Experience Report:
Using A Cloud Computing Environment During Haiti and Exercise24

Brianna Terese Hertzler, San Diego State University, USA

Eric Frost, San Diego State University, USA

George H. Bressler, San Diego State University, USA

Charles Goehring, San Diego State University, USA

ABSTRACT

The events of September 11, 2001, the Indian Ocean tsunami in 2004, and Hurricane Katrina in 2005 awakened American policymakers to the importance of the need for emergency management. This paper explains how a cloud computing environment can support social networks and logistical coordination on a global scale during crises. Basic cloud computing functionality is covered to show how social networks can connect seamlessly to work together with profound interoperability. Lastly, the benefits of a cloud computing solution is presented as the most cost-effective, efficient, and secure method of communication during a disaster response, with the unique capability of being able to support a global community through its massive scalability.

Keywords: *Cloud Computing, Disaster Response, Emergency Management, Natural Disasters, Social Networks*

INTRODUCTION

The last decade has endured multiple man-made and natural disasters. They have been physically devastating, such as Hurricane Katrina, they have been traumatic, such as 9/11 in America, and some have been widespread, like the Indonesian/Malaysian/Thai tsunami. One common characteristic that they all have in common is that the world stayed connected during and after the event through new technological capabilities.

DOI: 10.4018/jiscrm.2011010104

The global community continues to be increasingly connected as technology evolves. Just as global economies are effected, both positively and negatively, by trading goods with each together, so has the emergency response system for wide-scale disasters. Therefore, as societies become more efficiently connected it is imperative that we respond faster, with greater effect, in order to reverse the potential damage caused to our economies, infrastructure, and personal lives. Through these events, catastrophic insufficiencies in communication and logistical coordination have become publicly

Copyright © 2011, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

apparent. The severe overloading of technological services within moments of the incidents was unavoidable.

With technological advancements, emergency managers have been able to better respond to disasters with groundbreaking success. Technologies such as geographic information systems, with visual technologies, and analytical reasoning capabilities are helping address these problems. However, when these services are run though a cloud computing environment, additional availability, performance, and reliability, make these services dramatically better. Cloud computing is a new application deployment approach through which to address emergency management. While the concept is young, its effects and benefits are far-reaching.

Examples of the cloud computing benefits, in response to the above insufficiencies, have already started to prove their worth. For example, the use of a cloud computing environment transitioned from hypothetical theory to fact in the wake of the Haiti disaster. Geographic information systems and social networks were used to provide a platform for the entire world to communicate and coordinate efficiently, and effectively, to meet the Haitian needs. In another example, the uses of cloud technology were further solidified though Exercise24, a two-day-long international and multidisciplinary crisis simulation. In this exercise, technologies were implemented to connect civilian and military organizations, in humanitarian assistance and disaster relief efforts, by using cloud-based applications.

Cloud computing is creating an environment for emergency managers and decision-makers to work and respond seamlessly. The breakthroughs and enhancements made in the cloud computing world have started to allow emergency managers to respond in a quick, effective, and efficient manner, changing the field of emergency management in drastic and profound ways.

This paper begins by evaluating some of the major technical areas of weakness presented during disasters. Many problems can be identified that need to be addressed and solutions found. Once there is an understanding of what is needed, steps can then be taken to evaluate currently available systems. This is followed by suggested improvements that can be implemented to address the noted problems. Furthermore, all new system proposed are evaluated to ensure that they operate within security requirements. The balance of the paper reviews how some of the new systems are being implemented. This includes exercises, such as Exercise24, where both its success, as well as some remaining open issues, is reviewed.

What is Cloud Computing?

There is potential for a lot of confusion surrounding the definition of cloud computing. In its basic conceptual form, cloud computing involves five primary fundamentals: shared resources, on-demand, elasticity, networked access, and usage-based metering (Craggs, 2009). Shared resources are the shared pool of IT resources, such as applications, processors, storage and databases. On-Demand allows users to call up resource from the cloud and use them as needed. When the user is finished with the resources they release them in a self-service fashion (Craggs, 2009). Elasticity, or flexibility that includes scalability, allows the cloud to be dynamic to the user's demand, allowing the cloud to satisfy peak demands and then release resources when demand subsides (Craggs, 2009). Networked access allows the cloud to be accessible widely, primarily though the internet. Lastly, the usage-based metering allows users of the cloud to pay for the services when needed and used, and to release them when they are no longer need, resulting in many benefits including cost and storage efficiency (Craggs, 2009).

The foundation of cloud computing is virtualization (Golden, 2010). Virtualization is the consolidation of servers and environment management. Cloud computing implementation

Copyright © 2011, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/experience-report-using-cloud-computing/53235

Related Content

Small Disasters Seen in Sunlight
Gerald Chaudron (2018). *International Journal of Disaster Response and Emergency Management (pp. 51-70).*
www.irma-international.org/article/small-disasters-seen-in-sunlight/212686

Overpopulation and Its Association With Natural Disasters: A Case Study of Indian Tsunami, 2004
Geetanjali Kaushik, Satish S. Patil, Poonam Singhaland Arvind L. Chel (2019). *Emergency and Disaster Management: Concepts, Methodologies, Tools, and Applications (pp. 1397-1409).*
www.irma-international.org/chapter/overpopulation-and-its-association-with-natural-disasters/207632

Appoint Disaster Recovery Coordinator
(2000). *A Primer for Disaster Recovery Planning in an IT Environment (pp. 20-20).*
www.irma-international.org/chapter/appoint-disaster-recovery-coordinator/119786

Metrics for Ensuring Security and Privacy of Information Sharing Platforms for Improved City Resilience: A Review Approach
Jaziar Radiantiand Terje Gjøsæter (2017). *International Journal of Information Systems for Crisis Response and Management (pp. 36-54).*
www.irma-international.org/article/metrics-for-ensuring-security-and-privacy-of-information-sharing-platforms-for-improved-city-resilience/207713

When Helping Is Dangerous: Benefits and Risks to Providers Delivering Digital Crisis Intervention
Dana C. Branson (2021). *Digital Services in Crisis, Disaster, and Emergency Situations (pp. 304-327).*
www.irma-international.org/chapter/when-helping-is-dangerous/269170