# TABLE OF CONTENTS

## LIST OF FIGURES

## I. INTRODUCTION AND KEY FINDINGS

1.1 Key Findings

1.2 Report Structure

## II. OVERVIEW: RESILIENCE, RELIABILITY, AND OAM

2.1 Background

2.2 Resilience and the 50ms Legacy

2.3 Costs of OTN Resilience

2.4 How Reliable Is IP?

2.5 Resilience and OAM

## III. ABOUT THE HEAVY READING PRODUCT SURVEY

## IV. NETWORK-LEVEL RESILIENCE

4.1 Accelerated IP Rerouting

4.2 MPLS Fast Reroute

4.3 MPLS Presignaled LSP

4.4 Sonet/SDH Automatic Protection Switching

4.5 POS and Gigabit Ethernet Link Aggregation

4.6 Vendor Comparison: Network Resilience Features

4.7 Notes and Vendor Comments

4.8 Feature Analysis

## V. NODE-LEVEL RELIABILITY

5.1 The NEBS Factor

5.2 Hardware Reliability

5.3 Operating System Reliability

5.4 Hitless Software Upgrades

5.5 Resilience and Isolation in IP Control-Plane Protocols

5.6 Vendor Comparison: Node Reliability Features

5.7 Notes and Vendor Comments

5.8 Feature Analysis

## VI. OPERATION, ADMINISTRATION, AND MAINTENANCE (OAM) FEATURES

6.1 OAM for MPLS: Possibilities and Realities

6.2 ITU-T MPLS OAM Initiatives to Date

6.3 IETF MPLS OAM Initiatives

6.4 PWE3 and VPLS OAM Initiatives

6.5 Vendor Comparison: OAM Features

6.6 Notes and Vendor Comments

6.7 Feature Analysis

## VII. CONCLUSIONS AND CALLS TO ACTION

7.1 Calls to Action

## APPENDICES

A1 Methodology

A2 Author Bio

A3 Legal Disclaimer