Technical white paper

HP RAM Disk

Public

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Overview

The HP RAM Disk feature is available on HP Enterprise and Managed single-function printers (introduced after January 2015) running HP FutureSmart firmware version 4.8 or newer.

HP RAM Disk provides volatile temporary storage for the print data. Upon shut down of the device or loss of power the RAM Disk loses any data held in memory. The RAM Disk function meets the needs of customers with requirements to have no user print data written to mass storage, such as a hard disk, eMMC or SSD.

With the installation of a supported HP DIMM, supported single-function printers can be configured to use the DIMM as RAM Disk. Once enabled, all print data that would have been written to mass storage will instead flow through the RAM Disk for print processing.

The supported accessory RAM DIMM modules for Ram Disk, HP 1GB 90-Pin DDR3 DIMM (2NR03A) and HP 2GB DDR3x32 144-Pin 800MHz SODIMM (2NR09A), are Trade Agreements Act (TAA) compliant.

The RAM Disk feature is available on HP FutureSmart Enterprise single-function products introduced after January 2015 and running HP FutureSmart firmware 4.8 or higher. See the Supported Printers section for a complete list of supported products and compatible TAA compliant DIMM accessories.

Data written to RAM Disk

When the RAM Disk is enabled, the print data is sent to the RAM Drive. All other data, including system data and configuration data will remain on the original device drive.

If the RAM Disk is enabled on a system that already has sensitive content on the mass storage device, the data is deleted upon enabling of the RAM Disk. This is done via a cryptographic erase of the storage device.

System requirements

RAM Disk functionality requires HP FutureSmart 4 firmware version 4.8 or higher to be installed on the printer. The product firmware must be installed prior to configuring the device for RAM Disk.

For more information on how to update the Enterprise printer firmware, please refer to document titled HP Enterprise - Update the firmware.

Enable RAM Disk

Follow these steps to enable RAM Disk:

1. Power the printer off.
2. Install the DIMM in the printer according to the DIMM installation instructions.
3. Power the printer on and wait for the printer to come to the Ready state.
4. Open a web browser.
5. In the URL field, type the IP address of the printer and then press **Enter**.

   NOTE: If the web browser displays a message indicating that accessing the website might not be safe, select the option to continue to the website. Accessing this website will not harm the computer. This message is received if the printer enforces HTTPS.

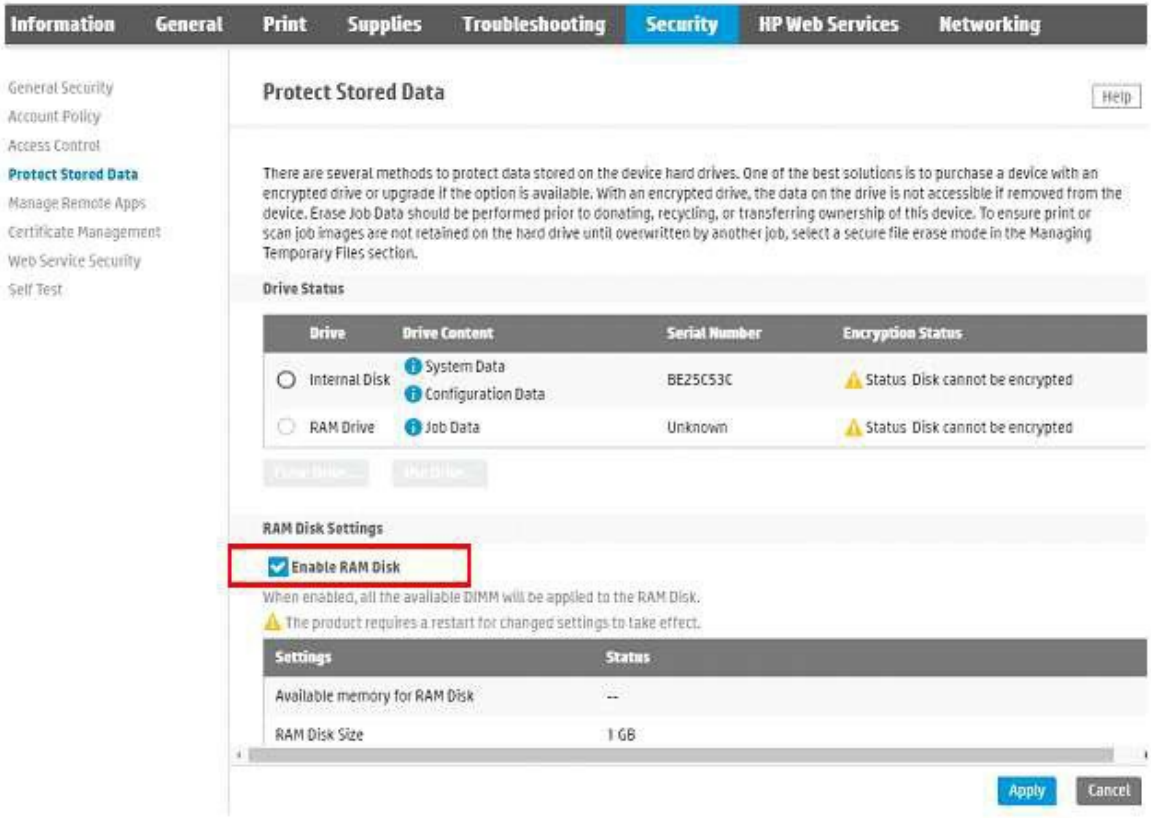
6. Select the **Information** tab, click **Configuration Page** to view the printer information (Figure 1). Verify the DIMM shows in the installed personalities and options.

   Figure 1: EWS - Configuration Page

7. Select the **Security** tab, and then select **Protect Stored Data** in the left navigation pane.

8. Under RAM Disk Settings section, select the **Enable RAM Disk** check box. (Figure 2).

Figure 2: EWS - Enable RAM Disk option on the Security tab



9. Click **Apply**. A restart of the printer is required to activate RAM Disk.

10. Click **Restart Now**. If desired, select **Restart Later**.

NOTE: HP recommends securing the formatter with a Kensington lock via the Kensington lock port. See the printer manual for additional information.

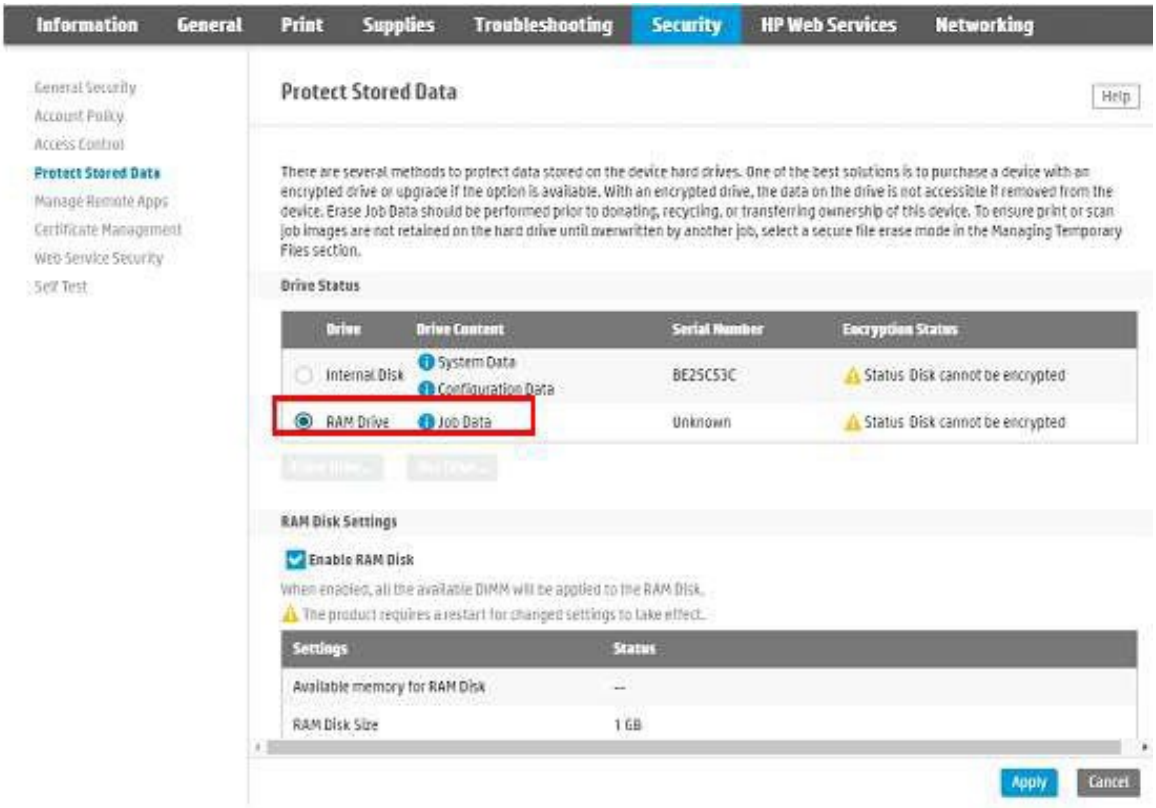
To verify RAM Disk is enabled after the printer restart

1. Open the printer Embedded Web Server.
2. Select the **Security** tab, and then select **Protect Stored Data** in the left navigation pane.
3. Under the **Drive Status** section, in the **Drive Content** column, verify that RAM Drive is listed, and that the Job Data is displayed. (Figure 3).

   NOTE: The Encryption Status will list with a warning "Status Disk cannot be encrypted." This is means that the RAM Drive is not self-encrypting.

   NOTE: There is no customer-facing method or interface to directly access information stored in the RAM Drive. Upon shut down of the device or loss of power, the RAM Disk loses any data held in its memory.

Figure 3: EWS – Protect Stored Data information in the Security tab



The configuration page in the Embedded Web Server will also display the RAM Disk Size under the Memory column (Figure 4)

Figure 4: EWS – RAM Disk Size information in the Information tab

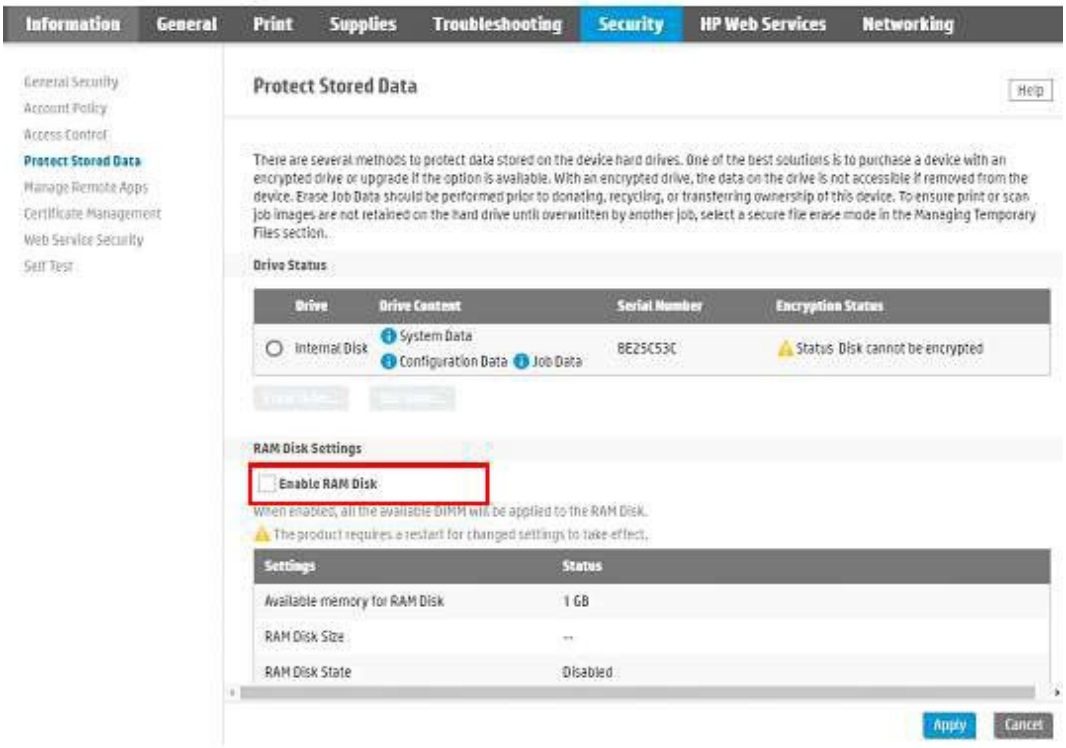
Disable RAM Disk

1. Open a web browser.
2. In the URL field, type the IP address of the printer, and then press **Enter**.

   NOTE: If the web browser displays a message indicating that accessing the website might not be safe, select the option to continue to the website. Accessing this website will not harm the computer. This message is received if the printer enforces HTTPS.

3. Select the **Security** tab, and then select **Protect Stored Data** in left navigation pane.
4. Under the **RAM Disk Settings** section, clear the **Enable RAM Disk** check box. (Figure 5).

Figure 5: EWS – RAM Disk Settings in the Security tab



5. Click **Apply**. A restart of the printer is required to deactivate RAM Disk.
6. Click **Restart Now**. If desired, select **Restart Later**.
7. The DIMM accessory can now be safely removed from the printer, if desired.

RAM Disk Error 33.03.07

The RAM Disk error 33.03.07 can be displayed on the BIOS menu in three different scenarios:

- If the DIMM accessory is removed from the printer prior to disablement via the Embedded Web Server.
- If the DIMM accessory is left off the formatter during a printer repair.
- If the DIMM accessory fails.

In any of these scenarios, the printer boot process will stop at the Preboot menu and post the 33.03.07 No DIMM Installed message (Figure 6). This message is also logged in the Event Log (Figure 7).

Figure 6: Error message: 33.03.07 No DIMM Installed

Figure 7: Event Log Page

Event Log Page

Device Information

Product Serial Number: PHBKQ00230

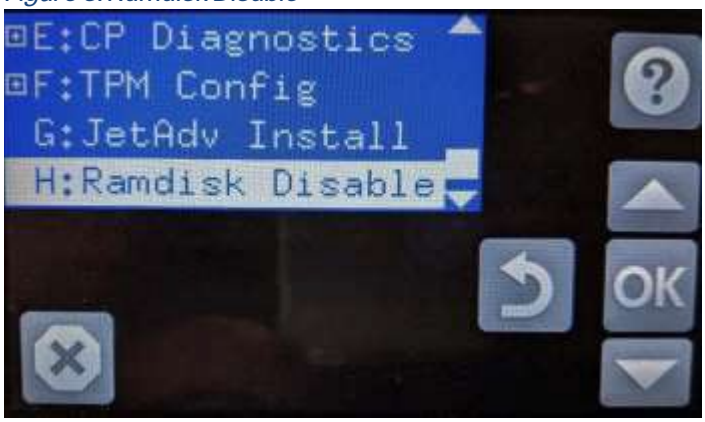
Number	Date and Time	Cycles	Event	Firmware	Description or Personality	Repetitions
3	8/14/2019 2:56:42 PM	0	33.03.07		RAMDisk is enabled, but there is no DIMM installed	0
2	7/24/2019 11:38:01 AM	179	10.99.40	2407349_000098	Genuine HP supplies installed	0
1	7/24/2019 11:37:32 AM	0	98.02.02	2407349_000098	Disk successfully cleaned	0

Resolve the error

To resolve the error, use one of the following solutions:

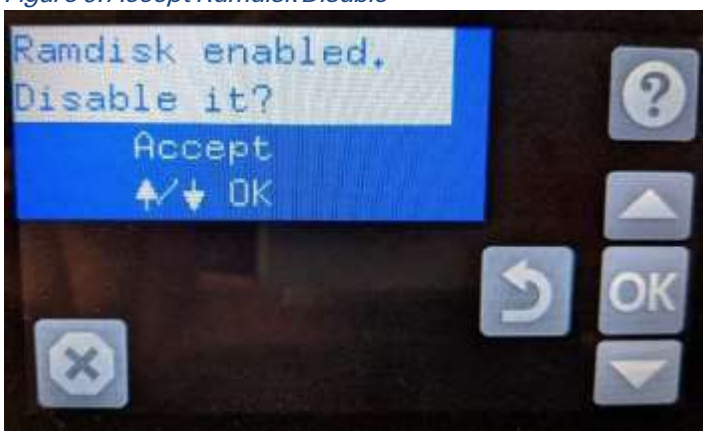
- Solution one: Reinstall the accessory DIMM onto the formatter as per the DIMM installation instructions. Or,
- Solution two: Disable the RAM Disk function from the **Preboot** menu, using the following instructions:
  a. At the **Preboot** menu error code, press the back arrow.
  b. Press the down arrow to the **Administrator** menu. Press **OK**.
  c. Press the down arrow to the **Ramdisk Disable** menu (Figure 8). Press **OK**.

Figure 8: Ramdisk Disable



  d. When prompted, press **OK** to accept (Figure 9).

Figure 9: Accept Ramdisk Disable



  e. Press the back arrow to return to the main menu.
  f. Select **Continue**, press **OK** to resume the printer start up process.

Supported printers

You might want to include the list of supported printers. If this document will apply to future releases, be more generic such as 'HP LaserJet Enterprise and HP PageWide Enterprise printers running HP FutureSmart firmware.

Product	Product Numbers	2NR03A	2NR09A
		TAA-Compliant HP 1GB 90-Pin DDR3 DIMM	TAA-Compliant HP 2GB DDR3x32 144-Pin 800MHz SODIMM
HP LaserJet Enterprise M506n, dn, x, dh	F2A68A, F2A69A, F2A70A, F2A71A	√	
HP LaserJet Managed M506dnm, xm	F2A66A, F2A67A	√	
HP LaserJet Enterprise M507n, dn, dng, x	1PV86A, 1PV87A, 1PV88A, 1PV89A	√	
HP Color LaserJet Enterprise M553n, dn, x, dh	B5L24A, B5L25A, B5L26A, B5L27A	√	
HP Color LaserJet Managed M553dnm, xm	B5L38A, B5L39A	√	
HP LaserJet Enterprise M604n, dn	E6B67A, E6B68A	√	
HP LaserJet Enterprise M605dh	L4W89A	√	
HP LaserJet Enterprise M605n, dn, x	E6B69A, E6B70A, E6B71A	√	
HP LaserJet Enterprise M606dn, x	E6B72A, E6B73A	√	
HP LaserJet Enterprise M607n, dn	K0Q14A, K0Q15A	√	
HP LaserJet Enterprise M608n, dn, x	K0Q17A, K0Q18A, K0Q19A	√	
HP LaserJet Enterprise M608nk	4QZ97A	√	
HP LaserJet Enterprise M609dh, dn, x	K0Q20A, K0Q21A, K0Q22A	√	
HP LaserJet Enterprise M610dn	7PS82A	√	
HP LaserJet Enterprise M611dn	7PS84A	√	
HP LaserJet Enterprise M611x	7PS85A	√	
HP LaserJet Enterprise M612dn	7PS86A	√	
HP LaserJet Enterprise M612x	7PS87A	√	

Product	Product Numbers	2NR03A TAA-Compliant HP 1GB 90-Pin DDR3 DIMM	2NR09A TAA-Compliant HP 2GB DDR3x32 144-Pin 800MHz SODIMM
HP Color LaserJet Enterprise M652n, dn	J7Z98A, J7Z99A		√
HP Color LaserJet Enterprise M653dn, x, dh	J8A04A, J8A05A, J8A06A		√
HP Color LaserJet Enterprise M751n, dn	T3U43A, T3U44A		√
HP Color LaserJet Enterprise M856 dn, x	T3U51A, T3U52A		√
HP LaserJet Managed E50045dn	3GN19A	√	
HP LaserJet Managed E50145dn Printer	1PU51A	√	
HP Color LaserJet Managed E55040dw	3GX98A	√	
HP LaserJet Managed E60055dn	M0P33A	√	
HP LaserJet Managed E60065dn, x	M0P35A, M0P36A	√	
HP LaserJet Managed E60075dn, x	M0P39A, M0P40A	√	
HP LaserJet Managed E60155dn	3GY09A	√	
HP LaserJet Managed E60165dn	3GY10A	√	
HP LaserJet Managed E60175dn	3GY12A	√	
HP Color LaserJet Managed E65050dn	L3U55A		√
HP Color LaserJet Managed E65060dn	L3U56A		√
HP Color LaserJet Managed E65150dn	3GY03A		√
HP Color LaserJet Managed E65160dn	3GY04A		√
HP Color LaserJet Managed E75245dn	T3U64A		√
HP Color LaserJet Managed E85055dn	T3U66A		√

Product	Product Numbers	2NR03A	2NR09A
		TAA-Compliant HP 1GB 90-Pin DDR3 DIMM	TAA-Compliant HP 2GB DDR3x32 144-Pin 800MHz SODIMM
HP PageWide Enterprise Color 556dn, xh	G1W46A, G1W47A		√
HP PageWide Enterprise Color 765dn	J7Z04A		√
HP PageWide Managed Color E55650dn	L3U44A		√
HP PageWide Managed Color E75160dn	J7Z06A		√
HP PageWide Managed P75250dn	Y3Z49A		√

Product	Product Numbers	6QY68A	616H1A	1M8J0A
		HP 2GB DDR3Lx32 120-pin 933MHz DIMM	TAA – Compliant HP 2GB DDR3Lx32 120-pin 933MHz DIMM	HP 4GB DDR3Lx64 204-pin 933MHz DIMM
HP Color LaserJet Enterprise 6700	49L00AV			√
HP Color LaserJet Enterprise 6700 dn	6QN33A			√
HP Color LaserJet Enterprise 6701	4Y280AV			√
HP Color LaserJet Enterprise 6701dn	58M42A			√
HP Color LaserJet Enterprise X65455 dn	49L02A			√
HP Color LaserJet Enterprise X65465 dn	49L04A			√
HP Color LaserJet Enterprise X654 dn	6QQ00A			√
HP Color LaserJet Enterprise 5700	49K98AV	√	√	
HP Color LaserJet Enterprise 5700 dn	6QN28A	√	√	
HP Color LaserJet Enterprise X55745dn	6QP97A	√	√	

Revision History

Edition/ Date (month/year)	Request submitted	Changes to the document
Edition1/ January 2020	CDD Request #3929	New .pdf uploaded in Concentra
Edition 2/ February 2020	CDD Request #3956	Added products M856/ E85055
Edition 3/ March 2021	CDD Request #5063	Added products M610, M611, M612 Updated Supported printers in numerical order.

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