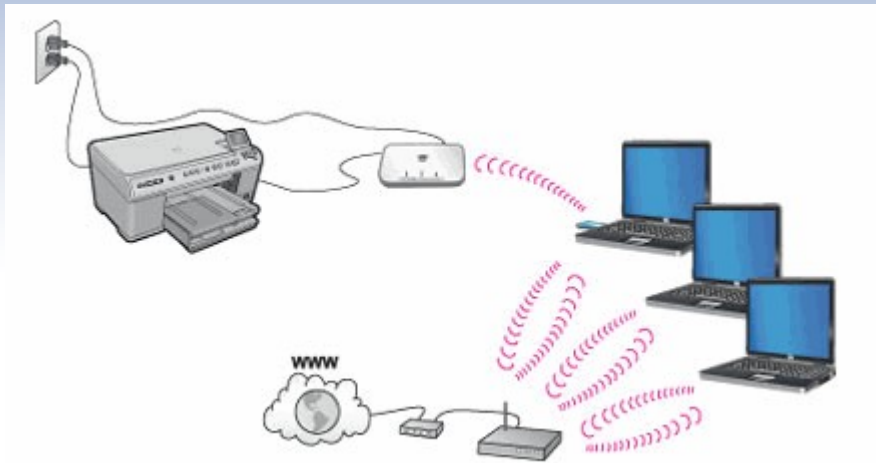


Wirelessly Printing to a Printer on a Network



- Mobile Device Printing

- Wireless Printing Overview
- Printing wirelessly to a printer on a wired network



PrintHand. One-stop mobile printing solution. Easy!

Wireless Printing

There are various types of methods of wireless printing for example:

- Printing directly from a printer with wireless capabilities
- Wirelessly connecting a wireless capable printer to a network
- Wireless printing using a network connected printer (Wired)
- Google Cloud Print
- Apple's AirPrint
- Other: Bluetooth, NFC and printer manufacturer's on-the-go-printing Apps (Android and iOS)



Wi-Fi Direct/Wireless Network

- Most of the current WI-FI capable printers allow you to connect directly to the printer with a Wi-Fi capable device (Wi-Fi Direct). With Wi-Fi Direct, you can print from a Wi-Fi enabled laptop or desktop computer without using a modem/router or access point. You can print, say, straight from your Wi-Fi enabled laptop to a Wi-Fi Direct-equipped printer without either device being attached to a Wi-Fi network
- Connecting a WI-FI capable printer wirelessly to a network can be done by using the network's modem/router (wireless) or a wireless print server connected to the network.
In this case you print from your WI-FI enabled device via either the modem/router or the wireless print server.
Generally you are connected (Logged on) to the network in this scenario

Wired Network/Google Cloud Print

- Printing wirelessly to a network printer is via the Modem/router (wireless capable) and print server. The printer is connected to the network by a print server (wired) be it hard-wired print server or a Samba print server for example. Your WI-FI enabled device would need to be logged onto the network to print



- Google Cloud Print, which is a technology that allows for remote printing from most device types. Mobile devices can access Cloud Print via apps, and ordinary computers can use it via Chrome or some third-party utilities. When you print through Google Cloud Print, your file is securely sent to your printer over the web. Because it's the web, Google Cloud Print works whether you're in the same room as your printer, or on another continent

AirPrint



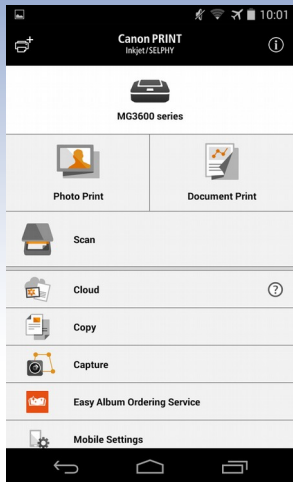
- AirPrint is a protocol that enables users of Apple iOS devices—iPads, iPhones and iPod Touches to print to a Wi-Fi equipped printer on your local network. AirPrint is largely seamless

You don't have to download a special app or utility to the mobile device; instead, having AirPrint support within the printer enables any AirPrint-enabled app or program to "find" the printer on your local network and print to it. AirPrint also works with Mac computers running OS X. Generally speaking, both the printer and the iOS/OS X device must be on the same Wi-Fi network to make AirPrint work wirelessly; the connection is not directly from device to printer

Other

- NFC (Near Field Communication) On NFC-enabled printers, you'll simply tap your NFC-enabled mobile device to an NFC-pickup spot on the printer. This tap establishes the link, and, depending on the implementation and configuration, it either prints a document or image on the device's screen automatically, or takes you to a print menu that lets you set the terms of printing
- Bluetooth wireless protocol is not as popular as it was now days as Wi-Fi has become the de facto wireless printing standard. Still, it's supported by a few printers for communicating with mobile devices for direct-from-device printing. You'll find it primarily in dedicated photo printers or mobile printers.

Other

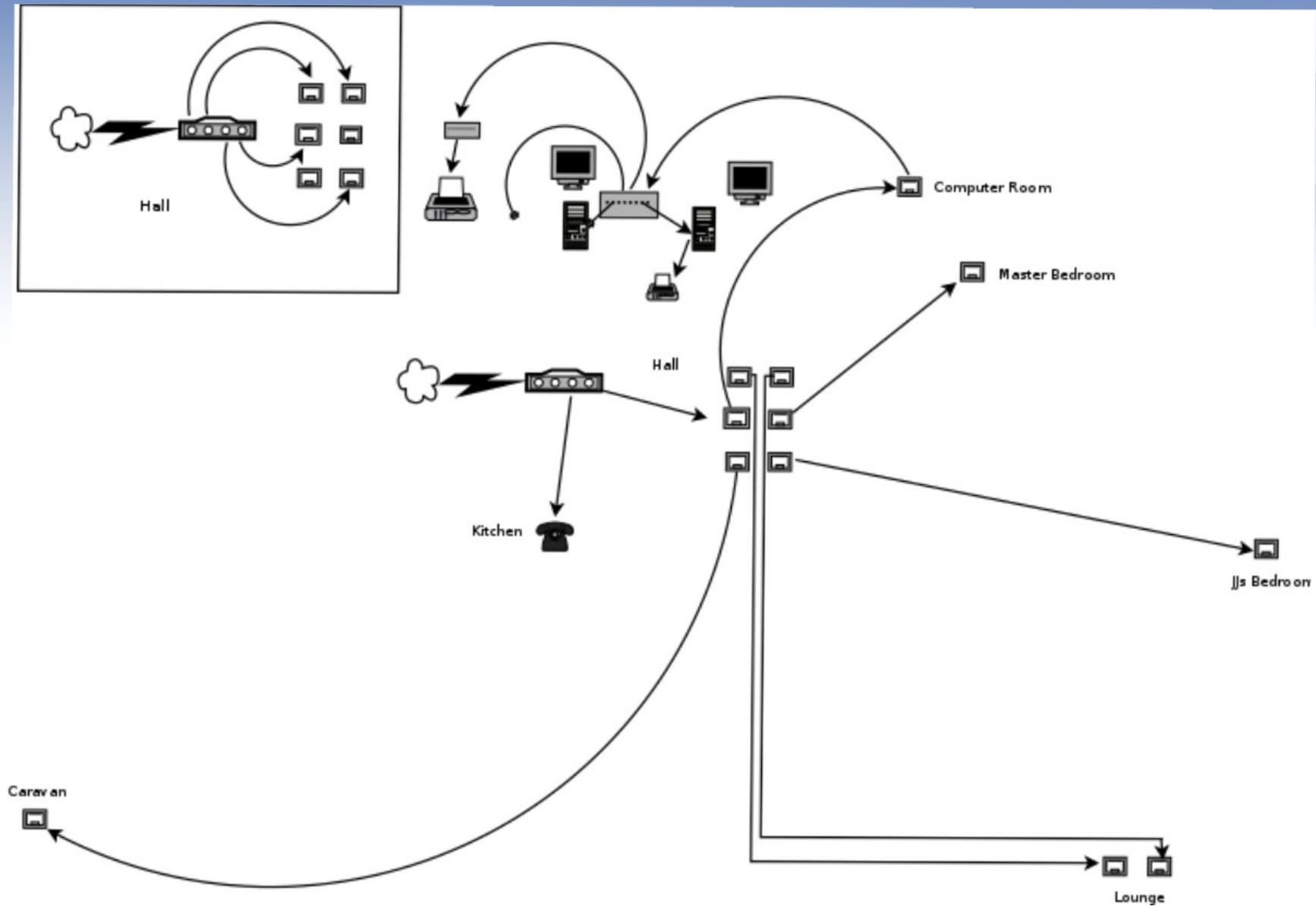


- The major printer makers all offer their own mobile apps for on-the-go printing from iOS and Android mobile devices, with the signal transmitted by one of the above mentioned methods. Brother's iPrint&Scan, HP's ePrint, Canon's Easy-PhotoPrint, and Epson's iPrint are some of the examples
- One other odd one to know about is e-mail printing, known most prominently (but not exclusively) as part of HP's ePrint feature. It's supported by most of the company's line, and it uses a wholly different wireless-printing concept. Under ePrint, your printer has a discrete e-mail address, and sending an e-mail with an attachment to that address triggers printing of the attachment

Printing wirelessly to a printer on a wired network

- In this scenario the printer is connected to the network by a print server. In this case the printer is using the parallel port to connect directly to the print server, but today's standard is now USB
- The print server is connected by an Ethernet cable to the network and hence the Modem/Router
- WI-FI capable devices use the Modem/Router to connect wirelessly onto the network
- This setup allows any WI-Fi capable devices that are allowed to log onto the network, and have the correct port number/ IP address and printer drivers to print

Network



Network Hardware

- 1Gb Modem/Router with Wireless and VOIP - Netcomm NB16WV-02
- Dual Wireless bands 2.4Ghz & 5Ghz
- 1Gb Switches
- CAT 5e network cabling and CAT 6 patch cables
- RJ45 Wall Plugs/Plates

Printer Hardware

- Print Server – HP JetDirect Ex Plus J2591A
- Parallel Port/Cable
- 10Mbps (10Base-T & BNC)
- Static IP Address (EG: 192.168.1.50)
- Use Telnet to set up/programme
- Printer - HP Laserjet 6P (Mono laser printer)
- Parallel Port (Optional Network Card)



Network Device Information

	A	B	C	D	E	F	G
1		<u>Network/Device Info</u>					
2	Device	Operating System	Host Name	MAC Address	IP Address	Network Type	Speed
3	ASUS Tablet (Transformer TF300T)	Android (Jelly Bean 4.2)		5C:FF:35:75:2D:B2	DHCP	Wireless	2.4GHz
4	Sony Mobile (Xperia Z1 Compact)	Android (Lollipop 5.1.1)		44:D4:E0:88:A9:7E	DHCP	Wireless	2.4GHz/5 GHz
5	OPPO Mobile (F1s)	Android (Lollipop 5.1)		6C:5C:14:3B:67:3D	DHCP	Wireless	2.4GHz
6	LG Mobile (3G)	Android (Lollipop 5.1.1)		34:4D:7F:34:C4:AB	DHCP	Wireless	2.4GHz/5 GHz
7	Dad's PC	Linux (Mageia 5.1)	jan	08:60:6E:D4:53:B9	DHCP	Wired	1000MBs
8	JJ's PC	Windows 7 Professional	Jan-Jame's PC	00:24:1D:D1:0C:57	DHCP	Wired	1000MBs
9	HP Jetdirect Print Server		HP Print Server	00:60:B0:18:B0:E4	192.168.20.5	Wired	10MBs
10	Test PC	Various	Various	00:16:17:C3:BA:0A	DHCP	Wired	1000MBs
11	Samsung TV	Orsay OS		1C:5A:3E:44:78:DE	DHCP	Wired	100MBs
12	Fetch TV Box			0C:56:5C:00:DB:B2	DHCP	Wired	100MBs
13	ASUS NetBook	Linux (Mint 13 -Maya)	Jan-1225b	DC:85:DE:15:D7:73	DHCP	Wired/Wireless	100MBs/2.4GHz
14	JJ's PS4	Orbis OS v4.55		A8:E3:EE:D2:41:19	DHCP	Wired	1000MBs
15	JJ's PS3	CellOS v4.81		A8:E3:EE:D2:41:19	DHCP	Wired	100MBs
16	LG TV	WebOS (Linux)		CC:2D:8C:30:47:82	DHCP	Wired	100MBs
17	Samsung Blue Ray Player/Surround Sound	Orsay OS		00:23:99:20:D0:B8	DHCP	Wired	100MBs
18	Ivan's PS4	Orbis OS v4.55		70:9E:29:91:8E:18	DHCP	Wired	1000MBs
19							
20							
21							

- The above spreadsheet with the information from all the devices on my network. Note the different MAC Addresses, the IP Addresses and Speeds
- The actual IP Address is a Static IP Address whilst the DHCP is a dynamically assigned IP Address
- The different connection speeds is due to the hardware and devices

Set up – Print Server

- The print server (J2591A) needs to be configured to run on your network, to do this you will need the IP Address from the print server or set one up
- The easiest way to obtain the print server's IP Address in this case was to connect the J2591A to the printer and press the “Test” Button and the printer prints out 2 pages of Config Data. (See Handout)
- To configure the J2591A, either connect it with a crossover Ethernet cable directly to a PC or the J2591A to your network by normal Ethernet cable and then use Telnet in Konsole Terminal (Command line)
- Once you have set up the IP Address that suits your setup connect the J2591A to the network. You can Ping the J2591A to see if it is receiving and sending network packages

Setup – Modem/Router

- Modem/Routers have in built DHCP Servers which automatically allocate IP Addresses to devices connected to the network (Wired and Wireless)
- Note: If the J2591A has been reset and is connected to the network the DHCP server may allocate an IP Address to it. (Use printer/J2591A “Test” button to print Config Data)
- The IP Addresses allocated by the DHCP Server are not permanent, they are “leased” either for a default time or time period set by the administrator. This means if the J2591A is allocated an IP Address it will change when the lease runs out. An another device could also have the same IP Address of the J2591A
- To overcome this set the J2591A up with a Static IP Address

Static IP Address

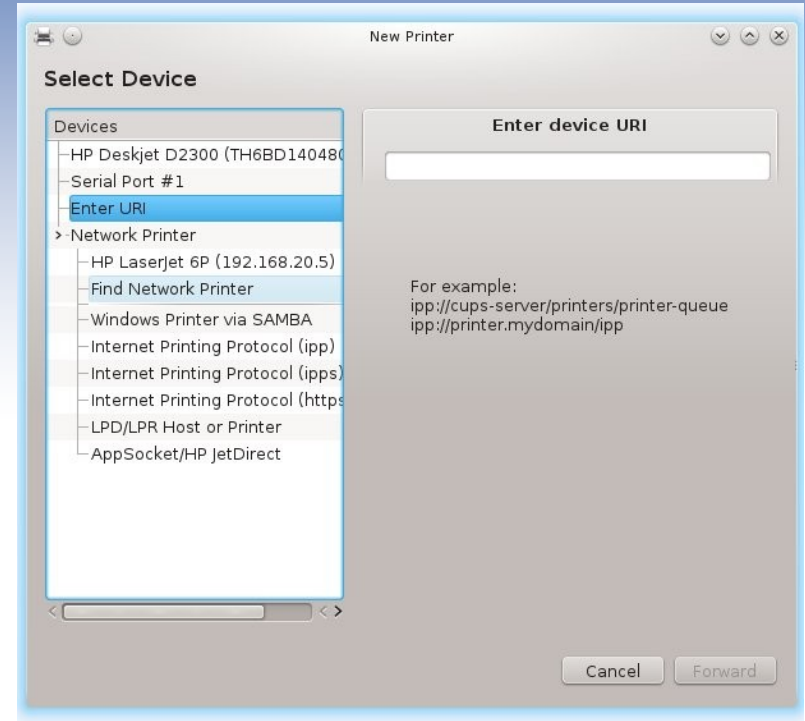
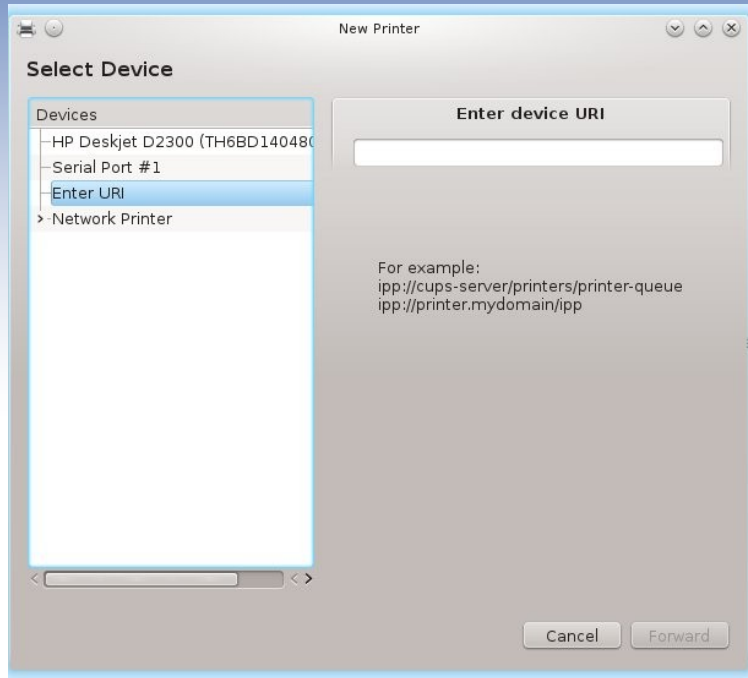
- A Static IP Address is permanently allocated to a device until it is removed/deleted
- Log into the Modem/Router using your favourite browser, go to the advanced view from your Modem/Router then the relevant area to set the static IP Address for the J2591A. Save the settings and log out.
- The Print Server (J2591A) is now setup onto the network

*Fixed Mapping
Advanced View
Netcomm NB16WV-02*

The screenshot shows the 'Advanced View' configuration page for the NetComm NB16WV-02 router. The page title is 'N600 Dual Band WiFi Gigabit Modem Router with Voice - NB16WV-02'. The navigation bar includes 'Status', 'Network Setup', 'Forwarding Rules', 'Security Settings', 'Advanced Settings', 'VoIP Settings', 'NAS Settings', and 'Toolbox'. The 'Advanced Settings' section is active, showing the 'DHCP clients' configuration. A dropdown menu for 'DHCP clients' is set to '-- select one --'. A 'Copy to ID' button is next to it. The main table has four columns: 'ID', 'MAC Address', 'IP Address', and 'Enable'. The first row (ID 1) is populated with MAC address '00:60:B0:18:B0:E4' and IP address '192.168.20.5', and the 'Enable' checkbox is checked. The remaining rows (IDs 2-10) have empty input fields for MAC and IP addresses, and the 'Enable' checkboxes are unchecked. At the bottom, there are buttons for '<< Previous', 'Next >>', 'Save', 'Undo', and 'Back'.

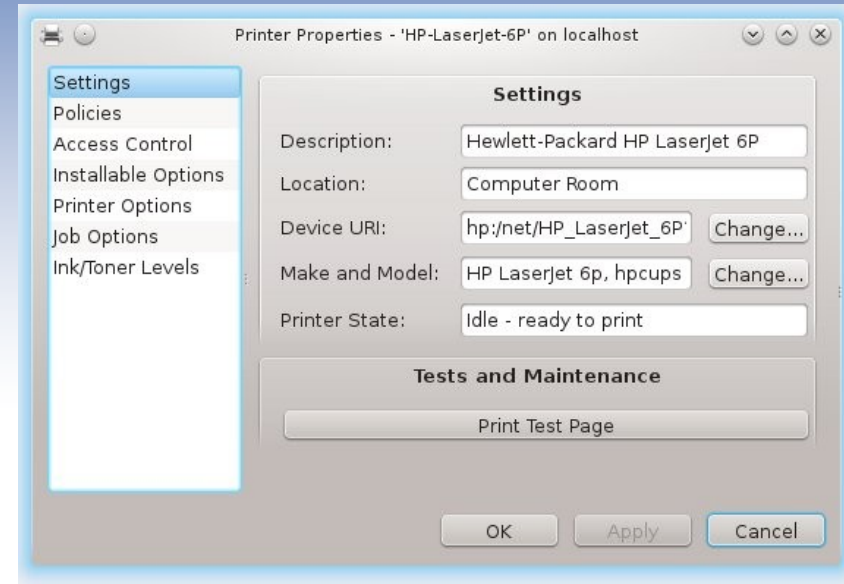
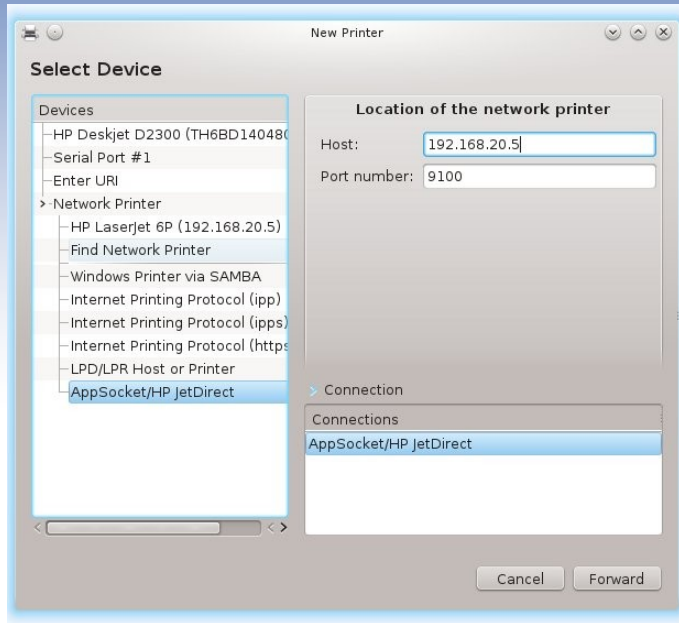
ID	MAC Address	IP Address	Enable
1	00:60:B0:18:B0:E4	192.168.20.5	<input checked="" type="checkbox"/>
2			<input type="checkbox"/>
3			<input type="checkbox"/>
4			<input type="checkbox"/>
5			<input type="checkbox"/>
6			<input type="checkbox"/>
7			<input type="checkbox"/>
8			<input type="checkbox"/>
9			<input type="checkbox"/>
10			<input type="checkbox"/>

Printer Setup - Wired



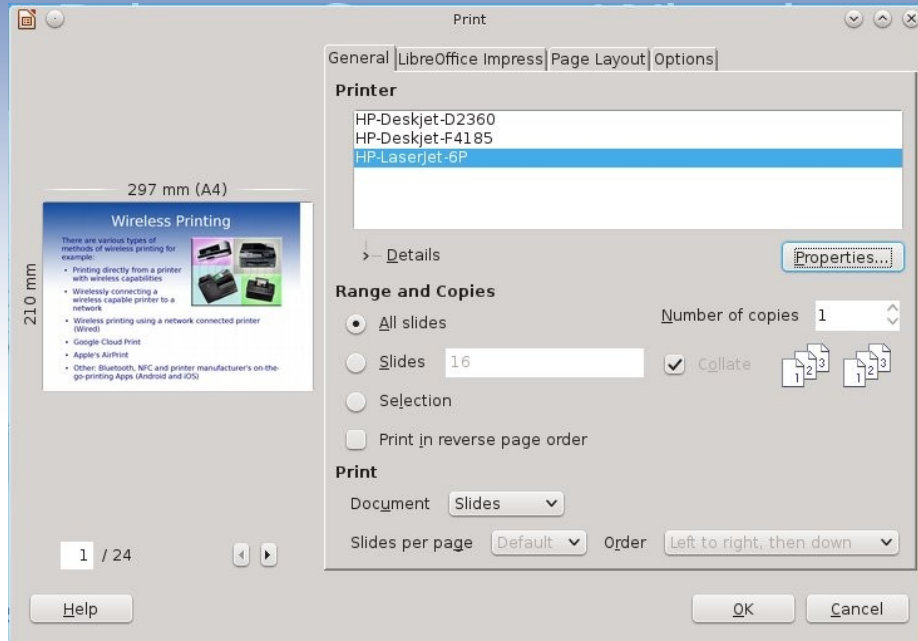
- Setting up the printer to print you use your Distribution's printer setup
- Add new printer
- On the Select Device screen - Select Network Printer

Printer Setup - Wired



- Select AppSocket/HP JetDirect
- Enter Host: E.G. 192.168.20.5 (Print Server's IP Address)
- Follow the prompts and click on appropriate responses for printer features and drivers
- Settings screen showing printer details and status

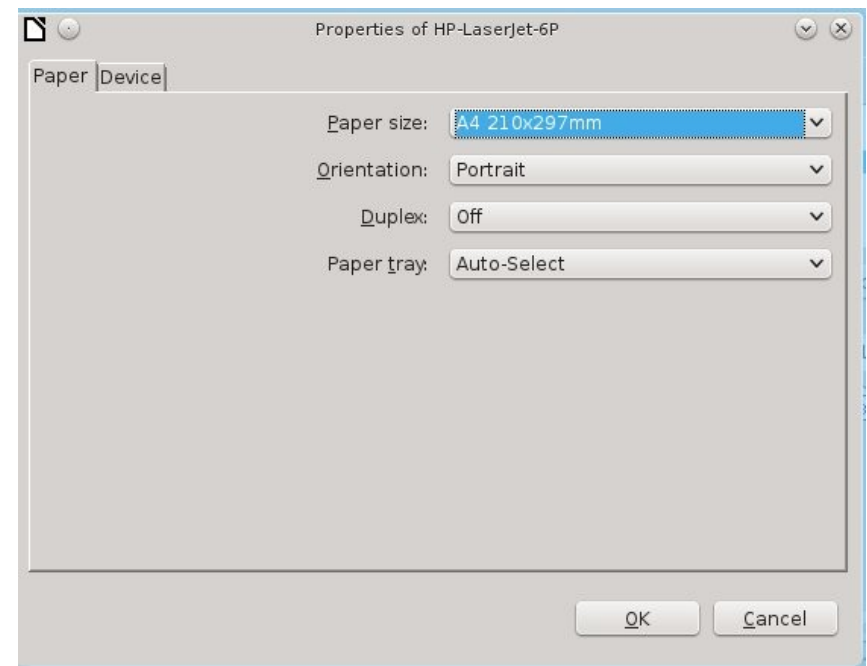
Printing



LibreOffice Impress Print Dialogue Box

HP Laserjet 6P Printer Properties Box

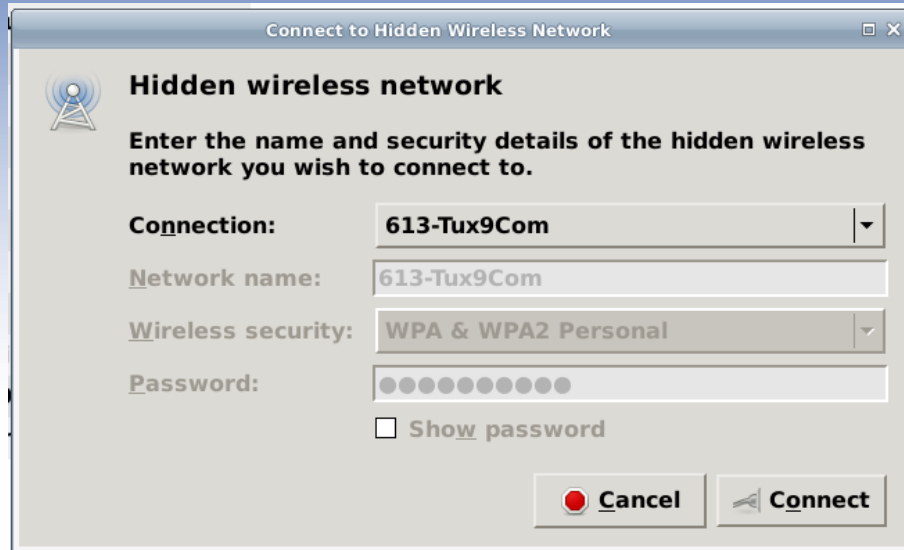
- Printing to a network printer is the same as a printer connected directly to your PC.
- The main difference is it is using network infrastructure



Wireless Connection

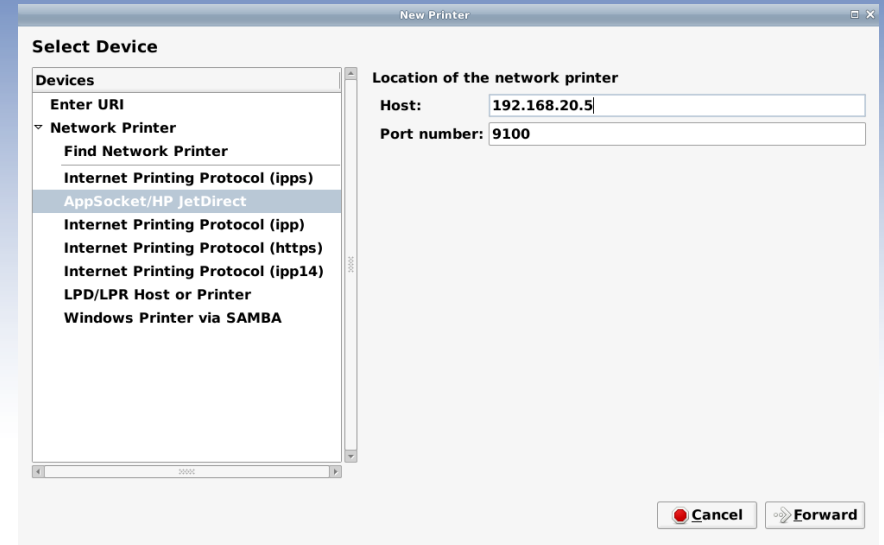
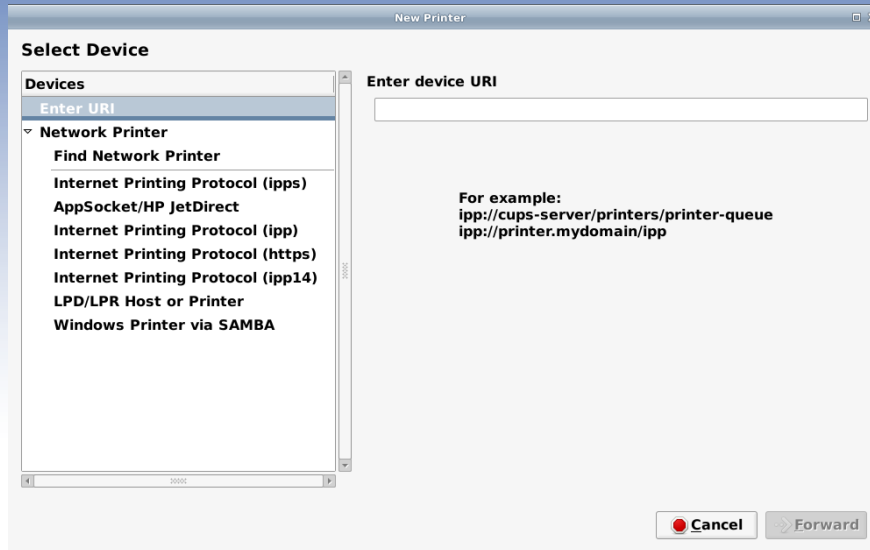
- There are few things you may need to take note of when connecting wireless devices
- What IEEE 802.11 standard your Modem/Router and devices are operating on. In the main it will be 802.11g, 802.11n or 802.11ac (All backward compatible)
- What wireless band your device operates on 2.4GHz, 5GHz or both on the latest devices
- Whether your network is Hidden or Visible
- SSID (Wireless Network Name), Wireless Network Security (WEP/WPA/WPA2) and Password is required to connect to the network
- When connecting you just turn on the WI-FI on your device, select your network from the list or click on Hidden Connections

Connecting Wirelessly

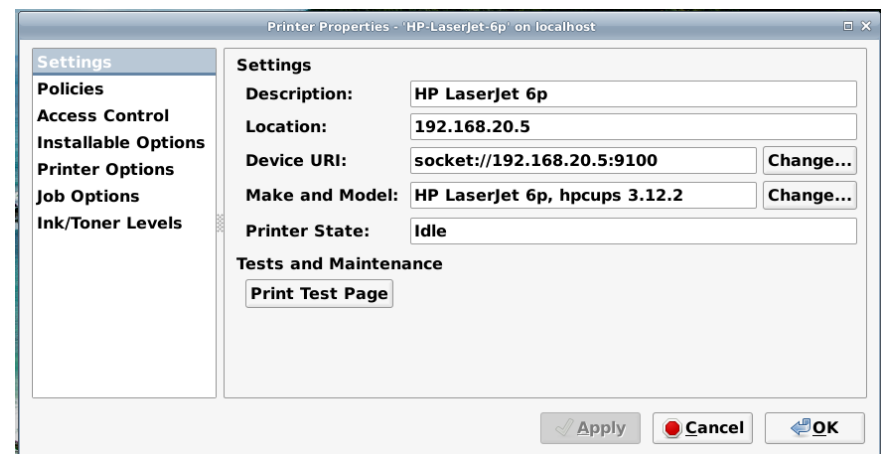


- Click on Network icon on taskbar then "Connect to a Hidden Network" from the select list
- Click on "Arrow" then select the required network
- Logon by entering "Network Name", select "Network security" and password.
- Network Connections box shows the list of networks

Printer Setup - Wireless



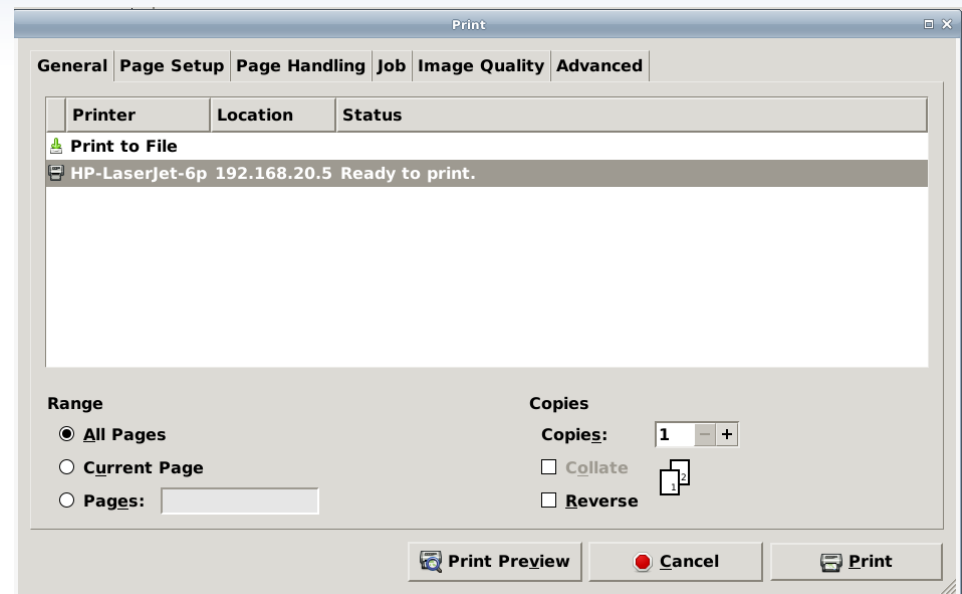
- As per wired setup, Select AppSocket/HP JetDirect, Enter Host: E.G. 192.168.20.5
- Follow the prompts and click on appropriate responses for printer features and drivers



Printer Details and Status

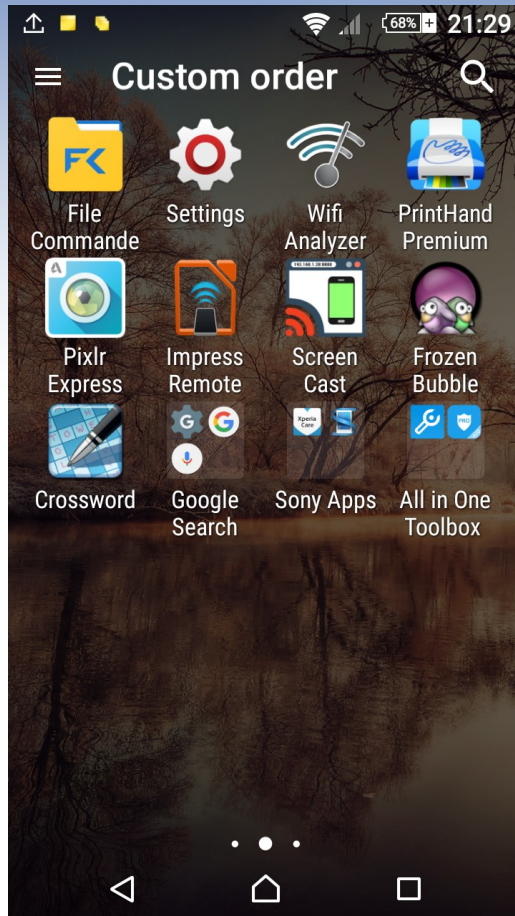
Printing

- Print as per normal – from any program that allows you to print (As per wired printing)
- The “PDF Viewer” Print dialogue box below accesses all the of printer properties by clicking on the relevant Tab, E.G. “Page Setup” etc.
- The “Print”, “Setup” dialogue boxes and phrasing will all vary depending on your Linux Distribution plus which printing software the Linux Distribution uses

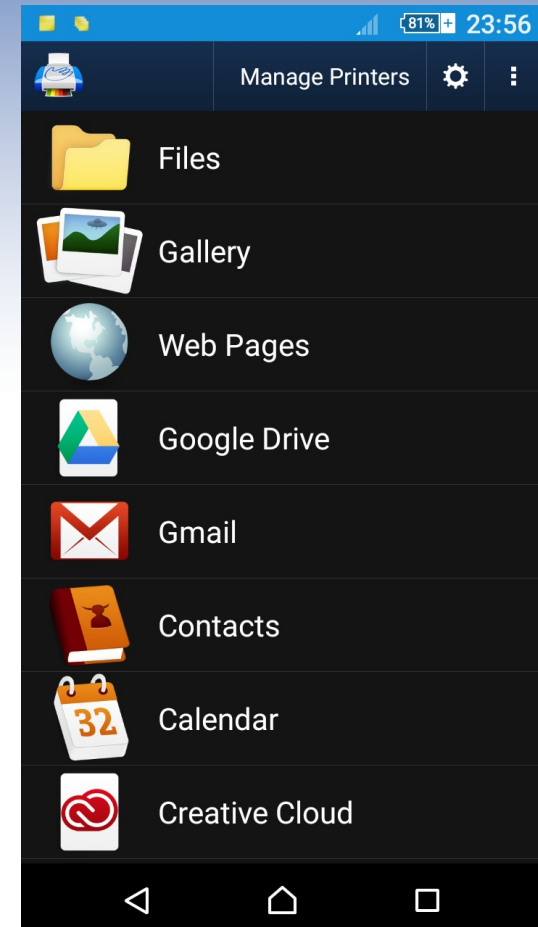


PDF Viewer Print Dialogue Box

Mobile Device Printing

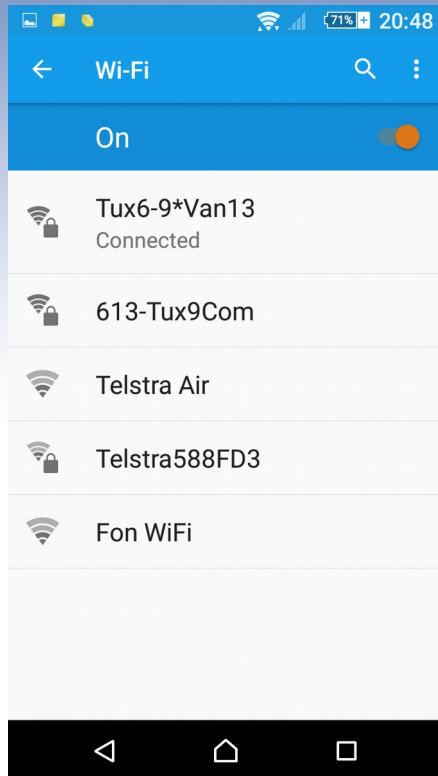


- To print from a mobile phone or tablet an App is required. (Android and Windows based devices – Apple devices use AirPrint)
- Printhead Premium is one of the better ones available



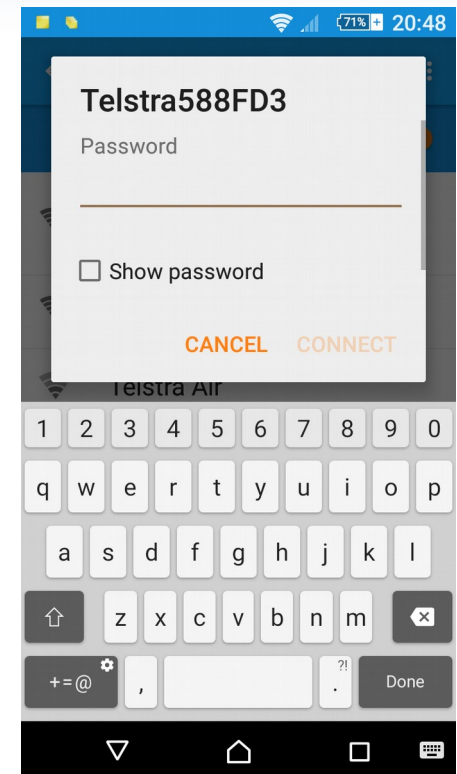
- Prints directly from the App or from the share options in the other Apps

Connecting Mobile Devices



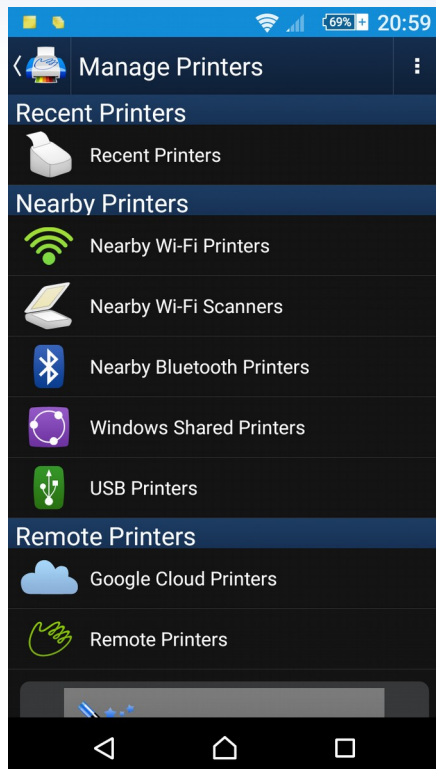
Note: Padlocks denote secured network

- Turn on the Wi-Fi on your device
- From list select network to connect to
- In example below enter the Password
- In most cases Wireless Network Security is also required. (In the case of the first 2 on the list it would be WPA2)
- In this case enter WPA2 and Password
- Click on “Connect” to complete the connection process (Both cases)
- The Wi-Fi connection is saved until removed (Forget)

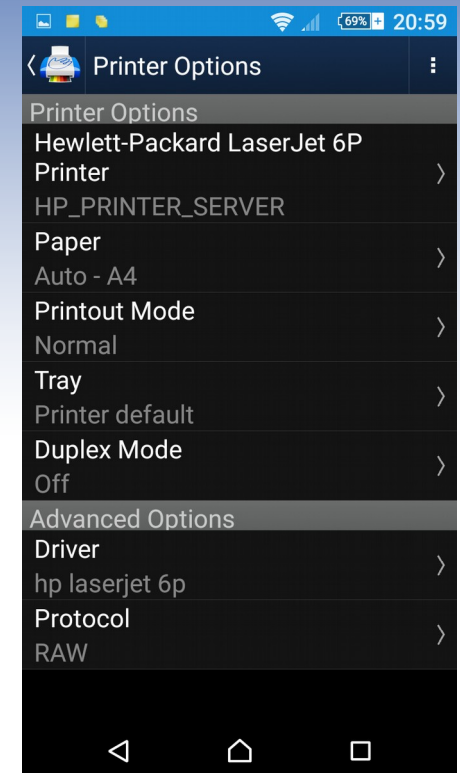


Setup Printhead (Premium)

- Open the Printhead Premium App
- Click on “Manage Printers”
- Click on “Nearby WI-FI Printers”

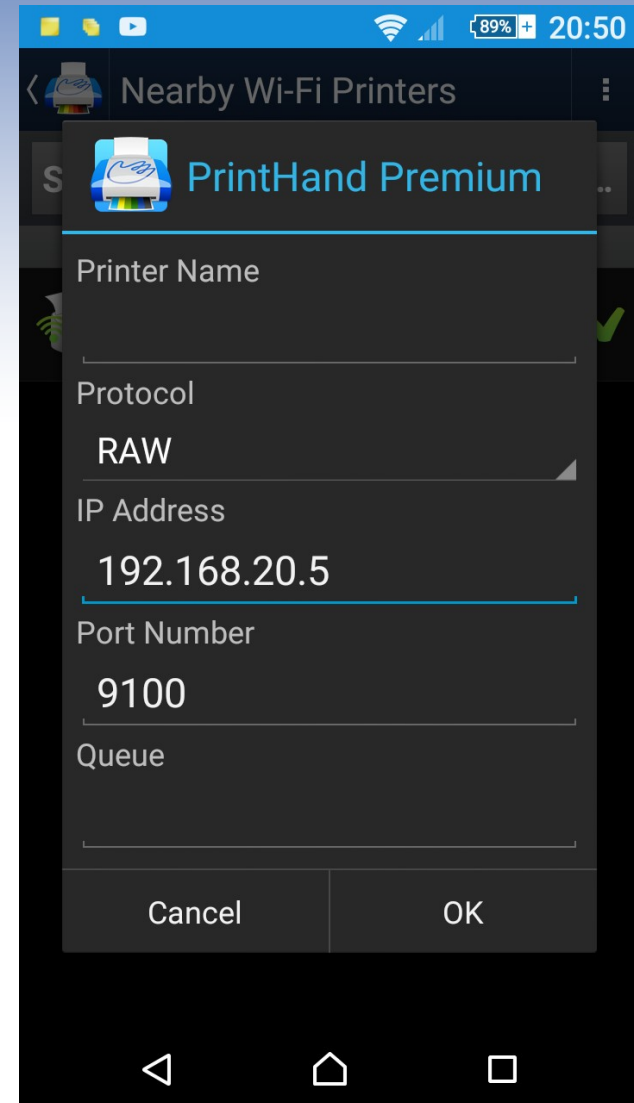


- The App automatically scans for any WI-FI Printers, listing any printers it locates.
- Click on your printer from list and “OK” Printer Drivers plus Rendering Software to be download. (Uses PDF Rendering to convert the printed content into an image which can be printed)
- The next screen is the Printer Options screen

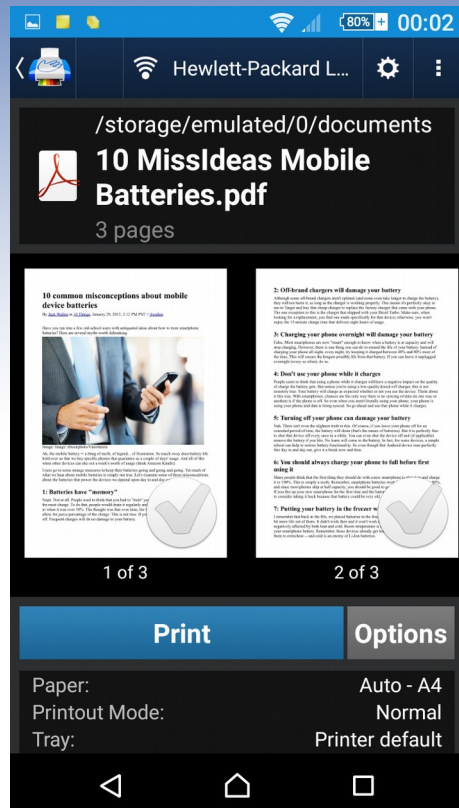


Setup Printhead (Premium)

- Use Manual select method if the scan process doesn't work
- In some cases even with the scan method you still may be required input following
- Again as in the earlier methods you will need to enter the Port Number and IP Address
- Click “OK” the click on your printer and “OK” Printer Drivers plus Rendering Software to be download.
- Again the next screen is the Printer Options screen



Printing Printhead (Premium)



- Print directly from the Printhead App or from other Apps using the share options of that App
- From the Printhead App use the list of locations/directories to locate the file/picture/etc to print then click on it
- Using Share Options on other Apps, Click on “Share” then “Printhead” from the list of Apps that share content
- In both cases the next screen is the Print Preview screen
- Click on Print to Print or Options for print options (Page setup, number of pages etc)
- Note: The ticks on the pages designates which pages are going to be printed (All gray indicates all pages)

SUMMARY

- Some points to remember when printing to a network printer wirelessly:-
- Printer Server IP Address has been allotted and preferably a Static IP Address
- Ensure you are on the same Network/Wireless Band
- Any WI-Fi capable devices that are allowed to log onto the network, and have the correct port number/ IP address and printer drivers can print
- You need the SSID (Wireless Network Name), Network Security (WEP/WPA/WPA2) and Password to connect to the network
- Any suitable printer can be used (Wireless and Wired)
- You don't need a wireless capable printer if using a print server with Parallel/USB and Ethernet connections