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A Study on the Development of Korea Certification System Framework for Cloud Service - Focusing on Security

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Abstract. Cloud services are the next-generation core services of green IT for operational management of IT resources and maximization of energy consumption efficiency. Cloud services are expected to rapidly increase in its market size in the future through its convenience in usage, operational management efficiency and significant industrial ripple effect compared to investment. In spite of this, the market has not been significantly revitalized due to the uncertainty of performance, reliability, loss of control in addition to security and cost issues while implementing and using cloud service by ICT users. In comparison to the United States, Singapore and Japan, however, cloud services in Korea has not been activated because of a lack of confidence in the security. This paper proposes core evaluation criteria and additional evaluation criteria which are removed the redundancy of the security controls from existing ISMS for Korea cloud services through a comparative analysis between domestic and foreign security controls of cloud certification scheme and guidelines and information security management system.

Keywords: Cloud Service, Security, Certification

1 Introduction

Cloud computing, which is provided in the form of service by sharing IT recourses, cannot become activated without solving the issue of information protection. In the case of Korea, cloud computing service is being recognized not only as an IT related business but also as an industry affecting national competitiveness. Accordingly, the cloud computing market size is being increased while expanding the global market share to actively engage in developing core technologies. However, it has not become activated to the level of that in the US and Japan mostly due to lack of trust on information protection. In the case of cloud computing service where multiple users

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use the same service, one might think that gathering every type of data in one place, namely IDC center to manage it would be safer than users having to directly manage it. However, security issues concerning important data such as personal information could occur and according damage could spread to multiple users. Accordingly, such security issues must be solved first [1].

For the purpose of increasing the level of trust of cloud service users and expand the cloud service market in advance, this study aims to examine domestic & overseas cloud certification systems and security stability items of guidelines to provide appropriate countermeasures against every possible threat that could occur in virtual environment by developing cloud service security diagnosis & check items and analyzing current Korean cloud service certification system to present a security-enhanced Korean cloud service certification and assessment system [2].

2 Korea Cloud Service Certification System

The "cloud service certification system" of Korea is a system of certifying cloud services of a certain level by checking whether service system (policy, technology, etc.) required to guarantee the level of service (quality, stability, etc.) provided by cloud service provider [5].

The target of "cloud service certification system" is IaaS/SaaS with the services that had been provided for over six months at the time when cloud service certification was requested among the services of connecting to the internet to use IT resources such as hardware & software by utilizing cloud technology (virtualization, distributed processing, etc.) and paying according fee, while excluding conventional web hard drives or video streaming services.

The certification screening criteria consist of seven items (availability, expandability, performance/speed, data management security/service continuity, service support) in three main areas (service quality, service information protection, service infrastructure, and IaaS and SaaS respectively consists of 105 items (required items: 39) and 85 items (required items: 33).

3 Security Enhanced Cloud Service Certification System

In the case of current cloud service certification system, companies assess their internal/external security policies and related technical security measures regarding their security management system, and they need institutional and systematic supplementations to diagnose and assess security management items by applying security diagnostic tools [1].

For the purpose of applying cloud service certification system, it is necessary to ensure stability and reliability of tool by providing security diagnostic tools to allow cloud service providers to diagnose and check their cloud service security level [3][4].

After ensuring the stability and reliability of virtualization security diagnostic tools, it would be necessary to improve and advance in steps current security items of cloud service certification system by checking and diagnosing vulnerabilities in cloud

virtualization environment. The Fig. 1 shows the improvement of assessment method to enhance the security of cloud service certification system.

Additionally, it would be necessary to increase the usability of multi-virtualization security diagnostic tools through additional comparative analysis of the assessment items and methods of the cloud service stability verification system currently being implemented to introduce cloud service in public sectors lead by Ministry of Science, ICT and Future Planning.

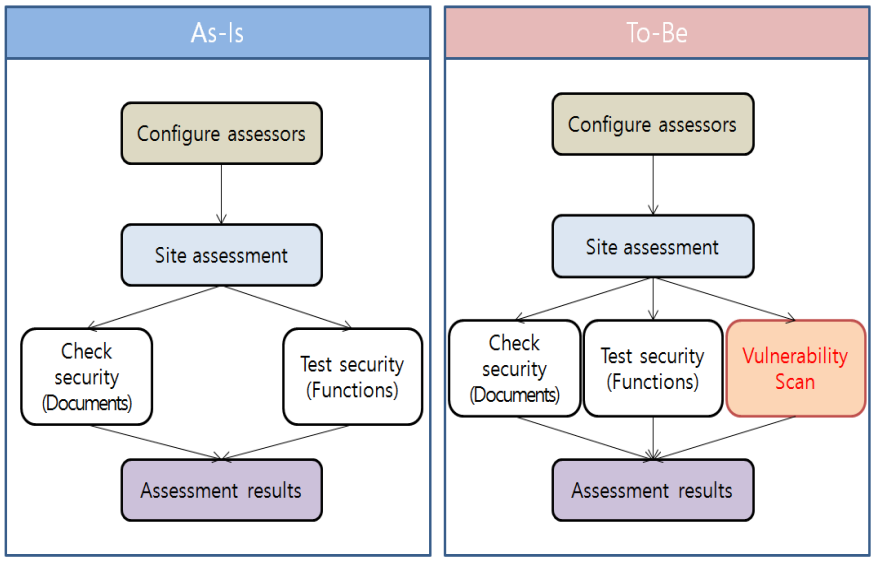

Fig. 1. Security Improvement of Cloud Certification System

4 Conclusion

Along with business interest in cloud computing, the interest in the security and legal application of cloud computing is also increasing. For the purpose of enhancing the level of trust of cloud service users and expand the cloud service market, this study examined the Korean cloud service certification system and security stability items and analyzed security threat factors that could occur in cloud environment to develop diagnosis, checking and monitoring items against possible threats in virtualization environment. Based on this, it presented a security enhancement plan by improving the current assessment method of cloud service certification system.

Based on follow-up studies on cloud service security assessment method, it is expected that the security of cloud service certification can be enhanced. It would be also necessary to continuously examine the requirements of security assessment items required as a result of cloud computing technological advancement to develop tools that will allow effective diagnosis, checking and monitoring to incorporate them into

the Korean cloud service certification system, which will contribute to the effort of forming a safe cloud service environment.

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References

1. Kim. K.C., Heo. O., Kim. S.J.: A Security Evaluation Criteria for Korea Cloud Computing Service. Journal of Security Engineering, vol. 23, no. 2, pp. 251--265 (2013)
2. Kou. K.S.: A Study on Security-Enhanced Cloud Service Evaluation and Certification Scheme. Journal of Security Engineering, vol. 9, no. 6, pp. 481—494 (2012)
3. Jeon. H.G., Min. Y.G., Seo. K.K.: A Framework of Cloud Service Quality Evaluation System - Focusing on Security Quality Evaluation. International Journal of Software Engineering and Its Applications, vol. 8, no. 2, pp. 41--46 (2014)
4. Kou. K.S., Lee. H.J., Shin. J.I., Ryu. C.H.: Development of CssT(Cloud Service Security Self-Testing System) for Cloud Service Providers. Journal of Security Engineering, vol. 10, no. 6, pp. 621--630 (2013)
5. www.kcloud.or.kr

