

Brocade SLX-OS Multi-Protocol Label Switching (MPLS) Configuration Guide, 16r.1.01

Supporting the Brocade SLX 9850 Router

© 2016, Brocade Communications Systems, Inc. All Rights Reserved.

Brocade, the B-wing symbol, and MyBrocade are registered trademarks of Brocade Communications Systems, Inc., in the United States and in other countries. Other brands, product names, or service names mentioned of Brocade Communications Systems, Inc. are listed at www.brocade.com/en/legal/brocade-legal-trademarks.html. Other marks may belong to third parties.

Notice: This document is for informational purposes only and does not set forth any warranty, expressed or implied, concerning any equipment, equipment feature, or service offered or to be offered by Brocade. Brocade reserves the right to make changes to this document at any time, without notice, and assumes no responsibility for its use. This informational document describes features that may not be currently available. Contact a Brocade sales office for information on feature and product availability. Export of technical data contained in this document may require an export license from the United States government.

The authors and Brocade Communications Systems, Inc. assume no liability or responsibility to any person or entity with respect to the accuracy of this document or any loss, cost, liability, or damages arising from the information contained herein or the computer programs that accompany it.

The product described by this document may contain open source software covered by the GNU General Public License or other open source license agreements. To find out which open source software is included in Brocade products, view the licensing terms applicable to the open source software, and obtain a copy of the programming source code, please visit http://www.brocade.com/support/oscd.

Contents

Preface	9
Document conventions	9
Notes, cautions, and warnings	9
Text formatting conventions	9
Command syntax conventions	10
Brocade resources	10
Document feedback	10
Contacting Brocade Technical Support	11
Brocade customers	11
Brocade OEM customers	11
About This Document	
Supported hardware and software	13
MPLS Traffic Engineering	
MPLS Traffic Engineering overview	
IETF RFC and Internet draft support	
How MPLS works	
How packets are forwarded through an MPLS domain	
MPLS label header encoding	
Using MPLS in traffic engineering	
CSPF calculates a traffic-engineered path	
Penultimate hop popping	
MPLS CSPF fate-sharing group	
Configuration considerations when using CSPF fate-sharing group information	
Configuring an MPLS CSPF fate-sharing group	
Deleting CSPF groups	
Displaying CSPF fate-sharing group configuration	
IS-IS Link State Protocol data units with TE extensions for MPLS interfaces	
Configuring MPLS	
Enabling MPLS	
The MPLS process restart	
The MPLS cold process restart user-observable behavior	
Traffic engineering database	
LSP attributes and requirements used for traffic engineering	
Calculating a path based on an interface address	
How RSVP establishes a signaled LSP	
MPLS traffic engineering flooding reduction	
MPLS traffic engineering flooding reduction global configuration	
MPLS traffic engineering flooding reduction interface specific configuration	
MPLS traffic engineering flooding reduction configuring the periodic flooding timer	
RSVP soft preemption	
RSVP soft preemption	
Configuring RSVP soft preemption	
Soft-preemption clean-up timer	53
RASLOG messages	
Path selection metric for CSPF computation	54

Configuring the CSPF computation mode	55
Path selection for CSPF computation	55
Configuring the CSPF computation mode value at global level	56
Configuring TE-metric for an interface	57
Configuring TE-metric for MPLS interface	58
Configuring the CSPF computation mode value for primary LSPsLSPs	58
Global RSVP parameters	59
RSVP message authentication	59
Configuring RSVP message authentication	60
Displaying refresh reduction information for an interface	64
RSVP message authentication on a MPLS VE interface	64
Configuring RSVP message authentication on a MPLS VE interface	64
Displaying MPLS and RSVP information	65
RSVP IGP synchronization	65
Limitations	65
Globally enabling RSVP IGP synchronization	66
Configuring RSVP IGP synchronization	66
RSVP IGP synchronization for remote links	67
Types of LSPs	67
Signaled LSPs	67
Setting up signaled LSPs	68
Setting up paths	68
Modifying a path	69
Inserting a hop into a path	
Deleting a path	70
Configuring signaled LSP parameters	71
Resetting LSPs	71
Resetting normal LSPs	71
Reset LSP considerations	
Link protection for FRR	
Configuring protection type preference for non-adaptive LSPs	75
Configuring protection type preference for Adaptive LSPs	
Configuring an adaptive LSP	
RSVP LSP with FRR	
RSVP per-session statistics	
RSVP per-session statistics and their applicability	
RSVP-TE Hello	
RSVP-TE Hello extension composition	
RSVP-TE Hello process	
RSVP-TE Hello considerations	
Creating an LSP	
Specifying the egress LER	
Specifying a source address for an LSP	
Configuring redundant paths for an LSP	
Configuring path selection	
Configuring a path selection revert timer	
Usage considerations:	
Specifying the primary path for an LSP	
Configuring signaled LSP parameters	
Performing a commit for an LSP configuration command	92