ICPS: Intelli Cloud Print Service

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Abstract-- When we observe the growing era of technical trends, there is a great push towards the cloud based applications and proliferation of web connected mobile devices. As there is a tremendous growth of smart phones/tablets, people are expecting the same capabilities of their PC's in their smart devices and printing is at the peak of the list. No one in the printing ecosystem users, developers and administrators want to extend the driver mess. In this paper we presenting Intelli Cloud Print (ICP), it eliminates the need for printer drivers and brings full-featured printing to a new generation of smart devices. This application supports all types of printing formats by using all types of protocols. ICP can track the nearby ICP featured printers and it is responsible for sending the print job to the user selected printer based on users' privileges and priorities. The ICP provides the estimated time of print job and its summary to the users.

Keywords: cloud computing, print, service, platform, software, protocol, drivers, network, spooler, ICP.

I. INTRODUCTION

Printers are widely used in everyday living environment like houses and organizations. These printers follow some regular protocols to print the required data from any computer. We have been using the network printing technology which prints the user required data over a particular network. After that we are using the internet based printing technology where we are printing the data with the help of a printer which is connected to the internet. Recently with the advent of [5, 6] Bluetooth printing technology we are able to print the data with the help of printers which supports Bluetooth. The main problem with all these printing technologies is either they are platform or device specific. But there are no specific printing procedures to get the print of the data from our smart mobiles or tablets. We follow the traditional procedures such as moving the data to SD card and connecting to the computer to send the print job to the computer. Otherwise we use an USB cable to establish a connection between a computer and smart phone and then getting the print out of the required data. These traditional methods consume a lot of time and moreover one can't find the nearby printers to get the print of data instantly and even one can't find the medium to connect to the printers. The solution to all the problems is INTELLI CLOUD PRINT [1-4] where we will use the cloud computing for printing purposes. Users are directed to send the data to cloud via ICP app which they need to be installed in their smart phones/tablets. The application then finds the nearby ICP printing centers using the Global Positioning System service in the smart devices and redirecting the print job to the desired printing center to get the print out.

II. EXISTING SYSTEM

A. The printing process

The following gives a detailed view on the operations which are preformed on a document which is submitted to a printer from traditional windows X operating systems.

A user want to print a desired document from a computer and he is submitting the document from an windows application then the applications invokes the graphics device interface(GDI),which simultaneously invokes the printer driver associated with the target printer. Using the information from the application, the GDI and the drivers exchange data to render the print job in the printer language of the printer, and then navigate it to the client side print spooler. If the client is using an operating system rather than windows [7] another component replaces the GDI to perform a similar task.

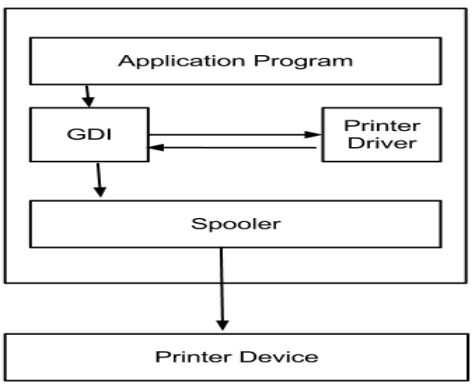

Fig 1: Actual Printing Process

B. Printing Scenarios

i. Printer connected to a PC:

When the user wants to print the desired data from his own computer he chooses the document and gives the print command then the print manager will get invoked by the [7] user command and it invokes the drivers of that particular printer and the print job gets executed.

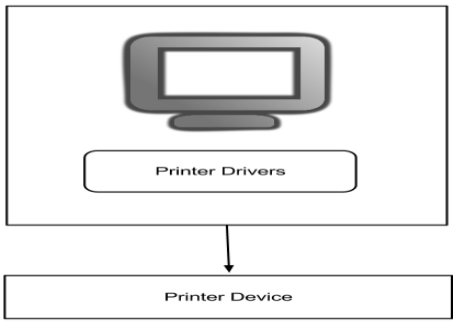

Fig 2: Printer connected to PC

ii. A Printer connected to a Network

In this process a group of printers are connected in a network and this technology is widely used in schools and organizations [7]. The users present in an network select the desired document and gives the print option then the printer which is in the particular network will get invoked and give the desired print [7].

The drawbacks of this technology is users will not be having a clear idea of the time at which his print will be delivered because of more number of users and also no error message will be displayed when there is any jam or error occurred at the time of printing to the appropriate user [7].

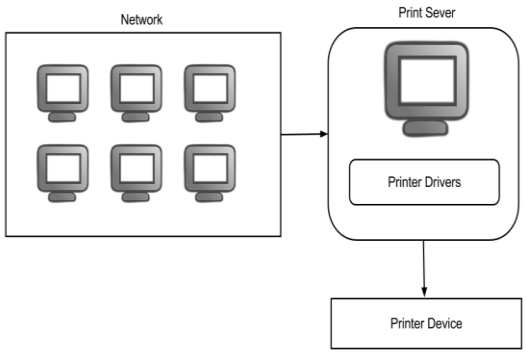

Fig 3: Printer Connected to a Network

iii. An IP based Printers

In the IP printer the printer is connected to a hub of computers. The printer present in that hub will be assigned a IP address so, any user who wants to print a particular document will assigned the print document to the particular IP which is assigned to the printer. Then the user will receive his print document depending upon the sequence of printing job [7].

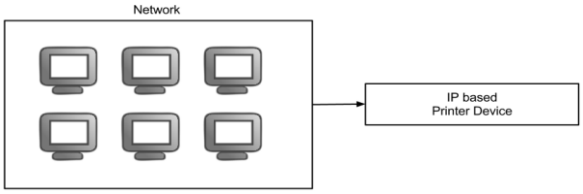

Fig 4: An IP based Printer

C. Drawbacks of an Existing system

There are many numerous disadvantages with the existing printing protocols:

- Printer will stop working if there are no drivers installed in the computer.
- Some printers work only on a desired platform.
- Only certain devices are capable of sending print jobs to the printer.
- Complexity in Non-cloud printing architecture.

III. PROPOSED SYSTEM

Intelli cloud Print is a cloud based application that can be installed on any smart phones/tablets to get the print outs from any normal printing centers featured with ICP services.

A. Intelli cloud print

Today the whole world is shifting towards the cloud based technologies to perform their tasks in very efficient and flexible manner. A greater change has come upon the movement towards the cloud based applications too; as there is a rapid growth of smart devices day by day and everybody want those same features in their smart phones which actually exist in the computer. Smart phones and tablets are growing rapidly which is forcing the manufactures to impinge all the features of normal personal computer in to them. In turn, users are expecting the simple and reliable printing procedures for those mobile devices.

The Intelli Cloud Print is a printing procedure where the users can forget about their device configuration and connecting medium to transmit the data to the printers. The user using this application from either a smart phone or tablet sends the data to the ICP central cloud which then it is forwarded to the printing centers depending upon his/her desired location. The data which is to be transmitted gets encrypted by using the AES 265 algorithm. This application supports nearly all document formats including Excel, Word, PowerPoint, PDFs, emails, contacts and photos etc., to get the print outs from their smart devices.

ICP service provides enhanced discovery find printers without complex server software installation or cloud printer configuration. ICP service targets at minimal data transmission during posting the print jobs to the printer as a result, the data rates will be decreased drastically.

The high fidelity on-device document conversion of ICP Mobile Print keeps documents securely on the consumers mobile device while producing PC-like print outs. ICP Mobile Print provides a no-compromise mobile printing solution.

B. Architecture

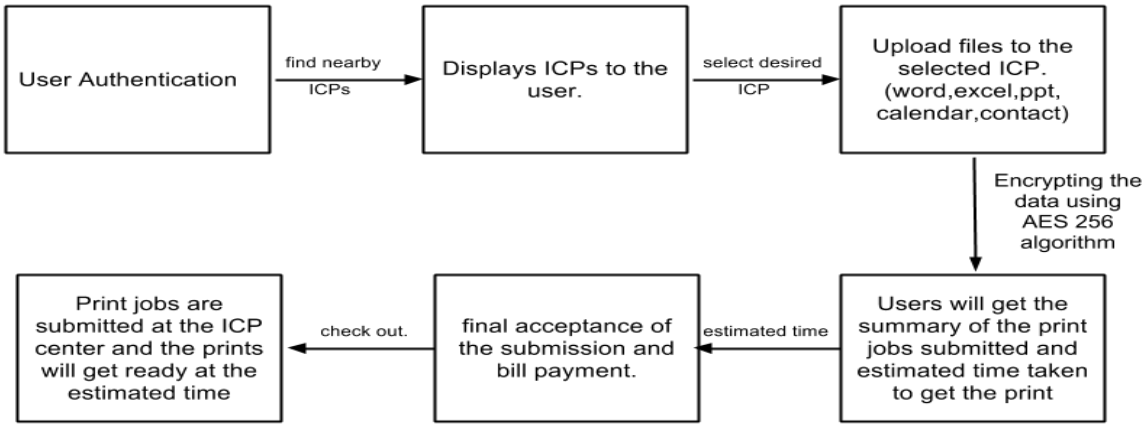

Fig 2: Intelli Cloud Print Architecture

C. Working procedure of ICP and Results

- Initially the user needs to be authenticated to use this application for the first time in his/her smart device.
- User authentication information is stored by default from the next time.
- The user can find the ICP printers nearby user and locate them.
- Users, then upload the files to the desired ICP. The uploaded data is encrypted using AES 256 encryption algorithm and transfers to the ICP's cloud.
- While uploading files to ICP checks for the constraints of that uploaded document (Page limit: 10 pages, time limit: for every day from 9AM to 5PM).
- The application program running in the ICP's cloud will forward this data to the ICP centre that the user has selected.
- While upload the files to ICP, users can change the priorities of document to be print depending on their privileges.
- Now the TimeCount() function of the ICP estimates the time required to print the document uploaded by the user.
- Now the data received at ICP centre will be printed like a normal document and the number of credits will be decremented in the user's account.

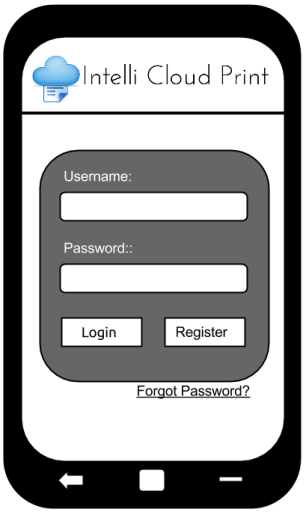

Fig 3: User Authentication to ICP

Fig 4: Finding nearby ICP's

i. Results

Fig 5: Finding nearby ICP's using location

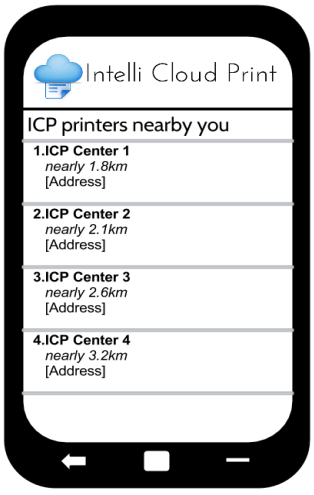

Fig 6: Select desired nearby ICP

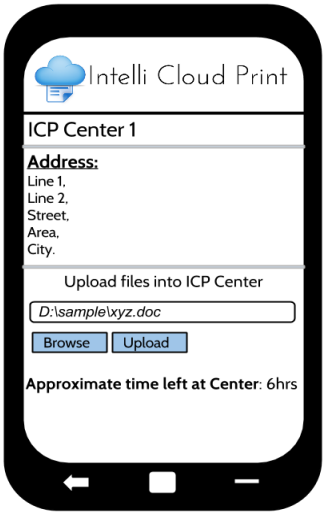

Fig 7: Upload files to selected ICP

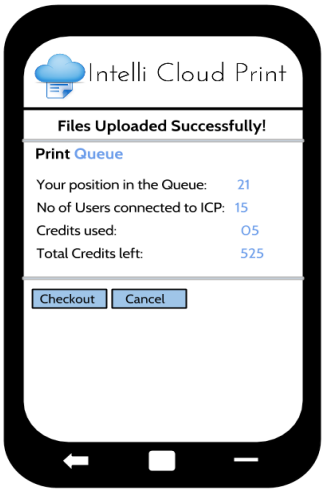

Fig 8: Summery to user.

IV. CONCLUSION

The normal printing procedures which we use in our personal computers follow certain protocols which are difficult to implement in smart phones or tablets, as these devices are always in state of motion. So finding the printers around those users at that particular moment and sending the print jobs from their smart phone/tablet is a very difficult task. We made these printing procedures in smart devices possible by using Cloud technology and integration of GPS based services to find out the nearest printers available to the users. Using these features, users can send the print jobs directly from smart phones/tablets to the ICP featured printers even without connecting them. Hence paving a path to novel printing procedures in the field of smart phones/tablets with the help of cloud computing.

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