Abstract

The primary goal of this project is to implement more sophisticated and flexible access control model using the ABAC methodology suitable for the requirements of the project developed in the Hyperledger Fabric framework. ABAC is a logical access control methodology where authorization to perform a set of transactions is determined by evaluating attributes associated with the subject, object, action and in some cases, environment conditions against policy, rules, or relationships that describe the allowable transactions for a given set of attributes. In this project, we identified few ABAC attributes from the BPMN work-flow diagram, and these attributes are assigned to a specific identity. Our goal is to add these attributes for specific users to provide the access control. According to our project requirement there are three different kinds of MBSE Assets defined, they are Change Request, BCDocument and DocumentPackage and we use these asset data for validation. All the security and privacy policies are defined in ALFA, which is a programming language used for writing the access control policies. Here, all the security policies are implemented in the form of Smart Contracts, and we accessed them to authorize a particular transaction. When a policy is successfully executed, it means the user is having the right privilege and he can submit the transaction successfully. When a request is made for an asset, it goes through the approval process and based on the level of access, the appropriate security policy is implemented thus the user will be able to do operations making changes to the world state and hence providing the necessary security check. In this way, we are achieving Access control based on attributes and thus have granular level of control on the transactions. For implementing the security policy, we are following the static struct which is having a null value problem. In the future, this static struct can be replaced with a dynamic struct for a better enhancement.