A promising approach to access efficient network services in dynamic network environment is to provide network awareness in communication paths. Network services across a wide area network still remains a challenging task and the difficulty mainly comes from the heterogeneous and constantly changing network environment, which usually causes undesirable user experience for network-oblivious applications. A promising approach to address this is to provide network awareness in communication paths. Many challenging problems remain, in particular: how to automatically create effective network paths whose performance is optimized for encountered network conditions; how to dynamically reconfigure such paths when network conditions change; and how to manage and distribute network resources among different paths and between different network regions. This paper describes solutions for these problems, built into a programmable network infrastructure called Switching Network Services (SNS). The SNS infrastructure provides applications with network-aware communication paths that are automatically created and dynamically modified.
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**Index Terms**

Computer Science  Communications

**Keywords**

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