

Enable End to End Encryption feature for HP Access Control Pull Print

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Overview

HP Access Control (HP AC) provides end-to-end encryption through a combination of **Encryption at rest** and **Encryption in transit**. When **Encryption at rest** is enabled, print jobs stored on the HP AC pull print server are encrypted.

When **Encryption in transit** is enabled, print jobs are transmitted through an encrypted communication channel between the user PC and pull print server and between the pull print server and the destination printer or MFP via IPPS.

Enable **Encryption at rest** to encrypt print jobs using AES 256 while the jobs are on the HP Access Control server.

When the printing protocol TCPIP/IPPS is set on the server and IPPS is enabled on the device, the print job is decrypted on the server but sent securely over the network via HTTPS.

Note: End-to-end encryption is not enabled by default. This document describes the process to enable it.

Figure 1 illustrates how HP AC end-to-end encryption works.

Figure 1: An overview of the End to End encryption



Prerequisites

o LPR print queues installed on the client

For instructions, see <u>Creating an HP AC LPR Print Queue</u>.

- o HP Access Control Print Client
- o The HP Access Control Print Client installs Microsoft .NET framework 2.0 on the client workstation.
- o Client PC connected to the domain and logged in as an authenticated user.

Creating an HP AC LPR Print Queue

This section provides the steps to configure an HP AC Enterprise print queue for client-based print queues.

- <u>Step one: Add a direct print queue</u>
- Step two: Create an HP AC LPR port
- Step three: Assign the Enterprise port to the new print queue

Step one: Add a direct print queue

Note: This step is required to prepare the pull print queue to support all the printers' features, such as duplex and color printing. After installed and configured, if required change the printer's port to support pull printing.

- 1. Open Print Manager: select **Start** and type **Print Management** in the **Search program and files** box.
- 2. Expand **Print Servers**, right-click on the local server and click on **Add Printer**.

Figure 7: Add Printer in Print Management

e Print Management							
File Action View Help							
🗇 🔿 📶 🖬 🖉	M						
🕞 Print Management	Port Name	Port Description	Port Type				
🕀 📝 Custom Filters	4 192.168.0.55	Standard TCP/I	Write				
Print Servers	📱 СОМ1:	Local Port	Write				
HPAC140 (local)	li coup	Local Port	Write				
Add Printer		Local Port	Write				
Export printers	to a file	Local Port	Write				
Por Import printers	from a file	Local Port	Write				
🛨 🛄 Prin Set Notification	0.55	Standard TCP/I	Write				
Deployed Pi Properties		Local Port	Write				
Help		Local Port	Write				
		Local Deat	00-0-				

- 3. Select Add a TCP/IP or Web Service Printer by IP address or hostname then select Next.
- 4. Select **TCP/IP Device** from the **Type of Device** drop-down list.
- 5. Type the IP address of a LaserJet printer.
- 6. Create a name for the port to reflect an HP AC Pull Print port.
- 7. Uncheck Auto detect the printer driver to use.
- 8. Click Next.

Figure 8: Network Printer Installation Wizard

🚔 Network Printer Installation Wizard	2	<u><</u>	🖶 Network Printer Installation Wiza	rd	×
Printer Installation Pick an installation method.			Printer Address You can type the printer's network	name or IP address.	
C Search the network for printers	ddress or hostname		<u>I</u> ype of Device: Host name or IP <u>a</u> ddress:	TCP/IP Device	
O Add a new printer using an existing port:	LPT1: (Printer Port)		Port name:	Pull Print	
C Create a new port and add a new printer:	HP AC Secure Pull Print Enterprise Port		Auto detect the printer driv	er to use.	
	< <u>₿</u> ack. <u>N</u> ext > Cancel			< Back Next > Cancel	

- 9. Select one of the driver options and click Next.
- 10. Locate your Universal Print Driver and complete the installation.

Step two: Create an HP AC LPR port

After the installation of the direct IP queue is complete, create a new LPR port that points to the HP AC print queue.

Note: Do not use the HAPC Secure Pull Print Enterprise Port for this configuration. This port is reserved for use with ePrint.

- 1. In Print Management, right-click on **Ports** and select **Add Port**.
- 2. Select a Standard TCP/IP Port and click New Port.

Figure 9: Add port in Print Management



Available	port types:		P-4	
HP AC S	ecure Pull Prir ecure Pull Prir	nt Enterprise nt Express Po	ort	
HP ACJ	Port			
HP Univ	ersal Print Mo .rt	nitor		
Standar	TCP/IP Port			
ThinPrin	t Print Port M	onitor for V	MWare	
New	Port Type		New Port	Cancel

- 3. Select **Next** on the wizard prompt.
- 4. In the **Printer Name or IP address** text box, type the IP address of the HP AC server.
- 5. In the **Port Name**, assign a name that will reflect a pull print port, and then select **Next**.

6. Select **Custom-Settings** on the **Additional port information required** window.

Figure 10: Add Standard TCP/IP port

Add Standard TCP/IP Printer Port Wizard	Add Standard TCP/IP Printer Port Wizard
Add pot For which device do you want to add a pot?	Additional port information required The device could not be identified.
Enter the Printer Name or IP address, and a port name for the desired device.	The device is not found on the network. Be sure that: 1. The device is turned on.
Printer Name or IP Address: 192.168.0.55 Port Name: Pull Print	 The network is connected. The device is properly configured. The address on the previous page is correct.
	If you think the address is not correct, click Back to return to the previous page. Then correct the address and perform another search on the network. If you are sure the address is correct, select the device type below.
	Device Type
	C Standard Generic Network Card
	C Custom
< Back Next > Cancel	< Back Next > Cancel

- 7. On the **Port Settings** tab, under the **Protocol** section, select the **LPR** option.
- 8. Under the Raw Settings section, change the Port Number to 515.
- 9. Under LPR settings, add the HP AC Enterprise queue name that is created in the PersonalQ tile (HP AC admin console>PersonalQ tile), and then select **OK** to complete the configuration.
- 10. Select Next on the Additional port information required window.

Figure 11: Configure Standard TCP/IP port

Configure Standard TCP/IP Port Monitor	
Port Settings	Add Standard TCP/IP Printer Port Wizard
Port Name: Pull Print	Additional port information required The device could not be identified.
Printer Name or IP Address: 192.168.0.55 Protocol C Baw C LPR Raw Settings Port Number: 515 LPR Settings Queue Name: sppe	 The device is not found on the network. Be sure that: The device is turned on. The network is connected. The device is properly configured. The address on the previous page is correct. If you think the address is not correct, click Back to return to the previous page. Then correct the address and perform another search on the network. If you are sure the address is correct, select the device type below.
LPR Byte Counting Enabled SNMP Status Enabled Gommunity Name: public SNMP Device Index: 1 OK Cancel	Device Type C Standard Generic Network Card C Custom Settings < Back Next > Cancel

11. Click **Finish**, and then click **Close** to close the printer ports window.

Figure 12: Close the printer ports wizard

dd Standard TCP/IP Printer Port Wizard	
Completing the Add Standard T Printer Port Wizard	CP/IP Printer Ports
You have selected a port with the following character	eristics. Available port types:
SNMP: No Protocol: LPR. sppe Device: 192168.0.55 Port Name: Pull Print Adapter Type:	HP AC Secure Pull Print Enterprise Port HP AC Secure Pull Print Express Port HP ACJA Port HP Universal Print Monitor Local Port Standard TCP/IP Port ThinPrint Print Port Monitor for VMWare
To complete this wizard, click Finish.	Cancel New Port Type New Port

Step three: Assign the Enterprise port to the new print queue

After the port is created, it needs to be assigned to the print queue.

1. Right click on the original TCP/IP printer that was created in "Step one", and then select the Ports tab.

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About Color Management

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Print <u>T</u>est Page

r available:

- 2. Select the LPR port created in Step 2, and then click OK.
- 3. Select the **General** tab and print a test page.

Figure 13: Pull Print Properties

Pull Print Properties			× Pull Print	Properties	
Security	Device Settings	About	Sec	curity	Device Settings
General Sharing	Ports Advanced	Color Management	General	Sharing F	orts Ad
Pull Print			*	Pull Print	
rint to the following port(s	. Documents will print to th	e first free	Location:		
Port Descri	otion Printer	<u> </u>	Comment	t	
192.168.0.55 Standa 192.168.0.55 Standa	rd TCP/IP Port rd TCP/IP Port rd TCP/IP Port HPAC SI	NTTP://192.108.0.55:	Madali	HP Universal Pri	nting PCL 6 (v5
I92.168.0.42 Standa ✓ Pull Print Standa	rd TCP/IP Port rd TCP/IP Port Pull Prin	t	Features	/er	Paper
XPSPort: Local F	Port Microso	ft XPS Document W	Double	-sided: Yes	Lette
Add Port	Delete Port	Configure Port	Staple: Speed:	No 30 ppm	
Enable bidirectional supp	ort		Maximu	um resolution: 600 dp	i
Enable printer pooling					Pr <u>e</u> ferences
]		Close
	ОК	Cancel Apply			

4. Navigate to the PersonalQ tile in the HP AC admin console to verify if the test page was printed.

Figure 14: HP AC admin console

(\leftarrow)											? _ □	x
	User Logon	Y	Document Name	Y	Status	Y	Pages	Y	Size	7	Generated	\mathbb{Y}
GABES			Test Page		Waiting		1		79145		8/19/2014 11:31:17 AM	1

Enable Encryption at Rest on the HP AC server

- 1. In the HP AC admin console, navigate to the **Settings** tile and select the **Pull Print** tab.
- 2. On the **Pull Print** tab, select the pull print server from the host name list and choose **Configure**.
- 3. Select the **Advanced** tab.
- 4. Expand **Pull Print options** and enable **Encryption at rest**. When the Encryption Key box displays, enter a key.

Preview the key requirements

- Encryption at rest requires an Enterprise port when used in a point and print (shared printer on the HP AC server) environment.
- LPR print queues installed on the client do not support Encryption at rest.
- LPR shared queues on the server do not support Encryption at rest.
 - o If you want to use an LPR print queue on a client PC and Encryption at rest, we need the Enterprise Client
 - o If you want to use a shared LPR queue and Encryption at rest- not supported
- 5. Select **TCPIP/IPPS** as the Printing Protocol.
- 6. Select **Update**.
- 7. Update the printer definition files after changing the print protocol to IIPS.
- 8. Click the **Update** printer definition button on all servers.
- 9. Restart Services.

Note: Enabling **Encryption at rest** will only encrypt jobs that are printed after this feature is enabled. Exiting jobs are not encrypted.

Figure 15: SPP Enterprise

SPP Enterprise Data	ibase Dev	ice Email	IIS	Alias	Agent	IPN
- Options	TCPIP/IPPS			-		
PJL overla Job expires aft	r 24 Hour	5		-		
	Retain "Print-I	(eep" jobs beyond ex	piration			
	Enable trackin	g of purged jobs g of printed jobs				
TCP/IP API Po	5501					
TCP/IP QUEUE Po	5500					
TCP/IP LPD Po	515					
TCP/IP IPP Po	631					
	X Use device IP a	ddress				
	Show local and	l remote jobs				
	Display all jobs	ŝ				
	PJL parsing					
	Encryption at	est				
Encryption ke	******					
Client passcoo	•					
Client encryption ke	1					
	Enable one-to	uch release				

Install the HP Access Control Print Client

Follow these steps to install HP AC Control Print Client:

- 1. Locate the HP Access Control Print Client (x86 or x64), typically located on the HP AC server: C:\Program Files\Hewlett-Packard\HP Access Control\client setup.
- 2. For a single client install, right-click on the Setup.exe and **Run as Administrator**, and then follow the setup wizard.

Note: When deploying on a larger scale, the Enterprise Print Client Setup.exe might be used to customize MSI.

- 3. Select a proper installation directory location, and then click **Next**.
- 4. When installing **Encription at Rest**, only the HP Access Control Pull Print server name is required.

Note: Fully qualified host names are required.

Figure 2: HP AC Print Client

🕼 HP Access Control Print Client	_ 🗆 X
HP Access Control Print Client	
HP Access Control JA server name:	
HP Access Control IPM server name:	
HP Access Control Pull Print server name:	
HPACCLUSTER.capellatech.com	
Cancel < Back	Next >

5. If only using the encryption feature, clear or uncheck all the check boxes in **Configuration**, and then select **Next**.

HP Access Control Print Client		"	i HP Access Control Print Client	_ 🗆 🗡
Configuration		=	Confirm Installation	
Select configuration			The installer is ready to install HP Access Control Print Client on your computer. Click "Next" to start the installation.	
Cuota				
IPM				
C Delegate				
Local job storage				
Cancel	< Back Next >		Cancel	Next >

Figure 3: HP AC Print Client Configuration

6. Complete the installation by selecting **Next.**

Figure 4: Installation of the HP AC Print Client

🙀 HP Access Control Print Client	_ 🗆 🗙	滑 HP Access Control Print Client	
Installing HP Access Control Print Client		Installation Complete	
HP Access Control Print Client is being installed.		HP Access Control Print Client has been successfully installed.	
Please wai	_	Click "Close" to exit.	
		Please use Windows Update to check for any critical updates to the .NET Framework.	
Cancel < Back	Next >	Cancel < Back. Close	;

Set up the Networking settings in the HP Embedded Web Server

Ensure that IPPS Printing is enabled.

- 1. Open the HP Embedded Web Server.
- 2. Click the **Networking** tab.
- 3. On the left navigation pane, select **Other Settings**, and then make sure to select the **IPPS Printing**.

Figure 5: Enable IPPS Printing option

HP LaserJet 500 MF	FP M525						
NPI0746C4 / 192.168.0.150							
Information General	Copy/Print	Scan/Digital Send	Fax	Troubleshooting	Security	HP Web Services	Networkin
Configuration TCP/IP Settings Network Settings	Other Settings Misc. Settings	'D Queues Support	Info Refresh Rate				
Other Settings AirPrint	Enabled Features						
Select Language Google Cloud Print	SLP Config		Bonjour			Multicast IPv4	
Setup Web Proxy	9100 Printing		AirPrint			FTP Printing	1
Security Settings	Telnet Config		HP Jetdirect X	ML Services		WS-Discovery	1
Authorization Mgmt. Protocols	Enable WINS Port		VINS Registra	mt Service ation		Web Services P	rint ition File
802.1X Authentication IPsec/Firewall Announcement Agent	Link settings:		AUTO 🔽				

Changing the client encryption key

If the encryption key is changed after the print client is installed on the client, run the command in the following steps to update the client:

This command will update the encryption key and the pull print queue name on the client if they are changed on the server.

- 1. Open a command prompt as an administrator.
- 2. Go to the following path:

C:\Windows\Microsoft.NET\Framework64\v4.0.30319\InstallUtil.exe /servername=hostname.domainname.local "c:\Program Files\HP\HP Access Control Print Client\bin\Configure.dll", where "hostname.domainname.local" is the FQDN of the HP AC server.

Note: This command displays the encrypted encryption key, pull print queue name, and the length of the encryption key.

Figure 6: Command Prompt

	Administrator: Command Prompt	_ 🗆 🗙
c:\Program Files\HP\HP Acc servername=eomctqa02.ctqa. Microsoft (R) .NET Framewo Copyright (C) Microsoft Co	:ess Control Print Client\bin≻c:\Windows\Microsoft.NET\Framework64\v4.€ .local "c:\Program Files\HP\HP Access Control Print Client\bin\Configu ork Installation utility Version 4.7.3056.0 orporation. All rights reserved.	9.30319\InstallUtil.exe /
Running a transacted insta	allation.	_
Beginning the Install phas See the contents of the lo progress. The file is located at c:\ Installing assembly 'c:\Pr Affected parameters are: logtoconsole = servername = eomctqa02. assemblypath = c:\Program Fi	ee of the installation. og file for the c:\Program Files\HP\HP Access Control Print Client\bin\ Program Files\HP\HP Access Control Print Client\bin\Configure.Installu rogram Files\HP\HP Access Control Print Client\bin\Configure.dll'. .ctqa.local ram Files\HP\HP Access Control Print Client\bin\Configure.dll iles\HP\HP Access Control Print Client\bin\Configure.InstallLog	∖Configure.dll assembly's ₋og.
The Install phase complete See the contents of the lo progress. The file is located at c:\ Committing assembly 'c:\Pr Affected parameters are: logtoconsole = servername = eomctqa02. assemblypath = c:\Program Fi	ed successfully, and the Commit phase is beginning. pg file for the c:\Program Files\HP\HP Access Control Print Client\bin\ rogram Files\HP\HP Access Control Print Client\bin\Configure.dll'. .ctqa.local ram Files\HP\HP Access Control Print Client\bin\Configure.dll iles\HP\HP Access Control Print Client\bin\Configure.dll iles\HP\HP Access Control Print Client\bin\Configure.lnstalLog	∖Configure.dll assembly's .og.
The Commit phase completed	d successfully.	