

OpenADN: Mobile Apps on Global Clouds Using Software Defined Networking

Raj Jain
Washington University
in Saint Louis
Campus Box 1045
One Brookings Dr.,
St. Louis, MO 63130 USA
+1 314-935-4963
Jain@wustl.edu

ABSTRACT

In recent years, there has been an explosive growth in mobile applications (apps), most of which need to serve global audiences using cloud based computing facilities. **Cloud computing** provides unique opportunities for the application service providers (ASPs) to manage and optimize application delivery over geographically distributed computing resources. We propose the design of an open application delivery network (**openADN**) platform which allows ISPs to offer custom application delivery services. This is possible using Software Defined Networks (SDN), which provides new opportunities for designing control architectures for networks by providing cleaner abstraction between the network control and data planes.

We make a case for augmenting the flow abstraction layer of SDN to add adequate support for application-level flows. Using several other recent innovations such as cross-layer communication, ID/Locator split, MPLS-like label switching, OpenADN allows ISPs to offer load balancing, fault tolerance, and other similar middle-box services to ASPs. We validate our claims about the usefulness of OpenADN through the implementation of a use-case scenario designed over a prototype switch implementation.

The proposed design is **evolutionary** in the sense that it can coexist and is **backward compatible** with the current Internet and can be **deployed incrementally now** with a small number of new devices. Those ISPs that deploy these OpenADN aware OpenFlow switches and those ASPs that connect to these switches will be able to benefit immediately from the technology. ISPs and CSPs (Cloud Service Providers) can also offer middle-box services to ASPs. Best of all, this can be done now while the SDN technology is still evolving..

Categories and Subject Descriptors

C.2.1 [Network Architecture and Design]; C.2.2 [Network Protocols]; C.2.3 [Public Networks]; C.2.4 [Network Operating Systems]; C.2.5 [Local and Wide Area Networks]

Keywords

Next Generation Networks, Software Defined Networks, OpenFlow, OpenADN, SDN, Mobile Applications, Cloud Computing.

