Response to Call for Participation

Software Defined Infrastructure / Software Defined Exchange Workshop

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Summary: The City of Ammon, Idaho operates a Software Defined Infrastructure (SDI) that includes: Software Defined Networking (SDN) technologies from end to end including a virtualized fiber optic premise device controlled by a user portal allowing for instantaneous end user provisioning of network connectivity and supporting an online services and an applications marketplace. We are also a proud US Ignite community member having been awarded an NSF EAGER grant in 2012 to research and develop 'network slicing for emergency communications' in addition to being an annual Global Cities Teams Challenge community participant and the winner of the National Institute of Justice's Ultra High Speed Apps Challenge. This white paper submission and our desire to participate in the workshop stems from our experiences to date and our need to advance the commercial development and adoption of SDN technologies.

Desired Research Support: Our experiences show that successful commercialization will require a dynamic and extensible Software Defined Exchange (SDX) capable of supporting a diverse marketplace of SDN aware applications and services that can be easily provisioned by an unexperienced user. There are currently three primary areas of Research and Development (R&D) the City is pursuing in an effort to improve the scale and economics of SDI.

The first area for R&D is the creation of a production SDX. This requires no less than two SDI owner/operators to agree to provide their SDI and end users for R&D from the SDX edge to the user edge. Additionally, assuming that these virtualization technologies will be used to abstract complexity, it stands to reason that diversity in applications, services, geography and demographics would be desirable. Consequently inviting support from multiple application, service and middle mile infrastructure provider(s) desiring to contribute would be beneficial. In establishing a municipal SDI, the City has leveraged its numerous relationships with entities and organizations both capable and desirous of participating in SDX R&D who would be willing to express their commitment in writing in order to create such a project.

The second R&D area concerns authentication and security. These processes will be necessary to support the commercialization of SDN. A required component of SDX implementation must include the ability to support these functions across multiple domains. The City is currently working with both a commercial and academic partner to address these needs.

The third area of interest is SDX economics. The goal of this R&D should be to find and prove a funding method that supports this new ecosystem by assessing fees to the correct participant(s) in the ecosystem to support each necessary operation or stakeholder, including the application/service providers, SDI operator(s) both middle mile and local loop as well as required SDX operations. Done correctly the resulting economics will drive adoption of this new ecosystem.

Infrastructure Requirements: The operator infrastructure required to support a testbed for SDX R&D must include SDN technologies from end to end. Additionally, the infrastructure will be required to provide all ecosystem stakeholders the ability to create, control and remove virtualized networks and connections from the infrastructure at the edges in a manner that allows for either direct user input or software abstraction, such as an SDX or user portal. This software abstraction has the potential to render hardware and operating systems compatibility considerations obsolete. Clearly, a key SDX function is to provide multi-domain infrastructure abstraction while at the same time allowing for domain specific authentication, security, protocols and controls.

Workshop Attendance Request: With this white paper the City of Ammon requests an invitation to attend and participate in the SDI/SDX Workshop planned for Washington DC on February 4-5, 2016. We would like to use the opportunity to share our current state of SDI development, ongoing work and future vision. As a nonacademic, tax supported entity with a limited budget we would require travel reimbursement in order to attend.