

Abstract

eCON Value Assessment Report – A Comparative Study of ICN versus Conventional Approaches provides the reader with an in-depth analysis of ICN-based solutions (compared to IP-centric architectures) from the perspective of a network architect or network planner. The value assessment is intended to convey an understanding of the design choices and their impacts on network performance and application enablement, as they relate to market-impacting use cases that are on the horizon for most network operators. While ICN is still in a developmental and experimental phase, early results at both a quantitative and qualitative level are presented in this report. These results are then applied to develop a set of early findings that can assist in making informed network evolution choices.

Foreword

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1. Introduction

ATIS' evolution to Content Optimized Networks (eCON) project is assessing the network implications of transitioning IP-based architectures to solutions that are based on named data (or content). From a practical perspective, the solutions outlined in this report do not assume a greenfield (or end-to-end replacement) approach to deploying networks based on Information-Centric Networking (ICN) principles, but rather an evolutionary path that may encompass existing or planned IP-based networks, including 5G. It is assumed that IP-centric architectures and ICN-based approaches could co-exist for a significant period of time, and that new capabilities such as network slicing could allow optimization of ICN in specific applications, while IP-based networking could meet the needs of many existing applications.

In February 2017, ATIS issued the *Evolution to Content Optimized Networks Report*¹, providing a broad assessment of ICN-based architectures, including market drivers, architectural approaches, technology choices, and standards development plans. In the *eCON Phase I Report*, it was recognized that a critical next step would be a focused deployment analysis that could assist network planners in making decisions regarding the value and viability of named content solutions. This *eCON Value Assessment Report* serves as a compendium document to the previous report and provides an in-depth analysis of key use cases, including a comparative analysis of IP and ICN-based solutions. Use cases have been selected that represent significant marketing opportunities in the near future. Evaluation criteria have been applied to each use case to more fully understand the network-based tradeoffs and potential benefits of ICN-based solutions with respect to existing best-in-class IP-based solutions.

The outcome of these assessments is presented in the form of Key Findings, as well as recommended Conclusions and Next Steps. It is hoped that network planners and architects can use the information in this report to make well-informed, tactical planning decisions to meet the growing demands for content optimized networks, today and well into the future. Further, this report may serve as a valuable implementation-level guide to related standards development activities addressing ICN requirements, protocols, and architectures.

¹ [ATIS-I-0000055](#), *Evolution to Content Optimized Networks*, February 2017.