

Cross-Workspace Impact Awareness for Early Detection of API-induced Indirect Conflicts in Configuration Management

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Abstract

Parallel development has been shown to frequently lead to conflicting changes. These conflicts can be categorized into two main classes: (1) direct conflicts, which arise due to concurrent changes to the same artifact, and (2) indirect conflicts, which arise due to changes in one artifact affecting concurrent changes in another artifact. While the detection of direct conflicts is supported by current workspace awareness tools, detection of indirect conflicts remains unsupported. To fill this void, we have designed a novel approach for cross-workspace impact awareness that helps in the early detection of API-induced indirect conflicts. The approach relies on the transmission across workspaces of API differences of ongoing changes. By using a local cache of dependencies, it is then possible to calculate the impact of remote API changes and, vice versa, to determine if any local changes cause a new indirect conflict. We present our approach, discuss its implementation in our workspace awareness tool Palantír, and show its value with an experimental evaluation.