

# What Makes a Log Transparent? A General Framework for Transparency Logs

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## Abstract

Transparency has emerged as a central principle in the design of modern security systems, ensuring that critical operations are not only correct, but also accountable to external scrutiny. Transparency Logs (TLs) are an efficient and versatile tool for achieving transparency in that they build a cryptographically verifiable record of how data is added and distributed. When properly implemented, TLs offer a reliable issue detection mechanism through which log users can spot inconsistencies and promptly implement incident response plans. This feature is appealing for a variety of application domains, including securing software updates, and key distribution consistency for large-scale messaging systems.

We would like to present a general framework that captures the essence of a TL and enables to reason about its functionalities and properties in a rigorous way, as if it were a cryptographic protocol. We showcase the usefulness of our framework by describing and analyzing an emerging TL proposal called `sigsum`.