Remote Desktop on Mobile

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Abstract—In This paper we will see how the remote Desktop with static IP can be accessed using Android based mobile phones,to develop this application we used virtual network computing architecture (VNC) .And for this the VNC Server must be installed in a person's computer which is connected via Wi-Fi network and VNC Client must be installed in Android based cell phone. Using this application we can access desktop within the Wi-Fi range for windows based Operating System.

Keywords— Remote Desktop, Pocket Droid, Android, W i-fi.

I. INTRODUCTION

In Today's era the Smartphone based on android platform plays great role in the technical field, which also provides various applications. The main aim of the application is to remotely access and control different applications on a static IP PC by connecting to it over a GPRS link from a Android based mobile phone. Mobile Remote Control turns your mobile into a remote control that can control various applications on Desktop PC. Both the PC and mobile phone have to support Wi-Fi/GPRS which is being used to send and receive the data. The user installs a server Application on the PC and a client on the mobile phone. Both applications going to be developed in Java Using Eclipse Or JDK. To develop server and client application VNC architecture is very efficient.

II. WHY ANDROIDAS A PLATFORM?

The Android Platform is a software stack [3] for mobile devices including an operating system, middleware and key applications. Developers can create applications for the platform using the Android SDK.Applications are written using the Java programming language and run on Dalvik, aCustom virtual machine designed for embedded use, which runs on top of a Linux kernel[1].There are many advantages to developing applications for Google's Android Mobile Operating System. The most prominent of these is Android's open-source nature. With the right software development tools, Android application developer can do whatever they want with the OS.This isn't something common to other smartphone platforms. Both Google and Verizon are confident that giving this kind of freedom to developers will lead to a burst of innovative applications, and so far, the numbers are looking good Android app developers use the classic open source Linux OS. When an operating system or any application is open source, it simply means all of its source code is transparent and available to any developer who wants to modify it or see how it works. Anyone who installs Linux on a machine can change any of the files that control the way the operating system works. Someone might go in and redesign the look and feel of the operating system, or they might modify these files in order to use system resources for a new application.

Google provides all Android developers with an open source software development kit for the Android OS. They can create applications for Android and then test them on an Android simulator before loading them onto an actual Droid phone [2].

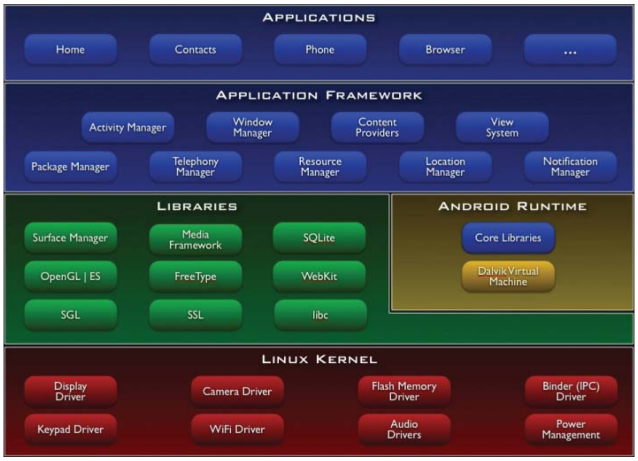


Fig 1.Android Architecture

Linux Kernel: **The** basic layer is the Linux kernel. The whole Android OS is built on top of the Linux 2.6 Kernel with some further architectural changes made by Google. It is this Linux that interacts with the hardware and contains all the essential hardware drivers. Drivers are programs that control and communicate with the hardware. For example, consider the Bluetooth function. All devices has a Bluetooth hardware in it. Therefore the kernel must include a Bluetooth driver to communicate with the Bluetooth hardware. The Linux kernel also acts as an abstraction layer between the hardware and other software layers. Android uses the Linux for all its core functionality such as Memory management, process management, networking, security settings etc. As the Android is built on a most popular and proven foundation, it made the porting of Android to variety of hardware, a relatively painless task.

Libraries: The next layer is the Android's native libraries. It is this layer that enables the device to handle different types of data. These libraries are written in c or c++ language and are specific for a particular hardware. Some of the important native libraries include the following:

Surface Manager: It is used for compositing window manager with off-screen buffering. Off-screen buffering means you can't directly draw into the screen, but your drawings go to the off-screen buffer. There it is combined with other drawings and form the final screen the user will see. This off screen buffer is the reason behind the transparency of windows.

Media framework: Media framework provides different media codecs allowing the recording and playback of different media formats.

SQLite: SQLite is the database engine used in android for data storage purposes

Web Kit: It is the browser engine used to display HTML content

OpenGL: Used to render 2D or 3D graphics content to the screen

Android Runtime:Android Runtime consists of Dalvik Virtual machine and Core Java libraries.

Dalvik Virtual Machine: It is a type of JVM used in android devices to run apps and is optimized for low processing power and low memory environments. Unlike the JVM, the Dalvik Virtual Machine doesn't run .class files, instead it runs .dex files. .dex files are built from .class file at the time of compilation and providehigher efficiency in low resource environments. The Dalvik VM allows multiple instance of Virtual machine to be created simultaneously providing security, isolation, memory management and threading support. It is developed by Dan Bornstein of Google.

Core Java Libraries: These are different from Java SE and Java ME libraries. However these libraries provide most of the functionalities defined in the Java SE libraries.

Application Framework: These are the blocks that our applications directly interact with. These programs manage the basic functions of phone like resource management, voice call management etc. As a developer, you just consider these are some basic tools with which we are building our applications.

Important blocks of Application framework are:

Activity Manager: Manages the activity life cycle of applications

Content Providers: Manage the data sharing between applications

Telephony Manager: Manages all voice calls. We use telephony manager if we want to access voice calls in our application.

Location Manager: Location management, using GPS or cell towerResource Manager: Manage the various types of resources we use in our Application

Applications:

Applications are the top layer in the Android architecture and this is where our applications are going to fit. Several standard applications come pre-installed with every device, such as:

- SMS client app
- Dialler
- Web browser
- Contact manager

As a developer we are able to write an app which replaces any existing system app. That is, you are not limited in accessing any particular feature. You are practically limitless and can whatever you want to do with the android (as long as the users of your application permit it).

III. PROPOSED SYSTEM

Virtual Network System [3] is acts as a communicating media, which provides access to graphical user interfaces. This system uses the VNC protocol which is based on the concept of remote frame buffer (RFB). The protocol simply allows a server to update the frame buffer displayed on a viewer. Because it works at the frame buffer level it is potentially applicable to all operating systems, windowing systems and applications .The protocol will operate over any reliable transport such as TCP/IP [4].In the following diagram the VNC viewer term is used to described client that is user handling android based mobile phone and VNC server to described remote desktop PC.

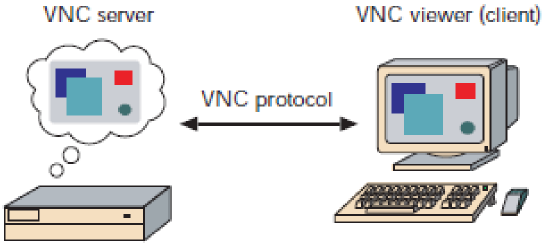


Fig 2. VNC Architecture

IV. PROTOCOL USED

RFB stands for Remote frame buffer. It is the simple protocol to remotely access the graphical user interface. It is applicable to all windowing systems as it works on frame-buffer level. RFB is the protocol used in VNC. It also has a RFB server(the end where the changes to the frame buffer originate) and RFB client or viewer(the end where the user sits and provides the input). RFB is truly a “thin client” protocol

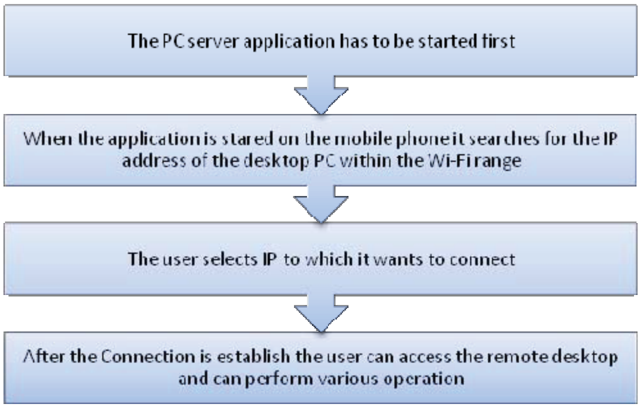
V. HOW ARE BLUETOOTH AND Wi-Fi COMPLEMENTARY?

As Bluetooth and Wi-Fi began to capture the interest of the hi-tech industry, many understood theexciting potential of these technologies to revolutionize how people connect their devices. These two wireless technologies do not compete but rather complement each other. Bluetooth and Wi-Fi have the potential to dramatically alter how people use devices to connect and communicate in everyday life. Bluetooth is a low-power, short-range technology for ad hoc cable replacement; it enables people to wirelessly combine devices wherever they bring them. Conversely, Wi-Fi is a moderate-range, moderate-speed technology based on Ethernet; it allows people to wirelessly access an organizational network throughout a campus location. Bluetooth and Wi-Fi can both potentially be used for WPAN and WLAN.

TABLE 1: DIFFERENCE BETWEEN BLUETOOTH AND WI-FI

Characteristic	**Bluetooth**	**Wi-Fi**
Frequency	2.4 GHz	2.4GHz
Range	10 meters	100 meters
Primary Application	WPAN: Cable Replacement	WLAN: Ethernet
Data Transfer rate	100Kbps	11Mbps
Power Consumption	Low	medium
Primary devices	Mobile phones, PDAs, Consumer electronics, office and industrial automation devices.	Notebook Computers, Desktop Computer, Server.
Primary Users	Traveling employees: electronics consumers; office and office and industrial workers.	Corporate campus users
Usage Location	Anywhere at least two Bluetooth devices exist-ideal for roaming outside buildings.	Within the range of WLAN infrastructure usually inside a building.
Development start date	1998	1990
Specifications Authority	Bluetooth SIG	IEEE,WECA

VI.WORKING PRINCIPLE:


The PC server application has to be started first
When the application is stared on the mobile phone it searches for the IP address of the desktop PC within the Wi-Fi range
The user selects IP to which it wants to connect
After the Connection is establish the user can access the remote desktop and can perform various operation

The applications are Firefox, Winamp, Windows Media Player, PowerPoint, Internet Explorer and Explorer. The last mode Utilities provides access to running commands or sending messages. We will also Implement and Handle Basic System Call and Also Transfer File among the Device. The application does not require any Specific configuration,It could be handy in several situations like business presentations, lying on the coach at home and listening to Winamp or Windows Media Player or starting a command without having to go near the computer.

6.1 Hardware Components List & Details:

6.1.1 HARDWARE CONFIGURATION:

Processor: PENTIUM IV Onwards
Monitor: 14 "SAMTRON MONITOR
Internal memorycapacity: 128 MB
RAM: 1 GB (minimum)
Hard disk: At least 80 GB

6.2 Software Components List & Details:

6.2.1 SOFTWARE CONFIGURATION:

Operating system: WINDOWS XP/7
Front end: JDK1.6.5 & Android
Back end: SQL/ ORACLE 9I/ MSACCESS 2008

VII.CONCLUSION

Currently the scope of this system is limited to the Wi-Fi area. Next step will involve implementing this system over Internet. The same RFB protocol and VNC architecture will be used for developing the system for tablet and other handheld devices thus providing mobility for users.Thus the extended scope of this system will prove to be helpful in providing mobility and accessing the remote desktop over the internet.

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