Dispersing the Cloud

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I. ABSTRACT

Our experience with PlanetLab is that large-scale, distributed, programmable infrastructures co-evolve incrementally along with applications: the infrastructure's development is driven by the requirements of the applications it hosts, and these requirements change over time based on the application's usage and the infrastructure's capabilities. In this talk I will survey several current and emerging application domains (content distribution, smartphone offloading, e-business, etc.) that require distributed infrastructures. I then argue that, in the future, the infrastructures supporting these application domains will evolve into what I'll call a "Dispersed Cloud". The Dispersed Cloud provides application builders with the abstractions of elastic computation and storage, but it relies more heavily on edge nodes and mid-sized clusters than on large data centers. I will outline the requirements that the Dispersed Cloud must meet to satisfy a wide range of application domains. Finally I will describe what I see as the path to this future infrastructure.