

Wide Area Disaster Management System using Mobile Intranet

K Anitha, Tejus Khadri, Tejas Prurvimuth, Venkatesh T.D, Yash Nesarikar

Abstract— On the occasion of a large-scale disaster, sharing of information functionality with everyone is important. However, there were many cases where information sharing was not actually well functioned because the disaster information network infrastructure did not consider the system failure when the disaster happened. In our findings, we focus on the fact that the disaster management systems are operated on each local area. The system redundancy is realized by sharing the system resources and integrating the disaster information into a large disaster system while decentralizing the system and network loads. And, the system failure can be recovered by introducing system failure detection function for server failure and link disconnection and dynamically reconstructing the network system. In order to verify the effectiveness of the suggested method, we constructed a nationwide, disaster information network prototype system over Japan Gigabit Network (JGN2), implemented Wide-area Disaster Information sharing system (WIDIS) and evaluated its functionality and performance.

Keywords— Japan Gigabit Network (JGN2), Wide-area Disaster Information Sharing system (WIDIS).

I. INTRODUCTION

The management of disaster is a very interesting and complex domain. The requirements during disaster situations are very different and complex from those found in normal life. Disaster Management presents different unique constraints that are very challenging and interesting to work. In this research work, we take the most common constraints that are found during the times of disaster to guide an exploration of the possibilities for new digital technologies to help out in case of a calamity. In particular, we examine the possibility of using a smart phone device in order to establish a stable communication during the times of natural or unnatural disasters. The Smart Phones are new class of portable devices which are characterized with the wireless technology. The Smart Phones use the multiple functions of the sensors and multiple networks which are capable of exchanging information. In the following sections we will examine disaster management using Smart phones in order

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to understand how this new class of devices could be used to assist people by establishing the means of communication during the times of disaster.

II. RELATED WORK

In recent years, the number of software tools for smartphones to assist people in midst of a natural crisis has grown. One well known incident is the “Fire Department” 15 application of the SalTEDn Ramon Valley’s District for Fire Protection [1]. This app gives users with information regarding calamities that happened recently on a map, which also can be used to find the location of pacemakers, for which there’s a requirement of internet accessibility to operate this. These types of software tools can be re-designed having used our approach which is relatively easy, allowing users to share data on recent events in an *ad-hoc* manner.

There’s a rise in the volume of interest shown in the SAHANA foundation project, which aims to provide a set of modular, web-based disaster management applications. Applications developed as part of it includes registries of missing person, organization, shelter and other facilities. SAHANA also includes tools Situation for synchronization between multiple instances, allowing for responders or district Situation Awareness, and Volunteer coordination. SAHANA likewise incorporates devices for synchronization between numerous examples, taking into consideration responders or region workplaces to catch information on exploited people in the field and trade the information with the other field workplaces, central command or responders. SAHANA likewise incorporates synchronization highlights to synchronize numerous examples. Since SAHANA is an online system, it has the issue of depending on correspondence to the unified web-server, and along these lines cannot exploit versatile hubs making separated tasks. Moreover, clients don't approach the information in the SAHANA framework when they are disconnected. Moreover, we note that the synchronization system in SAHANA depends altogether on alteration timestamps and is in this way subject to the issue of unsynchronized. Clocks on mobile devices leading to incorrect conflict recognition. Moreover, the applications in SAHANA can't be changed by clients of the product, and are in this way difficult to adjust to meet the already obscure necessities of clients when calamity strikes [2].

As of late, the Serval Project2 has exhibited the capacity to utilize just cell phones as a work organize and to give voice-over-IP approaching this work arrange utilizing just the implicit radios of these gadgets. Strangely, the task enables individuals to consider each other utilizing their current phone numbers utilizing Serval's Distributed Naming Architecture [3].

Since different catastrophes gives genuine harm impact at the opportunity to numerous occupants in wide region crosswise over Japan island, expansive size of fiasco data framework with more vigor and excess secured over wide region is required[4][5].

The IAA clusters are known as the data base nodes which are present in IAA (I Am Alive) database system. IAA clusters are located at different places and users' requests are distributed among them [6]. A huge number of simultaneous requests are avoided from paralysis of the system and network through IAA clusters.

There are some advances to temporally recover Wide area disaster information network (WDN) like Wireless recovery protocols (WRP), having minimum configurations using network management [7].

III. METHODOLOGY

Tracker Server and a video server are present in the focal foundation. In the most basic case, just a solitary occurrence of every part exits in the framework. To build the unwavering quality and the execution of the framework, one will always want more, repetitive occurrences of every part. The need of the video server is to enlist his substance at the tracker server to have the capacity to stream video content. In the prospective framework, every video results in a claim dissemination swarm, for example just the friends viewing similar video trade video information. From combining of swarm, i.e. watching and reconstruct a picked video can be depicted as pursues: Beginning with the enlistment at the tracker server, each friend gets a one of a kind identifier (Peer ID or IP address). What's more, the tracker server restores a rundown of the as of now communicated diverts in blend with the association data of the video server. In the event that the companion has picked a video channel, it illuminates the tracker server of joining the specific swarm. The tracker server supplies the companion with an underlying friend list in the bootstrap procedure. Upon effective association setup, the friends trade their cradle maps and they demand missing lump from one another. The trading of the cushion maps and the lump exchange are led iteratively as long as the friend is viewing the video. Because of the structure of the proposed framework, each correspondence relationship needs a specific sort of association. The video information dispersal requires an increasingly effective transport convention, in this way, the connectionless UDP is utilized. Be that as it may, to guarantee the fruitful transmission of the flagging and the control message between the companions, the system can

utilize TCP separately RUDP for this sort of correspondence. A couple of GUI classes called exercises are added to the introduction layer. The Connection Server is Used to enter the contact data of the diverse servers, for example, IP address and so forth, the Video List movement shows the got rundown of accessible video endless supply of enough video information , the Video Player demonstrates a specific video. The cerebrum of the application is the controller, which oversees in a joint effort with the Streaming Component every one of the associations through the approaching and active correspondence modules. The Streaming Component is additionally in charge of the interior video support and taking care of all the cushion information association.

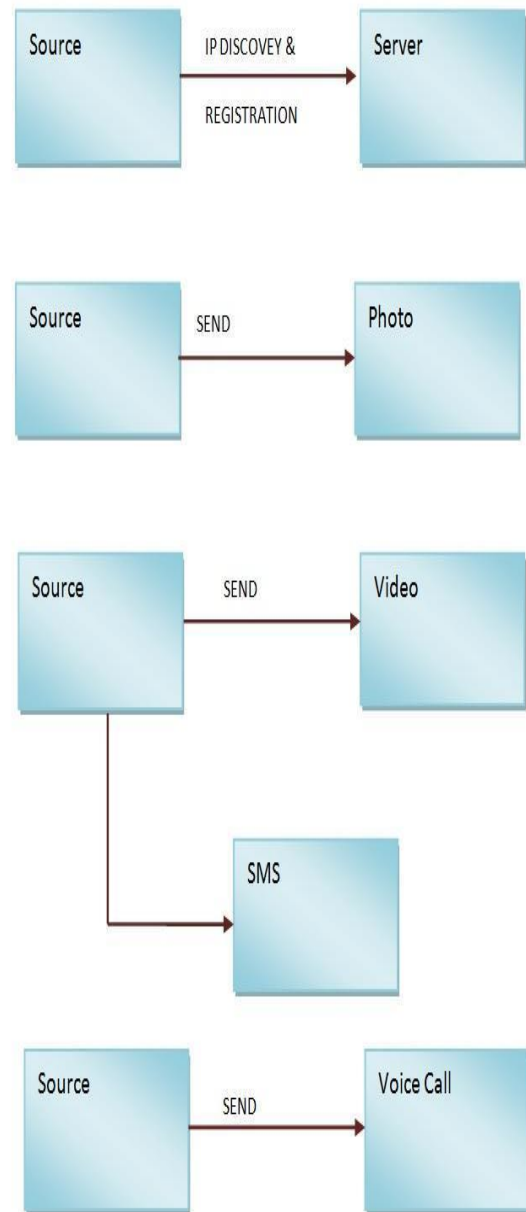


Figure 1. Data Flow Diagram

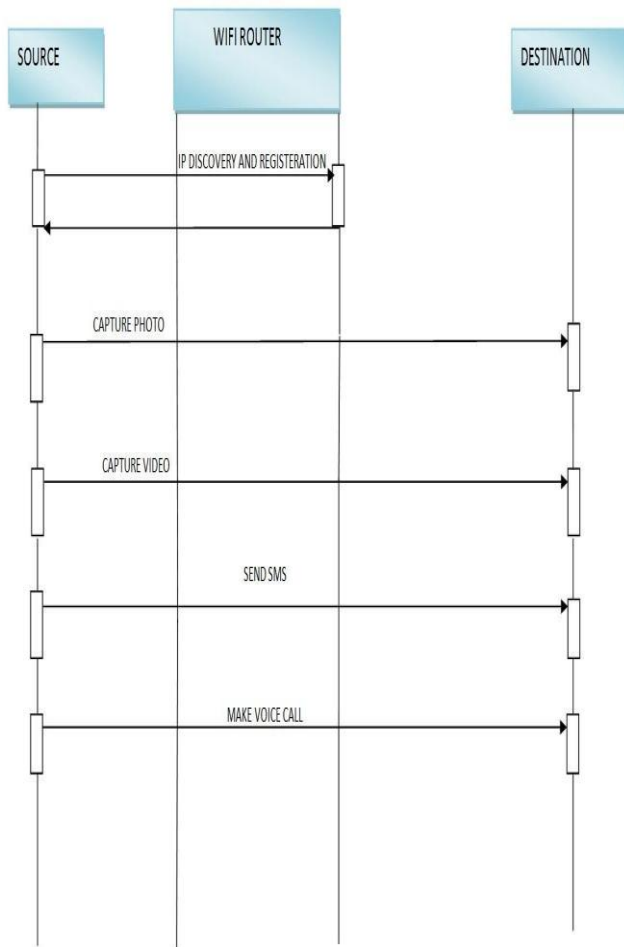


Figure 2. UML Sequence Diagram

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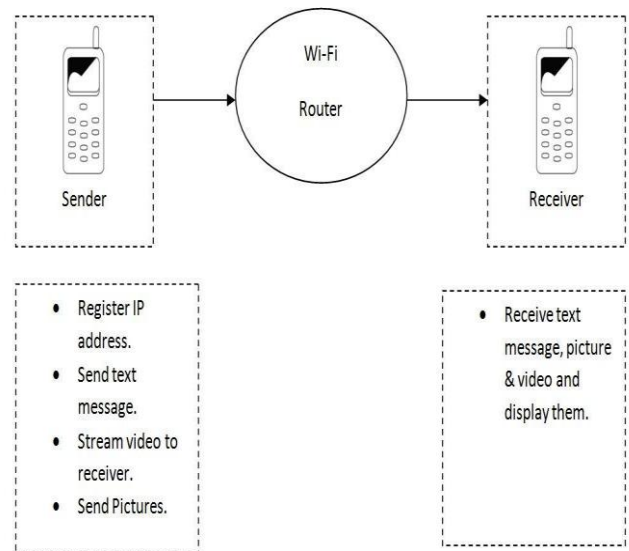


Figure 3. System Design

IV. RESULTS AND DISCUSSION

Android Platform: It is an operating system which is designed and developed on the basis of java based mobile technology. Android Platform can be used for advanced applications that can run on a consumer wireless device platform such as PDAs and portable mobile devices. Android platform is the combination of mobile devices and embedded systems. The two main aspects of the device are portability and usability. They are carefully designed to establish stability between them. Over native application development alternatives, it also provides many benefits such as security advantages. It is a very secure and safe platform which encourages complex programming and also the portability strikes other technologies. It is Network agnostic and can trade the data over many protocols like TCP/IP, WAP, and i-mode traverse across many carriers like GSM, CDMA, Wi-Fi, and Bluetooth etc. Its favorable circumstances incorporate improved security and consistency of utilizations crosswise over stages and gadgets, predominant UIs with illustrations, the capacity to work disconnected out of remote inclusion, distributed systems administration and no permitting costs required for the SDK, which implies that anybody can make an approach and market it over Google play[8]

V. ADVANTAGES

- Voice Calling without SIM card or service provider.
- Video Calling without SIM card or service provider.
- Sending photos without SIM card or service provider.
- Text chatting without SIM card or service provider.



VI. CONCLUSION

Innovative Impact is that the main thing to note about the calamity is that it thumps out the majority of the interchanges frameworks that state and neighborhood specialists and first responders rely upon to speak with one another. These frameworks included the plain old phone frameworks (POTS) [9] yet in addition the cell towers. While some cell towers went on for quite a while on battery reinforcements, in New Orleans, where there was extensive flooding on account of the levee breach, the towers inevitably lost all power. Since the battery reinforcement frameworks and generator frameworks came up short on power, the cell arrange kicked the bucket and couldn't be reestablished until the flooding was managed.

Albeit many may believe that the loss of cell towers infers that mobile phones would be of little use in these territories, the rise of telephones with remote web associations and the improvement of the specially appointed systems administration frameworks, just as the capacity to rapidly send battery-based work organizing hardware, will permit cell phones to have extensive utility in future catastrophes. It has been recommended that distributed systems involved phones could be utilized to permit (potentially constrained) correspondence in such an occasion. In this way our desire is that the correspondence issues can be tended to by these new advancements, and specifically using a blend of remote systems found on present day cell phones.

During the recent times, severe floods affected the south Indian state of Kerala. There was no proper management of the disaster. There was complete breakdown of the cellular network due to which there was no proper communication in several regions of the state. These disastrous situations can be handled by using a proper disaster management system. Technologies which can establish network without the need of cellular towers can be very useful during such situations.

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