

Key Encryption in Lifecycle Controller

This Dell Technical White Paper provides information about using the Key Encryption in Lifecycle Controller on the 12th Generation servers and later of Dell.

Dell Engineering December 2013

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A Dell Technical White Paper

Revisions

Date	Description
Nov 2013	Initial release

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Executive Summary

This whitepaper provides information about using Key Encryption feature in Lifecycle Controller on Dell PowerEdge Servers.

Introduction

Key Encryption is a feature provided in Lifecycle Controller to enable local key encryption, rekey encryption, or delete the encryption key on storage controllers. This feature enables ease of operation by providing an easy-and-simple-to-use interactive GUI. The feature can be used if at least one security-capable controller is present in the system. Otherwise, the link is grayed-out.

Pre-requisits

A system must have any of the following security-capable storage controllers:

- H7XX Series or H7XXp series
- H8XX Series

Local Key Encryption

Local Key Encryption is used to generate an encryption key locally and applies the same on the storage controller.

To create Local Key Encryption:

- 1. Start Lifecycle Controller. In the left pane, click Hardware Configuration.
- 2. In the right pane, click Configuration Wizard.
- 3. Under Storage Configuration Wizards, click Key Encryption.
- 4. Select the **Storage Controller** on which you want to create a local key, and then click **Next**.

	Configuration \	Configuration Wizards: RAID Encryption Configuration				
Select Task						
incryption Configuration	Step 1 of 3: Sele	ct Controller				
	Select the RAID contro	ller for encryption configuratio	n.			
	PERC H710P Ada	apter in Slot 3 (Security Capa	ble)			
	Selected Controller En	Selected Controller Encryption Mode:				
	PERC H710P Adap	PERC H710P Adapter: No Encryption				
	Selected Controller \	/irtual Disk Attributes				
	Virtual Disks	RAID Level	Size (GB)	Encryption		
	OS_VD	RAID 0	297.00	No		

Figure1. Select Storage Controller



5. Click Setup Local Key Encryption and click Next.



Figure2. Select Encryption Type

- 6. Type data in the following boxes and click **Finish**.
 - a. **Encryption Key Identifier**: Type a unique identifier that is used to identify the encryption key with which the virtual disks are encrypted. This feature enables you to identify the encryption key of the encrypted virtual disks.
 - b. **New Passphrase**: Type a security key to encrypt the virtual disks. The controller card uses this passphrase to encrypt the virtual disk data. A valid passphrase must have 8 to 32 characters. A passphrase must include a combination of upper- and lower case letters, numbers, symbols, and must not have white spaces.
 - c. **Confirm Passphrase**: Retype the passphrase to confirm. That is, the same security passphrase has to be entered in this field. If an incorrect passphrase is entered, the encryption key is not created, but a warning message is displayed.



	Configuration Wizards: RAID Encryption Configuration
Encryption Configuration	Step 3 of 3: Encryption Configuration
	Enter a passphrase to encrypt the controller. Enter an Encryption Key Identifier that is displayed when the passphrase is required. Encryption Key Identifier New Passphrase Confirm Passphrase A valid passphrase contains 8-32 ASCII characters and includes a combination of uppercase and lowercase letters, numbers and symbols, and no spaces.
	Once disks are encrypted, they cannot be decrypted. Record the passphrase in a safe location as it cannot be retrieved or reset.

Figure 3. Encryption Configuration

Select Controller		Configuration Wizards: F	RAID Encryption Configuration	
Select Task	ation	Encryption Warning New Pass Confirm F	ntroller. t is displayed when the passphrase is required not match. Re-enter phrase and retry. includes a combinat	on of uppercase and se in a safe location as it
PowerEdge R620 Service Tag : HJF2D2	s		Cancel	Back Finish

Figure4. Message when passphrase does not match

After you type data in all the boxes, click **Finish**. Lifecycle controller validates the passphrase. If the passphrase fulfills all the criteria, a message is displayed.



Figure5. Security will be enabled on the controller

7. Click **Yes** to create an Encryption key. After successful creation of an ecryption key, a message is displayed.



Figure6. Encryption Key Successfully Created

Encrypting Unsecure Virtual Disks

This feature is used for securing the virtual disks created using RAID Configuration on security-capable disk drives (SEDs—Self Encryption–capable Disks).

To use this option, the pre-requisites are:

- The selected controller must be security-capable
- Self-encryption-capable disk drives with Virtual Disk created on them
- Controller is in local-key-encryption mode

To encrypt an unsecured virtual disk:

- 1. Start Lifecycle Controller. In the left pane, click Hardware Configuration.
- 2. In the right pane, click **Configuration Wizard**.
- 3. Under Storage Configuration Wizards, click Key Encryption.
- 4. Select the Storage Controller on which you want to enable this feature and click Next.
- 5. Click the Encrypt Unsecure Virtual Disk option, and then click Next.



Figure7. Select Encrypt Unsecure Virtual Disks

6. Select a virtual disk you want to encrypt, and then click **Finish**.

Lifecycle Controll	er Unified Server Configura	ator		Help About Exit
Select Controller	Connguration	Wizards: RAID En		figuration
Encrypt Virtual Disks	Step 3 of 3: Encrypt Unsecure Virtual Disks The selected virtual disks will be encrypted with the current controller encryption type. Selected Controller Encryption Mode: PERC H710P Minit Local Key Encryption Deselect Select the virtual disks			
	Virtual Disks i ✓ sed_VD	RAID Level RAID 0	Size (GB) 465.250	Encryption Mode Local Key Encryption
PowerEdge R620 Service Tag : HJF2D2S			C	ancel Back Finish

Figure8. Encrypt Unsecure Virtual Disks



Rekeying Controller and Encrypted Disks with a New Local Key

This option is available when the security key is already created on a controller card. You can change the existing security key to another key by using this feature available in Lifecycle Controller.

To rekey the existing security key:

- 1. Start Lifecycle Controller. In the left pane, click Hardware Configuration.
- 2. In the right pane, click **Configuration Wizard**.
- 3. Under Storage Configuration Wizards, click Key Encryption.
- 4. Select the Storage Controller on which you want to enable this feature and click **Next**.
- 5. Click Rekey Controller and Encrypted Disks with a New Key, and then click Next.

	ONTROLLER UNIFIED SERVER CONFIGURATOR	Help About Exit
Select Controller 🗸	Configuration Wizards: RAID Encryption Configuration	
Select Task Encryption Configuration	Step 2 of 3: Select Encryption Task Select an encryption task to perform on the virtual disk(s). Only valid selections will be active. Selected Controller Encryption Mode: PERC H710P Adapter: Local Key Encryption Encrypt Unsecure Virtual Disks Switch from Local Encryption to Key Manager Rekey Controller and Encrypted Disks with a New Key Remove Encryption and Delete Data	
PowerEdge T420 Service Tag:HH9RD2S	Cancel Back	Next

Figure9. Select the Rekey option

6. Type appropriate data in the Existing Passphrase, New Encryption Key Identifier, New Passphrase, and Confirm Passphrase text boxes and click Finish.

elect Controller	 Configuration Wizards: RAID Encryption Configuration
elect Task	✓
ekey controller	Step 3 of 3: Rekey Controller
	Rekeying the controller will encrypt all existing controller virtual disks with a new key.
	Existing Encryption Key Identifier - Test1
	Existing Passphrase
	New Encryption Key Identifier —
	New Passphrase
	Confirm Passphrase
	A valid passphrase contains 8-32 ASCII characters and includes a combination of uppercase and lowercase letters, numbers and symbols, and no spaces.
	Once disks are encrypted, they cannot be decrypted. Record the passphrase in a safe location as it cannot be retrieved or reset.

Figure10. Rekey Controller

After clicking **Finish**, Lifecycle Controller validates the existing passphrase, and then the new passphrase. If the validation is successful, a message is displayed.

	13
Security will be enabled on this control	lier. Record the
Encryption key identifier and passphra	ase in a safe location. If
the key identifier or passphrase is forg	gotten, the data will be
inaccessible. Are you sure you want to	o create a security key



7. Click **Yes** to recreate the key with a new passphrase. After successfully recreating the encryption key, a message is displayed.



Figure12. Key Encryption Successfully Created



Removing Encryption and Deleting Data

This feature is used to disable the encryption already present in the controller and the virtual disks, and then deleting data on the secured virtual disk. To disable the encryption and delete data on the secured virtual disks:

- 1. Start Lifecycle Controller. In the left pane, click Hardware Configuration.
- 2. In the right pane, click **Configuration Wizard**.
- 3. Under Storage Configuration Wizards, click Key Encryption.
- 4. Select the Storage Controller on which you want to enable this feature and click Next.
- 5. Click the **Remove Encryption and Delete Data** option and click **Next**.

Lifecycle Controller	Unified Server Configurator	Help About Exit
Select Controller	Configuration Wizards: RAID Encryption Configuration	
Select Task		
Encryption Configuration	Step 2 of 3: Select Encryption Task	
	Select an encryption task to perform on the virtual disk(s). Only valid selections will be active.	
	Selected Controller Encryption Mode:	
	PERC H710P Mini: Local Key Encryption	
	 Encrypt Unsecure Virtual Disks Switch from Local Encryption to Key Manager Rekey Controller and Encrypted Disks with a New Key Remove Encryption and Delete Data 	
PowerEdge R620	Cancel Back	Next
Service Tag: HJF2D2S		

Figure13. Select Encryption Task

Select the Delete encryption key and all the secure virtual disks option, and then click Finish.
 This feature permanently deletes the encryption key, virtual disks, and the data stored on the virtual disks.

elect Controller	 Configuration 	Wizards: RAID Encr	yption Configura	tion		
elect Task	✓ Step 3 of 3: De	Step 3 of 3: Delete Encryption Configuration				
elete Encryption	Step 5 01 5. De		guiation			
		The current encyption configuration is listed below. Removing the encryption deletes the encryption key, all data, and virtual disks.				
	☐ Delete encryption	Delete encryption key and all the secure virtual disks. Selected Controller Encryption Mode: PERC H710P Adapter: Local Key Encryption				
	Selected Controller El					
	PERC H710P Ada					
	Selected Controller	Selected Controller Virtual Disk Attributes				
	Virtual Disks	RAID Level	Size (GB)	Secure		
	OS_VD	RAID 0	297.00	No		

Figure14. Delete Encryption Configuration

After clicking **Finish**, a message is displayed asking whether or not you want to permanently delete data.



Figure15. Delete Encryption Key

7. To delete encryption key and all the secure virtual disks, click **Yes**. After successful deletion of encryption key, a message is displayed.



Figure16. Encryption Key Successfully Deleted

