COMMVAULT®

Simplifying HDS Thin Image (HTI) Operations

USING COMMVAULT® INTELLISNAP® TECHNOLOGY

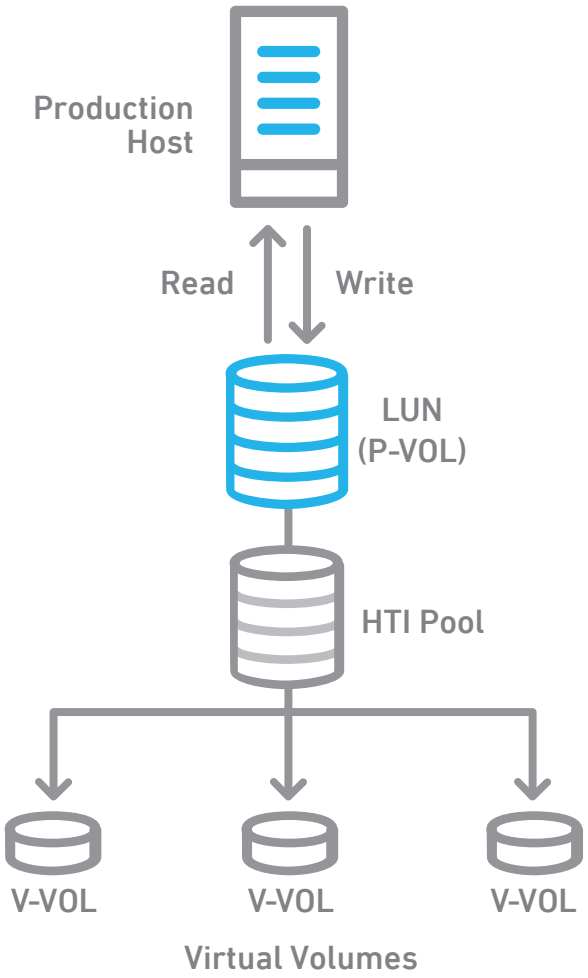
Simplifying the Move to Snapshots: As application data sizes grow ever larger, more organizations are turning to storage array snapshot technologies to protect and recover their most critical workloads more efficiently and quickly. But managing snapshots, and integrating them with applications for protection and recovery, can be a challenging undertaking, especially when done manually using scripts and multiple disk vendor tools. These challenges confront storage owners, application owners, and IT managers – anyone seeking to optimize snapshot usage – with increased complexity and cost.

Commvault IntelliSnap technology integrates with Hitachi Thin Image Snapshots to simplify and automate protection and recovery tasks so that enterprises may protect and recover critical workloads with the efficiency and speed they demand.

THE EFFICIENCY AND CHALLENGES OF THIN IMAGE TECHNOLOGY

Hitachi Data Systems Thin Image technology allows you take many highly efficient snapshots – 1,024 per volume and 32,000 per array – delivering multiple point-in-time protection copies for rapid, near-instant recovery of data and applications. The resulting disk savings are up to 75% compared to using full-sized clones.

When using Thin Image, the production disk volume is referred to as the P-VOL. Snapshot space is taken from a defined pool of storage called the



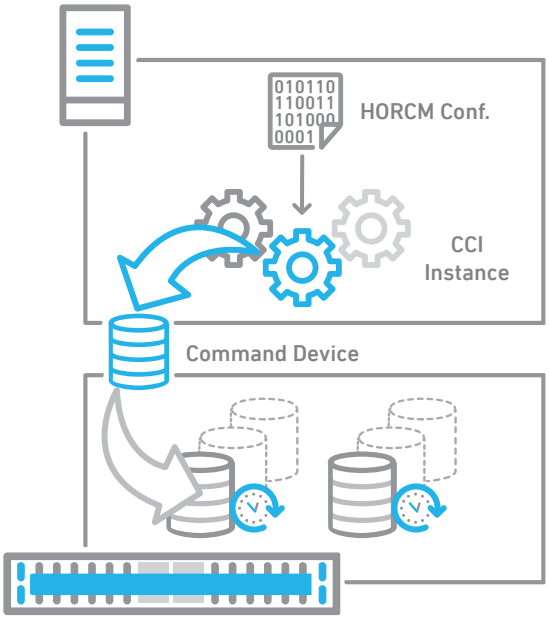
HTI Pool (for Hitachi Thin Image), and each snapshot is referred to as a virtual volume, or V-VOL. The following illustration will help you visualize the relationship between these components.

While Thin Image is a powerful technology for protecting and restoring data, it can also be complex and time consuming to implement if you rely on manual processes and the creation of configuration files.

HOW HDS SNAPSHOTS WORK

In order to drive snapshot processes, HDS arrays use software called the Command Control Interface (CCI) which enables data management and configuration tasks. CCI application files are also referred to as Hitachi Open Remote Copy Manager (HORCM) files, which require a configuration file to be created. This software, and associated configuration files, sits on every application host that's going to make use of the storage.

For operations, the CCI communicates with a Command Device, which is a logical volume on the storage system that functions as the interface to the storage system. The Command Device accepts read and write commands that are executed by the storage system as shown in the following illustration.



Hitachi Array (HUS-VM, VSP, VSP G1000)

To make this work across multiple hosts, you must configure multiple HORCM configuration files. Here's an example of part of a HORCM file taken from HDS documentation:[1]

```
HORCM_MON
#ip_address    service     poll(10ms)    timeout(10ms)
HST1           horcm       1000          3000
HORCM_CMD
#unitID 0... (seq#30014)
#dev_name dev_name    dev_name
/dev/rdsk/c0t0d0
#unitID 1... (seq#30015)
#dev_name dev_name    dev_name
/dev/rdsk/c1t0d0
HORCM_DEV
#dev_group  dev_name   port#     TargetID  LU#    MU#
oradb       oradb1     CL1-A        3       1      0
oradb       oradb2     CL1-A        3       1      1
oralog      oralog1    CL1-A        5       0
oralog      oralog2    CL1-A1       5       0
oralog      oralog3    CL1-A1       5       1
oralog      oralog4    CL1-A1       5       1      h1
HORCM_INST
#dev_group  ip_address     service
oradb        HST2          horcm
oradb        HST3          horcm
oralog       HST3          horcm
```

1 Hitachi Command Control Interface User and Reference Guide, page 2-13.

Simply put, having to maintain dozens or hundreds of HORCM files manually is no small task. Like most configuration files, HORCM files are very precise, meaning that something as minor as an extra space or carriage return can cause operations to fail. Troubleshooting can also be challenging since there is no inherent error detection. And, the work doesn't end the first time you create them. Hardware and software updates, capacity expansions, configuration changes and all of the typical day-to-day IT operations can require changes to the HORCM files.

To solve these challenges, Commvault created IntelliSnap technology. It reduces operational complexity and simplifies the creation and management of snapshots. When you deploy IntelliSnap technology, the HORCM configuration file is built and maintained for you by the IntelliSnap software.

THE COMPLEXITY OF MANUAL SNAPSHOT MANAGEMENT

Getting Thin Image snapshots to work effectively with applications requires multiple steps and many different areas of expertise. If you are manually managing operations you'll need to:

- Create, troubleshoot and maintain HORCM files
- Create scripts to synchronize snapshots with a pause in application processing
- Potentially modify these scripts following application upgrades
- Create scripts to restore data and recover applications
- Update scripts to accommodate new or changed mountpoints and other storage configuration changes
- Properly re-start applications once data is recovered
- Fully document scripts so they are readily transferable across IT personnel changes

Then, you'll have to do it all over again if (and when) you migrate an application to new storage. To handle this, it is required that you understand Hitachi syntax, a scripting language, application APIs, storage APIs, SAN access protocols, application design and structure, application operations, and more. Furthermore, if your applications are virtualized, yet another layer of hypervisor management must be considered.

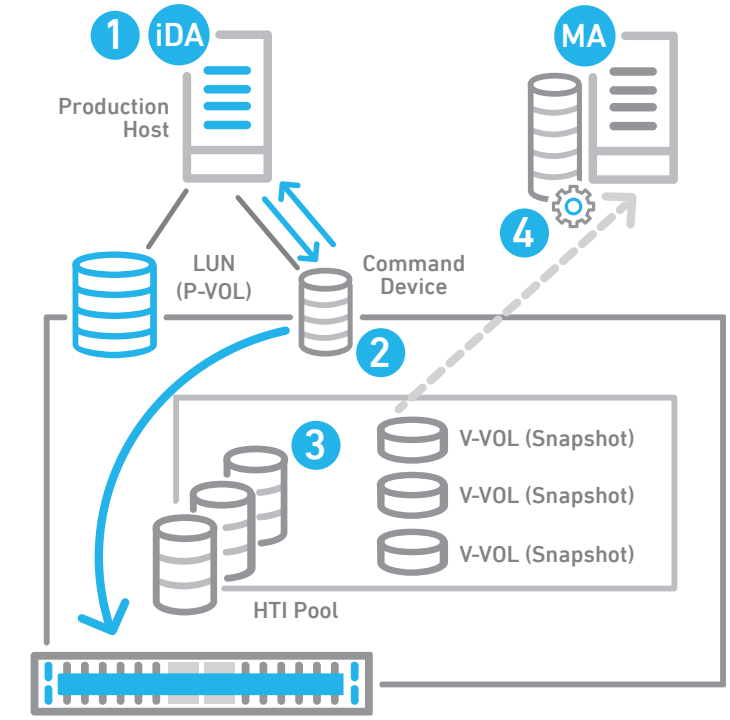
These tasks are daunting, and that is just to achieve basic protection and recovery. You'll likely also need to consider the following:

- **Snapshot Indexing** - Finding data is challenging across dozens or hundreds of snapshots if data is not indexed.
- **Reporting** - Understanding disk utilization in a snapshot environment is crucial.
- **Alerting** - If you build scripts, you have to build alerts in, otherwise when they fail you won't know they've failed.
- **Access Rights** - Snapshots involve both applications and storage, which often are under the control of different groups with separate access policies.

Because there is so much involved with snapshot management it's not at all uncommon to see IT organizations with dedicated personnel for snapshot management tasks, even for a single application.

INTELLISNAP® TECHNOLOGY SIMPLIFIES THIN IMAGE SNAPSHOTS

IntelliSnap® technology dramatically simplifies the creation and management of Thin Image snapshots. The key is that IntelliSnap technology orchestrates the snapshot with what's happening on the host system. The following diagram outlines the steps, 1 through 4.



Hitachi Array (HUS-VM, VSP, VSP G1000)

STEP 1: The iDataAgent (iDA) talks to the application running on the production host. It supports many of the biggest enterprise applications, including Oracle, Oracle RAC, MS Exchange, MS SQL, MS SharePoint, DB2, SAP, MySQL and more. IntelliSnap technology uses application level APIs to quiet the application prior to taking the snapshot.

STEP 2: When the app is properly quiesced, the iDA communicates to the storage array via the Command Device and tells it to take the snapshot.

STEP 3: The snapshot is taken, automatically creating a new V-VOL which can be used as a recovery point.

STEP 4: As an optional step, the snapshot can be mounted to the IntelliSnap server for indexing. Snapshot indexing is a great feature which lets you find files/data within your snaps and provides granular recovery for them.

IntelliSnap technology will take new snapshots based on a schedule you configure and will also manage snapshot retention. The solution even covers all the other items mentioned earlier: reporting, alerting, and access rights. Regardless of which applications you are deploying or which Hitachi storage array you are using, IntelliSnap technology makes operations simple, reliable and repeatable.

Snapshot Management & Replication: A Buyer's Checklist[1]

This checklist will enable you to build a shortlist of the 'must have' features needed for snapshots to deliver exactly what you require in your application environment or Private Cloud.

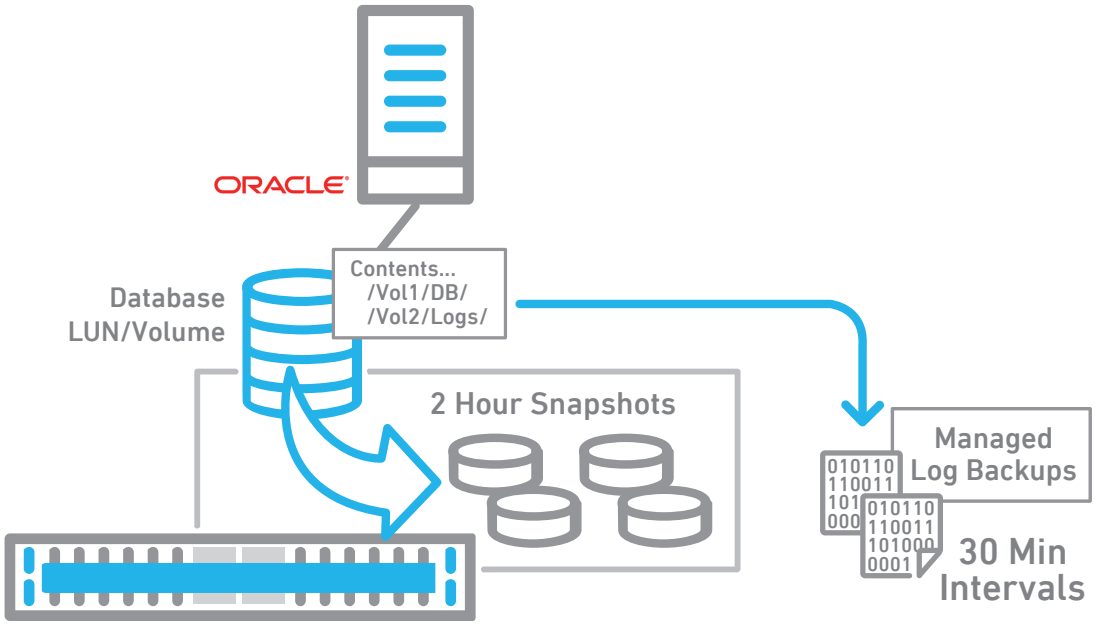
READ NOW

PDF

While configuring a snapshot policy with IntelliSnap technology is easy, under the covers there are many complex processes being managed. The difference is IntelliSnap technology is handling them all in a way that's massively simplified and exponentially more reliable than trying to do it manually with scripts and batch jobs.

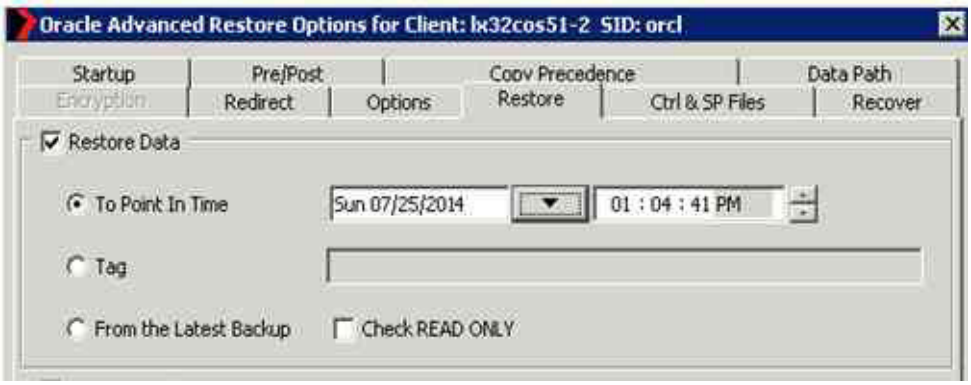
RAPID, EASY, REPEATABLE APPLICATION RECOVERY

In addition to taking application consistent snapshots, IntelliSnap technology also provides managed log backups which can take place on a separate schedule. In this illustrated example, an Oracle application is being protected with snapshots every two hours and log backups every 30 minutes. This delivers a Recovery Point (RPO) of 30 minutes.



Hitachi Array (HUS-VM, VSP, VSP G1000)

Now imagine there is a data loss event with Oracle and you must restore the database as quickly as possible, with minimal data loss. With IntelliSnap technology, you can run a point-in-time recovery easily by picking a point in time from the restore options screen.



Select the date and time to restore back to and run the restore job. Two things happen when the job starts.

1. The bulk of the volume you are restoring will be recovered within the array from the snap image, giving you a very quick recovery, much faster than anything you'd get trying to pull a legacy backup over the wire, even across a 10Gbps network.
2. The IntelliSnap software will replay the Oracle logs back to the point in time you selected. It even runs any service re-starts needed to bring the application back online.

Commvault refers to this standardizing of snapshot recovery as "operationalizing recovery." Without a tool like IntelliSnap technology, every recovery operation is a unique process requiring multiple manual steps and multiple forms of expertise (storage, application, SAN, scripting), all subject to human error at any step of the recovery process. With IntelliSnap technology in place, it's pick and click, just another routine recovery operation, even for complex enterprise applications.

This kind of simplicity is even more important when you consider that having a Tier 1 application down is a major stress factor for any enterprise. The bottom line is: whether you are an application owner, a storage owner, or a virtualization owner, IntelliSnap technology gives you the intelligence you need to recover your most critical applications in a way that is operationally simple, consistent and reliable. Combine this with the speed and efficiency of Hitachi Data Systems Thin Image snapshots and the resulting combination will restore your applications faster and more efficiently than you'd ever think possible, without the stress.

Commvault Snapshot Management Technology: Capabilities and Benefits[2]

Discover trends and challenges in snapshot adoption, and key features and benefits of Commvault IntelliSnap technology.

READ NOW

PDF

PURCHASING INTELLISNAP® TECHNOLOGY

IntelliSnap technology is available as part of Commvault software, and also as part of the Hitachi Data Protection Suite, Powered by Commvault. It can be purchased as a non-disruptive, standalone solution for managing snapshots without the need to replace your current backup software.

Don't know where to start? Our consultants can easily help you work out the requirements, architecture, and deployment scenarios you should be utilizing to confidently protect your most critical data. Please consult with your Commvault or HDS sales rep for more details and a personal consultation for your organization.

RESOURCES

1 http://commvau.lt/29SO6qo
2 http://commvau.lt/29HbiFx

For further information on how Commvault IntelliSnap technology works with Hitachi Data Systems storage, please visit **commvault.com/hds**.

COMMVAULT®

PROTECT. ACCESS. COMPLY. SHARE.

COMMVAULT.COM | 888.746.3849 | GET-INFO@COMMVAULT.COM