

**EXAM DESCRIPTION**

**Hitachi Data Systems Certified Expert – Performance Architect HCE-3700 Exam**

<b>Description:</b>	This test is designed for Hitachi Data Systems (HDS) employees and partners who architect and support HDS storage solutions. The test validates that the successful candidate has knowledge of storage performance concepts, Hitachi storage performance tools and products, and standard performance-analysis tools and procedures. The test also covers recommended deployment principles and practices as well as performance-troubleshooting and bottleneck-analysis techniques. The product lines covered include Hitachi Virtual Storage Platform (VSP), Hitachi Virtual Storage Platform midrange family (VSP Gx00 and VSP Fx00) and Hitachi Virtual Storage Platform G1000 (VSP G1000).
<b>Audience:</b>	Hitachi Data Systems employee and partner solutions architects.  HDS storage performance architects should have strong knowledge of storage systems, servers, operating systems, file systems, disk drives, fabric and host, connectivity hardware (Fibre Channel, iSCSI, Fibre Channel over Ethernet), applications and virtualization in storage systems. They also should have a deep understanding of RAID, I/O concepts and storage-design principles. In a presales engineering role, architects assess, plan and design storage solutions and develop proposals that meet the business needs and performance expectations of HDS customers. In a storage-engineering role and in association with implementation personnel, they present and propose deployment and support plans for the solutions. In a solutions-support role, they provide services to customers to assist them with the location, identification and resolution of performance-related issues.
<b>Supporting material:</b>	TSI2597 Architecting Storage Performance With Hitachi Storage v8.x (5d ILT/vILT)
<b>Exam type:</b>	Certification
<b>Format:</b>	Proctored, closed-book exam
<b>Credential:</b>	Hitachi Data Systems Certified Expert - Performance Architect
<b>Delivery:</b>	The exam is available through the <a href="#">Kryterion Webassessor</a> system.
<b>Questions:</b>	60
<b>Passing score:</b>	65%
<b>Duration:</b>	90 minutes; 120 minutes for non-English-speaking countries
<b>Cost:</b>	US\$225

**Test Objectives**

<b>Section 1</b>	<b>Storage Systems Architecture</b>
1.1	Describe common performance expectations and measurement criteria.
1.2	Describe storage media characteristics and features that influence performance.
1.3	Identify the performance characteristics of the different RAID levels available with Hitachi storage systems.
1.4	Identify the characteristics of Hitachi storage systems processing and path architecture that relate to performance optimization.
1.5	Identify the characteristics of Hitachi storage systems cache architecture that relate to performance optimization.
1.6	Demonstrate understanding of connectivity between the host and the storage array as it relates to performance.
<b>Section 2</b>	<b>Pools, Tiers and Workload Profiles</b>
2.1	Identify the performance-related data to be collected prior to a design.
2.2	Describe the characteristics and principles of tiering and non-tiering pools, and how to choose

	between them.
2.3	Demonstrate understanding of workload profiling for the design of storage pools and tiers.
2.4	Demonstrate knowledge of Hitachi Dynamic Provisioning and Hitachi Dynamic Tiering concepts as they relate to customer requirements.
2.5	Demonstrate how to define and apply Hitachi Dynamic Provisioning strategies, and how to monitor performance to meet customer needs and expectations.
2.6	Demonstrate how to define and apply Hitachi Dynamic Tiering strategies, and how to monitor performance to meet customer needs and expectations.
<b>Section 3</b>	<b>Storage Virtualization</b>
3.1	Describe Hitachi Data Systems recommended practices for the deployment of virtualized storage solutions.
3.2	Describe the performance aspects of cache partitions as they relate to virtualized storage solutions.
3.3	Demonstrate the performance aspects of Hitachi Dynamic Provisioning with virtualized storage solutions.
3.4	Demonstrate the performance aspects of Hitachi Dynamic Tiering with virtualized storage solutions.
<b>Section 4</b>	<b>Performance Tools and Data Acquisition</b>
4.1	Identify industry-standard tools used for performance-data monitoring, data collection, data analysis and workload simulation.
4.2	Demonstrate how to apply workload profile information to industry-standard workload generators.
4.3	Describe the performance and configuration data that Hitachi Performance Monitor and Hitachi Tuning Manager collect.
4.4	Demonstrate how to review Hitachi Dynamic Tiering performance data from Hitachi Performance Monitor and Hitachi Tuning Manager.
4.5	Describe the data to be collected to size Hitachi storage solutions to meet customer performance requirements and utilization expectations.
4.6	Describe the data to be collected when planning for capacity growth and performance for Hitachi storage systems.
<b>Section 5</b>	<b>Solution Design and Deployment Planning</b>
5.1	Describe Hitachi Data Systems recommended design practices when sizing and configuring Hitachi storage systems for industry-standard database applications.
5.2	Describe Hitachi Data Systems recommended design practices when sizing and configuring Hitachi storage systems for non-database application workloads.
5.3	Demonstrate your ability to configure Hitachi storage system capacity for planned growth while maintaining the customer's performance requirements.
5.4	Describe how path management software load-balancing algorithms are used to optimize storage performance.
5.5	Describe concepts of logical devices, LUNs per port, and queuing as they relate to performance.
<b>Section 6</b>	<b>Monitoring and Troubleshooting</b>
6.1	Describe common and generic principles and concepts used to analyze performance data, isolate bottlenecks and troubleshoot performance-related problems.
6.2	Describe the Hitachi products and services that are available to investigate and identify performance problems.
6.3	Describe how to analyze performance data, isolate bottlenecks and troubleshoot performance-related problems of Hitachi storage systems.
6.4	Describe how to recognize a replication-related performance problem.
6.5	Describe how to troubleshoot performance issues outside of the storage array.