

Storage Service Level Management with Hitachi Storage Command Portal

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Richard Jew, Senior Product Marketing Manager
John Yarborough, Technical Marketing Manager

Technical Session: Are you spending a lot of time and effort tracking storage resources back to the respective business applications that rely on them? Do key reporting statistics span multiple storage resource management products, with no easy way to merge and analyze them?

Learn how you can transform storage management reporting with the Hitachi Storage Command Portal. It combines a variety of management statistics from across the Hitachi Storage Command Suite to establish storage service level objectives (SLO) by business application and help ensure that storage service levels are met.

In this session learn how to:

- Create business views of applications and their respective Hitachi storage assets
- Define and monitor application-specific storage service objectives
- Customize business-oriented storage management reports and dashboards

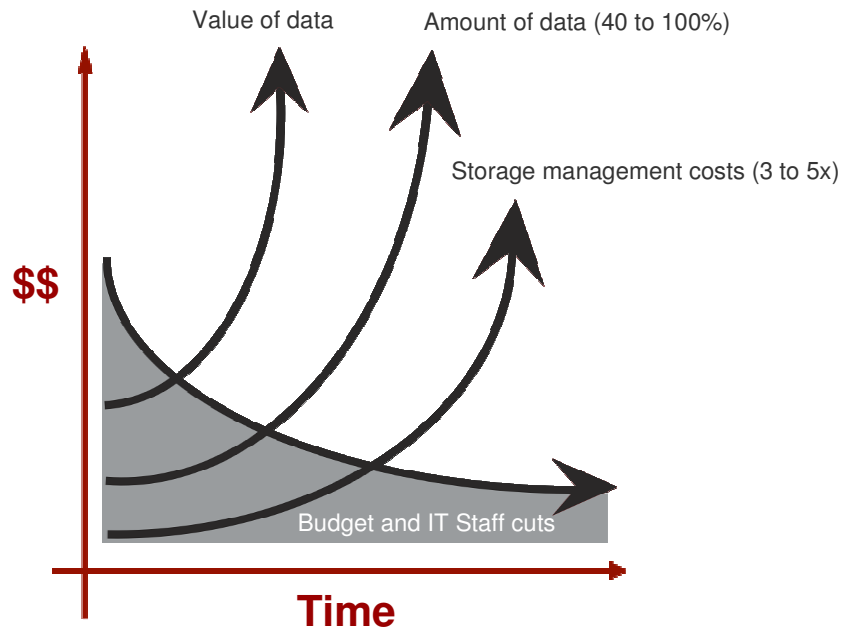
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Managing Storage in Today's Environment



- **Cost:** Storage costs continue to rise with new data storage demands
- **Complexity:** Storage growth brings increased infrastructure that adds complexity
- **Risk:** Changing needs for application availability and data protection
- **Service Levels:** Ensuring the ability to meet service level objectives

Storage Service Levels

- **Service level agreement (SLA) applied to storage**
 - A service contract where the level of service is formally defined
 - Applied to storage attributes of: availability, throughput, capacity and performance
 - View and defined by business function, host server or application
- **Storage service objectives based on**
 - Availability or service uptime
 - Network capacity or throughput
 - Storage capacity allocated or consumed
 - Storage response times or latency





- **Views:** Service must be viewed from the business function or application's viewpoint
- **Statistics:** Key storage statistics are typically found across multiple storage management products
- **Reports:** Flexible dashboards and custom reports are required to properly monitor storage service objectives
- **Alerts:** Ongoing monitoring and alerting is required to properly measure storage service objectives

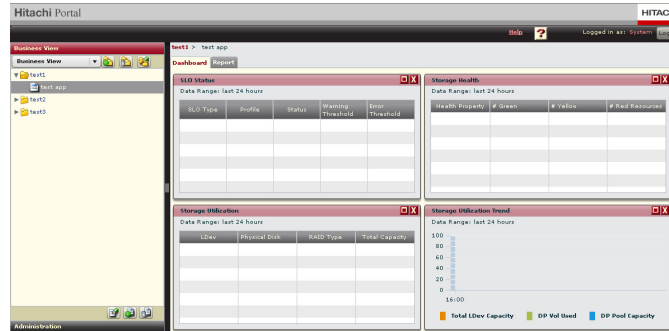
Storage Service Levels: All of the above attributes must be aligned to ensure storage service levels are being met

- Hitachi Storage Command Portal: Centralized Storage Management Reporting
 - Consolidates reporting of storage configuration, tier, capacity, and performance across the Hitachi Storage Command management suite to easily align Hitachi storage assets with the business applications that rely on them
 - Delivers business oriented storage reporting that leverages data from Hitachi Device Manager, Hitachi Tuning Manager and Hitachi Tiered Storage Manager (optional)
- Hitachi Storage Command Portal
 - Create business application based storage views
 - Organize and view storage assets based on applications and business functions
 - Ensure compliance to application based storage service levels
 - Define and monitor storage performance indicators by applications to ensure their adherence to required service levels

Hitachi Storage Command Portal

Centralized Hitachi Storage Command Reporting

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Hitachi Storage Command Portal

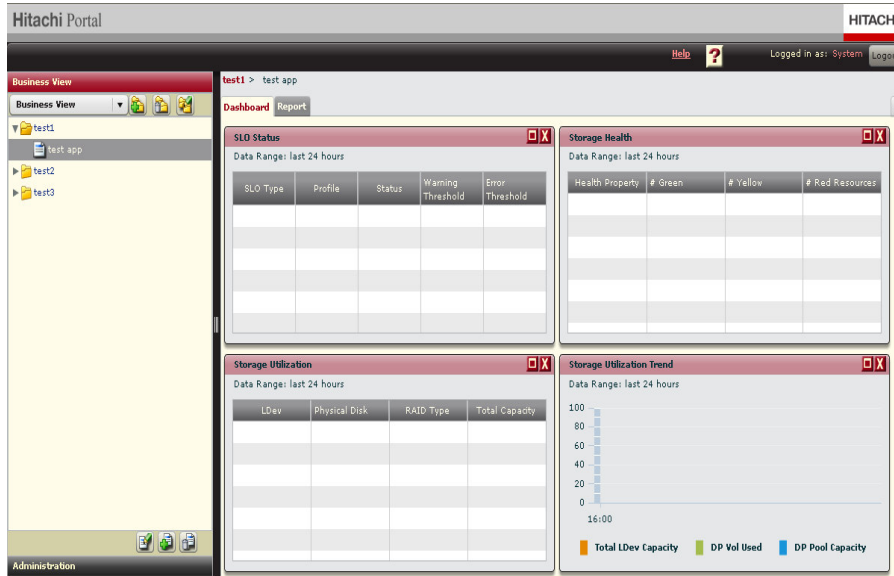
Hitachi Common
Data Reporting Model

Hitachi Device Manager

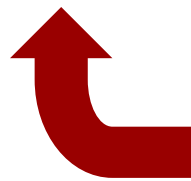
Hitachi Tuning Manager

Hitachi Tiered Storage Manager

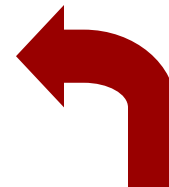
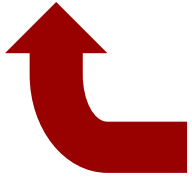
Hitachi Storage Command Portal



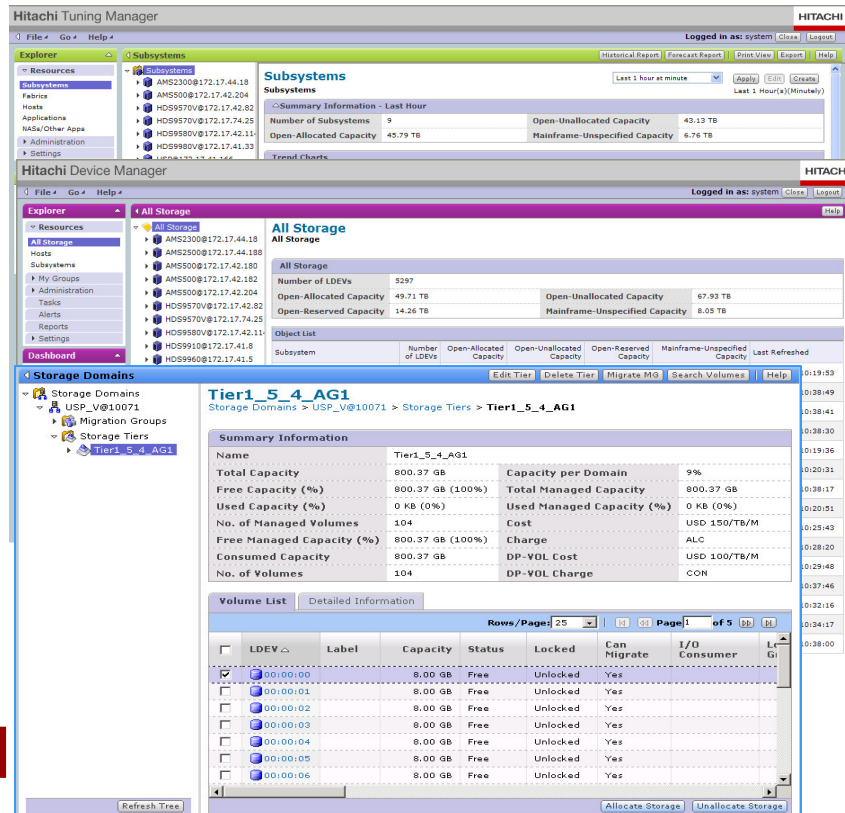
Merge storage configuration data from multiple Hitachi Device Manager instances



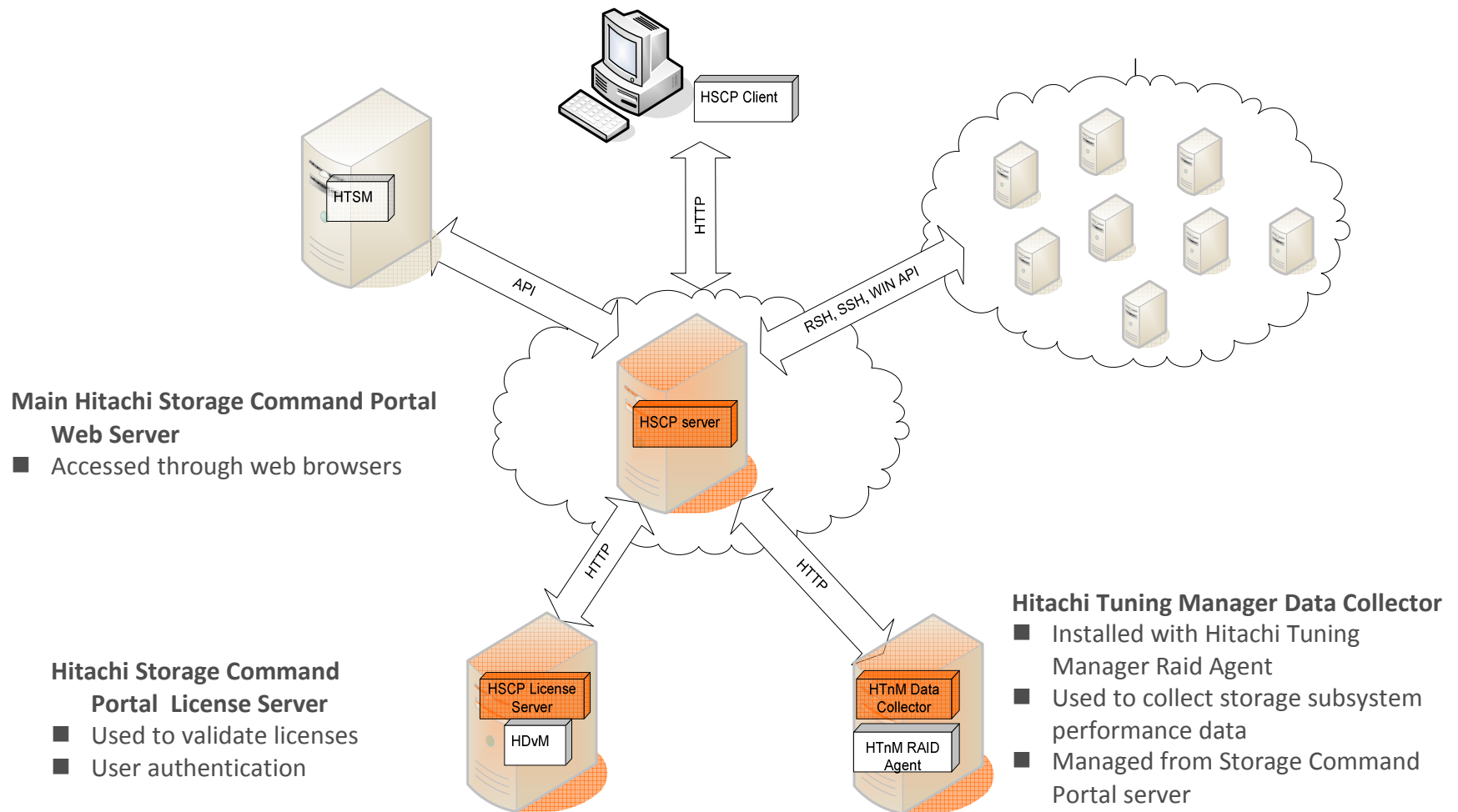
Merge storage tier information from Hitachi Tiered Storage Manager instance (Optional)



Merge storage performance data from multiple Hitachi Tuning Manager instances



Hitachi Storage Command Portal Software Architecture



- HSCP = Hitachi Storage Command Portal
- HTSM = Hitachi Tiered Storage Manager
- HTnM = Hitachi Tuning Manager
- HDvM = Hitachi Device Manager

- **Capability**
 - View Hitachi storage infrastructures from business application perspectives
 - Aggregate management statistics from across the Hitachi Storage Command Suite
 - Requires: Hitachi Device Manager and Hitachi Tuning Manager
 - Optional: Hitachi Tiered Storage Manager
 - Correlate business applications with storage logical devices (LDEV)
 - Host to storage correlation without the use of host based agents
 - Integrated with Hitachi Device Manager logical groups
- **Business Value**
 - Business level storage reporting based on applications and business functions
 - Facilitates chargeback accounting of storage resources directly back to the respective business units
 - Comprehensive storage management reporting for increased IT efficiency
- **What Is Unique About this Feature?**
 - Easily align Tier 1 storage assets with mission critical business applications

Business Application View of Hitachi Storage Infrastructures

The screenshot displays the Hitachi Command Portal Business Views interface. The browser window title is "HSCP: Business View - Windows Internet Explorer". The URL is "http://172.17.78.196/#/Business%20Views/Business%20View/treeId=12;nodeId=34". The page title is "Hitachi Command Portal". The breadcrumb navigation is "EMEA > UK > Backup > CRM EMEA-Backup".

The interface is divided into several sections:

- Business Views:** A tree view on the left showing the hierarchy: EMEA > UK > Backup > CRM EMEA-Backup.
- SLO Status:** A table showing SLO performance for the last 24 hours. Both "AVG Stor..." and "MAX Sto..." are in an "Open - OLTP Bronze" state with a green checkmark, indicating they are within thresholds.
- Subsystem Health:** A table showing the health of subsystems. "Array Groups" and "Port MP" are both in a "Green" state.
- Storage Allocation:** A table showing storage allocation for three LDEVs (01:10, 01:11, 01:12) on USP 15050 subsystems. Each has 134GB physical storage, RAID5(3D+1P) configuration, and a total of 2.29GB.
- Storage Allocation Trend:** A line graph showing capacity usage over the last 24 hours. The x-axis represents time from 23:00 to 23:00. The y-axis represents Capacity. Two lines are shown: "LDEV Capacity" (orange) and "DP-VOL Consumed Capacity" (green). Both lines are nearly horizontal and close to the top of the graph, indicating high capacity utilization.

Ensure Compliance to Application Based Storage Services Levels

- Capability
 - Establish application based storage service level objectives for:
 - Allocated or consumed storage capacity at the host
 - Average and maximum LDEV response times
 - Dynamic Provisioning pools and volumes (capacity consumed, over provisioning ratio)
 - Storage service level monitoring, reporting and alerting per application
- Business Value
 - Measures storage performance based on an application's service level objectives
 - Define and enforce service level agreements
 - Improves application uptime and performance
- What Is Unique About this Feature?
 - Monitor key application specific storage performance indicators to ensure adherence to required service levels

Monitoring of Storage Service Level Objectives by Applications

The screenshot displays the Hitachi Command Portal interface within a Windows Internet Explorer browser. The browser window title is "HSCP: Business View - Windows Internet Explorer". The address bar shows the URL: `http://172.17.78.196/#/Business%20Views/Business%20View/treeId=12;nodeId=30`. The browser menu includes File, Edit, View, Favorites, Tools, and Help. The Hitachi Command Portal header shows "Hitachi Command Portal" and "HITACHI". Below the header, there is a navigation bar with "Last Refresh: Jan 08, 09 23:00" and links for "Help", "About", "License", "User: system", and "Logout".

The main content area is divided into two panes. The left pane, titled "Business Views", shows a tree structure under "DataCenter View":

- EMEA
 - UK
 - Production
 - Exchange Dummy
 - CRM EMEA - Production
 - CRM Oracle EMEA-Produ
 - CRM Web Server EMEA-
 - Backup
 - CRM EMEA-Backup
 - Exchange EMEA Corp-Back
- APAC

The right pane, titled "SLO Status", shows a table of storage service level objectives for the last 24 hours. The table has the following columns: SLO, SLO Profile, Application, Status, Red Threshold, and Yellow Threshold.

SLO	SLO Profile	Application	Status	Red Threshold	Yellow Threshold
AVG Storage Resp...	Mainframe - MyCo Custom Gold	CRM Oracle EMEA-Production	✓	90 ms	80 ms
MAX Storage Resp...	Mainframe - MyCo Custom Gold	CRM Oracle EMEA-Production	✓	90 ms	80 ms
AVG Storage Resp...	Open - Exchange Gold	CRM Web Server EMEA-Production	✓	90 ms	80 ms
MAX Storage Resp...	Open - Exchange Gold	CRM Web Server EMEA-Production	✓	90 ms	80 ms

The bottom of the screenshot shows the Windows taskbar with the Start button, several application icons, and the system tray displaying "Done", "Internet", "100%", and "11:39 PM".

Demonstration

- Summary: Consolidates reporting of storage configuration, tier, capacity, and performance across the Hitachi Storage Command Suite to easily align Hitachi storage assets with the business applications that rely on them
- Business Value: Business level storage reporting based on applications
 - Capability: Aggregate management statistics from across the Hitachi Storage Command management suite
 - Capability: Correlate hosts and applications with storage LDEVs without host based agents
 - Feature: Create business application based storage views
- Business Value: Measures storage performance based on application service level objectives
 - Capability: Define and establish application based storage service level objectives
 - Capability: Storage service level monitoring, reporting and alerting per application
 - Feature: Ensure compliance to application based storage services levels

Questions and Discussion

- **March**

- **Economic Impact of Storage Archive for Today's Public Sector Initiatives**,
March 24, 2010, 9am Pacific
- **Economic Impact of Storage Archive**, March 31, 2010, 9am Pacific

- **Please check www.hds.com/webtech for:**

- Link to the recording, the presentation, and Q&A
(available next week)
- Schedule and registration for upcoming WebTech sessions

Thank you!