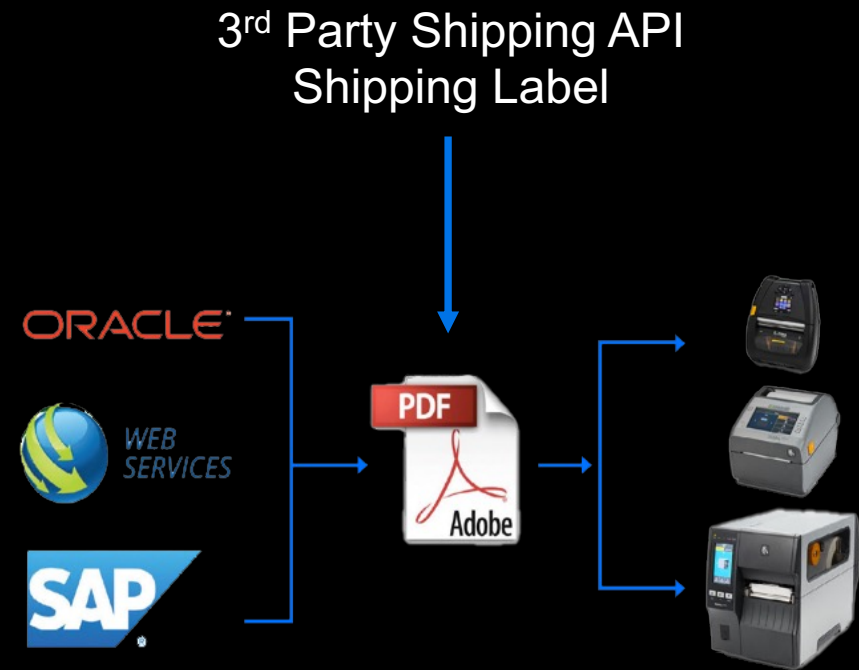# PDF Printing Made Simple

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

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

Factory Installed since Link-OS 6.4*

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

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		

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

Factory Installed since Link-OS 6.4*

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

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

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

Printer Emulations – Where to Find?

- 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
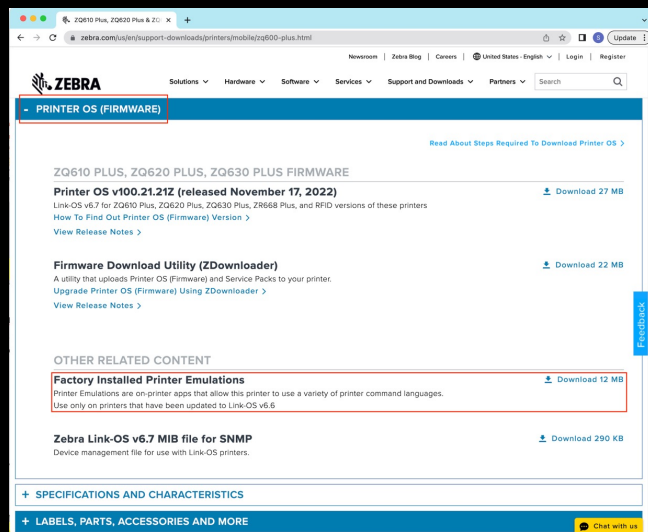
PDF Emulation is inside the downloaded zip file
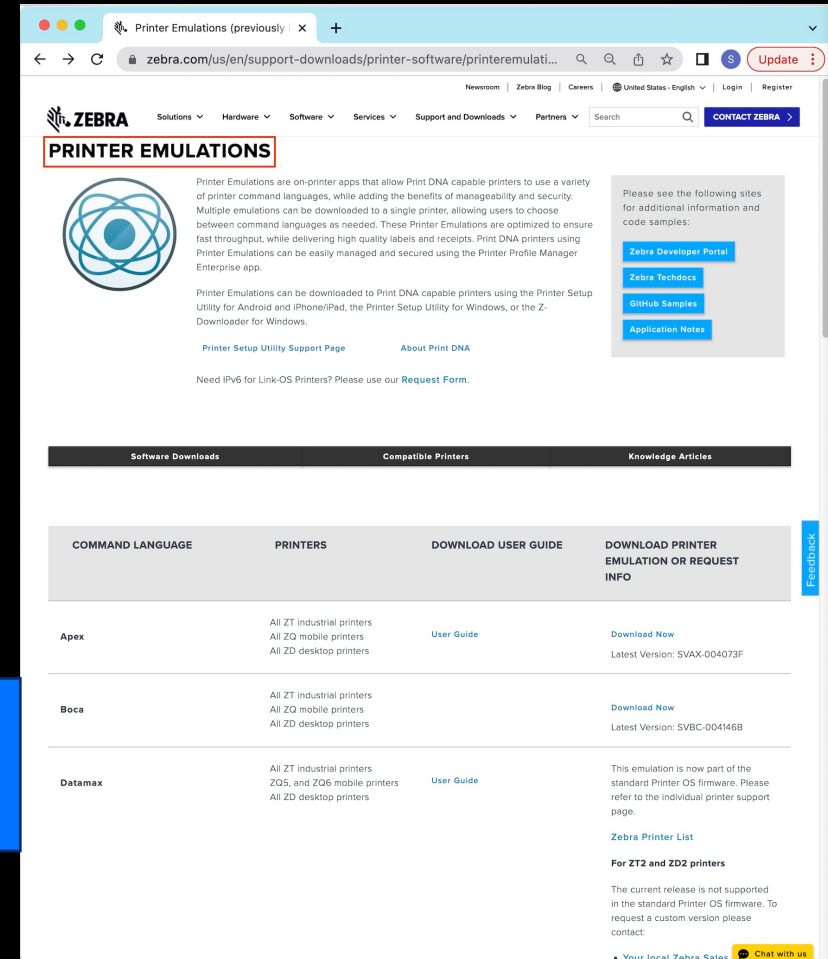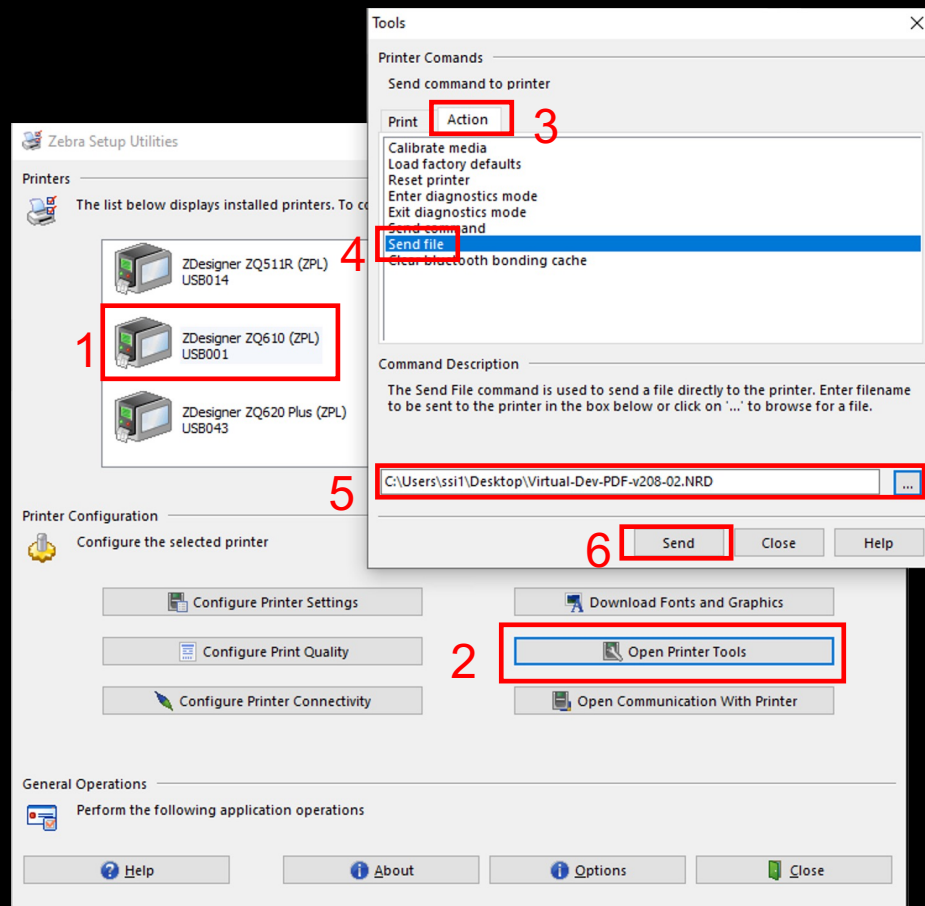
Printer Emulations Installation
On Mobile

- 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
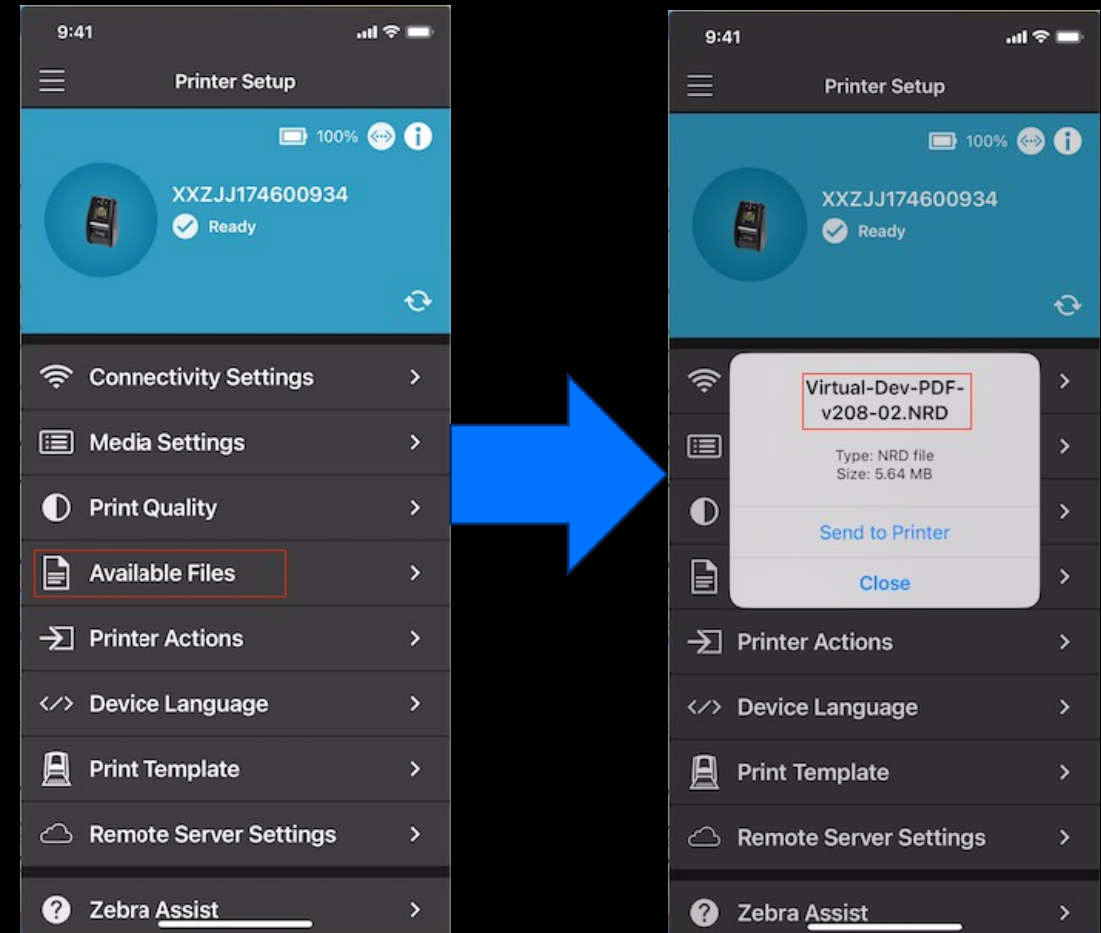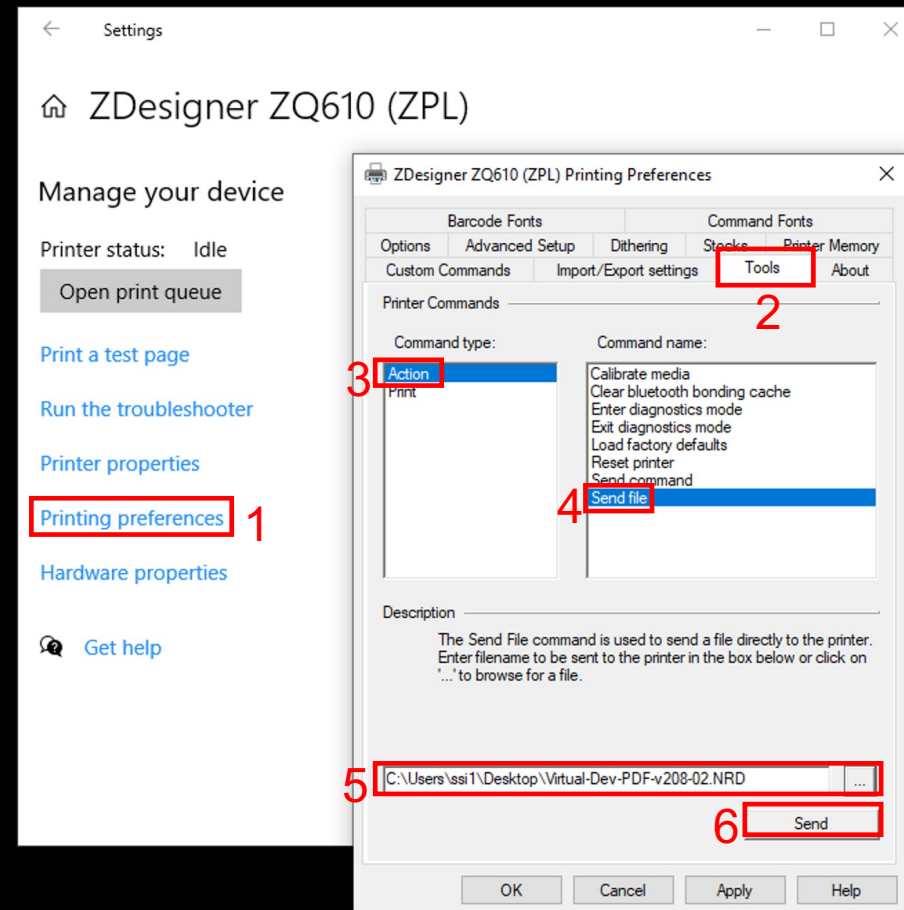
Printer Emulations Installation - Windows

- 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

```java
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: UUBPTeoGjN68qQqg4BONmalfTyFXa33z' \
    -H 'tenant: bb62a0cd13e235750402689a723309b1' \
    -H 'Content-Type: multipart/form-data' \
    -F 'sn=XXZJJ174600934' \
    -F 'zpl_file=@ZebraLogo_2x2.pdf;type=application/pdf'
```

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/>
```

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

Thank You