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AUTOMATED SMART PRINTING OF PRINT DATA

HP INC

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ABSTRACT

Cloud print platform enables users with web-enabled devices to print documents, photos by rendering any document entering the system into a printable format and then sends to the corresponding printer for printing. PCL (Printer Command Language) format supported printers accept PCL commands to process a print job. Documents are converted into a printable format in the print path, the most common format being PCL (Printer Command Language). Rendering features are hard to check as it consumes more time to ensure that all print features are as per designed. Manual verification is required to check if printed output is correct by visually comparing the output printed on paper to the document within the printing application or comparing to a printed baseline file. This disclosure provides an automated solution for printing of print data by extracting raster data of a print file to verify the print data without having to print the file.

PROBLEM STATEMENT

PCL print jobs has metadata along with the raster data, metadata of PCL files gets changed with each execution. This results in failure of normal binary comparison between the two PCL print files. Metadata content of the PCL file has data related to time stamp, printer details picked up for the job, Job Start time, Page start time, job creator and other details.

This disclosure provides an automated solution for printing of print data without printing the print file by raster data extraction of the print file and compare with raster data of the baseline file.

SOLUTION

An automated solution is designed to compare the PCL formats of the print jobs. The solution would avoid physical print of the jobs on the PCL printers. This solution has higher accuracy with comparison precision and eliminates the wastage of ink, paper, and time. It eliminates the need of human interpreter for assessing the print fidelity and captures formatting issues. This solution will compare only the extracted raster data of the printed PCL file from the print output of the printer simulator with the baseline file. Baseline file is created on successful build, the output of the new developed build is compared to the baseline file.

SOLUTION DESIGN

Modules of the system architecture as shown in Figure 1 are explained in detail. The baseline file is formed from the prn or pcl file that is generated with standard successful build. The printed file is prn file that is generated with new build.

File Disassembler: PCL file is created in cloud print path. In the formed PCL file, the pcl commands are in binary format and difficult to read these commands. PCL disassembler such as JetAsm tools are used to convert a PCL binary file that was generated by the print driver into a human readable source file. In the disassembled file, the unique strings used for “Start Raster” and “End Raster” are checked.

Raster Data Extractor: The Raster Data Extractor module will consider the strings used for “Start Raster” and “End Raster” in the formed disassembled (.asm) file of a PCL Disassembler and extracts the raster data only of PCL file, excluding the metadata. The “Start Raster” data is sent using pcl command (Esc*r1A) and “End Raster” is sent using pcl command (Esc*rC) for each page of the PCL file.

Figure 1: System Architecture

Compare Module: With Baseline PCL and Printed PCL files are generated, compare module as shown in Figure 2 is invoked. This module compares the baseline and printed files pixel by pixel of the raster data of PCL file. Result will be returned as PASS if both files are same, and result will be returned as FAIL if both the files are different.

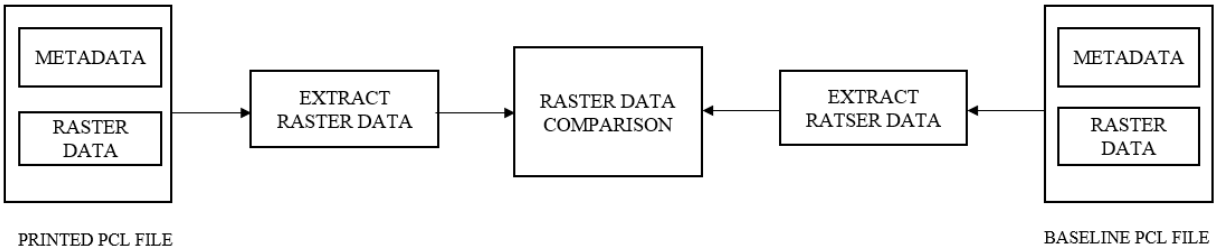

Figure 2: Compare Module

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