



**Denial of Service Risk Minimization in the Cloud  
Environment**

**By**

Musaab Dhari Abdullah

**Supervisor**

Prof. Dr. Mohammed Alfayomi

**This thesis was submitted in partial fulfillment of the requirements for  
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**ISRA University**

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## **Authorization Statement**

I, **Musaab dhari abdullah** , authorize Isra University to provide hard copies or soft copies of my thesis to libraries, institutions or individuals upon their request.

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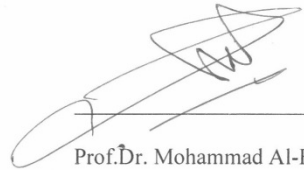
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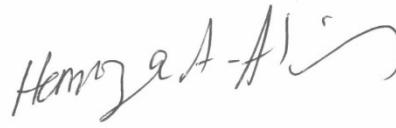
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Dr. Adi Maaita

3/3/2019

Date



Prof. Dr. Hamza Abbas Al-Sewad:

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They all deserve to be acknowledged as well.

## Dedication

I start my words with the name of God, as he was the reason to the place I have reached today; I thank him for what came to me...

"To my first Role model...

"To the one who taught me success and patience ...

"To the one whom I carry my name with all pride...

"To the person in whose presence he overcame all odds.

My beloved father

"To my angel in life ...

"To the smile of life and the secret of existence ...

"To the meaning of love, compassion and dedication ...

"To the one whom her prayers were the secret of my success and her tenderness to heal my wounds ...

"Who taught me and suffered the difficulties to get me to what I am now ...

My Dearest mother

"To whom I knew the meaning of life ...

"To those closer to me than my soul ...

"To the glowing jewels and the shining Diamonds...

"To those whom their presence gave me strength and boundless love ...

My brothers

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## List of Abbreviation

Abb.	Desecration
BLL	Business Logic Layer
CCAF	Cloud Computing Adoption Framework
CPU	Central Processing Unit
CRF	Cloud Requirement Framework
DDoS	Distributed Denial of Service
DDoS-MS	DDoS-Mitigation System
DoS	Denial of Service
GUI	Graphic User Interface
HD	Hard Drive
IaaS	Infrastructure as a Service
IT	Information Technology
LBC	Leeds Beckett Cloud
PaaS	Platform as a Service
RAM	Random Access Memory
SaaS	Software as a Service
SSL	Socket Source Layer
ToS	Term of Service
XML	Extensible Markup Language

## Abstract

Cloud computing is a new computational paradigm that found to offer many services easily with the increasing number of users, and offers an innovative business model for organizations to adopt IT without upfront investment.

The cloud computing considers as good storage that handling with different users that access the cloud from different times and locations because the information that stored on it does not need any space and does not need transferring from one place to another.

Despite the potential gains achieved from the cloud computing, the model security is still questionable which impacts the cloud model adoption. One of the most common concerns for users is the availability and data management process in the cloud. Thus, this thesis focused on how to permanently available data to users and prevent the denial of service.

This thesis attempts to investigate the web application that indicates the multiple resource management policies to implement different user demands to better support the implementation of resource allocation for cloud computing. In addition to, it investigates multi-level solutions specifically designed for cloud and its features will be better compared to conventional DoS solutions.

**Keywords:** Cloud Computing, Risk of Cloud, DDoS attacks, Resource Management.

## الخلاصة

تعتبر الحوسبة السحابية هي النموذج الحاسوبي الجديد الذي وجد أنه يوفر العديد من الخدمات بسهولة بالرغم من التزايد المستمر لأعداد المستخدمين، ويقدم نموذجًا تجاريًا مبتكرًا للمنظمات لتبني تقنية المعلومات بدون استثمار مقدم.

أن الحوسبة السحابية هي بمثابة سعة تخزينية جيدة تتعامل مع مختلف المستخدمين الذين يستطيعون الوصول إلى السحابة في أوقات وأماكن مختلفة، لأن المعلومات المخزنة عليها لا تحتاج إلى أي مساحة ولا تحتاج إلى النقل من مكان إلى آخر.

على الرغم من المكاسب المحتملة التي تحققت من الحوسبة السحابية، لا يزال نموذج الأمن موضع شك والذي يؤثر على تبني نموذج السحابة. أحد أكثر الاهتمامات شيوعًا بالنسبة للمستخدمين هو عملية التوافر وإدارة البيانات في السحابة. لذلك، ركزت هذه الدراسة على كيفية توفير البيانات بشكل دائم للمستخدمين ومنع هجمات حجب الخدمة.

تعمل هذه الدراسة على البحث عن تطبيقات الويب التي تشير إلى سياسات إدارة الموارد المتعددة لتنفيذ طلبات المستخدمين المختلفة من أجل دعم أفضل لتنفيذ تخصيص الموارد للحوسبة السحابية. بالإضافة إلى أنها تحقق في الحلول متعددة المستويات المصممة خصيصًا للسحابة ، وستكون ميزات أفضل مقارنة مع حلول DoS التقليدية.

**الكلمات المفتاحية:** الحوسبة السحابية ، مخاطر السحابة ، هجمات DDoS ، إدارة الموارد.