

PDF Printing Made Simple

Steven Si

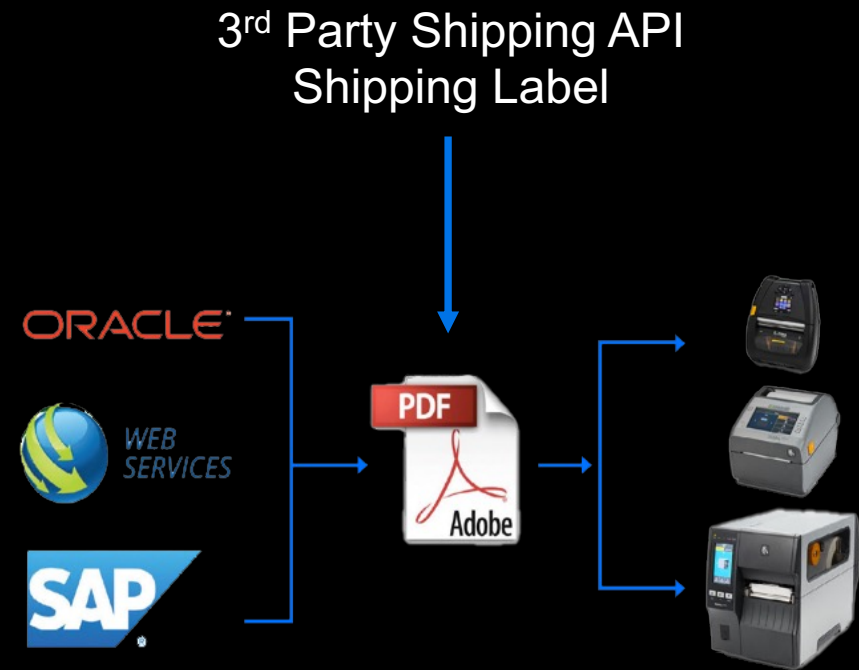
Sr. Software Engineer



PDF Emulation - Benefits

a.k.a. PDF Direct, is part of the Printer Emulations Family

- Simplifies the Printing of PDFs
- Eliminates Middleware Dependency
- No Need to Learn Specific Printer Languages
- Print Documents
- Eliminates Need to Scale Documents
- Reduces Scanning Errors



Printer Emulations

Virtual Devices are now called Printer Emulations

- On-printer Apps
 - Enable the use of a variety of printer command languages
- Optimized
 - Ensure fast throughput, while delivering high quality labels and receipts
- Multiple Emulations
 - Can be installed to a single printer
- Printers with emulation installed
 - Can be managed and secured using the Printer Profile Manager Enterprise application

Factory Installed since
Link-OS 6.4*

PDF, Datamax, ESC-POS,
Intermec, Monarch, Sato

All Emulations
are Available
on the Printer
Emulations
webpage on
zebra.com

Apex, Boca, Label Point,
Microcom, O'Neil, Printronix,
TEC

Printer Emulations

Supported printers

Desktop	Mobile	Industrial
1. ZD200	12. ZQ310	25. ZT210
2. ZD888	13. ZQ320	26. ZT220
3. ZD410D	14. ZR318	27. ZT230
4. ZD420C	15. ZR328	28. ZT411
5. ZD420D	16. ZQ511	29. ZT421
6. ZD420T	17. ZQ521	30. ZT510
7. ZD500	18. ZQ610	31. ZT610
8. ZD500R	19. ZQ620	32. ZT620
9. ZD510	20. ZQ630	33. ZE511
10. ZD620D	21. ZR658	34. ZE521
11. ZD620T	22. ZR668	
12. ZD421C		
13. ZD421D		
14. ZD421T		
15. ZD621D		
16. ZD621T		

* ZT2x0, ZD2xx and ZR3x8 series printers are the exception. They will not have the emulations factory installed due to memory constraints.

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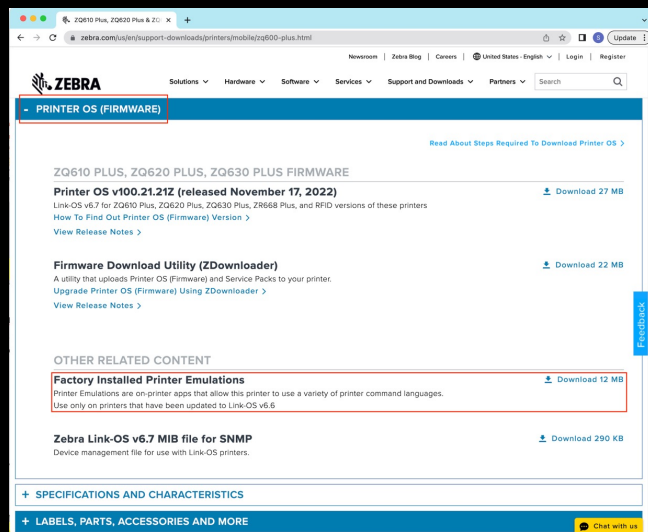
Apex, Boca, Label Point,
Microcom, O'Neil, Printronix,
TEC

Printer Emulations – Where to Find?

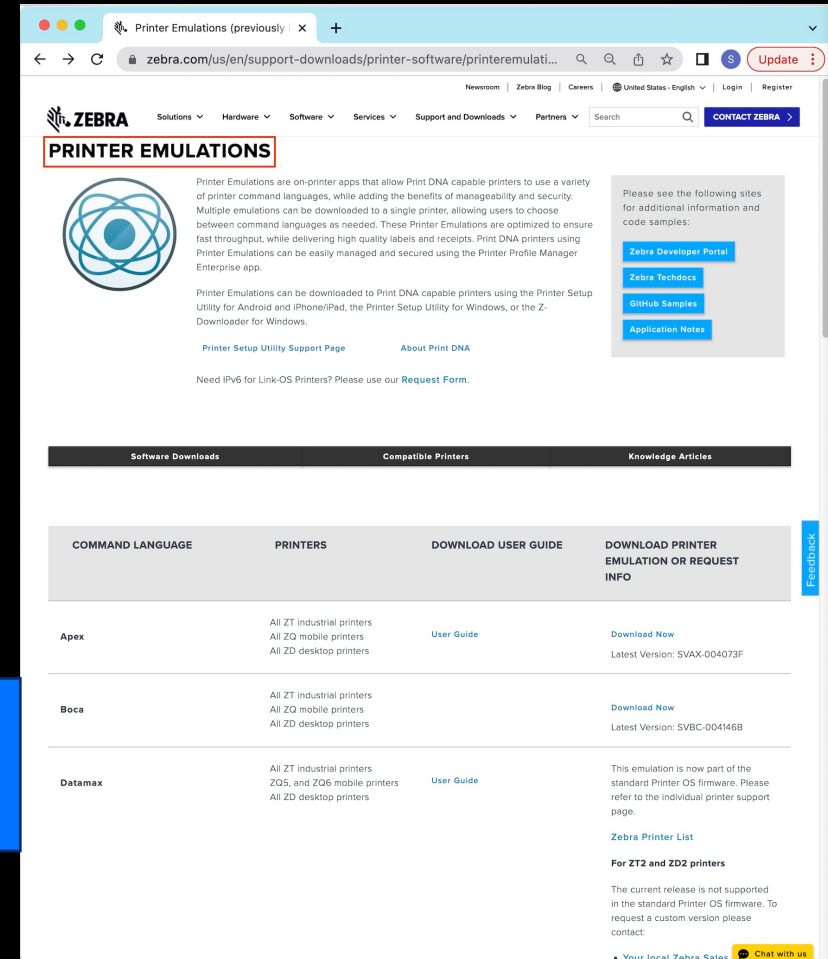
<https://www.zebra.com/us/en/support-downloads/printer-software/printeremulations.html>



- Emulations are available for download on zebra.com – By searching for the “Printer Emulations”
- Factory installed emulations – Available for download from the firmware section of the printer support webpage



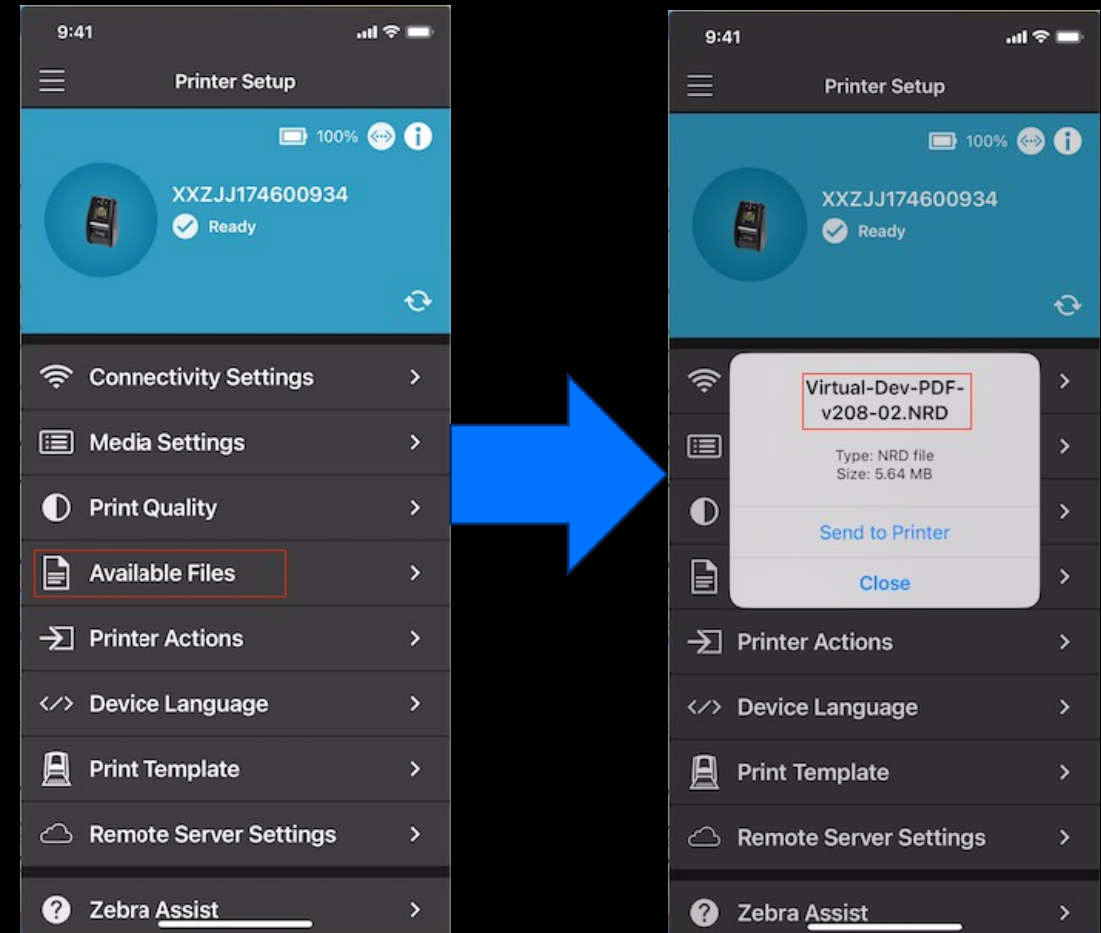
PDF Emulation is inside the downloaded zip file



Printer Emulations Installation

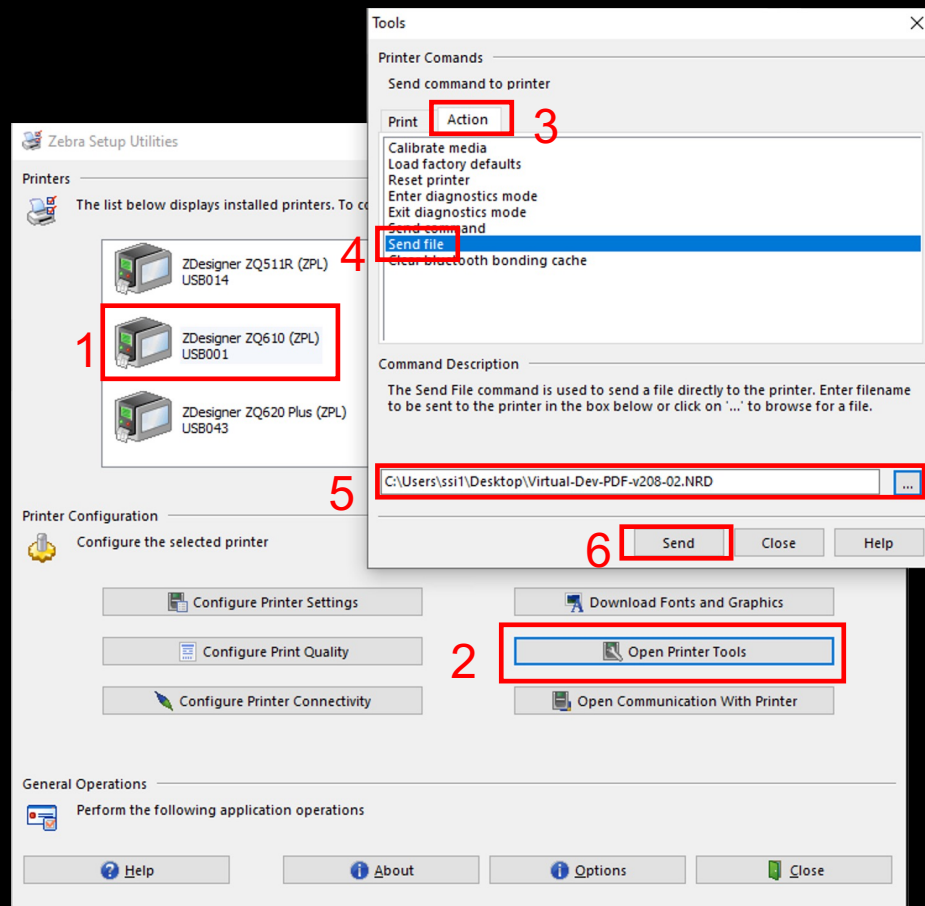
On Mobile

- The emulations can be installed via one of the following tools.
 - Printer Setup Utility for Android and iOS
 - Printer Setup Utility for Windows
 - Z-Downloader for Windows
- PDF emulation
 - Virtual-Dev-PDF-vXXX-YY.NRD
 - Inside the IncludedPrinterEmulations.zip, downloaded from the Factory Installed Printer Emulations file

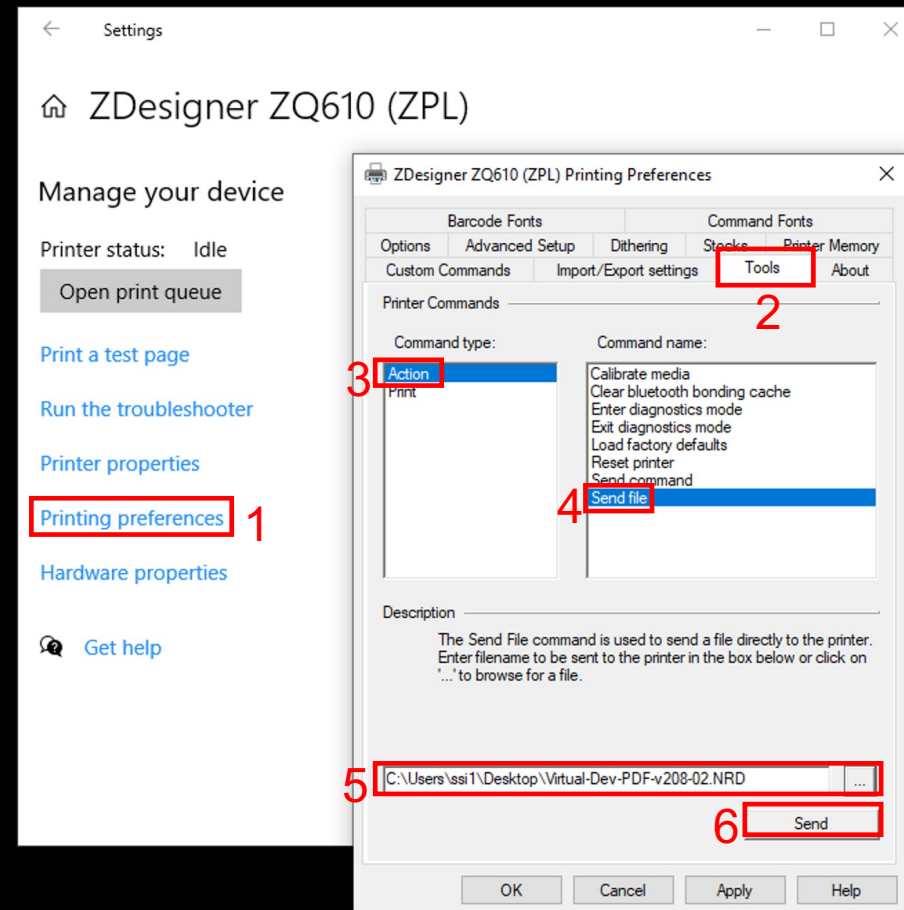


Printer Emulations Installation - Windows

- Printer Setup Utilities for Windows



- Zdesigner Driver



PDF Emulation Enable / Disable

a.k.a. PDF Direct

- Enable/Disable PDF Emulation
 - ! U1 setvar "apl.enable" "pdf"
 - ! U1 setvar "apl.enable" "none"
- Configure PDF Emulation Settings
 - ! U1 setvar "apl.settings" "dither scale=50x50 scale-to-fit no-varlen orient=N"

PDF Emulation Settings - "apl.settings"

a.k.a. PDF Direct

- dither: Dithering
 - Off by default.
- scale: Scale Factor
 - Off by default. Scale=WxH, where the W and H are percentages, ranging from 1 to 100.
- scale-to-fit: Auto-Scale/Rotate
 - Off by default. Modifies the size of the text & image to fit the media and rotates if needed. Takes precedence over scale. Example:
 - ! U1 setvar "apl.settings" "scale-to-fit no-varlen orient=N"
- no-varlen: Variable Length
 - On by default in journal mode, which disables the scale-to-fit. To turn off, include no-varlen in apl.settings. Example:
 - ! U1 setvar "apl.settings" "scale-to-fit no-varlen"
- Orient: Orientation (N/I)
 - Top-first (Inverted) by default. To change, include orient=N in apl.settings.

Printer Emulations – Query the Settings

```
! U1 getvar "apl"
```

```
Received:6 bytes  
apl.
```

```
Received:201 bytes  
apl.enable : pdf , Choices: pdf,none  
apl.framework_version : 1.3  
apl.version : 2.08-02  
apl.settings : scale-to-fit no-varlen orient=N  
apl.o.  
apl.o.graphics_byte_width : 48 , Choices: 0-255
```

Delete PDF Emulation

- Disable PDF Emulation
 - ! U1 setvar "apl.enable" "none"
- Clear PDF Emulation Settings
 - ! U1 setvar "apl.settings" ""
- Delete PDF Emulation
 - ! U1 do "file.delete" "pdf.apl"
- Use SGD
 - ! U1 setvar "apl.enable" "none"
 - ! U1 setvar "apl.settings" ""
 - ! U1 do "file.delete" "pdf.apl"
- Or Use JSON
 - {
 - "apl.enable" : "none"
 - "apl.settings" : ""
 - "file.delete" : "pdf.apl"
 - }

PDF Print Programmatically

Use Link-OS Multiplatform SDK



- Supported Connectivity
 - Serial Port
 - Parallel Port
 - USB
 - Bluetooth®
 - Classic
 - Low Energy
 - Network
 - TCP
 - Cloud-Connection
 - WebSocket (Link-OS 6.7 or later)

Send PDF file with `sendFileContents()` API in Link-OS SDK

```
public void sendPdfFile(ZebraPrinter printer) {  
    try {  
        // Sending PDF file with sendFileContents() API  
        printer.sendFileContents(getPdfFilePath("MyShippingLabel.pdf").getAbsolutePath());  
    } catch (ConnectionException e1) {  
        helper.showErrorDialogOnGuiThread("Error sending file to printer");  
    } catch (IOException e) {  
        helper.showErrorDialogOnGuiThread("Error creating file");  
    }  
}  
  
public File getPdfFilePath(String pdfFilename) {  
    File directory = Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_DOWNLOADS);  
  
    File[] pdfFiles = directory.listFiles(new FileFilter() {  
        @Override  
        public boolean accept(File file)  
        {  
            return (file.getPath().endsWith("pdfFilename"));  
        }  
    });  
  
    return pdfFiles[0];  
}
```

PDF Print Programmatically

Use the SendFileToPrinter API – Cloud-based Printing



```
curl -X 'POST' \  
  'https://api.zebra.com/v2/devices/printers/send' \  
  -H 'accept: text/plain' \  
  -H 'apikey: UUBPTeoGjN68qQqg4BONmalTYFXa33z' \  
  -H 'tenant: bb62a0cd13e235750402689a723309b1' \  
  -H 'Content-Type: multipart/form-data' \  
  -F 'sn=XXZJJ174600934' \  
  -F 'zpl_file=@ZebraLogo_2x2.pdf;type=application/pdf'
```

A screenshot of a web browser showing the configuration page for the SendFileToPrinter API. The browser address bar shows the URL: developer.zebra.com/apis/sendfiletoprinter-model#/SendFileToPrinter/... The page has a light green background and contains several sections. At the top right, there are "Cancel" and "Reset" buttons. Below this is a table with columns "Name" and "Description". The first row is for "apikey", which is a required string header with the value "UUBPTeoGjN68qQqg4BONmalTYFXa33z". The second row is for "tenant", also a required string header with the value "bb62a0cd13e235750402689a723309b1". Below the table, there is a "Request body" section with a dropdown menu set to "multipart/form-data". Underneath, there are two more required fields: "sn" (string) with the value "XXZJJ174600934" and "zpl_file" (string, binary) with a "Choose File" button and the selected file "ZebraLogo_2x2.pdf". At the bottom of the form, there are "Execute" and "Clear" buttons.

PDF Print Programmatically

Use the Browser Print SDK – JavaScript API



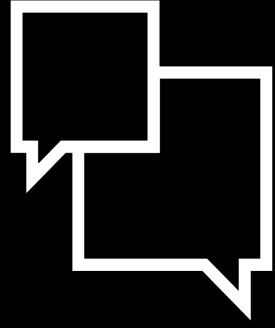
```
function sendFile(fileUrl){  
    url = window.location.href.substring(0, window.location.href.lastIndexOf("/"));  
    url = url + "/" + fileUrl;  
    selected_device.sendFile(url, undefined, errorCallback)  
}  
  
<input type="button" value="Send PDF File" onclick="sendFile('PDF_2x2.pdf');"><br/><br/>
```

A screenshot of a web browser window showing the "Zebra Browser Print Test Page". The browser's address bar shows "localhost:8080/zebra-browser-print-js-v3...". The page title is "Zebra Browser Print Test Page" and it includes a warning: "This page must be loaded from a web server to function properly." Below this, there is a dropdown menu for "Selected Device" set to "ZQ610-203dpi (10.80.23.54)". A series of buttons are listed: "Get Application Configuration", "Send Config Label", "Send ZPL Label", "Get Status", "Get Local Devices", "Write" (next to an empty input field), "Read", "Send BMP", "Send JPG", and "Send File". Further down, there are sections for "Additional Examples for DevTalk" with links and buttons: "Get printer status via Zebra.Printer.getStatus() method" (button: DevTalk_PrinterStatus), "Get printer status via Zebra.Printer.Status class constructor" (button: DevTalk_PrinterStatus_~HS), and "Send PDF file to a PDF Direct enabled printer" (button: Send PDF File).

Resources



- Printer Emulations Download
 - <https://www.zebra.com/us/en/support-downloads/printer-software/printeremulations.html>
- PDF Emulation (a.k.a. PDF Direct)
 - <https://www.zebra.com/us/en/software/printer-software/pdf-direct-printer-emulation.html>
- PDF Emulation Settings
 - https://www.zebra.com/content/dam/zebra_new_ia/en-us/manuals/printers/common/programming/zpl-zbi2-pm-en.pdf#page=650



Questions



Zebra DevCon 2023



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