP Anywhere is not changing, you want to recover the existing production HCP Anywhere system in place. Perform the steps outlined under **Migration Planning** to accomplish the in-place migration of HCP Anywhere.

Migration Planning

Key planning steps include:

1. Configure the source HCP to replicate HCP Anywhere data to the destination HCP system. All of the data stored for HCP Anywhere in the source HCP must be replicated to the destination HCP system prior to the migration.
2. Ensure that the HCP replication is mostly complete and caught up. The goal is minimize the replication backlog. Since the source system will remain online until the beginning of the migration, the migration window must include time to complete any remaining replication backlog.

Migration Testing

Key testing steps include:

1. Set up temporary physical nodes or VMs for HCP Anywhere so that a system recovery may be tested without disturbing the production HCP Anywhere system. Install the software, load the license key and set

the serial number. Make sure that you use the same license key and serial number from the production HCP Anywhere system and apply it to the temporary HCP Anywhere system.

2. Run a test using a tool provided by HDS. This tool performs an HCP Anywhere system recovery on the temporary system without perturbing the production system or the replication in any way.
3. Note the time required for the system recovery. With this information, the elapsed time required for the production migration window is determined and the migration window may now be scheduled.

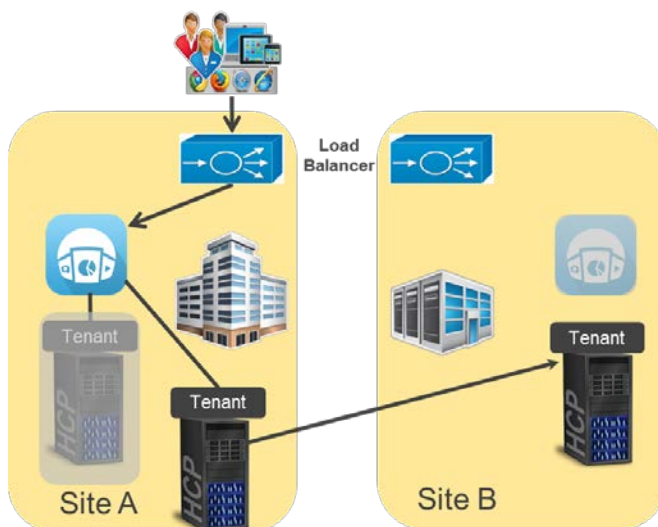
Migration Execution

When the above testing steps have been completed, the scheduled migration to the destination HCP system is accomplished by performing the following steps.

1. Open a support call with HDS for HCP Anywhere system recovery.
 - Visit <https://support.HDS.com>.
 - HDS support will assist you with the remaining steps.
2. Do a graceful shutdown of the source HCP Anywhere production system.
3. Re-install the HCP Anywhere software on the production system.
4. Monitor the HCP replication. When all objects have been replicated from the source to the destination HCP system, fail over the HCP to make the destination system production ready.
5. With help from HDS support, start HCP Anywhere recovery from the new HCP system.
6. Once complete, login as a user to the recovered HCP Anywhere system and verify access to files and folders.
7. Put the recovered HCP Anywhere system into production for the users.
8. The HCP Anywhere desktop clients will go through a recovery and data validation (reconciliation) process to ensure that both the server and the desktop clients have same data, and make any updates as needed.
9. Set up an HCP system to replicate data to a secondary site and set up a cold standby HCP Anywhere system for DR protection.

Figure 12 shows the end state.

Figure 12. Configuration After Migration of the HCP System Within the Same Data Center

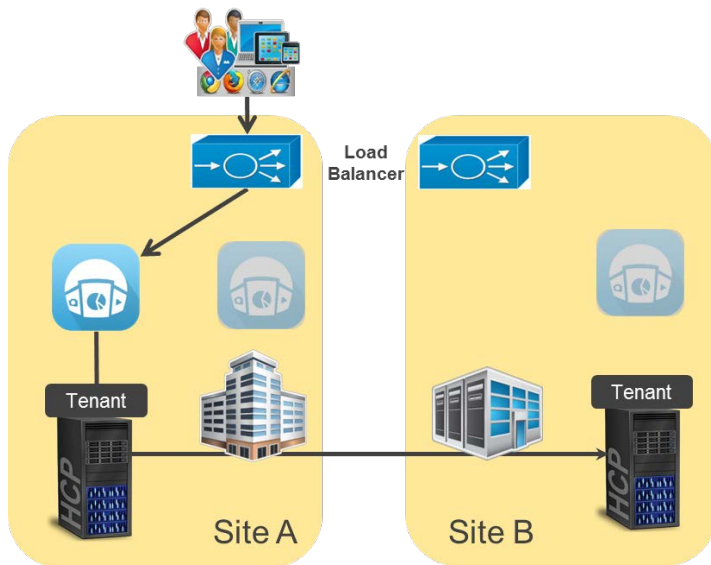


Migration Case 3

In this scenario, the HCP Anywhere system is migrating to a new HCP Anywhere physical or VM environment within the same data center. (See before and after configurations of this migration in Figures 13 and 14.) The HCP containing the tenant in which HCP Anywhere stores its data is not moving or changing. If the old and new HCP Anywhere environments are both VMs, the migration may be accomplished by using VMware vMotion.

For scenarios where the migration involves HCP Anywhere physical nodes, the migration is accomplished by setting up the new physical nodes or VMs for the destination HCP Anywhere system and then executing the HCP Anywhere migration.

Figure 13. Configuration Before Migrating the HCP Anywhere System Within the Same Data Center



Migration Planning

Set up the physical nodes or VMs for the destination HCP Anywhere system. Install the software, load the license key and set the serial number. Make sure that you use the **same** license key and serial number from the source HCP Anywhere and apply it to the destination HCP Anywhere system. Now the destination HCP Anywhere system is configured for when the system recovery step is done later during the actual production migration.

Migration Testing

Key testing steps include:

1. Run a test using a tool provided by HDS. This tool performs an HCP Anywhere system recovery on the destination system without perturbing the source system or the replication in any way.
2. Note the time required for the system recovery. With this information, the elapsed time required for the production migration window is determined, allowing the migration window to be scheduled.

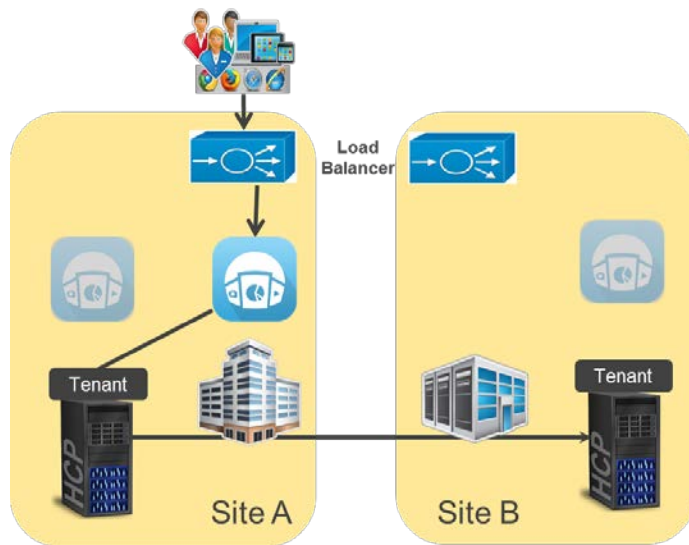
Migration Execution

When the above preparatory steps have been done, the scheduled migration to the destination HCP Anywhere system is accomplished by executing the following steps:

1. Open a support call with HDS for HCP Anywhere system recovery.
 - Visit <https://support.HDS.com>.
 - HDS support will assist you with the remaining steps.

2. Do a graceful shutdown of the source HCP Anywhere production system.
3. Power up the destination HCP Anywhere system and verify that it is healthy.
4. With help from HDS support, complete the HCP Anywhere recovery on the destination system.
5. Once complete, login as a user to the recovered HCP Anywhere system and verify access to files and folders.
6. Put the recovered HCP Anywhere system into production for the users.
7. The HCP Anywhere desktop clients will go through a recovery and data validation (reconciliation) process to ensure that both the server and the desktop clients have the same data, and make any updates as needed.

Figure 14. Configuration After Migrating the HCP Anywhere System Within the Same Data Center



Conclusion

This white paper describes the process and methodology for planning and executing HCP Anywhere DR and migration scenarios. If you are planning a DR test or a data center migration, please contact our HDS support team. Our team members will assist you in ensuring a successful outcome.

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