EXAM DESCRIPTION

Hitachi Vantara Certified Expert – Replication Solutions Implementation HCE-5710 Exam	
Description:	This test is designed for Hitachi Vantara employees and partners who deploy and integrate Hitachi Vantara replication solutions in customer environments. The test will validate that the successful candidate has the knowledge and skills to implement and support replication solutions that run on Hitachi storage systems. This includes the thorough understanding of deployment and integration procedures and best practices, and of the tools and techniques related to supporting the solutions. This test covers data replication software products including Hitachi Universal Replicator, Hitachi Thin Image, Hitachi ShadowImage In-System Replication, Hitachi TrueCopy Remote Replication, Hitachi Replication Manager and global-active device.
Audience:	Hitachi Vantara employee and partner implementation and integration professionals. Hitachi Vantara replication solutions implementation personnel should have strong knowledge and skills in the use, deployment and support of Hitachi replication solutions. They have knowledge of general storage and storage networks concepts and in the area of interoperability of storage networking. As systems integrators, they provide pre-installation services, and following Hitachi Vantara recommended practices, they deploy, configure and test the software products included in the solutions. They provide post-installation support services including solutions maintenance, updates and upgrades, and they have thorough knowledge of problem determination and incident resolution tools and techniques. They support all related administrative activities and should also be able to perform knowledge transfer tasks by communicating needed information to allow clients to assume responsibility for operation of the solutions deployed.
Supporting material:	CSI0147 Hitachi Enterprise Storage Replication course (5d ILT) TSI0150 Implementing Hitachi Universal Replicator on Open Systems course (5d ILT) TSI2728 Managing Global-Active Device on Hitachi Virtual Storage Platform G Series (3d ILT)
Exam type:	Certification
Format:	Proctored, closed-book exam
Credential:	Hitachi Vantara Certified Expert – Replication solutions implementation
Delivery:	The exam is available through the Kryterion Webassessor system.
Questions:	60
Passing score:	70%
Duration:	90 minutes; 120 minutes for non-English-speaking countries
Cost:	US$225

Test Objectives	
Section 1	**Replication principles and fundamentals**
1.1	Describe the features of synchronous remote replication.
1.2	Describe the features of asynchronous remote replication.
1.3	Demonstrate how clusters integrate with replication.
1.4	Describe when to use Hitachi Thin Image vs. Hitachi ShadowImage in a replication solution.
Section 2	**Understanding replication solutions**
2.1	Identify anticipated outage causes and the appropriate protection.
2.2	Describe the key elements of the customer environment that need to be taken into consideration when deploying a replication solution.
2.3	Describe how replication solutions are deployed within a tiered storage infrastructure.
Section 3	**Pre-deployment checks**
3.1	Identify the required checks to be carried out prior to deploying a replication solution.

3.2	Describe configuration, infrastructure and bandwidth requirements for remote replication solutions.
3.3	Describe configuration requirements for in-system replication solutions.
Section 4	**Hitachi replication common concepts**
4.1	Describe how command devices are set up and used.
4.2	Describe how to manage replication pairs.
4.3	Describe how RAID manager/command control interface (CCI) is configured and used.
4.4	Describe the purpose of having consistency groups and explain their benefits.
4.5	Describe the differences between a CCI device group and a consistency group.
Section 5	**Implementing Hitachi Universal Replicator**
5.1	Describe the characteristics of a replication solution that uses Hitachi Universal Replicator software.
5.2	Describe how to configure Hitachi Universal Replicator links between Hitachi storage systems.
5.3	Describe the key steps to set up and configure a Hitachi Universal Replicator solution.
5.4	Describe the requirements and the restrictions relating to mapping and pairing P-VOLs and S-VOLs for Hitachi Universal Replicator.
5.5	Describe the purpose and the usage of RAID Manager/CCI commands with Hitachi Universal Replicator.
Section 6	**Implementing Hitachi Thin Image**
6.1	Describe the key steps to set up and configure a Hitachi Thin Image solution.
6.2	Describe the requirements and the restrictions relating to mapping and pairing P-VOLs and V-VOLs for Hitachi Thin Image.
6.3	Describe the purpose and the usage of RAID Manager/CCI commands with Hitachi Thin Image.
Section 7	**Implementing Hitachi ShadowImage**
7.1	Describe the characteristics of a replication solution that uses Hitachi ShadowImage software.
7.2	Describe the key steps to set up and configure a Hitachi ShadowImage solution.
7.3	Describe the requirements and the restrictions relating to mapping and pairing P-VOLs and S-VOLs for Hitachi ShadowImage.
7.4	Describe the purpose and the usage of RAID Manager/CCI commands with Hitachi ShadowImage.
Section 8	**Implementing Hitachi TrueCopy**
8.1	Describe the characteristics of a replication solution that uses Hitachi TrueCopy software.
8.2	Describe the key steps to set up and configure a TrueCopy solution.
8.3	Describe the requirements and the restrictions relating to mapping and pairing P-VOLs and S-VOLs for TrueCopy.
8.4	Describe the purpose and the usage of RAID Manager/CCI commands with TrueCopy.
Section 9	**Implementing global-active device**
9.1	Describe the characteristics of a replication solution that uses global-active device.
9.2	Describe the key steps to set up and configure a global-active device solution.
9.3	Describe the purpose and the usage of RAID Manager/CCI commands with global-active device.
9.4	Describe the I/O modes in a global-active device environment.
Section 10	**Advanced replication implementation techniques**
10.1	Demonstrate how to set up replication and describe operations in a tiered storage environment with Hitachi Universal Volume Manager software.
10.2	Describe how replication solutions are deployed within Hitachi Dynamic Provisioning environments.
10.3	Demonstrate how to set up replication and describe operations in a three data center (3DC) configuration.
Section 11	**Replication with Hitachi Replication Manager software**
11.1	Describe how Hitachi Replication Manager can be used with in-system replication.
11.2	Describe how Hitachi Replication Manager can be used with remote replication.
11.3	Describe how to integrate an existing HORCM configuration into Hitachi Replication Manager.
Section 12	**Testing and troubleshooting replication solutions**
12.1	Describe the steps required to fix a "HORCM failed to start" error.
12.2	Describe how to specify the environment parameters.
12.3	Describe methods of troubleshooting "paircreate" errors.

12.4	Describe the various replication pair states.
12.5	Describe which logs are available for troubleshooting and how to access them.
12.6	Describe how to troubleshoot in a global-active device environment.
12.7	Describe how to troubleshoot mounting problems in replication environments.

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