

APPVISION

Submitted in partial fulfillment of the requirements

of the degree of

Bachelor of Engineering in Information Technology

By

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2016-17

CERTIFICATE OF APPROVAL

This is to certify that the project entitled

“APPVISION”

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Date:

Place: Mumbai

Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Name of student

Roll No.

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Date:

Acknowledgement

This black book is based on our project, AppVision which aims at running multiple applications on browsers. We are grateful for a number of friends and colleagues for providing us a valuable feedback, assistance and support throughout this process for encouraging us to start the work, persevere with it and finally to publish it.

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Sincerely,

Chirag Charania

Preshita Narkar

Siddhant Rajadhyaksha

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CHAPTER 1: INTRODUCTION

INTRODUCTION

With high end media- HD photos, movies, games, etc. we constantly face a challenge of managing our memory. Most of the image files and video files are stored in high quality by default, which makes it even more difficult to manage the memory space in our phones. The internal memory or storage space of our mobile phones isn't enough as applications and the media size is constantly growing with active application updates from vendors from time to time and high quality content. In this scenario, downloading new apps or storing new pictures or videos can be a difficult task. One possible solution to this could be deleting pictures, videos or documents or uninstalling old applications in order to download and install new ones which can be quite a task as the regular updates make app sizes even bigger and hence freeing up space to make some for a new application which you might need only for a limited time period can be time consuming.

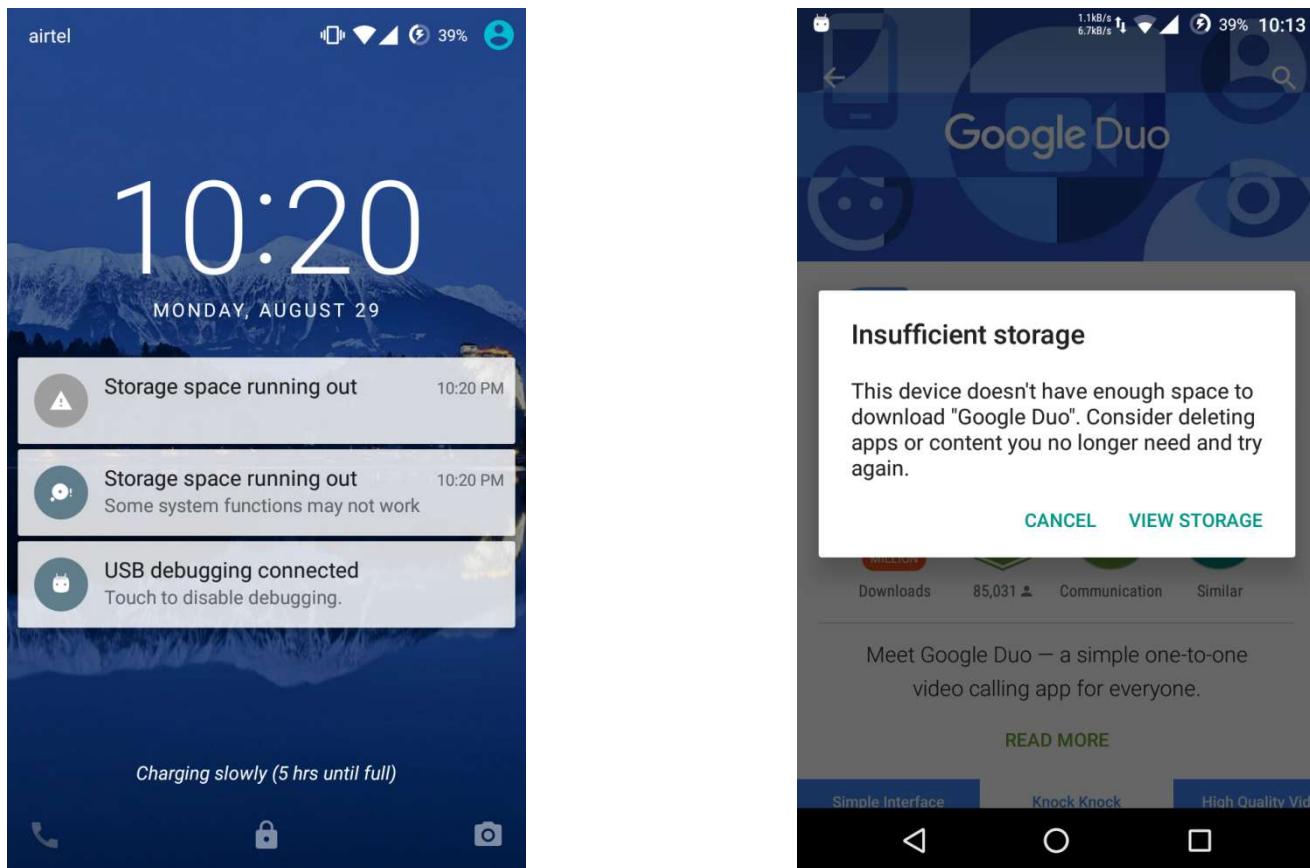


Figure 1.1 – Insufficient storage space examples



Figure 1.2 – AppVision Logo

In order to tackle this memory problem, we came up with the idea of AppVision.

With AppVision, you can access multiple applications that you wish to try or use without having to install them on your phone. The applications that you wish to access are side-loaded on the cloud in .apk format and you can access it from there via a web browser interface, which successfully eliminates the need of having to install it on your phone. This instance of the application runs on your phone's browser straight from cloud thereby saving a lot of memory space. This basically saves you the work of freeing up memory space in your phone in order to make space for a new application or a few new applications. We are using mobile cloud computing to provide this functionality in order to provide additional features like on-demand access, security, bandwidth, storage, etc. AppVision aims at running all the android applications on a private cloud on an android emulator and rendering the instance(s) of the required application on the user's mobile phone browser on demand.

CHAPTER 2: AIM AND OBJECTIVE

AIM AND OBJECTIVE

Ideally, the process of downloading multiple applications on our phones should be a hassle-free experience. However, there is a memory constraint on various mobile phone's storage spaces and some phones don't even support expandable storage specification as a result of which managing space for new data becomes difficult. It is not feasible to invest in a new phone for the sake of additional memory space. We aim to tackle this issue by proposing AppVision.

AppVision allows the users to use multiple applications without worrying about the consumption of memory space. AppVision works on mobile cloud computing in order to facilitate on demand access to applications and 24/7 availability. It ensures straightforward usage of applications without the concerns of privacy breach and also prevents the deletion and reinstallation of applications thereby helping in effectively managing the storage space.

Thus our system effectively helps to manage memory space and storage problems by providing on demand access to applications through a web browser interface thereby providing a feasible solution to storage space management in mobile phones.

CHAPTER 3: NEED FOR PROJECT

NEED FOR PROJECT

With high end media- HD photos, movies, games, etc. we constantly face a challenge to constantly manage the memory space in our phones. Since most of the media is downloaded in high quality by default, the media itself consumes a lot of space in our phone's storage. Clearly, the internal memory or storage space isn't enough as the size of data and applications is constantly growing with regular updates from application vendors from time-to-time. In this case, downloading new applications can be quite a task.

In order to effectively manage the memory space of phones, we have proposed AppVision. With AppVision, you can use multiple applications on your phone without worrying about the space that the application may occupy. This enables you to use the applications that you want without installing them on your phone. This is done by side loading the applications on the cloud and accessing it from there using the web browser interface. This process effectively eliminates the need of installing applications on your phone and thereby saving the memory space.

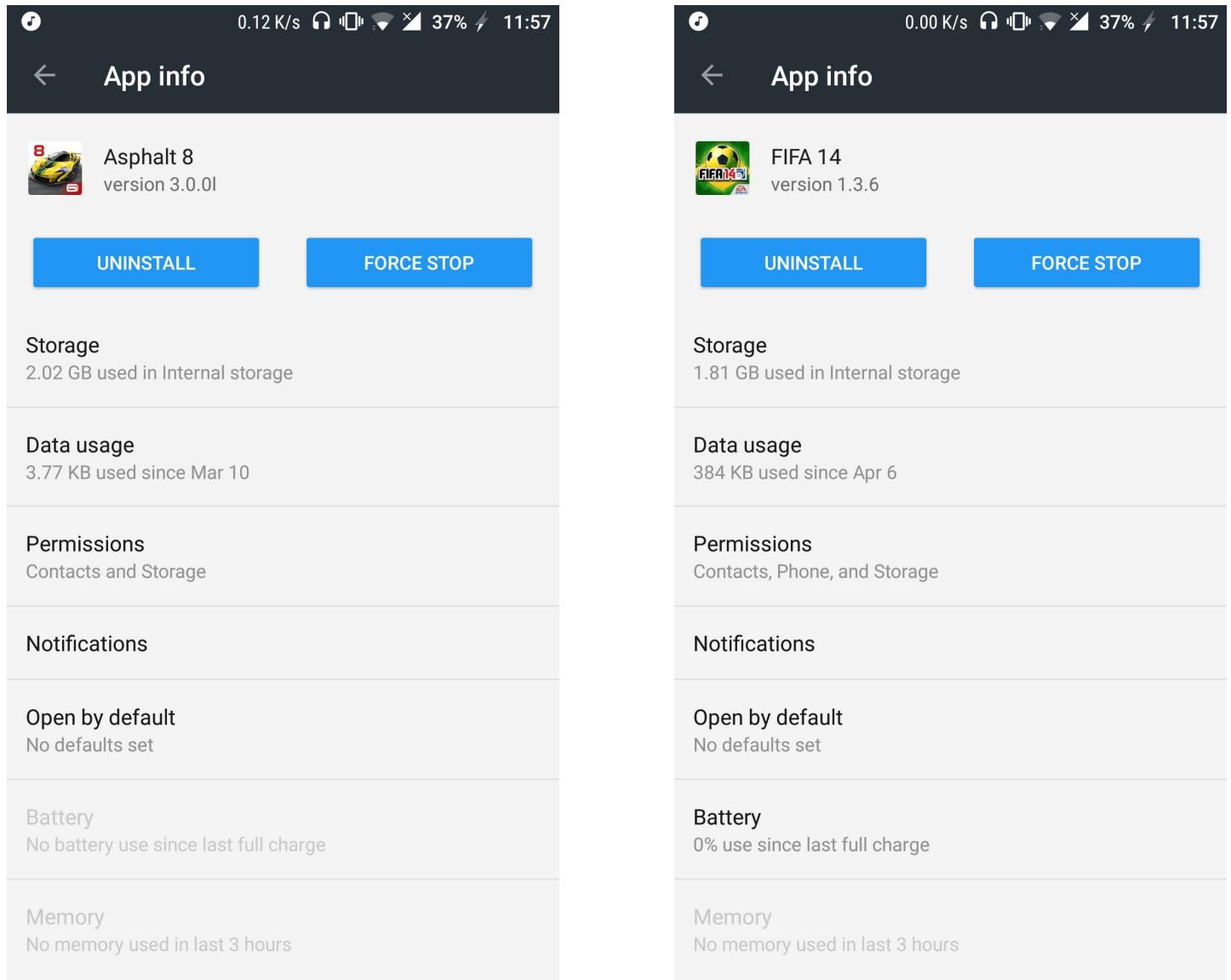


Figure 3.1 – Apps that require high disk storage space

CHAPTER 4: LITERATURE SURVEY

LITERATURE SURVEY

In order to get a basic idea about the technical details, we referred 3 papers on mobile cloud computing, cloud security, data organization in cloud computing. Given below is our conclusion and our inferences from the papers referred.

1. “Basics of Mobile Cloud Computing” by esat journal0073

Inferences: We understood the challenges, scope, approaches and solutions in the area of Mobile Cloud Computing since the paper focuses on energy conservation in mobile devices, migration issues, application development platforms and the various mobile cloud computing applications, we got an idea of the potential mobile device issues and the need to devise a solution for them. Besides, we also got an idea of the existing solutions and approaches to tackle these issues. The paper presents the survey on mobile cloud computing applications, challenges, existing solutions and approaches to overcome the challenges and thereby improve the user experience.

2. 10 steps to ensure Security in Cloud Computing by the Cloud Council Organization

Inferences: While cloud is becoming latest trend nowadays, it is very important to consider security issues with respect to cloud computing and with respect to the application we’re developing. From this paper, we learnt how to follow a systematic guide and incorporate a step by step approach towards successfully hosting a cloud without compromising on security at any level by various techniques like enforcing security policies, managing people, roles and identities, security provisions for cloud applications etc.

3. “A complete perspective on cloud and handling data” by John Hagel

Inferences: This paper provides an enterprise approach to cloud data mart management, benefits fundamental to future enterprise computing, immediate and pragmatic opportunities to improve efficiencies today while managing cost effectively and systematically and setting the stage for strategic change. It helped us develop a professional approach towards development of the system. This paper helps us understand that cloud computing can be used to address tactical problems with which IT continually deals, like resource availability and reliability, data center costs, and operational process standardization which can be very useful when it comes to development of AppVision.

4. “Towards data handling requirements- Aware Cloud Computing.”

The adoption of the cloud computing paradigm is hindered by severe security and privacy concerns which arise when outsourcing sensitive data to the cloud. We understand those concerns regarding the handling of data. The requirements how their data should be treated have to be addressed in order to enable the affected users and companies to utilize cloud computing. We observe that current cloud offers, especially in an inter-cloud setting, fail to meet these requirements. Users have no way to specify their requirements for data handling in the cloud and providers in the cloud stack - even if they were willing to meet these requirements - can thus not treat the data adequately. In this paper, we identify and discuss the challenges for enabling data handling requirements awareness in the (inter-)cloud and how to extend a data storage service.

5. “Deploying an Application on Cloud”

We understand how to deploy the applications on cloud, cloud virtualization, different types of clouds and deployment of applications on them, phases of computer paradigms, attributes, benefits, cloud services, requirements of deploying an application, cost factors and more.

6. “Mobile Cloud Computing- The future of Cloud.”

This paper basically helps us in understanding the concepts of Mobile Cloud Computing, various challenges faced in this area and research in Mobile cloud computing. It helps us study this field in depth to understand the future scope and challenges in implementing the Mobile Cloud Computing platform for deployment of applications or services.

SR.NO	Paper Title	Author	International / National	Topic
1	Mobile Cloud Computing as future for mobile applications.	C. Shravanthi, H S. Guruprasad	International	Understanding the challenges, scope, approaches and solutions in the area of MCC. The paper also focuses on battery conservation in mobile devices, migration issues, application development platforms and various mobile cloud computing applications.
3	A complete perspective on cloud and handling data.	John Hagel	International	This paper outlines an enterorise approach to cloud data mart management, fundamentals to future enterprise computing, immediate and pragmatic opportunities to improve efficiencies today while managing cost effectively and systematically and setting the stage for strategic change.
4	Towards data handling requirements- Aware Cloud Computing.	Marton Henze, Marcel Grossfengels, Maik Koprowski	International	To extend a data storage service, Appscale and Cassandra to follow data handing requirements. Studying data handling requirements.

5	Deploying an Application on Cloud	N. Ram Ganga Charan, S. Tirupathi Roy Dr. P. V. S. Srinivas	International	Deploying various types of applications on cloud.
6	Mobile Cloud Computing- The future of Cloud.	Pragya Gupta, Sudha Gupta.	International	Basic understanding of Cloud, Mobile Cloud Computing.

Table 4.1 – Summary of Literature Survey

CHAPTER 5: PROBLEM STATEMENT

PROBLEM STATEMENT

The aim of AppVision is to run multiple applications on user's android phone on demand. We aim at providing on-demand access, scalability apart from our core objective of effectively managing the memory space. We also aim at maintaining the privacy of the system, users and application access using various SSL encryption techniques, Authentication and Authorization. Our primary aim is at providing a fast and reliable service that can be accessed anytime and from anywhere along with tailored experience for users according to their interests and preferences.

CHAPTER 6: CLOUD COMPUTING BASICS

Cloud computing is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g., computer networks, servers, storage, applications and services), which can be rapidly provisioned and released with minimal management effort. Cloud computing and storage solutions provide users and enterprises with various capabilities to store and process their data in either privately owned, or third-party data centers that may be located far from the user—ranging in distance from across a city to across the world. Cloud computing relies on sharing of resources to achieve coherence and economy of scale, similar to a utility (like the electricity grid) over an electricity network.

Advocates claim that cloud computing allows companies to avoid up-front infrastructure costs (e.g., purchasing servers). As well, it enables organizations to focus on their core businesses instead of spending time and money on computer infrastructure. Proponents also claim that cloud computing allows enterprises to get their applications up and running faster, with improved manageability and less maintenance, and enables Information technology (IT) teams to more rapidly adjust resources to meet fluctuating and unpredictable business demand. Cloud providers typically use a "pay as you go" model. This will lead to unexpectedly high charges if administrators do not adapt to the cloud pricing model.



Figure 6.1 – Cloud Computing

In 2009, the availability of high-capacity networks, low-cost computers and storage devices as well as the widespread adoption of hardware virtualization, service-oriented architecture, and autonomic and utility computing led to a growth in cloud computing. Companies can scale up as computing needs increase and then scale down again as demands decrease. In 2013, it was reported that cloud computing had become a highly-demanded service or utility due to the advantages of high computing power, cheap cost of services, high performance, scalability, accessibility as well as availability. Some cloud vendors are experiencing growth rates of 50% per year, but being still in a stage of infancy, it has pitfalls that need to be addressed to make cloud computing services more reliable and user friendly.

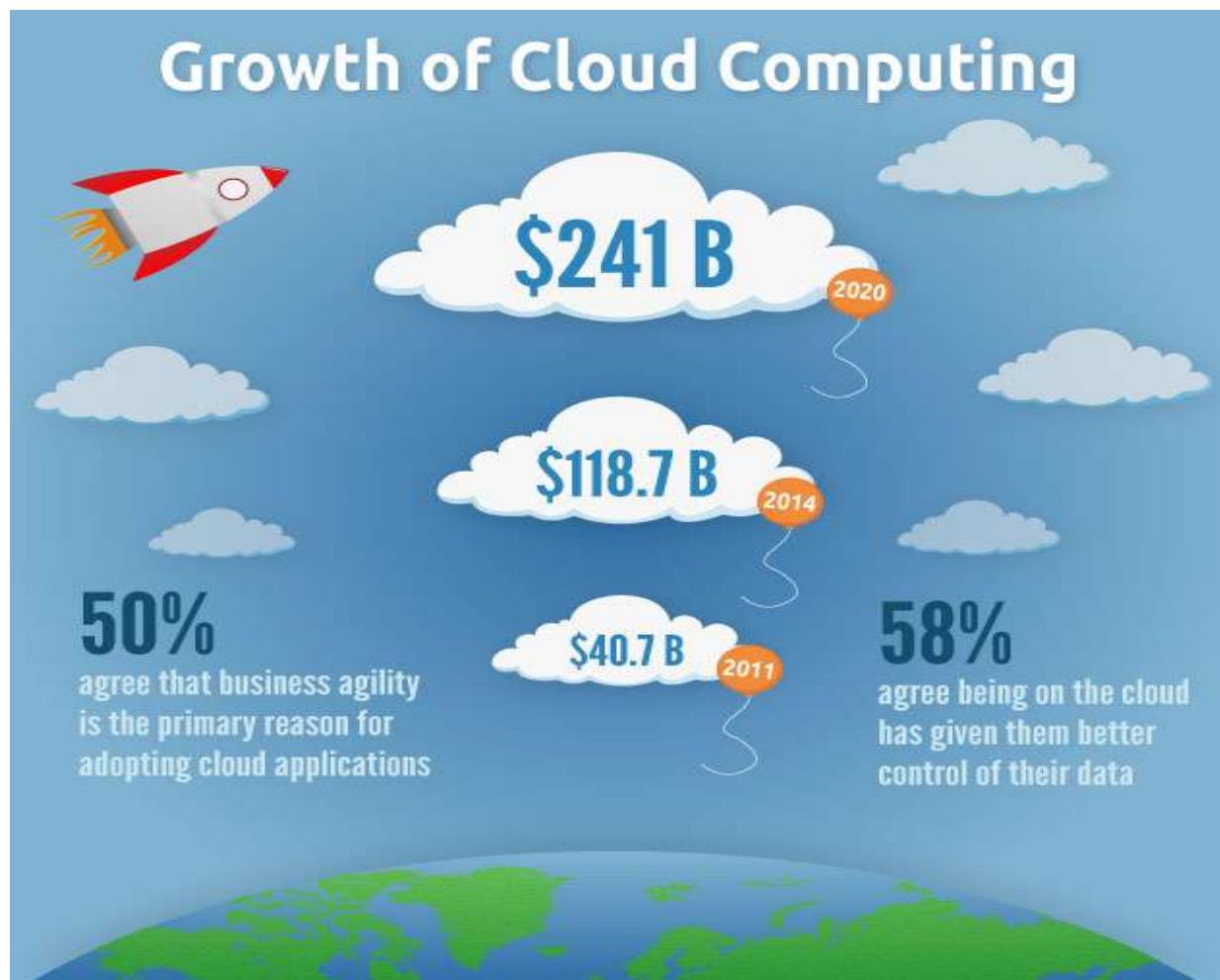


Figure 6.2– Growth of Cloud Computing

Cloud computing exhibits the following key characteristics:

- Agility for organizations may be improved, as cloud computing may increase users' flexibility with re-provisioning, adding, or expanding technological infrastructure resources.
- Cost reductions are claimed by cloud providers. A public-cloud delivery model converts capital expenditures (e.g., buying servers) to operational expenditure. This purportedly lowers barriers to entry, as infrastructure is typically provided by a third party and need not be purchased for one-time or infrequent intensive computing tasks. Pricing on a utility computing basis is "fine-grained", with usage-based billing options. As well, less in-house IT skills are required for implementation of projects that use cloud computing. The e-FISCAL project's state-of-the-art repository contains several articles looking into cost aspects in more detail, most of them concluding that costs savings depend on the type of activities supported and the type of infrastructure available in-house.
- Device and location independence enable users to access systems using a web browser regardless of their location or what device they use (e.g., PC, mobile phone). As infrastructure is off-site (typically provided by a third-party) and accessed via the Internet, users can connect to it from anywhere.
- Productivity may be increased when multiple users can work on the same data simultaneously, rather than waiting for it to be saved and emailed. Time may be saved as information does not need to be re-entered when fields are matched, nor do users need to install application software upgrades to their computer.
- Reliability improves with the use of multiple redundant sites, which makes well-designed cloud computing suitable for business continuity and disaster recovery.
- Scalability and elasticity via dynamic ("on-demand") provisioning of resources on a fine-grained, self-service basis in near real-time (Note, the VM startup time varies by VM type, location, OS and cloud providers), without users having to engineer for peak loads. This gives the ability to scale up when the usage need increases or down if resources are not being used.
- Security can improve due to centralization of data, increased security-focused resources, etc., but concerns can persist about loss of control over certain sensitive data, and the lack of security for stored kernels. Security is often as good as or better than other traditional systems, in part because service providers are able to devote resources to solving security issues that many customers cannot afford to tackle or which they lack the technical skills to address.

CHAPTER 7: PROPOSED SYSTEM

PROPOSED SYSTEM

Taking into consideration, the operating functionality of mobile cloud computing, we aim at implementing our system in the form of an interface that is similar to that of an emulator by providing SaaS to the end users and rendering android applications on demand.

In order to use AppVision, the user must have a strong and stable internet connection. The user should be registered on the system and once he's successfully authenticated, he may access the system. The user can search for the desired application. Our system will check if the application that the user requested is available as an instance on the cloud. If it is available, the user further gets an option to play it(run it virtually on the web browser interface) or install it on the phone. If the user plays it on AppVision, an instance of that application is played on user's mobile phone browser instead of actually downloading it and occupying the memory space of the phone. Since the application runs on an android emulator on AppVision's private cloud, the user need not worry about data and privacy issues as several security steps have been performed. Once the user is done with the usage of application, he may log out of the system and end the process.

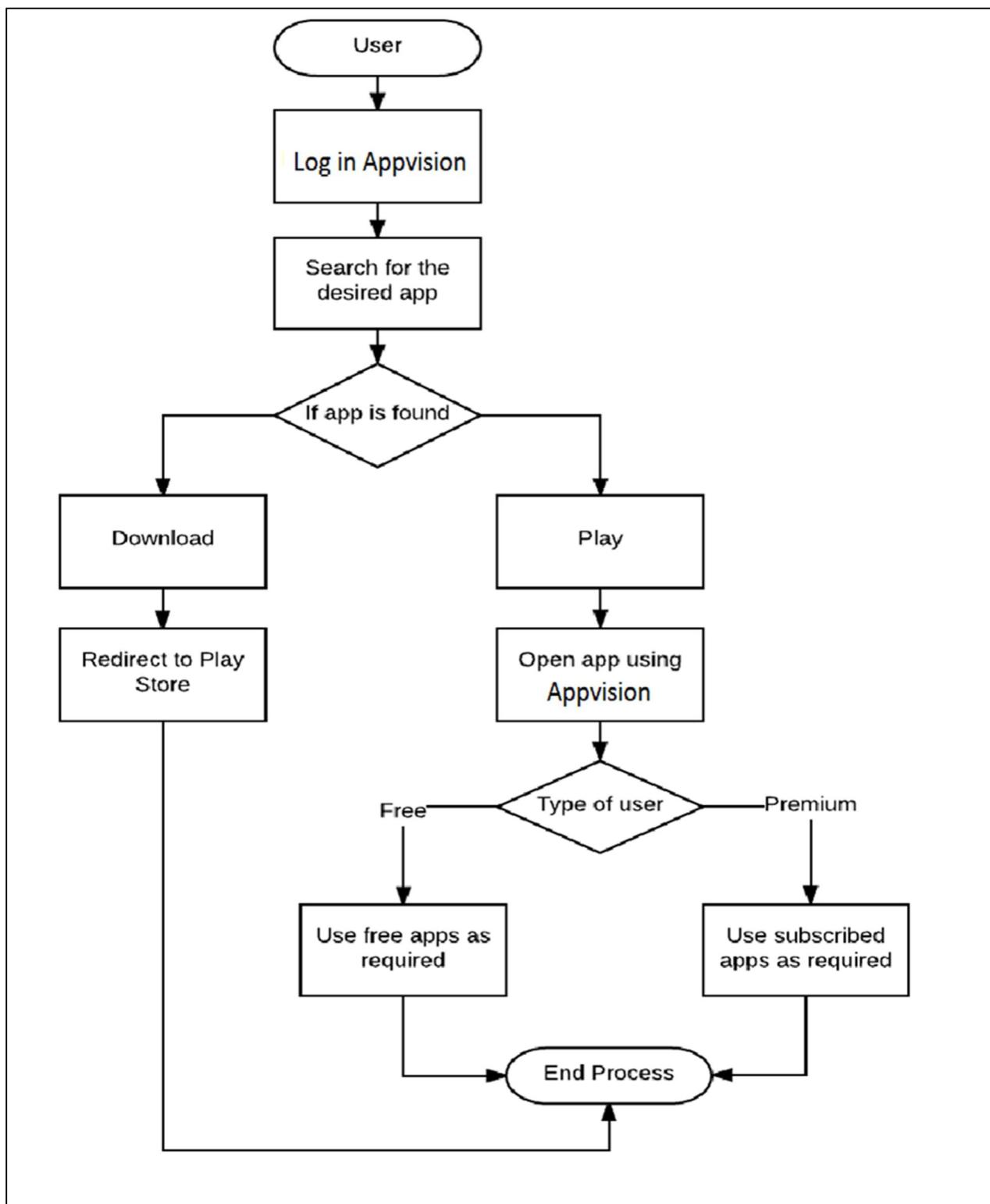


Figure 7.1 - System Architecture

CHAPTER 8: SOFTWARE DEVELOPMENT & ANALYSIS

SOFTWARE DEVELOPMENT & ANALYSIS

8.1 ANALYSIS:

8.1.1 PROCESS MODEL USED FOR THE PROJECT:

The process model used for development purpose is incremental model.

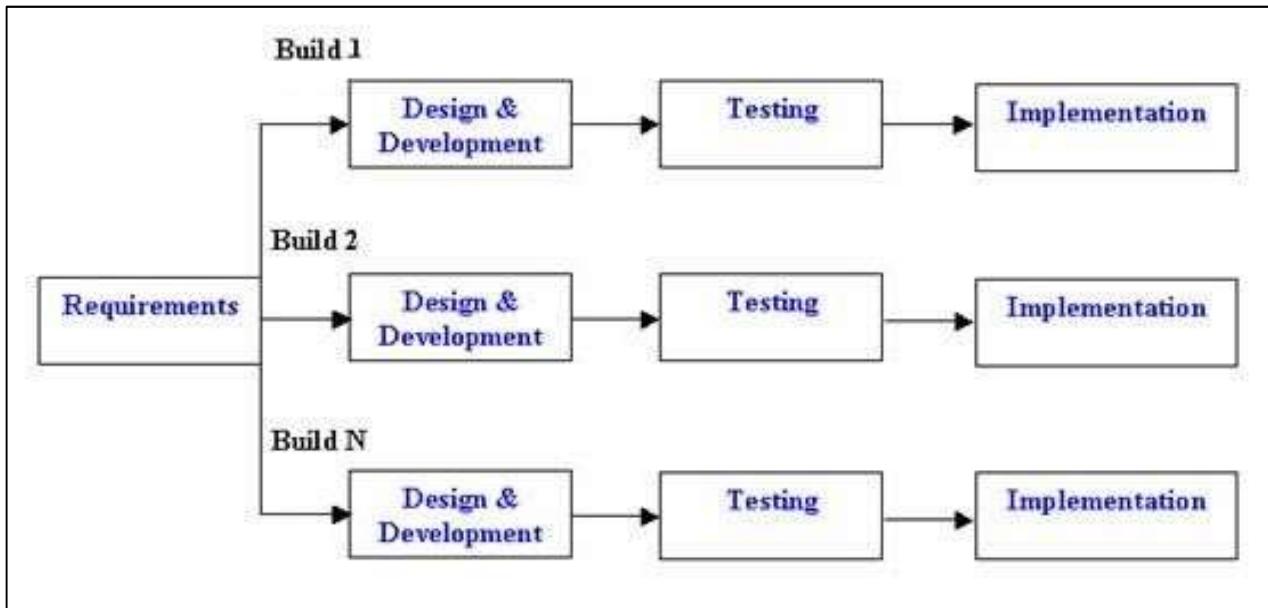


Figure 8.1 – Incremental Life Cycle Model

8.1.2 JUSTIFICATION:

- Incremental model is a process of software development where requirements are broken down into multiple standalone modules of software development cycle. Each iteration passes through the requirements, design, coding and testing phases.
- A working version of the system will be produced during the first build and each subsequent release will add additional functions to the previous release of the system.
- Another reason for using incremental model is flexibility, ease of testing and debugging and easy management of risk

8.2 SOFTWARE DEVELOPMENT

The design of the application is based on the following modules

- User login - The user has to be successfully authenticated to be able to log into the system.
- Application launch - Once the user is logged into the system, the application can be accessed by him. The user can directly browse the emulator to search for the desired application and choose to run or install it.
- Running the application - The application that has been selected by the user is retrieved from the cloud and run on the client side on a web browser interface. The application is directly rendered into the front end for easy access.
- Visual representation

8.3 FEASIBILITY STUDY:

8.3.1 Technical Feasibility:

The implemented system is a mobile based application which is developed using Dreamweaver cc2017. HTML is the base language for the front end and the whole team has its practical knowledge. The website hosting has been facilitated by cPanel.

8.3.2 Operational Feasibility:

The memory consumption problem is increasing since the data is constantly increasing and so is the complexity of managing the data.

It has the following key features:

- a. It greatly reduces the efforts and time for manual storage management.
- b. It allows the applications to be accessed anytime, anywhere.

8.3.3 Economical Feasibility:

- a. The system can be highly useful for developers meaning to test their applications on an emulator eliminating the need to invest in hardware which might cost anything between 5000 to 50,000
- b. In our system, the equipment needed would be a mobile or desktop computer. The source of financing would be students working on the project itself.

8.4 COST ANALYSIS:

The costing required will be for hardware as well as the software.

Domain- www.appvision.co.in INR 250/-

cPanel Hosting- INR 1161.50/-

Genymotion- \$136 /year

CHAPTER 9: DESIGN

DESIGN

9.1 DATA FLOW DIAGRAM:

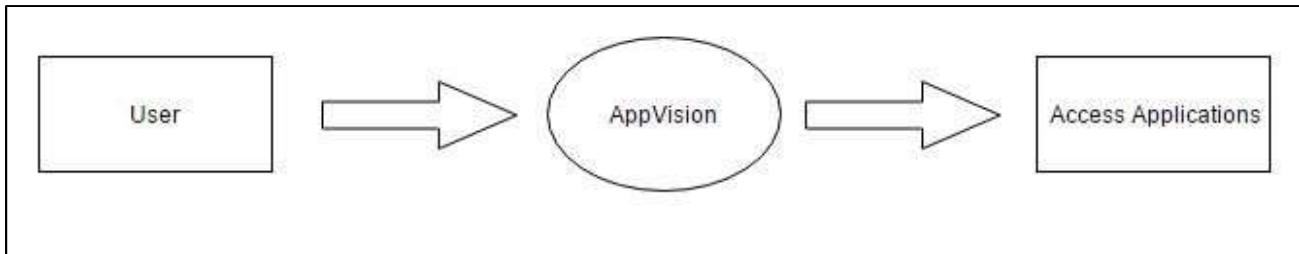


Figure 9.1 - DFD LEVEL 0

The Data Flow Diagram level 0 as shown in Figure 9.1 for AppVision shows the basic interaction of the end user with the system.

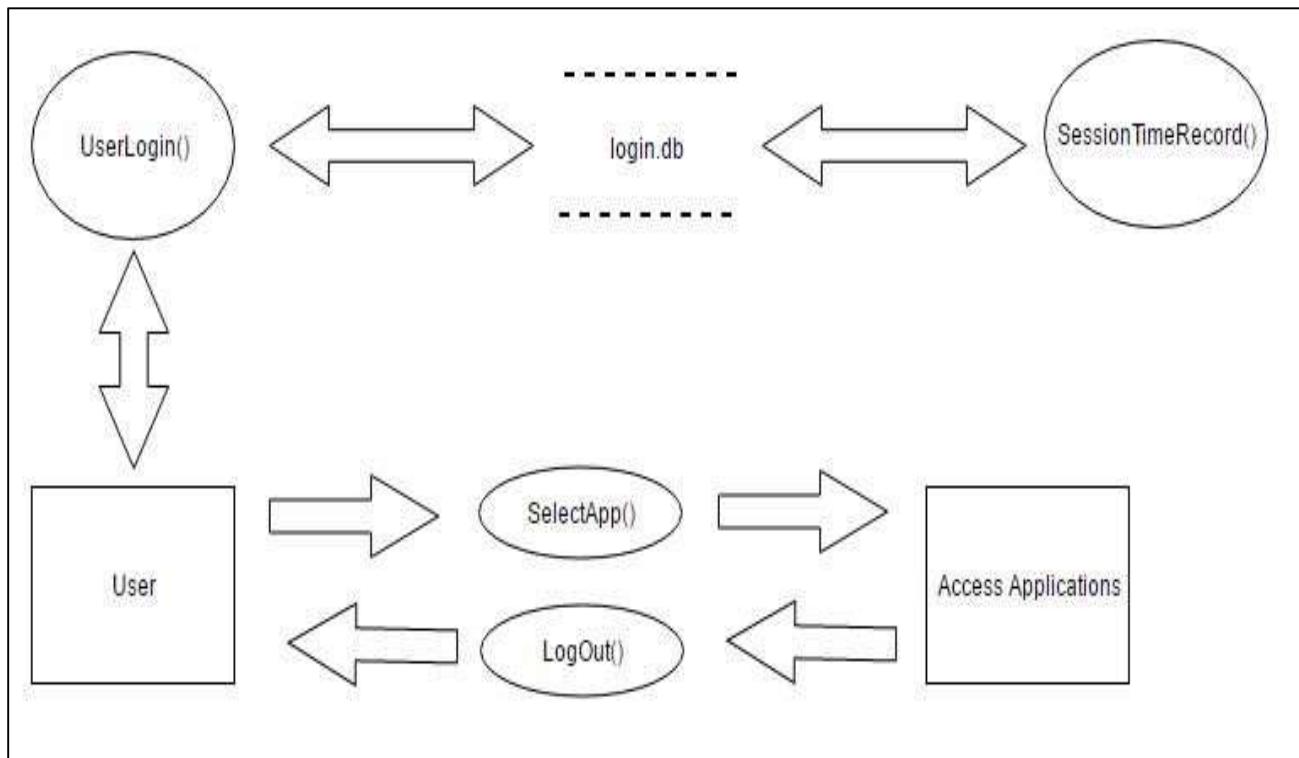


Figure 9.2 - DFD LEVEL 1

DFD level 1 as shown in Figure 9.2 showcases, in detail, the various functionalities incorporated in the system with modules like USER LOGIN, SELECTION OF APPLICATION and the functions invoked in that case.

Once the user logs into the system, his details are recorded into the database. If the user is successfully authentication, he is given an access to the application. The user may use the application and select application(s). At this instance SelectApp() method is invoked. Once user is done with using the application, he may logout of the system.

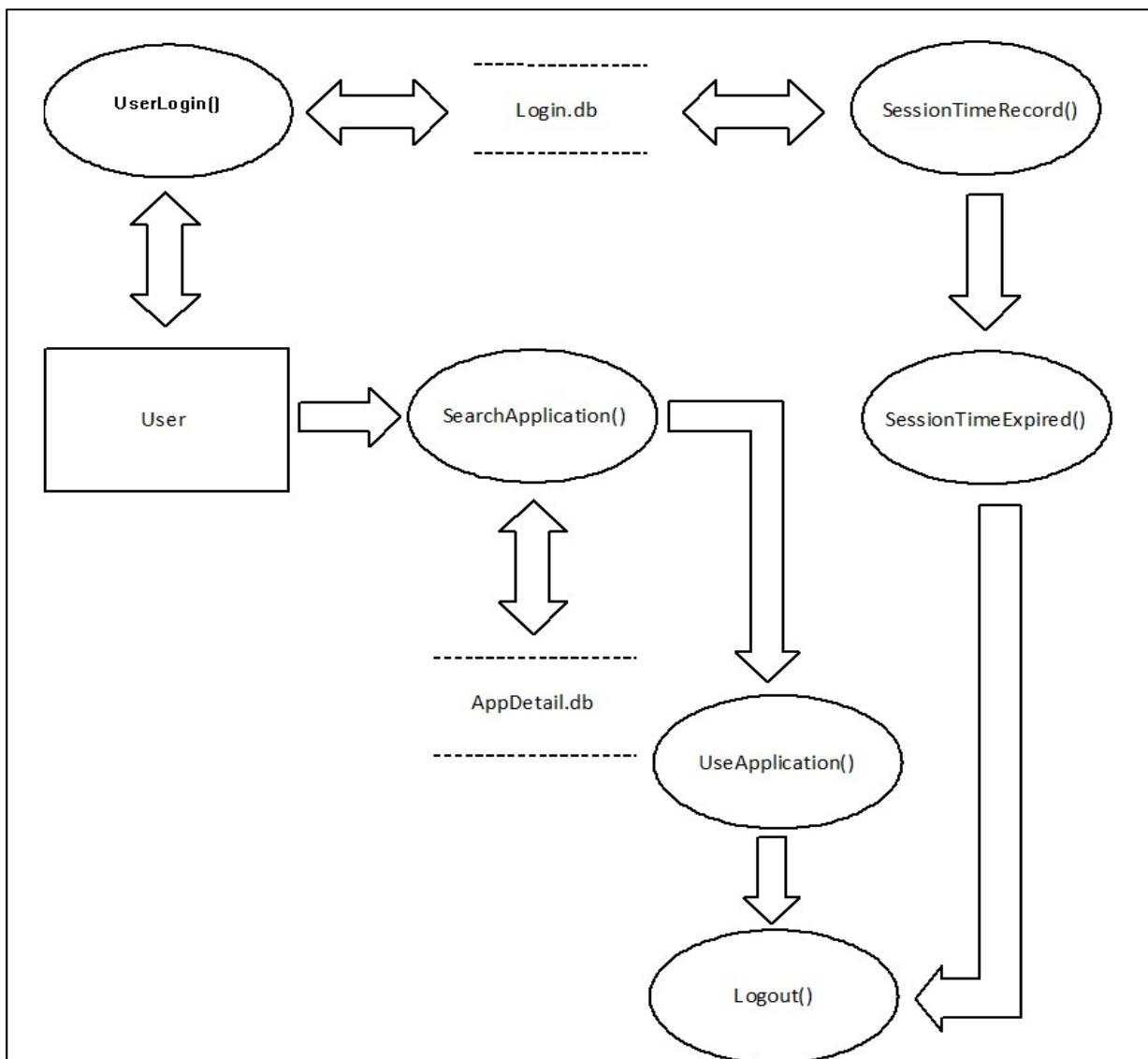


Figure 9.3 DFD LEVEL 2

DFD level 2 shows us a detailed functionality of the operation of AppVision. How the user goes about searching the desired application, session time, using the application, and logging out, all the modules are showcased in detail along with the functions invoked and databases accessed in the process.

9.2. DEPLOYMENT DIAGRAM:

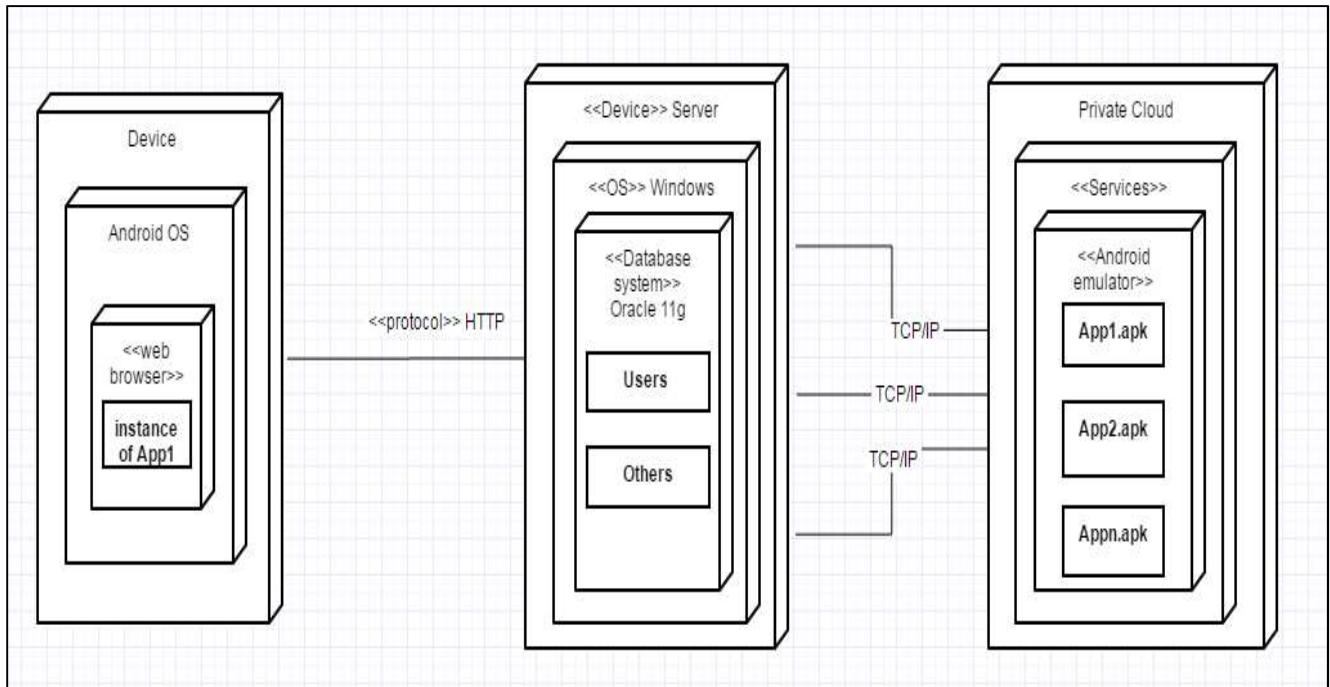


Figure 9.4 - Deployment Diagram

Showcased above is the deployment diagram for AppVision. It gives us the 3-tier view of how the system is implemented. The first tier is the client side where GUI of the system is visible and the end user can access the system using this GUI. The user is authenticated and his details are stored in the database which is incorporated in the middle tier of the system. When user requests for application, the request is forwarded to the cloud which stores the instances of applications in .apk format. If the application is available, then it is rendered on the client side of the system. This is how the system interacts when a request is made

CHAPTER 10:

PROJECT TIME & TASK

DISTRIBUTION

PROJECT TIME & TASK DISTRIBUTION

10.1 Semester 7:

ID	Task Name	Duration	Jul 2016		Aug 2016				Sep 2016				Oct 2016			
			3W	4W	1W	2W	3W	4W	1W	2W	3W	4W	1W	2W	3W	
1	Project idea and approval	3														
2	Literature Survey	2														
3	Presentation for Project Status	1														
4	Deciding Technology	1														
5	Develop Implementation Plan	2														
6	Project Report Documentation	3														

Table 10.1: Timeline chart for Semester 7



Milestones

10.2 Semester 8:

ID	Task Name	Duration	Jan 2017			Feb 2017				Mar 2017				Apr 2017	
			2W	3W	4W	1W	2W	3W	4W	1W	2W	3W	4W	1W	
1	Project Implementation	6													
2	Scholarly Paper on Implementation	1													
3	GUI and Additional Features	1													
4	Testing	2													
5	Preparation of Black Book	1													
6	Submission of Black Book	1													

Table 10.2: Timeline chart for Semester 8



Milestones

CHAPTER 11:

IMPLEMENTATION

TECHNOLOGIES USED

11.1 HARDWARE AND SOFTWARE REQUIREMENT:

I. Development and Deployment Platform Requirements:

A. Software Requirements:

- Operating System: Windows 7 or higher.
- Dreamweaver CC2017 framework.
- cPanel

B. Hardware Requirements:

- A typical Computer (CPU, Monitor, Keyboard, Mouse) with optional internet connectivity.
- 2GB storage space in the system.
- RAM: 4GB or higher.
- x32 based processor or higher.
- Genymotion EC2 console mx2.large

II. User Platform Requirements:

a. Software Requirements:

- Android 4.1+ for devices
- Windows 7 or higher for desktop systems.

b. Hardware Requirements:

- A typical mobile device with internet connectivity
- A computer (CPU, Monitor, Keyboard, Mouse) with stable internet connectivity.

11.2 INTRODUCTION TO PROGRAMMING TOOLS:

1. Adobe DreamWeaver

Adobe Dreamweaver CC is a proprietary tool developed by Adobe Systems.

It combines a visual design surface known as LIVE VIEW and a code editor with standard features such as syntax highlighting, code completion and code collapsing as well as more sophisticated features such as real time syntax checking and code introspection for generating code hints to assist the user in writing the code. Combined with an array of site management tools, DreamWeaver lets its users design, code and manage websites as well as mobile content. DreamWeaver is positioned as a versatile web design and development tool that enables visualization of web content while coding. Dreamweaver, like any other HTML editors, edits files locally and then uploads them to the remote web servers using FTP, SFTP or WebDAV.



Figure 11.1 – Adobe DreamWeaver Logo

2. Microsoft SQL Server:

In computing Microsoft SQL Server is a DBMS relational (*relational database management system RDBMS*) produced by Microsoft. In early versions, it was used for databases small to medium, but since the 2000 version was also used for the management of large databases.

Microsoft markets at least a dozen different editions of Microsoft SQL Server, aimed at different audiences and for workloads ranging from small single-machine applications to large Internet-facing applications with many concurrent users.



Figure 11.2 – Microsoft SQL Server Logo

3. cPanel Framework:

cPanel is a Linux based web hosting control panel that provides a graphical user interface and automation tools designed to simplify the process of hosting a website. cPanel utilizes a 3-tier structure that provides capabilities for administrators, resellers and end user website owners to control the various aspects of website and server administration through a standard web browser.

In addition to the GUI, cPanel also has a command line and API based access that allows third party software vendors, web hosting organizations and developers to automate standard system administration processes. cPanel is designed to function either as a dedicated server or virtual private server. It supports installation on CentOS, Red Hat enterprise Linux and CloudLinux OS. Application based support includes POP3, IMAP, and SMTP services. cPanel is accessed via https on port 2083.

FEATURES:

- Files – Edit and back up files and folders while monitoring your website's disk space usage.

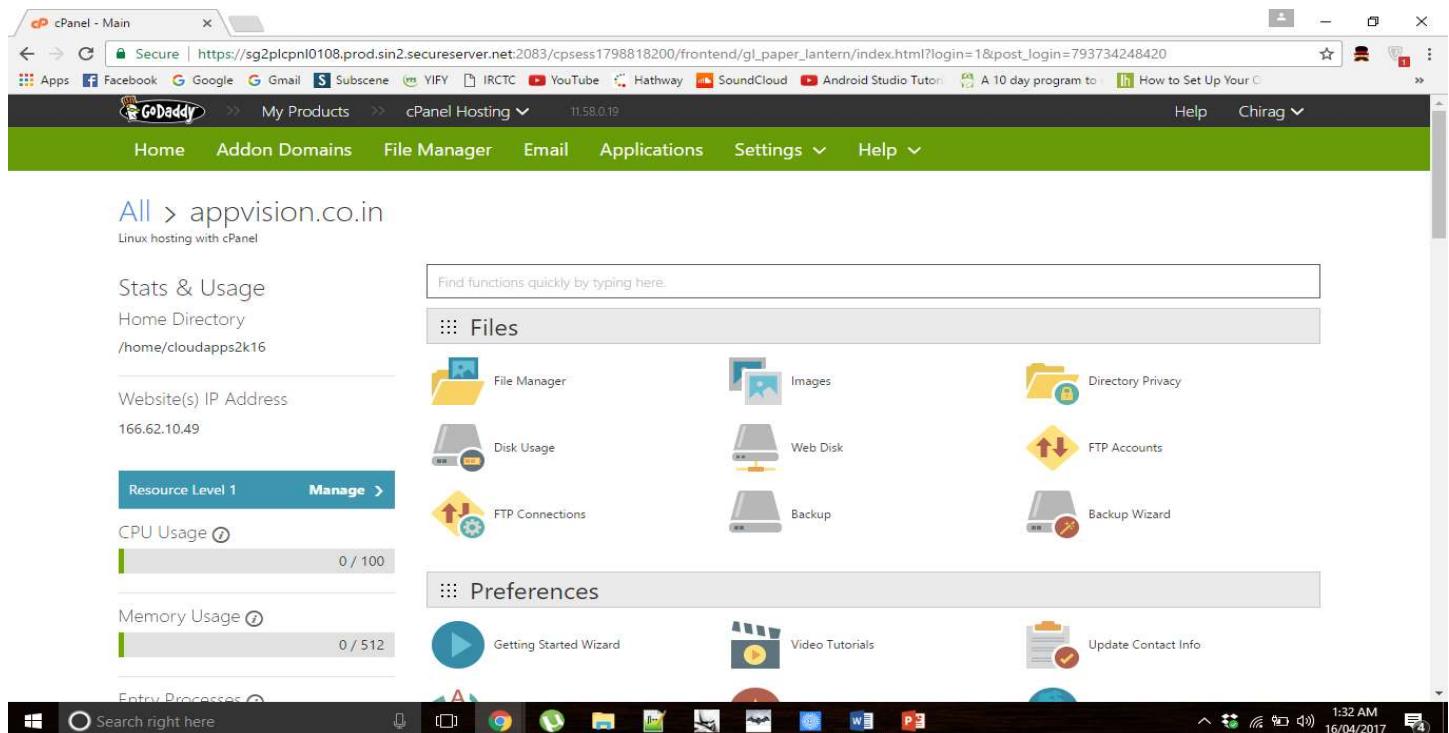


Figure 11.3 – Files displayed on cPanel

- Domains - Set up subdomains, addon domains, parked domains, and redirects to point visitors in the right direction. Identify your site with Simple DNS Zone Editor and Advanced DNS Zone Editor.
- Databases – Store large amounts of data and limit access using MySQL and PostgreSQL databases.

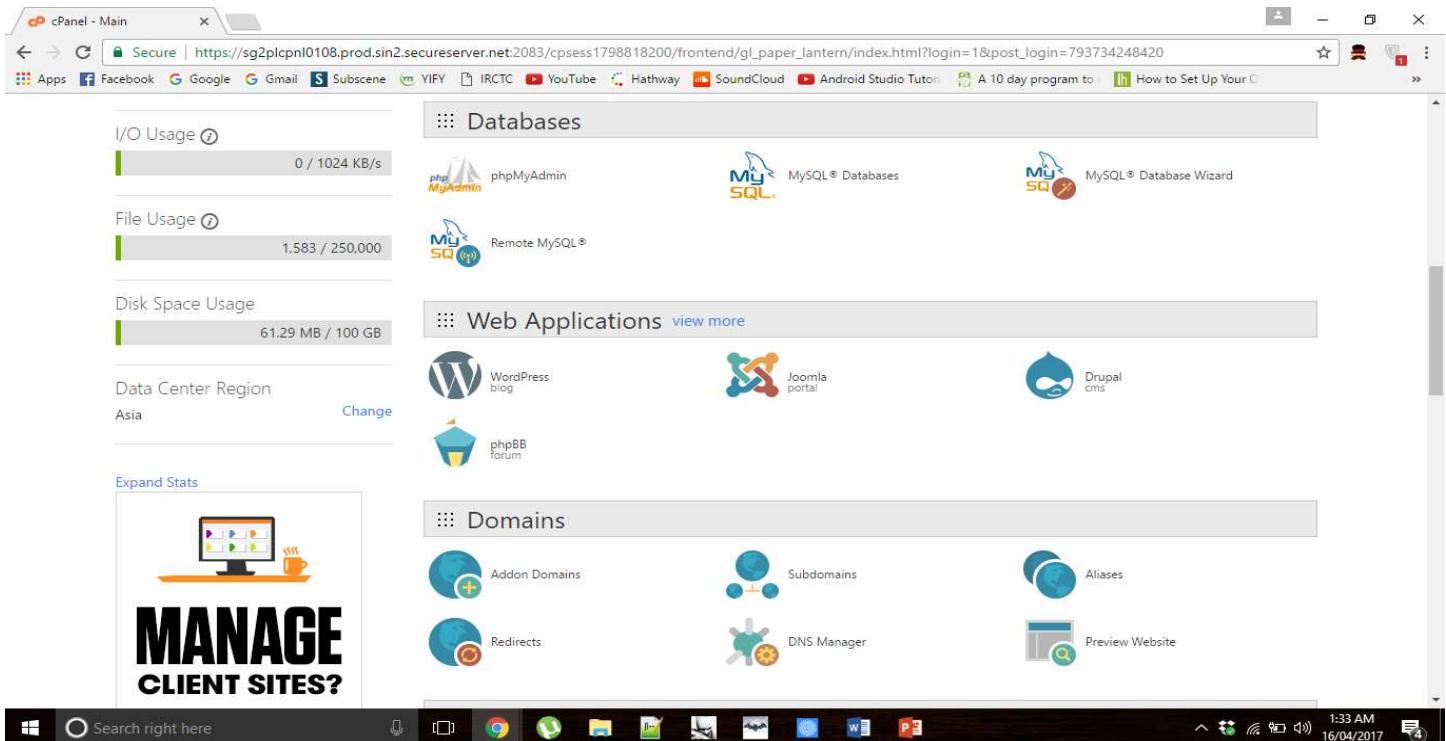


Figure 11.4 – Databases, Web Applications and Domains

- Mail - Create email accounts, forwarders, and autoresponders as well as account and user-level filtering to manage email. Fight spam with BoxTrapper, Apache SpamAssassin, and email authentication. Then, use mailing lists to broadcast your message.

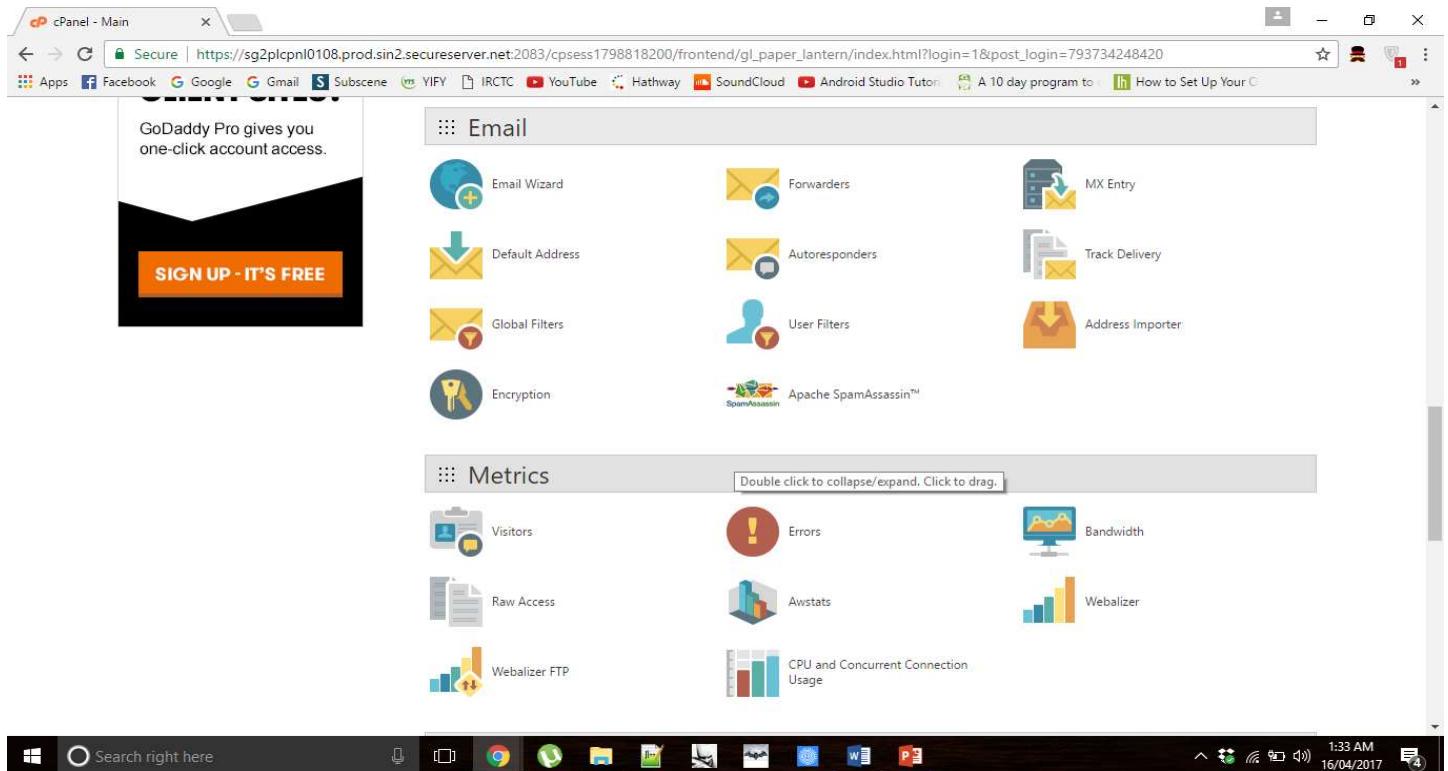


Figure 11.5 – Email on cPanel

- Security - Configure password-protected directories, IP address denials, SSL/TLS, and GnuPG key settings to restrict access. Protect your site with HotLink Protection, Leech Protect, and ModSecurity.
- Apps Galore - Take advantage of third-party software for blogs, bulletin boards, guest books, eCommerce, and more to build a robust, dynamic site.

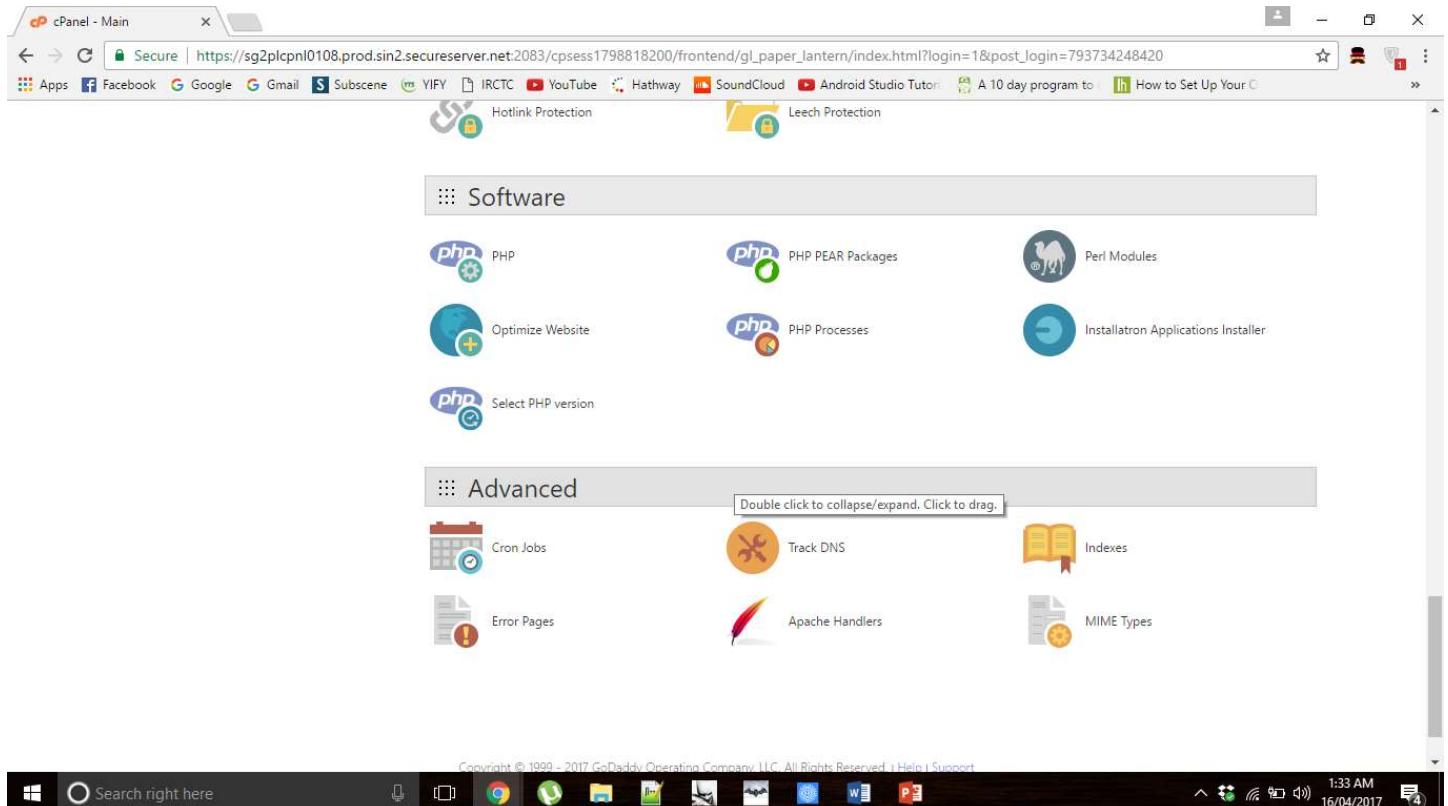


Figure 11.6 – Software available on cPanel

4. Amazon Web Services:

Amazon web services are a subsidiary of www.amazon.com that offers on demand computing platforms. These services operate across the world. They include Amazon Elastic Compute Cloud also known as EC2 and AmazonSimple Storage service also known as S3 A's of 2016 AWS has more than 70 services including compute, storage and networking and tools for IoT. Amazon markets AWS as a service to provide large computing capacity quicker and cheaper than a client company building an actual physical server farm.



Image 11.7 – Amazon Web Services Logo

AWS is located in 16 geographical regions:

- North America (6 regions)
 - US East (Northern Virginia), where the majority of AWS servers are based
 - US East (Ohio)
 - US West (Oregon)
 - US West (Northern California)
 - AWS GovCloud (US), based in the Northwestern United States, provided for U.S. government customers, complementing existing government agencies already using the US East Region
 - Canada (Central)

- South America (1 region)
 - Brazil (São Paulo)
- Europe / Middle East / Africa (3 regions)
 - EU (Ireland)
 - EU (Frankfurt), Germany
 - EU (London), United Kingdom
- Asia Pacific (6 regions)
 - Asia Pacific (Tokyo), Japan
 - Asia Pacific (Seoul), South Korea
 - Asia Pacific (Singapore)
 - Asia Pacific (Mumbai), India
 - Asia Pacific (Sydney), Australia
 - China (Beijing)

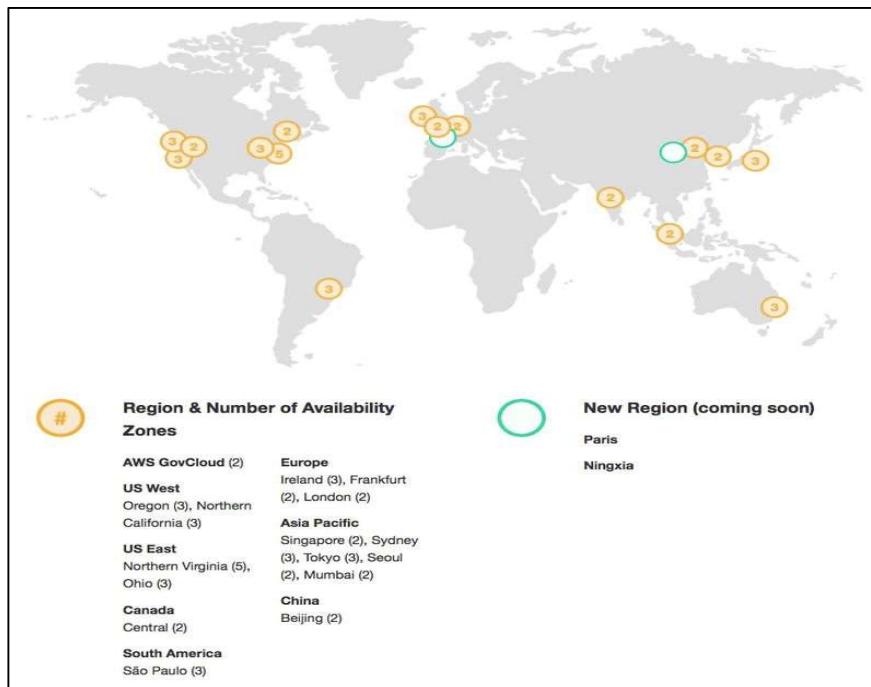


Figure 11.8 – Map showing Amazon Web Services' availability zones within geographic regions around the world

5. Genymotion:

Genymotion is a third-party program that offers Android virtualization so you can test against different versions of Android, and for debugging. Genymotion has many advantages over the AVD Manager (although a lot of them require a paid subscription). One of the major advantages that Genymotion offers is speed, as stated earlier Genymotion is definitely faster than virtual devices from the AVD Manager. This is because Genymotion uses the x86 architecture to run, which is great for performance. The problem with this though is that there is no option to change the architecture, x86 is the only one available, this means there is no way to test an app on ARM, which is the main architecture of Android devices. Genymotion has a sidebar that loads on the right side of a virtual device offering anything you could want, and if for some reason something is missing, Genymotion also has a console to manually type in any command that is needed. The sidebar allows the ability to test the GPS, use a camera, change the virtual device's battery stats, capture videos and much more.



Figure 11.9 – Genymotion Logo

FEATURES:

- Large Scale & Easy App Sharing - Scale sharding for testing easily without the constraints of local emulation. Showcase your app on your website.
- Clone & Scale - Create and duplicate a virtual device or environment with specific chosen configurations, easily scale the number of virtual device or environment according to the evolution of your needs, pay as you go: pay for actual usage, without long term contractual commitments.
- Automate testing - Seamless ADB access activated through specific settings. Automate your tests on Genymotion on Demand and/or integrate it with your existing Continuous Integration infrastructure to enable continuous delivery.

- Run, showcase and kiosk - Run your app or appreciate a smooth interactive access to a virtual device into the cloud or a web browser, howcase your app into your website with a kiosk mode to allow your visitor to test your app without downloading it.



Figure 11.10 – Genymotion Idea

SOME EXAMPLES OF USE CASES:

- Apps Monitoring - Have an agent installed on your virtual device that will automate a customer's journey and raise alerts if something is wrong
- Apps benchmarking / stress testing - Spin a large number of virtual devices on the cloud, and measure the system's response to exceptionally heavy load situations in order to make sure your mobile services will perform adequately.
- Mobile Application Security Testing - Automate complex testing on virtual devices to make sure that your enterprise apps and data security are complete, efficient, well implemented and relevant to the current threat levels.

- Ad campaigns A/B testing – Simulate user journeys on a mobile phone and collecting data on displayed ads, for various cohorts of users with predefined behaviors and usage profiles.
- Help Desk/Customer Support - Pop a virtual device into your web browser, match the phone type the caller is using and increase the quality of your customer support while reducing costs.
- Online App Advertising - Put your virtual device into kiosk mode to showcase your app into displayed ads for on-the-spot testing, without APK download or install.
- BYOD/VMi - Create and provide a secure professional environment available via the Cloud from any dedicated device.
- Mobile Threat Defense (MTD) - Use virtual devices and scripts simulating user activity to simplify the setup and operation of mobile threat defense systems by removing the need to use physical devices and actual users.

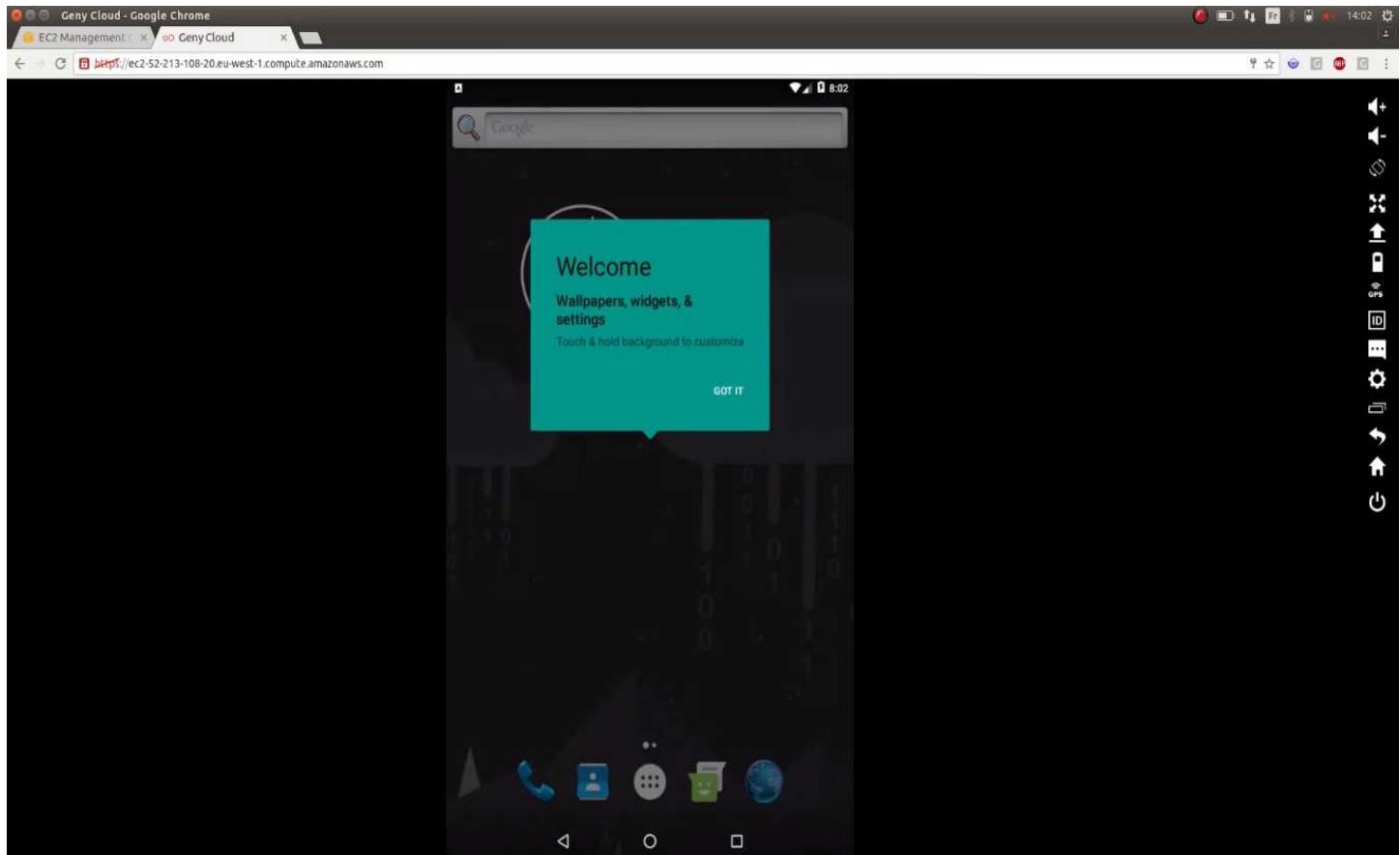


Image 11.11 – Genymotion in a browser

10.3 IMPLEMENTATION:

10.3.1 Get Genymotion on Demand

1. Login to AWS
2. Search for Genymotion on Marketplace.
3. Click Continue.

The screenshot shows the AWS Marketplace product page for 'Genymotion VD for AWS Android 6'. The page includes the following details:

- Customer Rating:** ★★★★☆ (0 Customer Reviews)
- Latest Version:** 1.0
- Operating System:** Linux/Unix, Other 6.0
- Delivery Method:** 64-bit Amazon Machine Image (AMI) (Read more)
- Support:** See details below
- AWS Services Required:** Amazon EC2, Amazon EBS
- Highlights:**
 - All the power and features of Genymotion, the only industry-leading Android emulator.
 - Smooth interactive access to a virtual device with or without widget toolbar via a web browser without any plug-ins.
 - Seamless ADB access activated through specific settings.
- Product Description:** Genymotion VD for AWS, based on industry-leading Genymotion, is Android operating system on EC2. Possibilities are numerous. Integrate it with your existing Continuous Integration infrastructure to enable continuous delivery, integrate it into your website to promote your mobile app or simply access it through a web browser to support your marketing, sales and support efforts. Better yet, by leveraging AWS APIs, you can build or extend your own solution on top of Genymotion VD for AWS. The only limit is your imagination. Use this Android OS for Android App Performance Monitoring, Mobile... Read more
- Pricing Details:**

EC2 Instance Type	Software	EC2	Total
i2.medium	\$0.342/hr	\$0.052/hr	\$0.394/hr
m1.large	\$0.076/hr	\$0.132/hr	\$1.009/hr
m1.xlarge	\$1.762/hr	\$0.260/hr	\$2.018/hr
m3.2xlarge	\$3.504/hr	\$0.532/hr	\$4.036/hr
c2.8xlarge	\$13.172/hr	\$2.00/hr	\$15.172/hr
cr1.8xlarge	\$23.051/hr	\$3.50/hr	\$26.551/hr
c3.large	\$0.610/hr	\$0.105/hr	\$0.797/hr
c3.xlarge	\$1.383/hr	\$0.21/hr	\$1.593/hr
c3.2xlarge	\$2.766/hr	\$0.42/hr	\$3.186/hr
c3.4xlarge	\$5.532/hr	\$0.84/hr	\$6.372/hr
c3.8xlarge	\$11.064/hr	\$1.68/hr	\$12.744/hr
g2.xlarge	\$5.610/hr	\$0.853/hr	\$6.471/hr
g2.2xlarge	\$11.220/hr	\$1.705/hr	\$12.934/hr
g2.4xlarge	\$22.440/hr	\$3.41/hr	\$25.868/hr
g2.8xlarge	\$44.896/hr	\$6.82/hr	\$51.736/hr
r3.large	\$1.093/hr	\$0.166/hr	\$1.259/hr
r3.xlarge	\$2.133/hr	\$0.333/hr	\$2.526/hr
r3.2xlarge	\$4.367/hr	\$0.667/hr	\$5.045/hr
r3.4xlarge	\$8.735/hr	\$1.33/hr	\$10.069/hr
r3.8xlarge	\$17.516/hr	\$2.66/hr	\$20.176/hr

Figure 11.12 – AWS Marketplace

In Manual Click Launch section:

4. Choose Launch with EC2 Console of the desired region

The screenshot shows the AWS Marketplace interface for launching software. The main area displays the 'Manual Launch' section, which includes a table of AMI IDs categorized by Region and a table of Pricing Details for various EC2 instance types across different regions.

AMIs Table Headers:

Region	ID	Action
Australia (Mumbai)	ami-006611ef	Launch with EC2 Console
EU (Ireland)	ami-5a4b0099	Launch with EC2 Console
Asia Pacific (Singapore)	ami-0a209e69	Launch with EC2 Console
Asia Pacific (Sydney)	ami-0f407d6f	Launch with EC2 Console
Asia Pacific (Seoul)	ami-0ee63220	Launch with EC2 Console
EU (Frankfurt)	ami-0a0f0c5	Launch with EC2 Console
Asia Pacific (Tokyo)	ami-0d8523d	Launch with EC2 Console
US East (N. Virginia)	ami-0f55065c	Launch with EC2 Console
US East (Ohio)	ami-0b39fcbe	Launch with EC2 Console
US West (N. California)	ami-03004d03	Launch with EC2 Console
South America (Sao Paulo)	ami-000994dc	Launch with EC2 Console
US West (Oregon)	ami-c3ff52a3	Launch with EC2 Console

Pricing Details Table Headers:

EC2 Instance Type	Software	EC2	Total
c2.medium	\$0.342/hr	\$0.052/hr	\$0.394/hr
m1.large	\$0.876/hr	\$0.133/hr	\$1.009/hr
m1.xlarge	\$1.752/hr	\$0.266/hr	\$2.018/hr
m1.2xlarge	\$3.504/hr	\$0.532/hr	\$4.036/hr
c2.8xlarge	\$13.172/hr	\$2.009/hr	\$15.172/hr
c1.8xlarge	\$23.051/hr	\$3.509/hr	\$26.551/hr
c1.large	\$0.692/hr	\$0.105/hr	\$0.797/hr
c1.xlarge	\$1.383/hr	\$0.211/hr	\$1.593/hr
c3.2xlarge	\$2.766/hr	\$0.421/hr	\$3.186/hr
c3.4xlarge	\$5.532/hr	\$0.841/hr	\$6.372/hr
c3.8xlarge	\$11.064/hr	\$1.681/hr	\$12.746/hr
i2.xlarge	\$5.618/hr	\$0.953/hr	\$6.471/hr
i2.2xlarge	\$11.229/hr	\$1.705/hr	\$12.934/hr
i2.4xlarge	\$22.458/hr	\$3.413/hr	\$25.868/hr
i2.8xlarge	\$44.911/hr	\$6.826/hr	\$51.736/hr
r3.xlarge	\$1.093/hr	\$0.166/hr	\$1.259/hr
r3.2xlarge	\$2.193/hr	\$0.333/hr	\$2.526/hr
r3.4xlarge	\$4.381/hr	\$0.665/hr	\$5.045/hr
r3.8xlarge	\$8.759/hr	\$1.331/hr	\$10.089/hr
i3.8xlarge	\$17.510/hr	\$2.661/hr	\$20.171/hr
p4.large	\$0.692/hr	\$0.105/hr	\$0.797/hr
c4.xlarge	\$1.376/hr	\$0.209/hr	\$1.585/hr
c4.2xlarge	\$2.759/hr	\$0.419/hr	\$3.178/hr
c4.4xlarge	\$5.519/hr	\$0.838/hr	\$6.357/hr
c4.8xlarge	\$11.037/hr	\$1.675/hr	\$12.706/hr
d2.xlarge	\$4.544/hr	\$0.918/hr	\$5.234/hr
d2.2xlarge	\$9.089/hr	\$1.838/hr	\$10.466/hr
d2.4xlarge	\$18.177/hr	\$3.776/hr	\$20.937/hr
d2.8xlarge	\$36.354/hr	\$7.526/hr	\$41.874/hr
t2.micro	\$0.685/hr	\$0.104/hr	\$0.789/hr
m1.large	\$0.797/hr	\$0.122/hr	\$0.919/hr
m1.xlarge	\$1.574/hr	\$0.239/hr	\$1.813/hr
m1.2xlarge	\$3.155/hr	\$0.479/hr	\$3.634/hr
m1.4xlarge	\$6.309/hr	\$0.958/hr	\$7.267/hr
m1.10xlarge	\$15.767/hr	\$2.394/hr	\$18.161/hr
x1.16xlarge	\$43.921/hr	\$6.669/hr	\$50.590/hr
x1.32xlarge	\$87.040/hr	\$13.338/hr	\$101.108/hr
m4.16xlarge	\$25.224/hr	\$3.633/hr	\$29.854/hr

Figure 11.13 – Launching Console

5. Choose the right instance depending on your needs.

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

Currently selected: m4.xlarge (13 ECUs, 4 vCPUs, 2.4 GHz, Intel Xeon E5-2676v3, 16 GiB memory, EBS only)

Family	Type	vCPUs	Memory (GB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate
General purpose	t2.micro	1	1	EBS only	-	Low to Moderate
General purpose	t2.small	1	2	EBS only	-	Low to Moderate
General purpose	t2.medium	2	4	EBS only	-	Low to Moderate
General purpose	t2.large	2	8	EBS only	-	Low to Moderate
General purpose	m4.large	2	8	EBS only	Yes	Moderate
General purpose	m4.xlarge	4	16	EBS only	Yes	High
General purpose	m4.2xlarge	8	32	EBS only	Yes	High
General purpose	m4.4xlarge	16	64	EBS only	Yes	High
General purpose	m4.10xlarge	40	160	EBS only	Yes	10 Gigabit
General purpose	m4.16xlarge	64	256	EBS only	Yes	20 Gigabit
General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate
General purpose	m3.large	2	7.5	1 x 32 (SSD)	-	Moderate

Cancel Previous Review and Launch Next: Configure Instance Details

Figure 11.14 – Choosing Instance type

Some instances are more appropriate for some use cases. Some instances have been recommended below in case you don't know which one to start with.

6. Configure instance details.

The screenshot shows the AWS EC2 Management Console interface for launching a new instance. The current step is "Step 3: Configure Instance Details". The configuration includes:

- Number of Instances:** 1
- Purchasing option:** Request Spot instances
- Network:** vpc-60248205 (default)
- Subnet:** No preference (default subnet in any Availability Zone)
- Auto-assign Public IP:** Use subnet setting (Enable)
- Placement group:** No placement group
- IAM role:** None
- Shutdown behavior:** Stop
- Enable termination protection:** Protect against accidental termination
- Monitoring:** Enable CloudWatch detailed monitoring (Additional charges apply)
- EBS-optimized instance:** Launch as EBS-optimized instance
- Tenancy:** Shared - Run a shared hardware instance (Additional charges will apply for dedicated tenancy)

A note at the bottom states: "You do not have permissions to list any IAM roles. Contact your administrator, or check your IAM permissions." The footer includes links for Feedback, English, Cancel, Previous, Review and Launch (highlighted in blue), Next: Add Storage, Privacy Policy, and Terms of Use.

Figure 11.15 – Configure Instance details

7. Add Storage

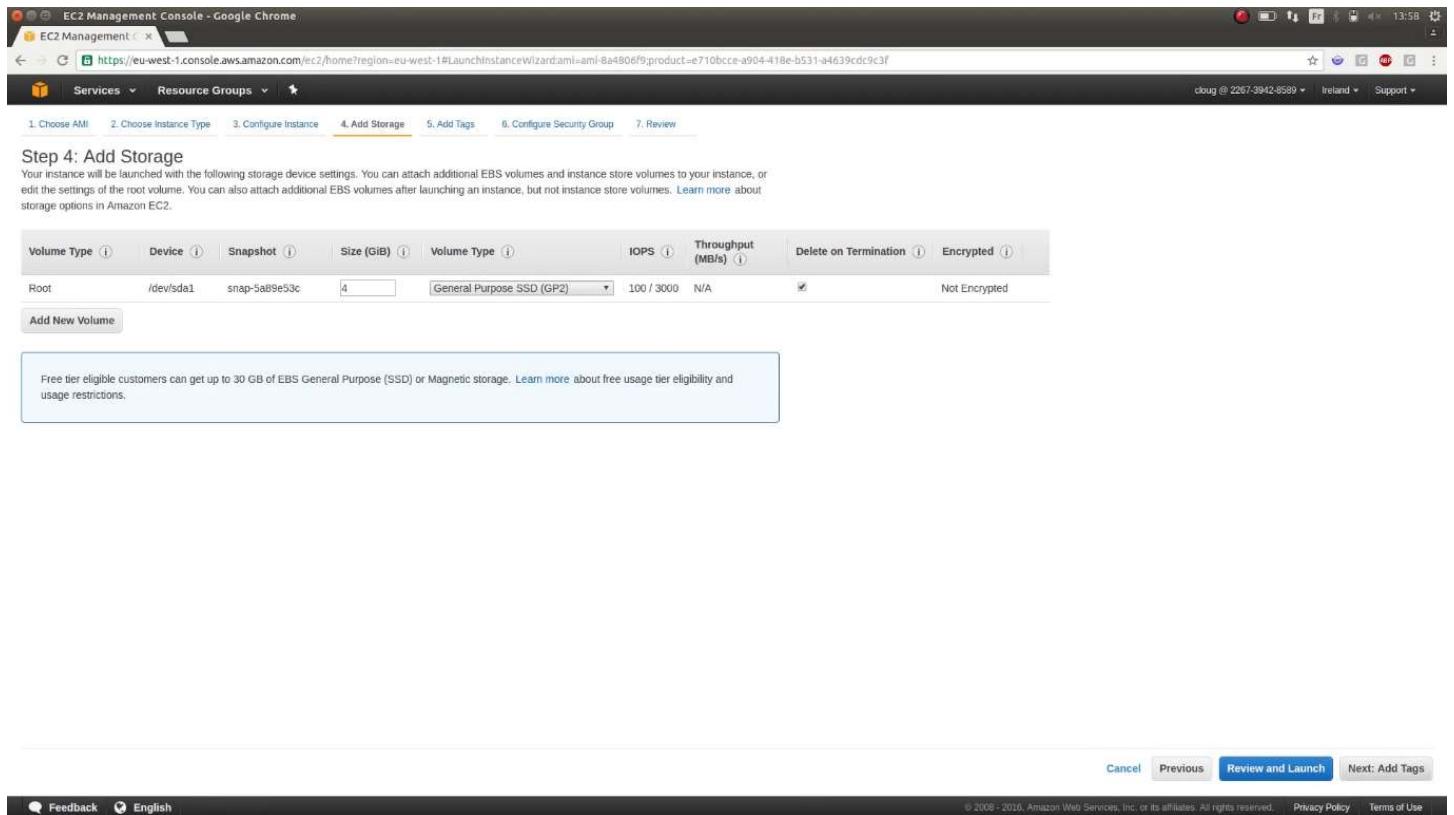


Figure 11.16 – Adding Storage

By default, the instance created has 4GB which is enough for Google apps and an application of 1GB to run. If you need more space, go through the Manual Launch section instead of the 1-Click Launch section.

During the step: Add Storage, you will be able to adjust the size of the storage disk by changing default value in the Size field. Note that only the /data partition will be resized accordingly.

8. Adding Tags.

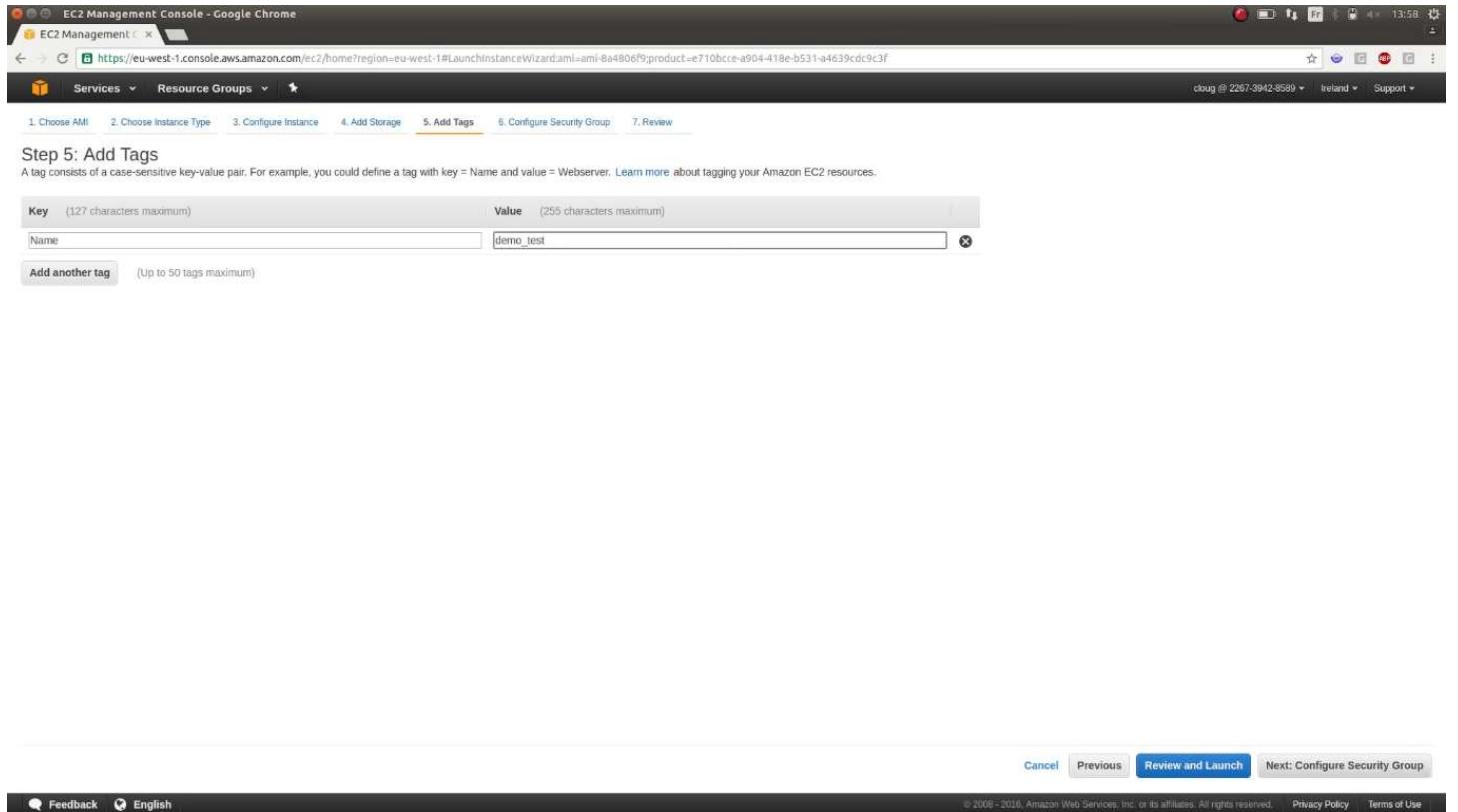


Figure 11.17 – Adding Tags

9. Review Instance Launch

The screenshot shows the AWS EC2 Management Console in Google Chrome, specifically on the 'Review Instance Launch' step of a wizard. The URL is <https://eu-west-1.console.aws.amazon.com/ec2/home?region=eu-west-1#LaunchInstanceWizard:ami=ami-8a4806f9;product=e710bcce-a904-418e-b531-a4639cdc9c3f>. The browser status bar shows 'cloud @ 2267-3942-8589' and 'Ireland'. The main content area shows the following sections:

- Step 7: Review Instance Launch**: A note says "Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only." It also mentions "You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. Edit security groups".
- AMI Details**: Shows the selected AMI: "genymotion-ami-6.0-v1.0-e710bcce-a904-418e-b531-a4639cdc9c3f-ami-cd5107da.3 - ami-8a4806f9". Root Device Type: ebs. Virtualization type: hvm.
- Instance Type**: Shows the selected instance type: m4.xlarge with 13 ECUs, 4 vCPUs, 16 Memory (GiB), EBS only storage, EBS-Optimized available, and High Network Performance.
- Security Groups**: Shows the selected security group: sg-5c56c53b with a description "ALL for everybody". It lists an inbound rule for All traffic on All protocols and port ranges from 0.0.0.0/0.
- Instance Details**, **Storage**, and **Tags** sections are shown with their respective edit links.
- Launch** button at the bottom right.

Figure 11.18 – Review Instance Launch

10. Select a key pair or create one.

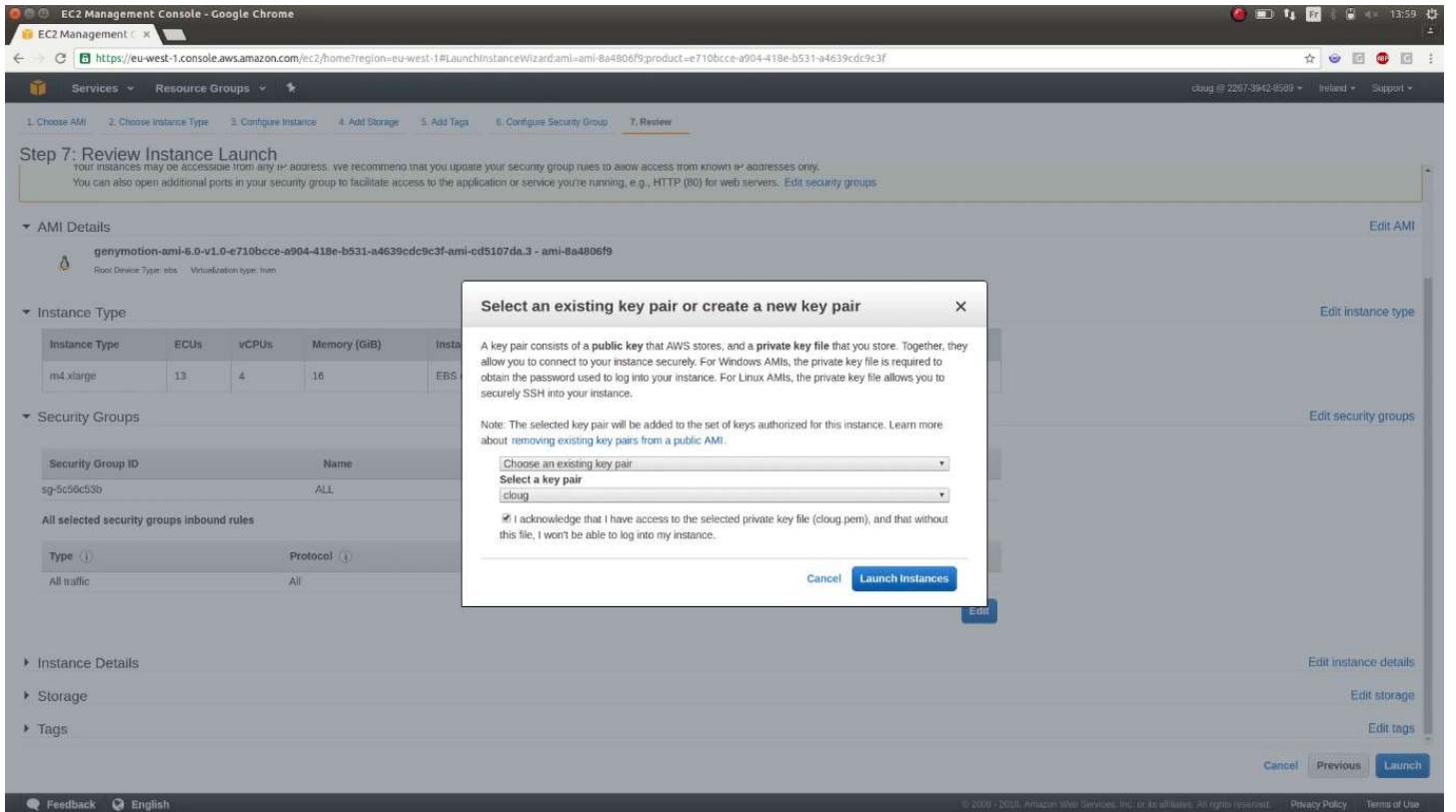


Figure 11.19 – Select a key pair or create one

11. Launch.

12. Access Genymotion instance from web browser.

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with various navigation links like EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, Elastic Block Store, Network & Security, Load Balancing, Auto Scaling, and Commands. The main area is titled 'Instances' and shows a table of running instances. One instance, 'demo_test', is highlighted. The table includes columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, Alarm Status, Public DNS, Public IP, Key Name, Monitoring, and Launch Time. The 'demo_test' instance has a Public IP of ec2-52-213-108-20.eu-west-1.compute.amazonaws.com and a Public DNS of 52.213.108.20. It was launched on November 22, 2016, at 1:59:00. The status is 'pending' with 'Initializing' progress. Below the table, there's a message: 'Select an instance above'.

Figure 11.20 – Launching Genymotion

Once the initial setup is done, the instance automatically starts.

It can take up to 2 minutes before the instance can be accessed through the browser.

Compatible browsers are: Chrome, Opera

From EC2 Management console in Instances, select the instance you want to access. In the description section at the bottom, copy the hostname or public IP and paste it to your web browser.

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a sidebar with navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Images, Elastic Block Store, Network & Security, Load Balancing, Auto Scaling, and Commands. The main area displays a table of instances. One instance, named 'demo_test' with ID i-9c588f5c, is selected and shown in a detailed view on the right.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS	Public IP	Key Name	Monitoring	Launch Time	
Thierry	i-84f3033b	m4.large	eu-west-1c	running	2/2 checks ...	None	ec2-52-211-196-0.eu-w...	52.211.196.0	cloug	disabled	October 11, 2016 at 2:02:13...	
test_2	i-3935fcf9	m4.xlarge	eu-west-1b	stopped	0/2 checks ...	None	ec2-52-211-196-1.eu-w...	-	cloug	disabled	November 21, 2016 at 3:14:...	
test	i-72a02cf9	m4.xlarge	eu-west-1a	stopped	0/2 checks ...	None	ec2-52-211-196-2.eu-w...	-	cloug	disabled	November 9, 2016 at 11:29:...	
Ubuntu	i-8627e20b	g2.2xlarge	eu-west-1b	stopped	0/2 checks ...	None	ec2-52-211-196-3.eu-w...	-	cloug	disabled	August 16, 2016 at 11:07:18...	
demo_test	i-9c588f5c	m4.xlarge	eu-west-1b	running	2/2 checks ...	Initializing	None	ec2-52-213-108-20.eu-w...	52.213.108.20	cloug	disabled	November 22, 2016 at 1:59:...
Ellenor_1	i-970bb5f	m4.2xlarge	eu-west-1b	stopped	0/2 checks ...	None	ec2-52-211-196-4.eu-w...	-	cloug	disabled	November 21, 2016 at 2:42:...	
Nouvel_mm...	i-a5a64933	m4.xlarge	eu-west-1c	stopped	0/2 checks ...	None	ec2-52-211-196-5.eu-w...	-	cloug	disabled	November 18, 2016 at 2:39:...	
QA-V8-THO...	i-baa65e35	m4.xlarge	eu-west-1c	stopped	0/2 checks ...	None	ec2-52-211-196-6.eu-w...	-	cloug	disabled	October 17, 2016 at 3:07:27...	
Demo 6.0 v1...	i-d9dc1519	m4.xlarge	eu-west-1b	stopped	0/2 checks ...	None	ec2-52-211-196-7.eu-w...	-	cloug	disabled	November 21, 2016 at 2:41:...	
market	i-f57eb635	m4.xlarge	eu-west-1b	stopped	0/2 checks ...	None	ec2-52-211-196-8.eu-w...	-	cloug	disabled	November 17, 2016 at 6:05:...	

Details for Instance i-9c588f5c (demo_test):

- Description: i-9c588f5c (demo_test)
- Status Checks: 2/2 checks ...
- Monitoring: disabled
- Tags: None
- Usage Instructions: None
- Public DNS: ec2-52-213-108-20.eu-west-1.compute.amazonaws.com
- Public IP: 52.213.108.20
- Elastic IPs: None
- Availability zone: eu-west-1b
- Security groups: ALL, view rules
- Scheduled events: No scheduled events
- AMI ID: genymotion-ami-6.0-v1.0-e710bcc-e904-418e-b531-a4639cd9c3f-ami-cd5107da.3 (ami-8a18009)
- Platform: -
- IAM role: -
- Key pair name: cloug
- Owner: 226739428589

Figure 11.21 – Copy the Public DNS

13. Now, you can go ahead and authenticate.



Figure 11.22 – Authentication

By default, the username is Genymotion and the password is the ID of the instance ID you can get here:

14. After successfully setting up Genymotion, the emulator is ready to use and be deployed on AWS.

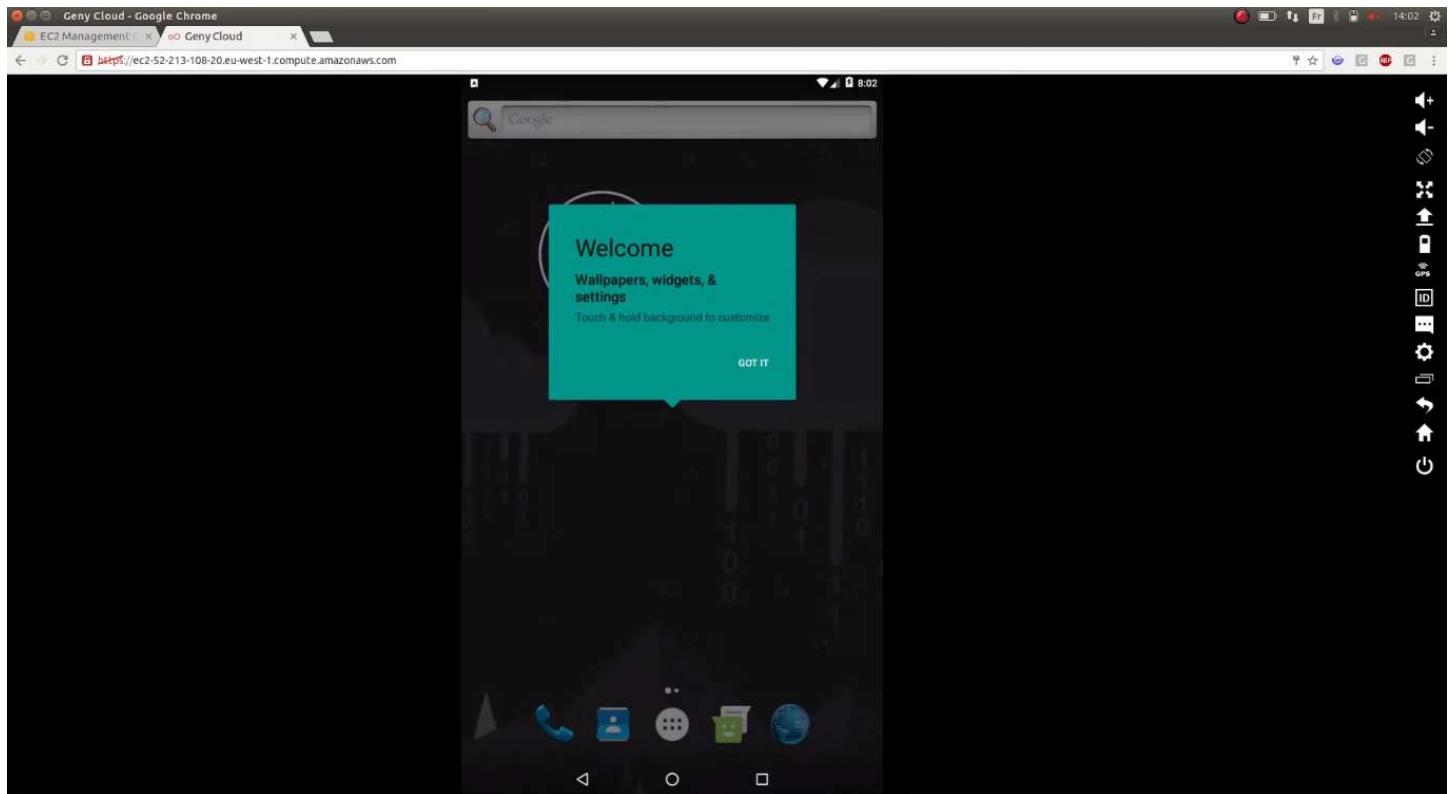


Figure 11.23 – Final Genymotion Screen

The emulator is deployed on AWS and rendered on the website, www.appvision.co.in

CHAPTER 12: TEST CASES

ID	TITLE	STEP TO EXECUTE	EXPECTED RESULT	ACTUAL RESULT	RESULT
1	Checking for login details.	Enter correct user ID and password.	User is authenticated.	User is authenticated.	PASS
2	Checking for login details.	Enter wrong user ID and password.	User is Invalid.	User is Invalid.	PASS
3	To test whether Genymotion service starts properly	Type the Public DNS in browser	Emulator is running.	Emulator is running.	PASS
4	To test whether Genymotion service is terminated properly.	Logout from Genymotion.	Logged out.	Logged out.	PASS
5	Checking if the GUI is responsive	Change the aspect ratio of the screen.	Web elements are perfectly aligned.	Web elements are perfectly aligned.	PASS
6	Checking if the emulator runs properly.	Downloading apps from Play Store.	Apps are executed.	Apps are executed.	PASS

Table 12.1 – AppVision Test Cases

CHAPTER 13: RESULTS

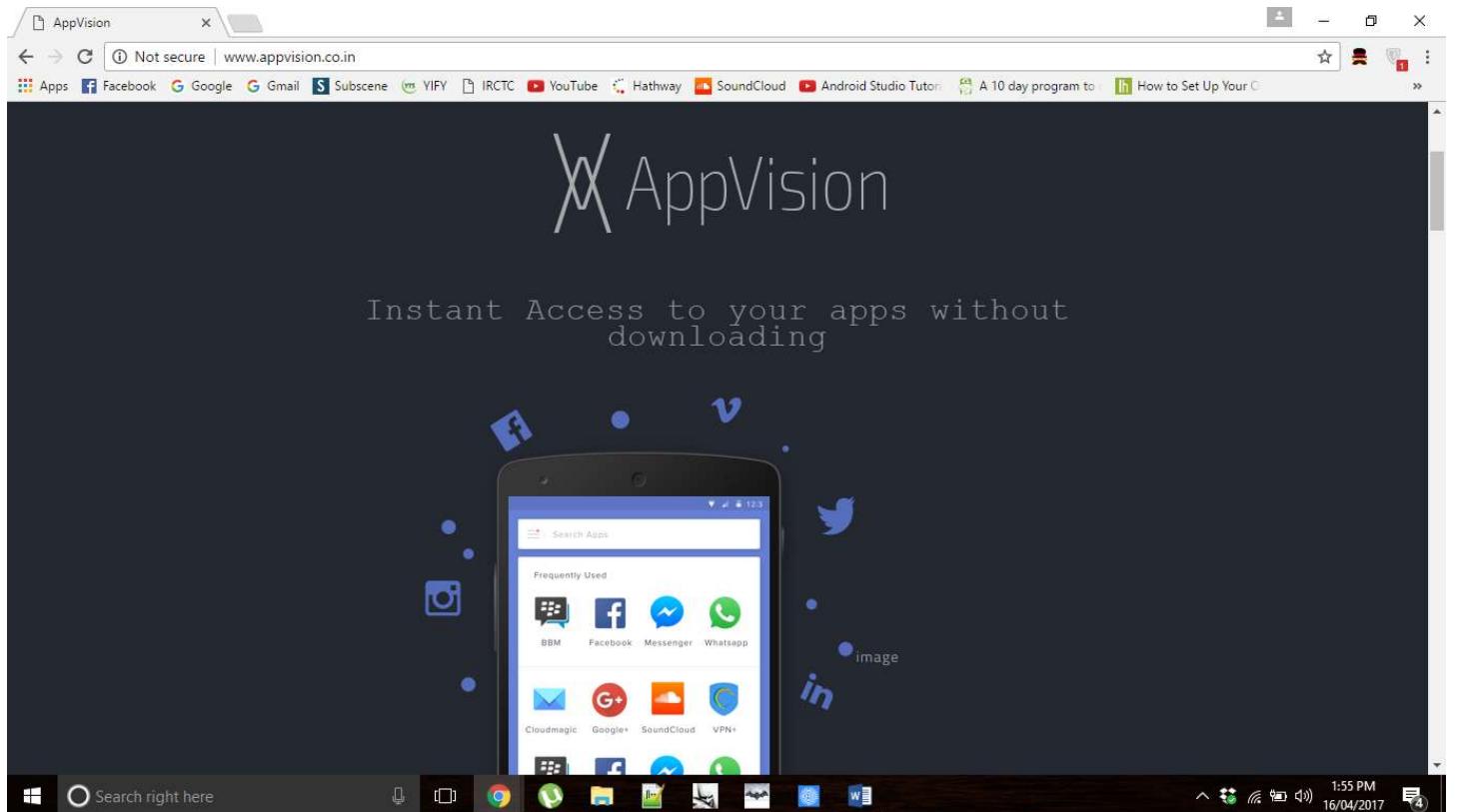


Image 13.1 – User Interface of www.appvision.co.in

The User Interface of AppVision is created using basic HTML and CSS as mentioned before.

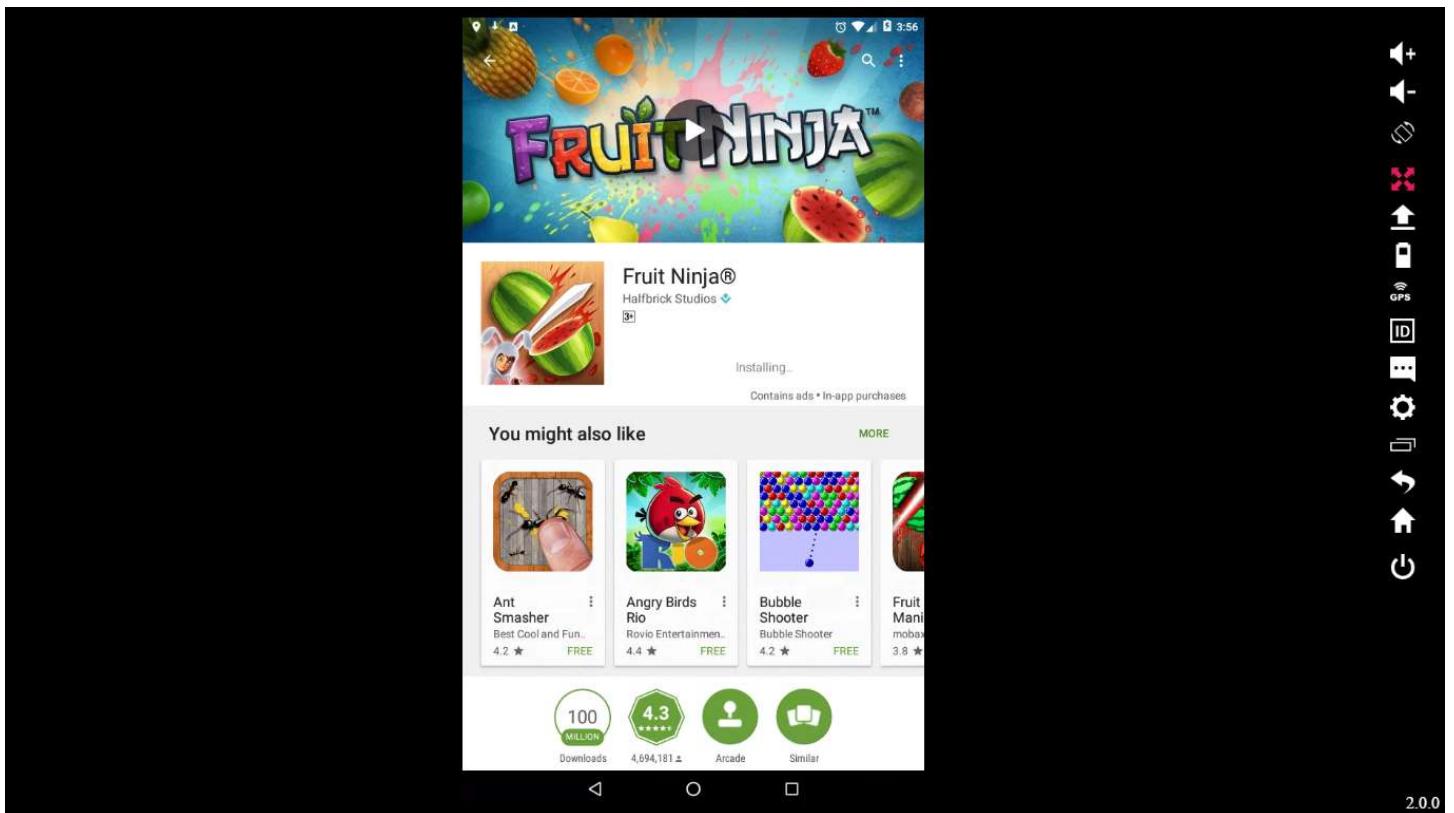


Figure 13.2 – Installing Fruit Ninja on Genymotion

As seen in Figure 13.2, the emulator is open on the browser. We can install any application (Fruit Ninja in this case). Once installed, user can use the application as he requires.



Figure 13.3 – Playing Fruit Ninja

Figure 13.3 displays the home screen of Fruit Ninja and from here on now, the game can be played as shown ahead.



Figure 13.4 – Inside the game

CHAPTER 14:

CONCLUSION AND FUTURE

SCOPE

CONCLUSION

This project will enable the users to effectively manage the storage space in their mobile devices by enabling application access over the cloud. We can now access any application without any problem regarding storage space. It might work a bit slower than usual, but that is bound to be fixed in forthcoming years.

With AppVision, developers can also test their created applications just by sideloading apps into the emulator.

FUTURE SCOPE

As the technology will advance, user can also store files and also manage them. Various file explorers can be used for this purpose that can connect Genymotion Cloud storage and internal memory.

Increased security is now a major concern in any given scenario. AppVision authenticates the user, but does not provide high security to user data. That is something that can be achieved in the future.

User tailored experience can be achieved once all the aspects of the current working Android OS are met with ease.

REFERENCES

REFERENCES

1. “Basics of Mobile Cloud Computing” by esat journals
2. 10 steps to ensure Security in Cloud Computing by the Cloud Council Organization
3. “A complete perspective on cloud and handling data” by John Hagel
4. <http://lifehacker.com/how-to-run-android-apps-inside-chrome-on-any-desktop-op-1637564101>, Run any application on Chrome.
5. <https://www.rackspace.com/en-in/application-hosting>, Application hosting on cloud
6. <http://www.tecmint.com/free-open-source-cloud-storage-tools-for-linux/>, Cloud Storage Tools for Linux
7. Cloud Security using SSL
8. <https://www.genymotion.com/help/on-demand/product-access/> Setting up Genymotion
9. <http://esatjournals.net/ijret/2014v03/i05/IJRET20140305048.pdf> Mobile cloud computing concepts
10. <http://www.androidauthority.com/android-virtual-devices-avd-manager-versus-genymotion-653093/> studying various Emulators.
11. <https://pdfs.semanticscholar.org/d0e6/5cc3c32dbcebbbe10c7be9fcdb9e0a668da9.pdf> Deploying an application on cloud.
12. https://www.ijareee.com/upload/september/4_Mobile%20Cloud%20Computing.pdf Future of MCC.
13. <http://www.ampercent.com/install-and-run-software-from-cloud/14928/> installing and running software from cloud.
14. <http://mashable.com/2011/11/16/mobile-app-cloud-servers/#2GU86ANsGPqo> How to pick a server for your app.
15. https://en.wikipedia.org/wiki/Cloud_computing#Emerging_trends Cloud Computing Basics
16. https://en.wikipedia.org/wiki/Amazon_Web_Services#/media/File:Amazon_Web_Services_Global_Infrastucture.jpg AWS Basics

PAPERS PUBLISHED

Running multiple Android apps on a browser

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Abstract: With the advent of technology, high-end media – High Definition photos, movies, games, etc. we constantly face a challenge of managing our memory. Most of the images and videos are stored in high quality by default which makes it more difficult to manage the memory space in our phones. The internal memory or storage space of our mobile phones isn't enough as apps and media's size is growing too. With this scenario, downloading new apps or storing new pictures or videos can be a difficult task. One possible solution to this could be deleting pictures, videos or uninstalling old applications in order to download and install new ones. which can be quite a task as the regular updates make app sizes even bigger and hence freeing up space to make some for a new application can be quite a task. In order to tackle this memory problem, we came up with the idea of AppVision.

Keywords: Memory, storage, browser, Android.

I. INTRODUCTION

AppVision aims at running multiple applications on cloud and rendering them on your Android device's browser. Most of the times users face memory shortage in their mobile devices and hence cannot install certain applications. It aims at tackling this issue by providing a functionality to help users run multiple applications on phone without having the need to actually install them on their devices. We are using mobile cloud computing to provide this functionality in order to provide on demand access, security, bandwidth, storage, etc.

II. LITERATURE SURVEY

In order to get a basic idea about the technical details and implementation, we have referred 3 papers on mobile cloud computing, cloud security, data organization in cloud computing. Given below is our conclusion and our inferences from the papers referred.

A. "Basics of Mobile Cloud Computing" by esat journals^[1]

Inferences: We understood the challenges, scope, approaches and solutions in the area of Mobile Cloud Computing since the paper focuses on energy conservation in mobile devices, migration issues, application development platforms and the various mobile cloud computing applications, we got an idea of the potential mobile device issues and the need to devise a solution for them. The paper presents the survey on mobile cloud computing applications, challenges, existing solutions and approaches to overcome the challenges and thereby improve the user experience.

B. 10 steps to ensure Security in Cloud Computing by the Cloud Council Organization^[2]

Inferences: While cloud is becoming latest trend nowadays, it is very important to consider security issues

with respect to cloud computing and with respect to the application we're developing. From this paper, we learnt how to follow a systematic guide and incorporate a step by step approach towards successfully hosting a cloud without compromising on security at any level by various techniques like enforcing security policies, managing people, roles and identities and also security provisions for cloud applications.

C. "A complete perspective on cloud and handling data" by John Hagel

Inferences: This paper provides an enterprise approach to cloud data mart management, benefits fundamental to future enterprise computing, immediate and pragmatic opportunities to improve efficiencies today while managing cost effectively and systematically and setting the stage for strategic change. It helped us develop a professional approach towards development of the system. This paper helps us understand that cloud computing can be used to address tactical problems with which IT continually deals, like resource availability and reliability, data centre costs, and operational process standardization which can be very useful when it comes to development of AppVision.

Ref no.	Parameters	
	Paper Referred	Summary
[1]	"Basics of Mobile Cloud Computing" by esat journals	Cloud Computing, its basics and how shortcomings can be overcome by using mobile Cloud Computing.
[2]	10 steps to ensure Security in Cloud Computing by the Cloud Council	Step by step guide to Cloud Security. Cloud Security at end user level. Laws and policies related to security.

	Organization	
[3]	"A complete perspective on cloud and handling data" by John Hagel	Using Cloud applications for an enterprise, it's challenges and data organization in cloud.

TABLE I
SUMMARY OF PAPERS REFERRED

III. PROPOSED METHODOLOGY

Taking into consideration, the basic operating functionality of mobile cloud computing, security issues, data organization and some key factors about cloud computing, we aim at implementing SaaS private cloud for our project that aims at running an Android simulator to provide software as a service to the end users by rendering android applications on demand. In order to use AppVision, the user must first be registered on the system. For that, the user needs to sign up using his email ID and password. Once the user has been successfully registered, he may log in to the system and use it. Whenever user logs

into the system using his credentials, he can search for the desired app that he wishes to use. If the instance of the app is available on our cloud, user further gets an option to play it on AppVision or download it on his phone in case of which he is redirected to the Google Play Store to do so. If user wishes to play or run the app on AppVision, our system first checks the type of user-normal or premium, renders the app on the user's phone browser for the user to use it as required according to the type of user that he/she is. In case an application that user wishes to use isn't available on our system, we also aim to provide the functionality for users to request that particular app to use it on our system. Since the app actually runs on an Android emulator on the AppVision's private cloud, you don't have to worry about data and privacy issues as several security steps are implemented, memory encryption of data, SSL encryption is performed, etc. After the user is done with using the applications that he wishes to, he/she may log out of the session. The activity of the user on the application will be saved so that it is available to the user the next time he logs into the system. The flow of the project can be seen in Fig 1.



Fig. 1 Flow of the project

IV. DESIGN

A. Data Flow Diagrams



Fig.2 DFD Level 0

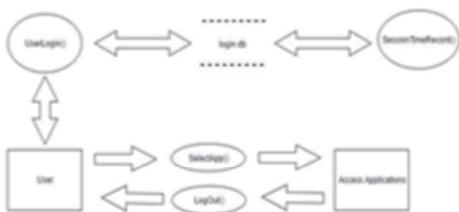


Fig.3 DFD Level 1

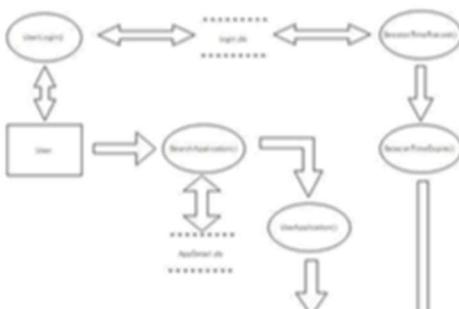


Fig.4 BFD Level 2

B. Deployment Diagram

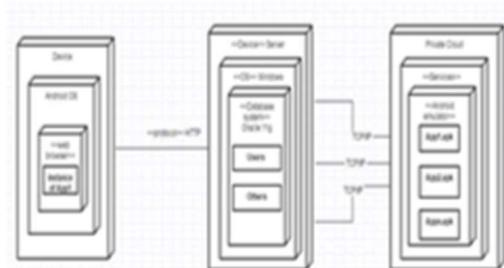


Fig.5 Deployment Diagram

V. PROCESS MODEL USED – INCREMENTAL MODEL

- o The project is divided into various builds, so Incremental Model is used.
 - o A working version of the system will be produced during the first module and each subsequent release will add functions to the previous release.
 - o Other reason for using Incremental Model is because it is more flexible, easier to test and debug and easier to manage risk because risky pieces are identified and handled during iteration.

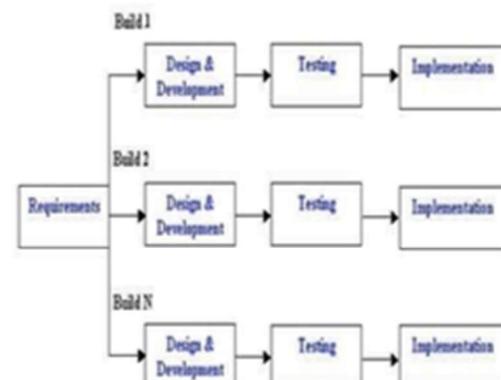


Fig.6 Incremental Model

VI. SCOPE

- A. Due to the usage of cloud is increasing day by day, the use of apps which are cloud based is also increasing. Hence, the proposed the system will be using cloud to not just try out but also use these apps regularly.
- B. End user can also try out apps for one time use which won't take up any space on the user's device.
- C. Keep your system healthy & strong by testing unknown software.
- D. AppVision in future can also be used on Windows, MAC and Linux.
- E. With the use of mobile cloud computing, we can use features like GeoLocation for improving user experience

VII. CONCLUSION

The data requirements are increasing from day to day. There are 2 billion internet users today generating around 100 petabytes of data every day. With so much data consumption, arises a need of managing and storing that data. We would like to achieve this by managing data storage on user's end by enabling the users to access their applications through a web browser interface. This will eliminate the need to uninstall and reinstall applications when memory is running low. This is highly useful for devices that do not have expandable storage functionality on their phones.

REFERENCES

- [1] "Basics of Mobile Cloud Computing" by csat journals^[1]
- [2] 0 steps to ensure Security in Cloud Computing by the Cloud Council Organization^[2]
- [3] "A complete perspective on cloud and handling data" by John Hagel^[3]
- [4] <http://lifehacker.com/how-to-run-android-apps-inside-chrome-on-any-desktop-op-1637564101>, Run any application on Chrome
- [5] <https://www.rackspace.com/en-in/application-hosting>, Application hosting on cloud
- [6] <http://www.tecmint.com/free-open-source-cloud-storage-tools-for-linux/>, Cloud Storage Tools for Linux
- [7] Cloud Security using SSL

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