Reliability Implications of Emerging Technologies/Services

Alliance for Telecommunications Industry Solutions
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Abstract

This report provides a qualitative assessment of key emerging technologies to identify potential implications for end-to-end service availability.

Foreword

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1. Executive Summary

Goal

This report identifies emerging technologies that have the potential to significantly impact service availability or the way that availability is measured or modeled. It does not attempt to quantify the impact of the technologies but will instead provide a qualitative assessment to understand the broad impact (positive/negative/neutral) of a technology on service availability.

Context

Network planning techniques for estimating end-to-end service availability are based on models and deployment experience for existing technologies and network architectures. In some cases, new technologies follow the existing architecture with a simple one-for-one substitution where a new technology completely replaces an existing technology. In these cases it is easy to understand the impact the new technology will have on service availability because the existing network planning methodology can continue to be used with a simple substitution of the new technology. But in other cases, a new technology can dramatically alter the network architecture and failure mechanisms. This may require rethinking approaches for assessing service availability.

Problem Statement

Emerging technologies have the potential to change service availability typically experienced in the network as well as the impact of component failures when they do occur. As a technology is developed and deployed, the service availability implications may not be considered from a holistic end-to-end perspective.

This document identifies key emerging technologies that are being currently developed or deployed and assesses the potential impact each technology could have on end-to-end service availability and resiliency, as well as how the technology could impact recovery from massive failures such as natural disasters. The analysis is limited to a qualitative assessment, simply identifying if a technology is likely to improve or degrade service availability.