

学术研究

语义标记Petri网的组合Web服务建模与验证

雷丽晖^{1,2}, 段振华¹⁺

1. 西安电子科技大学 计算理论与技术研究所, 西安 710071

2. 武汉大学 软件工程国家重点实验室, 武汉 430072

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摘要 随着Web服务组合的发展, 整合业务过程成为可能。组合Web服务可以被看作是基于过程的工作流。由于死锁、不安全和不可达等流的设计错误会影响组合Web服务的有效执行, 因此这些错误应在组合Web服务执行前被检测出并修改。提出了基于语义标记Petri网的组合Web服务建模与验证方法。首先提出语义标记Petri网(SaPNs), 并给出其语义; 用受限描述逻辑tableau算法获得组合Web服务; 使用SaPNs描述组合Web服务及其组成部分; 最后, 使用基于SaPNs的分析方法验证了组合Web服务。使用该方法在开放的Internet环境下可以获得满足客户需求的、可靠的组合Web服务。

关键词 [Petri网](#) [Web服务](#) [语义匹配](#)

分类号

Modeling and Verifying Composite Web Services Based on Semantic Annotated Petri Nets

LEI Lihui^{1,2}, DUAN Zhenhua¹⁺

1. Institute of Computing Theory and Technology, Xidian University, Xi'an 710071, China

2. State Key Laboratory of Software Engineering, Wuhan University, Wuhan 430072, China

Abstract

Integrating business processes becomes practicable along with the development of Web services composition. Composite Web services can be regarded as process-based workflows. Since error design of flow structures, such as deadlock, unsafeness, non-reachability and so on, will affect composite Web services performance, these errors should be detected and corrected before composite Web services are executed. An approach for modeling and verifying composite Web services based on semantic annotated Petri Nets is proposed. Firstly, semantic annotated Petri Nets (SaPNs) is presented and the semantics of SaPNs is given. Secondly, a restricted description logic tableau algorithm is utilized to obtain composite Web services. Thirdly, SaPNs is used to represent a composite Web service and the participating services that are invoked by this composite Web service. Finally, the composite Web services represented with the SaPN are verified by means of some analysis methods based on SaPNs. With this approach, a reliable composite Web services meeting client requirements in an open Internet environment can be achieved.

Key words [Petri Nets](#) [Web services](#) [semantic matching](#)

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通讯作者 雷丽晖 zhduan@mail.xidian.edu.cn

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