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Abstract

The Dapps.ai Hyperledger Blockchain Application Management Suite enables Salesforce customers to build, deploy, and manage decentralized applications on the Salesforce platform. This managed package is a composite application built to help companies quickly develop blockchain applications that can be integrated with existing customer data, business processes and other mission critical revenue driving applications.

Dapps.ai Release Notes

Hyperledger Blockchain Application Management Suite v1.0

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# Dapps.ai Company Background

Dapps.ai is an award winning Blockchain Technology software company founded by Marc Wolenik and Dominic Steil on January 17th, 2017. Dapps.ai builds enterprise blockchain technology applications and blockchain enabled solutions. The company was built in Barcelona, Spain in 2017.

Dapps.ai builds blockchain enabled solutions for public, private, and permissioned blockchain protocols. These solutions are focused specifically on the Bitcoin, Ethereum and Hyperledger blockchains.

Dapps.ai flagship product, the Blockchain Application Management Suite, was released in May at Consensus 2017 in New York City. The Blockchain Application Management Suite enables customers to build, deploy and manage blockchain applications on the Salesforce platform.

Dapps.ai is a member of the Enterprise Ethereum Alliance and a Registered ISV on Salesforce.

Dapps.ai has offices in both San Francisco, CA and Barcelona, Spain.

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Figure : Dapps.ai Homepage

# Hyperledger Blockchain Application Management Suite

Modeling, Persisting, and Updating Distributed Transaction State

There is a common theme when developing Hyperledger Fabric applications.

You spend time learning the difference between it and public nets. You stand up the infrastructure, you hit a wall configuring and standing up the network. It has happened time and time again.

Its frustrating.

There needs to be a better way.

We are simply building out International Business Transaction Networks.

We have a fault tolerant consensus driven transaction legers that multiple parties can operate on.

We want companies to be able to use their existing customer and machine data when leveraging these networks. We want it to create a business graph. Similar to google but specifically between parties that are all operating against the same data.

We want to create a permissioned business transactional system that enables companies to model and integrated business applications.

The state updates that are made on the network need to be reflected in Salesforce as well, this is where there users are. The users don’t need to know about the infrastructure level. They care about assets, they care about the participants in the network that are now in a market.

Blockchains turn networks into markets.

There is a distributed consensus as to all of this.

A distributed state machine ledger that can be used in conjunction with existing customer data in addition to other third party applications.

How do we connect and update state from salesforce to a Hyperledger network? How do we ensure that all of the parties that are using the network have the same data. How can we ensure that the assets being exchanged the global state of the assets have been agreed upon.

We need an event system. We need to have Platform Events that are subscribed to state changes at the infrastructure level of the Fabric Infrastrucutre.

The Hyperledger Blockchain Application Management Suite addresses these questions:

We are developing an application suite that enables a developer to model and create assets, participants and script logic. These types of assets when created are also created in corresponding objects in the Dapps.ai managed package. Any state changes that happen are registed as Business Network Events and these events can be used in other business processes and applications.

Dapps.ai Hyperledger Blockchain Application Management Suite

The cost for our application is $25,000 for Enterprise, $15,000 for Commercial per company per month.

The application suite consist of the following:

The Hyperledger Infrastructure runs in a Virtual Machine that is operated by Dapps.ai We have the latest fabric v1.0 docker images running in a private virtual machine with 16GB of Memory. We use a C3 Large on AWS equivalent on Azure or IBM.

Hyperledger Business Networks can be thought of as two layers; the application layer and the infrastructure layer. The cost for our application is $25,000 for Enterprise, $15,000 for Commercial per company per month. The reasoning is the following

:The Hyperledger Infrastructure runs in a Virtual Machine that is operated by Dapps.ai We have the latest fabric v1.0 docker images running in a private virtual machine with 16GB of Memory.

We use a C3 Large on AWS equivalent on Azure or IBM. Hyperledger Business Networks can be thought of as two layers; the application layer and the infrastructure layer.

**Enterprise Application Layer:**

* Salesforce Lightning UX
* Enterprise Network Dashboard
* Enterprise Network Compiler
* Enterprise Network Interface
* Enterprise Transaction Interface
* Enterprise Business Network Events

**Commercial Application Layer:**

* Salesforce Lightning UX
* Commercial Network Dashboard
* Commercial Network Compiler
* Commercial Network Interface
* Commercial Transaction Interface

**Enterprise Infrastructure Layer:**

* Enterprise Certificate Management
* Hyperledger Fabric V1
* Hyperledger NodeServer

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Figure Dapps.ai Hyperledger Salesforce Object Model

The goal is to build an object model and an interface that enables Salesforce Customers to quickly build and deploy Business Networks that are tightly integrated with their existing customer data, third party applications and other proprietary business processes. We handle the underlying infrastructure level so that companies can focus on modeling the participants, assets, and transaction logic. When deploying state changes to the network these changes are updated across every peers state. The data is also persisted in Salesforce as well in the Dapps.ai Hyperledger Objects.

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Figure Dapps.ai Hyperledger Infrastructure

The Hyperledger Fabric Infrastructure is run in docker containers and hosted on Dapps Servers.

# Business Network Events

Salesforce provides the platform event that we can link to the blockchain network. We call these Business Network Events and the object is Business\_Network\_Event\_\_e. We use this type of object as a asynchronous messaging system from the blockchain network to Salesforce clients. This becomes a message broker and it comes with many advantages when distributing state or network status update. One message from the network can be sent to several recipients because it logically decouples the sender from the recipient (the send just published messages and doesn’t care who consumes them). This message broke can automatically delivered messages to a process that has crashed as well and thus prevent messages from being lost is a recipient is unavailable or overloaded.

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Figure 1: Business Network Event Architecture

This essentially means that the various participants in the business network can listen to the same event and carry out actions knowing that endorse and verifies by the peers in the network. This is different then Ethereum which takes a distributed actor framework.

The advantage to having a Business Network event driven architecture is that multiple participants that are on the network can subscribe from various clients and understand and receive asynchronous messages with regards to the current state of the network.