Preface

Cisco's customers that exist within the MSDC realm are expanding their East-West networks at ever-increasing rates to keep up with their own demand. Because networks at MSDC scale are large cost-centers, designers and operators of these networks are faced with the task of getting the most out of their capital, power and cooling, and data center investments. Commodity pricing for networking gear, previously only seen in the server space, is pushing vendors to re-think how customers architect and operate their network environments as a whole: to do more (faster), safely (resilient), with lower costs (smaller buffers, fewer features, power efficiency).

This document intends to guide the reader in the concepts and considerations impacting MSDC customers today. We:

1. Examine characteristics of traditional data centers and MSDCs and highlight differences in design philosophy and characteristics.
2. Discuss scalability challenges unique to MSDCs and provide examples showing when a MSDC is approaching upper limits. Design considerations that improve scalability are also reviewed.
3. Present summaries and conclusions to SDU's routing protocol, provisioning and monitoring, and TCP performance testing.
4. Provide tools for network engineers to understand scaling considerations in MSDCs.

While any modern network can benefit from topics covered in this document, it is intended for customers who build very large data centers with significantly larger East-West than North-South traffic. Cisco calls this space Massively Scalable Data Center (MSDC).