Testing and Verification of RESTful Web Services

Ege Can Özer

Tekijä — Författare — Author
Ege Can Özer

Työn nimi — Arbetets titel — Title

Testing and Verification of RESTful Web Services

Tiivistelmä — Referat — Abstract

Today, service-oriented architectures (SOA) are widely used and have become a major discipline for enterprise applications. Until the last decade, the most popular way to implement the services was using Simple Object Access Protocol (SOAP). Including the big companies such as Google, Facebook, Twitter, the direction moved towards to Representational State Transfer (REST) services due to the advantages such as its lightweight and scalability.

Unlike the conventional software testing, web services require different testing methods due to their loosely coupled, headless, and distributed architectures. In the literature, general trends and challenges of SOA testing reviewed, but the discussion largely focused on the SOAP web services. Despite RESTful services being so popular, there is a demand to demonstrate recent approaches concerning testing RESTful services.

This paper presents different means for testing and verification of RESTful web services, showing the advantages and disadvantages of testing tools and current approaches; and includes an analysis of five of this specialized methods from the service testing point of view. Based on the comparative results, we will identify issues for the future work.

ACM Computing Classification System (CCS):
Applied computing → Enterprise computing → Service-oriented architectures

Avainsanat — Nyckelord — Keywords
Service-oriented architectures, Software testing, Web services, REST

Säilytyspaikka — Förvaringsställe — Where deposited

Muita tietoja — övriga uppgifter — Additional information

Contents

1   Introduction

2   System Description

You can put a subsection to group similar systems and their features.

3   System Analysis

Review of existing systems, and comparative analysis of the systems.

Test-the-rest: An approach to testing restful web-services (Chakrabarti & Kumar, 2009). Paragraph to give an analysis

Connectedness testing of restful web-services (Chakrabarti & Rodriquez, 2010). Paragraph to give an analysis

Model-Based Testing of RESTful Web Services Using UML Protocol State Machines (Pinheiro, Endo, & Simao, 2013). Paragraph to give an analysis

REST service testing based on inferred XML schemas (Navas, Capelastegui, Huertas, Alonso-Rodriguez, & Dueñas, 2014). Paragraph to give an analysis

RESTful API Automated Test Case Generation (Arcuri, 2017). Paragraph to give an analysis

4   Future Research

5   Conclusion

Conclusion section.

References

Arcuri, A. (2017). Restful api automated test case generation. In *Software quality, reliability and security (qrs), 2017 ieee international conference on* (pp. 9–20).

Bozkurt, M., Harman, M., & Hassoun, Y. (2013). Testing and verification in service-oriented architecture: a survey. *Software Testing, Verification and Reliability*, *23*(4), 261–313.

Canfora, G., & Di Penta, M. (2009). Service-oriented architectures testing: A survey. *Software Engineering*, 78–105.

Chakrabarti, S. K., & Kumar, P. (2009). Test-the-rest: An approach to testing restful web-services. In *Future computing, service computation, cognitive, adaptive, content, patterns, 2009. computationworld'09. computation world:* (pp. 302–308).

Chakrabarti, S. K., & Rodriquez, R. (2010). Connectedness testing of restful web-services. In *Proceedings of the 3rd india software engineering conference* (pp. 143–152).

Navas, A., Capelastegui, P., Huertas, F., Alonso-Rodriguez, P., & Dueñas, J. C. (2014). Rest service testing based on inferred xml schemas. *Network Protocols and Algorithms*, *6*(2), 6–21.

Pinheiro, P. V. P., Endo, A. T., & Simao, A. (2013). Model-based testing of restful web services using uml protocol state machines. In *Brazilian workshop on systematic and automated software testing*.

SmartBear. (2005). *The complete api test automation framework for soap, rest and more*. Retrieved 2017-10-03, from `https://www.soapui.org/`