

**CHENNAI – PONDICHERRY**

**Cloud Message Queueing and Notification: Challenges and (Blockchain) Opportunities**

**Abstract:**

The current mobile app development practice, like other large-scale network-centric software projects, is characterized by the use of event notification facilities supporting the exchange of effective and efficient data flows between the application’s front-end, usually located on customer’s terminal equipment, and the back-end services available within the cloud. In order to avoid the need of setting up the notification infrastructure from scratch for any new application, many cloud service providers and mobile system manufacturing companies provide cloud-based messaging solutions. Such solutions, however, are often characterized by vulnerabilities that can be exploited to compromise the mobile applications’ security by violating the privacy and integrity in their operations. In this work, we analyze these issues and posit the potential for the blockchain technology to mitigate such threats.

**Existing System:**

Event-driven communications are prevalent in network-centric applications where a large number of data sources and destinations need to exchange messages in a flexible and scalable manner. 2 Such a communication pattern is typically supported by publish/subscribe services, implemented as a federation of brokers queueing the incoming messages and routing them towards the interested destinations. Therefore, apart from the effort of implementing the communication logic within their applications, developers must design and deploy the brokers’ federation by using their computing commodities. Such a task may be seen as a nuisance, as well as an unnecessary cost, particularly for small-scale software projects with a limited budget. However, it requires the fast prototyping/implementation of an idea to be concretely presented to potential investors. This may also result in an unnecessary effort duplication in those projects that have most of their backend components located within the cloud. Indeed, cloud computing can be effectively used in dealing with such an issue due to its elastic and pay-per-use resource provisioning model.

**Proposed System:**

A cloud infrastructure can host the brokers and make them available according to the Software as a Service (SaaS) paradigm to developers without worrying about their configuration, deployment and management, together with the relative operational efforts and costs. Such solutions are referred to as Cloud Messaging or Cloud-based Push Notification facilities,3 and major cloud service providers have already put in place their own solutions that users can freely use, such as Firebase Cloud Messaging (FCM) by Google, Apple Push Notification Service, or Windows Push Notification. Such solutions have been thought within the context of mobile application (app) development4 to provide flexible notification services between the apps and central servers, usually also located within the cloud, so as to cope with the high degrees of app engagement and user retention, by offering an always available and extremely flexible/scalable communication architecture as well as an improved usage experience to developers. In addition, the current research trends are leveraging these solutions to facilitate the design of Internet of Things (IoT) products, and to support the interaction of IoT nodes with the cloud or smartphones.