

IEEE Standard for  
Local and metropolitan area networks—  
Bridges and Bridged Networks

IEEE Computer Society

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**IEEE Std 802.1Q™-2014**

(Revision of  
IEEE Std 802.1Q-2011)

**IEEE Standard for  
Local and metropolitan area networks—**

**Bridges and Bridged Networks**

Sponsor

**LAN/MAN Standards Committee  
of the  
IEEE Computer Society**

Approved 3 November 2014

**IEEE-SA Standards Board**

**Abstract:** This standard specifies how the Media Access Control (MAC) Service is supported by Bridged Networks, the principles of operation of those networks, and the operation of MAC Bridges and VLAN Bridges, including management, protocols, and algorithms

**Keywords:** Bridged Network, IEEE 802.1Q™, LAN, local area network, MAC Bridge, metropolitan area networks, MSTP, Multiple Spanning Tree Protocol, Rapid Spanning Tree Protocol, RSTP, PBN, Provider Bridged Network, Shortest Path Bridging Protocol, SPB Protocol, Virtual Bridged Network, virtual LAN, VLAN Bridge

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IEEE Std 802.1D-2004

9 February 2004

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Vijoy Pandey  
Don Pannell  
Luc Pariseau  
Glenn W. Parsons  
Richard Patti  
Ken Patton  
Mark Pearson  
Joseph Pelissier  
Yonadav Perry  
David Peterson  
Roger Pfister  
Thomas L. Phinney  
John Pickens  
Daniel Pitt  
Hayim Porat  
Gideon Prat  
Kirk Preiss  
Ron L. G. Prince  
Max Pritikin  
Ray Qiu  
Rene Raeber  
Ananda Rajagopal

Steve Ramberg  
Nigel Ramsden  
Karen Randall  
Shlomo Reches  
Frank Reichstein  
Dick Reohr  
Trudy Reusser  
James Richmond  
Anil Rijisinghani  
Robert Roden  
Edouard Rocher  
Guenter Roeck  
John J. Roese  
Josef Roese  
Derek J. Rohde  
Allyn Romanow  
Dan Romascanu  
Paul Rosenblum  
Moran Roth  
Jessy V. Rouyer  
Doug Ruby  
Eric Ryu  
Jonathan Sadler  
Ali Sajassi  
Dolors Sala  
Joseph Salowey  
John Salter  
Panagiotis Saltsidis  
Sam Sambasivan  
Ray Samora  
Alan Sarsby  
Satish Sathe  
John M. Sauer  
Ayman Sayed  
Susan Schanning  
Ted Schroeder  
Benjamin Schultz  
Michael J. Seaman  
Gerry Segal  
Rich Seifert  
Lee Sendelbach  
Koichiro Seto  
Himanshu Shah  
Rakesh Sharma  
Ravi Shenoy  
Howard Sherry  
K. Karl Shimada  
Fred Shu  
Wu-Shi Shung  
Taeshi Shimizu  
Phil Simmons  
Curtis Simonson  
Paramjeet Singh  
Rosemary V. Slager  
Alexander Smith  
Andrew Smith

Michel Soerensen  
M. Soha  
Stuart Soloway  
Nurit Sprecher  
Kevin B. Stanton  
Larry Stefani  
Dan Stokesberry  
Sundar Subramaniam  
Robert Sultan  
Muneyoshi Suzuki  
Yoshihiro Suzuki  
George Swallow  
Lennart Swartz  
Richard Sweatt  
Attila Takacs  
Kenta Takumi  
Francois Tallet  
Robin Tasker  
Angus Telfer  
John Terry  
Patricia A. Thaler  
Jonathan Thatcher  
Dave Thompson  
Geoff Thompson  
Oliver Thorp  
Michel Thorsen

Fouad Tobagi  
Nathan Tobol  
Jeremy Touve  
Naoki Tsukutari  
Fred Tuck  
Chait Tumuluri  
Wendell Turner  
Paul Unbehagen  
Dhadesugoor Vaman  
Steve Van Seters  
Dono van-Mierop  
Peter Videcraz  
John Viega  
Maarten Vissers  
Dennis Volpano  
Manoj Wadekar  
Paul Wainwright  
Scott Wasson  
Daniel Watts  
Yuehua Wei  
John Wakerly  
Peter Wang  
Philip Wang  
Y. C. Wang  
Yan Wang  
Trevor Warwick

Bob Watson  
Karl Weber  
Brian Weis  
Alan Weissberger  
Glenn Wenig  
Martin White  
Bert Wijnen  
Deborah Wilbert  
Keith Willette  
Robert Williams  
Val Wilson  
Ludwig Winkel  
Robert Winter  
Michael Witkowski  
Edward Wong  
Michael D. Wright  
Michele Wright  
Chien-Hsien Wu  
Min Xiao  
Ken Young  
Allen Yu  
Wayne Zakowski  
Igor Zhovnirovsky  
Carolyn Zimmer  
Glen Zorn  
Nick Zuchero

## Introduction

This introduction is not part of IEEE Std 802.1Q-2014, IEEE Standard for Local and metropolitan area networks—Bridges and Bridged Networks.

IEEE Std 802.1Q-2014 incorporates the text of the following amendments into IEEE Std 802.1Q-2011.

IEEE Std 802.1Qbe™-2011	Multiple I-SID Registration Protocol
IEEE Std 802.1Qbc™-2011	Provider Bridging—Remote Customer Service Interfaces
IEEE Std 802.1Qbb™-2011	Priority-based Flow Control
IEEE Std 802.1Qaz™-2011	Enhanced Transmission Selection for Bandwidth Sharing Between Traffic Classes
IEEE Std 802.1Qbf™-2011	PBB-TE Infrastructure Segment Protection
IEEE Std 802.1Qbg™-2012	Edge Virtual Bridging
IEEE Std 802.1aq™-2012	Shortest Path Bridging
IEEE Std 802.1Q-2011/Cor 2-2012	Technical and editorial corrections
IEEE Std 802.1Qbp™-2014	Equal Cost Multiple Paths (ECMP)

The 2011 revision of this standard incorporated the text of the following amendments into IEEE Std 802.1Q-2005.

IEEE Std 802.1ad™-2005	Provider Bridges
IEEE Std 802.1ak™-2007	Multiple Registration Protocol
IEEE Std 802.1ag™-2007	Connectivity Fault Management
IEEE Std 802.1ah™-2008	Provider Backbone Bridges
IEEE Std 802-1Q-2005/Cor-1-2008	Corrections to the Multiple Registration Protocol
IEEE Std 802.1ap™-2008	Management Information Base (MIB) Definitions for VLAN Bridges
IEEE Std 802.1Qaw™-2009	Management of Data Driven and Data Dependent Connectivity Faults
IEEE Std 802.1Qay™-2009	Provider Backbone Bridge Traffic Engineering
IEEE Std 802.1aj™-2009	Two-Port Media Access Control (MAC) Relay
IEEE Std 802.1Qav™-2009	Forwarding and Queuing Enhancements for Time-Sensitive Streams
IEEE Std 802.1Qau™-2010	Congestion Notification
IEEE Std 802.1Qaf™-2010	Stream Reservation Protocol

Clause 13 of IEEE Std 802.1Q-2011 was also revised to include an updated specification of the Rapid Spanning Tree Algorithm and Protocol (RSTP), superseding references to IEEE Std 802.1D™-2004 [B10].<sup>a</sup>

The 2005 revision of this standard incorporated the text of the following amendments into IEEE Std 802.1Q-1998.

IEEE Std 802.1u™-2001	Technical and Editorial Corrections
IEEE Std 802.1v™-2001	VLAN Classification by Protocol and Port
IEEE Std 802.1s™-2002	Multiple Spanning Trees

This standard was first published as IEEE Std 802.1Q-1998, making use of the concepts and mechanisms of LAN Bridging that were introduced by IEEE Std 802.1D and defining additional mechanisms to allow the implementation of Virtual Bridged Networks.

<sup>a</sup>Numbers in brackets correspond to the numbers in the bibliography in Annex Q.

For an introduction to this standard that details each of the provisions introduced by amendments and revisions throughout its development, refer to 1.3.

This standard contains state-of-the-art material. The area covered by this standard is undergoing evolution. Revisions are anticipated within the next few years to clarify existing material, to correct possible errors, and to incorporate new related material. Information on the current revision state of this and other IEEE 802 standards may be obtained from

Secretary, IEEE-SA Standards Board  
445 Hoes Lane  
Piscataway, NJ 08854-4141  
USA

## Contents

1.	Overview.....	1
1.1	Scope.....	2
1.2	Purpose.....	2
1.3	Introduction.....	2
2.	Normative references.....	9
3.	Definitions.....	12
4.	Abbreviations.....	32
5.	Conformance.....	37
5.1	Requirements terminology.....	37
5.2	Conformant components and equipment.....	37
5.3	Protocol Implementation Conformance Statement (PICS).....	38
5.4	VLAN Bridge component requirements.....	38
5.4.1	VLAN Bridge component options.....	39
5.4.2	Multiple VLAN Registration Protocol (MVRP) requirements.....	43
5.4.3	VLAN Bridge requirements for congestion notification.....	44
5.4.4	Multiple Stream Registration Protocol (MSRP) requirements.....	44
5.4.5	Shortest Path Bridging (SPB) operation (optional).....	45
5.5	C-VLAN component conformance.....	46
5.5.1	C-VLAN component options.....	46
5.6	S-VLAN component conformance.....	46
5.6.1	S-VLAN component options.....	47
5.6.2	S-VLAN component requirements for Provider Backbone Bridge Traffic Engineering (PBB-TE).....	47
5.6.3	S-VLAN component requirements for PBB-TE IPS.....	47
5.6.4	S-VLAN component requirements for ECMP with flow filtering.....	48
5.7	I-component conformance.....	48
5.7.1	I-component options.....	48
5.8	B-component conformance.....	48
5.8.1	B-component options.....	49
5.8.2	B-component requirements for PBB-TE.....	49
5.8.3	B-component requirements for PBB-TE IPS.....	49
5.8.4	B-component requirements for ECMP with flow filtering.....	50
5.9	C-VLAN Bridge conformance.....	50
5.9.1	C-VLAN Bridge options.....	50
5.10	Provider Bridge conformance.....	50
5.10.1	S-VLAN Bridge conformance.....	50
5.10.2	Provider Edge Bridge conformance.....	51
5.11	System requirements for Priority-based Flow Control (PFC).....	51
5.12	Backbone Edge Bridge (BEB) conformance.....	51
5.12.1	BEB requirements for PBB-TE.....	52
5.13	MAC Bridge component requirements.....	52
5.13.1	MAC Bridge component options.....	52
5.14	MAC Bridge conformance.....	53
5.14.1	MAC Bridge options.....	53
5.15	TPMR component conformance.....	53
5.15.1	TPMR component options.....	53

5.16	TPMR conformance.....	54
5.16.1	TPMR options .....	54
5.17	T-component conformance .....	54
5.17.1	T-component options .....	54
5.18	End station requirements for MMRP, MVRP, and MSRP .....	54
5.18.1	MMRP requirements and options .....	55
5.18.2	MVRP requirements and options .....	55
5.18.3	MSRP requirements and options .....	56
5.19	VLAN-aware end station requirements for CFM .....	56
5.20	End station requirements—FQTSS.....	57
5.21	End station requirements for congestion notification .....	57
5.22	MAC-specific bridging methods.....	58
5.23	EVB Bridge requirements.....	58
5.24	EVB station requirements.....	59
5.24.1	Edge relay (ER) requirements .....	59
6.	Support of the MAC Service.....	61
6.1	Basic architectural concepts and terms .....	62
6.2	Provision of the MAC Service .....	62
6.2.1	Point-to-point, multipoint-to-multipoint, and rooted-multipoint connectivity .....	63
6.3	Support of the MAC Service.....	63
6.4	Preservation of the MAC Service .....	64
6.5	Quality of service (QoS) maintenance.....	64
6.5.1	Service availability .....	64
6.5.2	Frame loss .....	65
6.5.3	Frame misordering .....	65
6.5.4	Frame duplication .....	66
6.5.5	Transit delay .....	67
6.5.6	Frame lifetime .....	68
6.5.7	Undetected frame error rate .....	68
6.5.8	Maximum Service Data Unit Size .....	68
6.5.9	Priority .....	68
6.5.10	Throughput .....	69
6.6	Internal Sublayer Service (ISS) .....	70
6.6.1	Control primitives and parameters .....	70
6.7	Support of the ISS by specific MAC procedures.....	70
6.7.1	Support of the ISS by IEEE Std 802.3 (Ethernet) .....	70
6.8	Enhanced Internal Sublayer Service (EISS) .....	70
6.8.1	Service primitives .....	71
6.8.2	Status parameters .....	72
6.8.3	Point-to-point parameters .....	72
6.8.4	Control primitives and parameters .....	72
6.9	Support of the EISS .....	72
6.9.1	Data indications .....	74
6.9.2	Data requests .....	75
6.9.3	Priority Code Point encoding .....	75
6.9.4	Regenerating priority .....	77
6.10	Support of the ISS/EISS by PIPs .....	78
6.10.1	Data indications .....	80
6.10.2	Data requests .....	81
6.10.3	Priority Code Point encoding .....	81
6.11	Support of the EISS by CBPs .....	82
6.11.1	Data indications .....	83

6.11.2	Data requests .....	84
6.11.3	Priority Code Point decoding .....	85
6.11.4	Regenerating priority .....	85
6.12	Protocol VLAN classification .....	85
6.12.1	Protocol Templates .....	87
6.12.2	Protocol Group Identifiers .....	87
6.12.3	Protocol Group Database .....	87
6.13	Support of the ISS for attachment to a PBN .....	88
6.13.1	Data requests .....	89
6.13.2	Data indications .....	90
6.14	Support of the ISS within a system .....	90
6.15	Support of the ISS by additional technologies .....	90
6.16	Filtering services in Bridged Networks .....	91
6.16.1	Purpose(s) of filtering service provision .....	91
6.16.2	Goals of filtering service provision .....	91
6.16.3	Users of filtering services .....	91
6.16.4	Basis of service .....	92
6.16.5	Categories of service .....	92
6.16.6	Service configuration .....	92
6.16.7	Service definition for Extended Filtering Services .....	93
6.17	EISS Multiplex Entity .....	94
6.18	Backbone Service Instance Multiplex Entity .....	95
6.18.1	Demultiplexing direction .....	96
6.18.2	Multiplexing direction .....	97
6.18.3	Priority Code Point encoding .....	98
6.18.4	Status parameters .....	98
6.19	TESI Multiplex Entity .....	98
6.20	Support of the ISS with signaled priority .....	99
6.20.1	Data indications .....	100
6.20.2	Data requests .....	100
6.21	Infrastructure Segment Multiplex Entity .....	100
7.	Principles of Virtual Bridged Network operation .....	102
7.1	Network overview .....	102
7.2	Use of VLANs .....	103
7.3	Active topology .....	103
7.4	VLAN topology .....	104
7.5	Locating end stations .....	105
7.6	Ingress, forwarding, and egress rules .....	105
8.	Principles of Bridge operation .....	107
8.1	Bridge operation .....	107
8.1.1	Relay .....	107
8.1.2	Filtering and relaying information .....	108
8.1.3	Duplicate frame prevention .....	108
8.1.4	Traffic segregation .....	108
8.1.5	Traffic reduction .....	109
8.1.6	Traffic expediting .....	109
8.1.7	Conversion of frame formats .....	109
8.2	Bridge architecture .....	110
8.3	Model of operation .....	112
8.4	Active topologies, learning, and forwarding .....	115
8.5	Bridge Port Transmit and Receive .....	117

8.5.1	Bridge Port connectivity .....	117
8.5.2	TPMR Port connectivity .....	118
8.5.3	Support of Higher Layer Entities .....	118
8.6	The Forwarding Process .....	119
8.6.1	Active topology enforcement .....	120
8.6.2	Ingress filtering .....	121
8.6.3	Frame filtering .....	121
8.6.4	Egress filtering .....	124
8.6.5	Flow classification and metering .....	124
8.6.6	Queuing frames .....	125
8.6.7	Queue management .....	126
8.6.8	Transmission selection .....	127
8.7	The Learning Process.....	129
8.7.1	Default filtering utility criteria .....	130
8.7.2	Enhanced filtering utility criteria .....	130
8.7.3	Ageing of Dynamic Filtering Entries .....	130
8.8	The Filtering Database (FDB) .....	131
8.8.1	Static Filtering Entries .....	134
8.8.2	Static VLAN Registration Entries .....	135
8.8.3	Dynamic Filtering Entries .....	136
8.8.4	MAC Address Registration Entries .....	136
8.8.5	Dynamic VLAN Registration Entries .....	137
8.8.6	Default Group filtering behavior .....	137
8.8.7	Dynamic Reservation Entries .....	139
8.8.8	Allocation of VIDs to FIDs .....	139
8.8.9	Querying the FDB .....	140
8.8.10	Determination of the member set for a VID .....	143
8.8.11	Permanent Database .....	144
8.8.12	Connection_Identifier .....	144
8.9	MST, SPB, and ESP configuration information .....	144
8.9.1	MST Configuration Table .....	145
8.9.2	MST configuration identification .....	146
8.9.3	FID to MSTI Allocation Table .....	146
8.9.4	SPT Configuration Identification .....	146
8.10	Spanning Tree Protocol Entity.....	147
8.11	MRP entities .....	147
8.12	Bridge Management Entity.....	147
8.13	Addressing .....	148
8.13.1	End stations .....	148
8.13.2	Bridge Ports .....	148
8.13.3	Use of LLC by Spanning Tree Protocol Entities .....	148
8.13.4	Reserved MAC addresses .....	149
8.13.5	Group MAC addresses for spanning tree entity .....	149
8.13.6	Group MAC addresses for MRP Applications .....	151
8.13.7	Bridge Management Entities .....	151
8.13.8	Unique identification of a Bridge .....	152
8.13.9	Points of attachment and connectivity for Higher Layer Entities .....	152
8.13.10	VLAN attachment and connectivity for Higher Layer Entities .....	155
8.13.11	CFM entities .....	156
9.	Tagged frame format.....	158
9.1	Purpose of tagging .....	158
9.2	Representation and encoding of tag fields .....	158

9.3	Tag format.....	159
9.4	TPID formats .....	159
9.5	Tag Protocol identification .....	159
9.6	VLAN Tag Control Information (TCI).....	160
9.7	Backbone Service Instance Tag Control Information (I-TAG TCI).....	161
10.	Multiple Registration Protocol (MRP) and Multiple MAC Registration Protocol (MMRP) .....	163
10.1	MRP overview .....	163
10.2	MRP architecture .....	166
10.3	MRP Attribute Propagation (MAP).....	167
10.3.1	MAP Context .....	168
10.4	Requirements to be met by MRP .....	169
10.5	Requirements for interoperability between MRP Participants .....	170
10.6	Protocol operation.....	171
10.7	Protocol specification.....	175
10.7.1	Notational conventions and abbreviations .....	176
10.7.2	Registrar Administrative Controls .....	178
10.7.3	Applicant Administrative Controls .....	178
10.7.4	Protocol timers .....	178
10.7.5	Protocol event definitions .....	179
10.7.6	Protocol Action definitions .....	182
10.7.7	Applicant state machine .....	184
10.7.8	Registrar state machine .....	185
10.7.9	LeaveAll state machine .....	185
10.7.10	PeriodicTransmission state machine .....	186
10.7.11	Timer values .....	186
10.7.12	Operational reporting and statistics .....	187
10.7.13	Interoperability considerations .....	187
10.8	Structure and encoding of Multiple Registration Protocol Data Units (MRPDUs).....	188
10.8.1	Structure .....	188
10.8.2	Encoding of MRPDU parameters .....	190
10.8.3	Packing and parsing MRPDUs .....	193
10.9	Multiple MAC Registration Protocol (MMRP)—Purpose .....	195
10.10	Model of operation.....	196
10.10.1	Propagation of Group Membership information .....	197
10.10.2	Propagation of Group service requirement information .....	198
10.10.3	Source pruning .....	198
10.10.4	Use of Group service requirement registration by end stations .....	198
10.11	Default Group filtering behavior and MMRP propagation.....	198
10.12	Definition of the MMRP application .....	200
10.12.1	Definition of MRP elements .....	200
10.12.2	Provision and support of Extended Filtering Services .....	202
10.12.3	Use of “new” declaration capability .....	204
10.12.4	Attribute value support requirements .....	204
10.12.5	Registrar Administrative Controls .....	205
11.	VLAN topology management.....	206
11.1	Static and dynamic VLAN configuration .....	206
11.2	Multiple VLAN Registration Protocol (MVRP).....	207
11.2.1	MVRP overview .....	207
11.2.2	VLAN registration service definition .....	209
11.2.3	Definition of the MVRP application .....	210
11.2.4	VID translation table .....	213

11.2.5	Use of “new” declaration capability .....	213
11.2.6	New-Only Participant and Registrar Administrative Controls .....	213
11.2.7	Attribute value support requirements .....	213
12.	Bridge management .....	214
12.1	Management functions .....	214
12.1.1	Configuration Management .....	214
12.1.2	Fault Management .....	215
12.1.3	Performance Management .....	215
12.1.4	Security Management .....	215
12.1.5	Accounting Management .....	215
12.2	VLAN Bridge objects .....	215
12.3	Data types.....	216
12.4	Bridge Management Entity .....	217
12.4.1	Bridge Configuration .....	217
12.4.2	Port configuration .....	220
12.5	MAC entities.....	222
12.5.1	ISS Port Number table managed object (optional) .....	222
12.6	Forwarding process.....	222
12.6.1	The Port Counters .....	223
12.6.2	Priority handling .....	223
12.6.3	Traffic Class Table .....	231
12.7	Filtering Database (FDB).....	232
12.7.1	The Filtering Database object .....	232
12.7.2	A Static Filtering Entry object .....	233
12.7.3	A Dynamic Filtering Entry object .....	234
12.7.4	A MAC Address Registration Entry object .....	234
12.7.5	A VLAN Registration Entry object .....	234
12.7.6	Permanent Database object .....	234
12.7.7	General FDB operations .....	235
12.8	Bridge Protocol Entity .....	237
12.8.1	The Protocol Entity .....	237
12.8.2	Bridge Port .....	240
12.9	MRP Entities.....	244
12.9.1	The MRP Timer object .....	244
12.9.2	The MRP Attribute Type object .....	245
12.9.3	Periodic state machine objects .....	246
12.10	Bridge VLAN managed objects.....	247
12.10.1	Bridge VLAN Configuration managed object .....	247
12.10.2	VLAN Configuration managed object .....	252
12.10.3	The VID to FID allocation managed object .....	254
12.11	MMRP entities.....	256
12.11.1	MMRP Configuration managed object .....	256
12.12	MST configuration entities .....	258
12.12.1	The MSTI List .....	258
12.12.2	The FID to MSTID Allocation Table .....	259
12.12.3	The MST Configuration Table .....	260
12.13	Provider Bridge management .....	262
12.13.1	Provider Bridge Port Type managed object .....	263
12.13.2	Customer Edge Port Configuration managed object .....	264
12.13.3	Remote Customer Access Port Configuration managed object .....	267
12.14	CFM entities .....	269
12.14.1	Maintenance Domain list managed object .....	270

12.14.2	CFM Stack managed object .....	272
12.14.3	Default MD Level managed object .....	272
12.14.4	Configuration Error List managed object .....	274
12.14.5	Maintenance Domain managed object .....	274
12.14.6	Maintenance Association managed object .....	277
12.14.7	Maintenance association Endpoint managed object .....	279
12.15	Backbone Core Bridge (BCB) management.....	286
12.16	Backbone Edge Bridge (BEB) management.....	286
12.16.1	BEB configuration managed object .....	288
12.16.2	BEB/PB/VLAN Bridge Port configuration managed object .....	291
12.16.3	VIP configuration managed object .....	292
12.16.4	PIP configuration managed object .....	293
12.16.5	CBP Configuration managed object .....	300
12.17	DDCFM entities.....	302
12.17.1	DDCFM Stack managed object .....	303
12.17.2	Reflection Responder managed object .....	303
12.17.3	RFM Receiver managed object .....	307
12.17.4	Decapsulator Responder managed object .....	308
12.17.5	SFM Originator managed object .....	310
12.18	PBB-TE Protection Switching managed objects .....	313
12.18.1	TE protection group list managed object .....	313
12.18.2	TE protection group managed object .....	314
12.19	TPMR managed objects.....	316
12.19.1	TPMR management entity .....	317
12.19.2	MAC and PHY entities .....	319
12.19.3	Forwarding Process .....	319
12.19.4	MAC Status Propagation Entity (MSPE) .....	324
12.20	Management entities for FQSS .....	326
12.20.1	The Bandwidth Availability Parameter Table .....	326
12.20.2	The Transmission Selection Algorithm Table .....	327
12.20.3	The Priority Regeneration Override Table .....	327
12.21	Congestion Notification managed objects .....	327
12.21.1	CN component managed object .....	328
12.21.2	CN component priority managed object .....	328
12.21.3	CN Port priority managed object .....	329
12.21.4	Congestion Point managed object .....	330
12.21.5	Reaction Point port priority managed object .....	331
12.21.6	Reaction Point group managed object .....	331
12.22	Stream Reservation Protocol (SRP) entities .....	332
12.22.1	SRP Bridge Base Table .....	332
12.22.2	SRP Bridge Port Table .....	332
12.22.3	SRP Latency Parameter Table .....	333
12.22.4	SRP Stream Table .....	333
12.22.5	SRP Reservations Table .....	333
12.23	Priority-based Flow Control objects .....	334
12.24	1:1 PBB-TE IPS managed objects .....	335
12.24.1	IPG list managed object .....	335
12.24.2	IPG managed object .....	336
12.25	Shortest Path Bridging managed objects .....	339
12.25.1	The SPB System managed object .....	340
12.25.2	The SPB MTID Static managed object .....	342
12.25.3	The SPB Topology Instance Dynamic managed object .....	343
12.25.4	The SPB ECT Static Entry managed object .....	344
12.25.5	The SPB ECT Dynamic Entry managed object .....	345

12.25.6	The SPB Adjacency Static Entry managed object .....	346
12.25.7	The SPB Adjacency Dynamic Entry managed object .....	347
12.25.8	The SPBM BSI Static Entry managed object .....	348
12.25.9	The SPB Topology Node Table managed object .....	349
12.25.10	The SPB Topology ECT Table managed object .....	350
12.25.11	The SPB Topology Edge Table managed object .....	351
12.25.12	The SPBM Topology Service Table managed object .....	352
12.25.13	The SPBV Topology Service Table managed object .....	353
12.25.14	The ECMP ECT Static Entry managed object .....	354
12.26	Edge Virtual Bridging (EVB) management.....	355
12.26.1	EVB system base table .....	358
12.26.2	SBP table entry .....	360
12.26.3	VSI table entry .....	361
12.26.4	S-channel configuration and management .....	363
12.26.5	ER management .....	366
12.27	Edge Control Protocol (ECP) management.....	367
12.27.1	ECP table entry .....	367
13.	Spanning tree protocols.....	368
13.1	Protocol design requirements.....	369
13.2	Protocol support requirements .....	370
13.2.1	MSTP support requirements .....	370
13.2.2	SPB support requirements .....	370
13.3	Protocol design goals .....	371
13.4	RSTP overview .....	371
13.4.1	Computation of the active topology .....	372
13.4.2	Example topologies .....	373
13.5	MSTP overview .....	376
13.5.1	Example topologies .....	377
13.5.2	Relationship of MSTP to RSTP .....	380
13.5.3	Modeling an MST or SPT Region as a single Bridge .....	380
13.6	SPB overview.....	381
13.7	Compatibility and interoperability.....	382
13.7.1	Designated Port selection .....	382
13.7.2	Force Protocol Version .....	382
13.8	MST Configuration Identifier (MCID).....	383
13.9	Spanning tree priority vectors.....	384
13.10	CIST Priority Vector calculations.....	386
13.11	MST Priority Vector calculations .....	388
13.12	Port Role assignments.....	390
13.13	Stable connectivity.....	391
13.14	Communicating spanning tree information .....	392
13.15	Changing spanning tree information.....	393
13.16	Changing Port States with RSTP or MSTP .....	394
13.16.1	Subtree connectivity and priority vectors .....	395
13.16.2	Root Port transition to Forwarding .....	395
13.16.3	Designated Port transition to Forwarding .....	395
13.16.4	Master Port transition to Forwarding .....	397
13.17	Changing Port States with SPB .....	399
13.17.1	Agreement Digest .....	402
13.18	Managing spanning tree topologies .....	402
13.19	Updating learned station location information .....	403
13.20	Managing reconfiguration.....	405

13.21	Partial and disputed connectivity .....	406
13.22	In-service upgrades .....	406
13.23	Fragile Bridges .....	408
13.24	Spanning tree protocol state machines .....	408
13.25	State machine timers .....	410
13.25.1	edgeDelayWhile .....	411
13.25.2	fdWhile .....	411
13.25.3	helloWhen .....	411
13.25.4	mdelayWhile .....	411
13.25.5	rbWhile .....	411
13.25.6	rcvdInfoWhile .....	411
13.25.7	rrWhile .....	412
13.25.8	tcDetected .....	412
13.25.9	tcWhile .....	412
13.25.10	pseudoInfoHelloWhen .....	412
13.26	Per Bridge variables .....	412
13.26.1	agreementDigest .....	413
13.26.2	BridgeIdentifier .....	413
13.26.3	BridgePriority .....	413
13.26.4	BridgeTimes .....	413
13.26.5	ForceProtocolVersion .....	414
13.26.6	MigrateTime .....	414
13.26.7	MstConfigId .....	414
13.26.8	AuxMstConfigId .....	414
13.26.9	rootPortId .....	414
13.26.10	rootPriority .....	414
13.26.11	rootTimes .....	414
13.26.12	TxHoldCount .....	414
13.27	Per port variables .....	414
13.27.1	AdminEdge .....	417
13.27.2	ageingTime .....	417
13.27.3	agree .....	417
13.27.4	agreed .....	417
13.27.5	agreedAbove .....	417
13.27.6	agreedDigest .....	417
13.27.7	agreedDigestValid .....	417
13.27.8	agreeDigest .....	417
13.27.9	agreeDigestValid .....	417
13.27.10	agreedMisorder .....	418
13.27.11	agreedN .....	418
13.27.12	agreedND .....	418
13.27.13	agreedPriority .....	418
13.27.14	agreedTopology .....	418
13.27.15	agreementOutstanding .....	418
13.27.16	agreeN .....	418
13.27.17	agreeND .....	418
13.27.18	AutoEdge .....	418
13.27.19	AutoIsolate .....	419
13.27.20	designatedPriority .....	419
13.27.21	designatedTimes .....	419
13.27.22	disputed .....	419
13.27.23	enableBPDUrx .....	419
13.27.24	enableBPDUtx .....	419
13.27.25	ExternalPortPathCost .....	419

13.27.26	isL2gp	419
13.27.27	isolate	420
13.27.28	fdbFlush	420
13.27.29	forward	420
13.27.30	forwarding	420
13.27.31	infoInternal	420
13.27.32	infoIs	420
13.27.33	InternalPortPathCost	420
13.27.34	learn	421
13.27.35	learning	421
13.27.36	master	421
13.27.37	mastered	421
13.27.38	mcheck	421
13.27.39	msgPriority	421
13.27.40	msgTimes	421
13.27.41	neighbourPriority	422
13.27.42	newInfo	422
13.27.43	newInfoMsti	422
13.27.44	operEdge	422
13.27.45	portEnabled	422
13.27.46	portId	422
13.27.47	portPriority	422
13.27.48	portTimes	423
13.27.49	proposed	423
13.27.50	proposing	423
13.27.51	pseudoRootId	423
13.27.52	rcvdBPDU	423
13.27.53	rcvdInfo	423
13.27.54	rcvdInternal	423
13.27.55	rcvdMsg	423
13.27.56	rcvdRSTP	423
13.27.57	rcvdSTP	423
13.27.58	rcvdTc	423
13.27.59	rcvdTcAck	423
13.27.60	rcvdTen	424
13.27.61	reRoot	424
13.27.62	reselect	424
13.27.63	restrictedDomainRole	424
13.27.64	restrictedRole	424
13.27.65	restrictedTcn	424
13.27.66	role	424
13.27.67	selected	424
13.27.68	selectedRole	424
13.27.69	sendRSTP	425
13.27.70	sync	425
13.27.71	synced	425
13.27.72	tcAck	425
13.27.73	tcProp	425
13.27.74	tick	425
13.27.75	txCount	425
13.27.76	updtInfo	425
13.28	State machine conditions and parameters	425
13.28.1	allSptAgree	426
13.28.2	allSynced	426

13.28.3	allTransmitReady	426
13.28.4	BestAgreementPriority	426
13.28.5	cist	426
13.28.6	cistRootPort	426
13.28.7	cistDesignatedPort	427
13.28.8	EdgeDelay	427
13.28.9	forwardDelay	427
13.28.10	FwdDelay	427
13.28.11	HelloTime	427
13.28.12	MaxAge	427
13.28.13	msti	427
13.28.14	mstiDesignatedOrTCpropagatingRootPort	427
13.28.15	mstiMasterPort	427
13.28.16	operPointToPoint	427
13.28.17	rcvdAnyMsg	427
13.28.18	rcvdCistMsg	427
13.28.19	rcvdMstiMsg	428
13.28.20	reRooted	428
13.28.21	rstpVersion	428
13.28.22	spt	428
13.28.23	stpVersion	428
13.28.24	updtCistInfo	428
13.28.25	updtMstiInfo	428
13.29	State machine procedures	428
13.29.1	betterorsameInfo(newInfoIs)	429
13.29.2	clearAllRcvdMsgs()	429
13.29.3	clearReselectTree()	429
13.29.4	disableForwarding()	430
13.29.5	disableLearning()	430
13.29.6	enableForwarding()	430
13.29.7	enableLearning()	430
13.29.8	fromSameRegion()	430
13.29.9	newTcDetected()	430
13.29.10	newTcWhile()	430
13.29.11	pseudoRcvMsgs()	431
13.29.12	rcvInfo()	431
13.29.13	rcvMsgs()	432
13.29.14	rcvAgreements()	432
13.29.15	recordAgreement()	432
13.29.16	recordDispute()	433
13.29.17	recordMastered()	433
13.29.18	recordPriority()	433
13.29.19	recordProposal()	433
13.29.20	recordTimes()	433
13.29.21	setReRootTree()	434
13.29.22	setSelectedTree()	434
13.29.23	setSyncTree()	434
13.29.24	setTcFlags()	434
13.29.25	setTcPropTree()	434
13.29.26	syncMaster()	434
13.29.27	txConfig()	434
13.29.28	txRstp()	435
13.29.29	txTcn()	435
13.29.30	updtAgreement()	435

13.29.31	updtBPDUVersion()	436
13.29.32	updtDigest()	436
13.29.33	updtRcvdInfoWhile()	437
13.29.34	updtRolesTree()	438
13.29.35	uptRolesDisabledTree()	439
13.30	The Port Timers state machine	440
13.31	Port Receive state machine	440
13.32	Port Protocol Migration state machine	441
13.33	Bridge Detection state machine	441
13.34	Port Transmit state machine	442
13.35	Port Information state machine	443
13.36	Port Role Selection state machine	444
13.37	Port Role Transitions state machine	444
13.38	Port State Transition state machine	449
13.38.1	Port State transitions for the CIST and MSTIs	450
13.38.2	Port State transitions for SPTs	450
13.39	Topology Change state machine	451
13.40	Layer 2 Gateway Port Receive state machine	452
13.41	CEP spanning tree operation	452
13.41.1	PEP operPointToPointMAC and operEdge	452
13.41.2	updtRolesTree()	453
13.41.3	setReRootTree(), setSyncTree(), setTcPropTree()	453
13.41.4	allSynced, reRooted	453
13.41.5	Configuration parameters	453
13.42	Virtual Instance Port (VIP) spanning tree operation	454
14.	Encoding of Bridge Protocol Data Units (BPDUs)	455
14.1	BPDUs Structure	455
14.1.1	Transmission and representation of octets	455
14.1.2	Common BPDUs fields	457
14.2	Encoding of parameter types	457
14.2.1	Encoding of Protocol Identifiers	457
14.2.2	Encoding of Protocol Version Identifiers	457
14.2.3	Encoding of BPDUs types	457
14.2.4	Encoding of flags	457
14.2.5	Encoding of Bridge Identifiers	457
14.2.6	Encoding of External Root Path Cost and Internal Root Path Cost	458
14.2.7	Encoding of Port Identifiers	458
14.2.8	Encoding of Timer Values	459
14.2.9	Encoding of Port Role values	459
14.2.10	Encoding of Length Values	459
14.2.11	Encoding of Hop Counts	459
14.3	Transmission of BPDUs	459
14.4	Encoding and decoding of STP Configuration, RST, MST, and SPT BPDUs	460
14.4.1	MSTI Configuration Messages	461
14.5	Validation of received BPDUs	462
14.6	Validation and interoperability	463
15.	Support of the MAC Service by PBNs	465
15.1	Service transparency	465
15.2	Customer service interfaces	466
15.3	Port-based service interface	466
15.4	C-tagged service interface	467

15.5	S-tagged service interface .....	468
15.6	Remote customer service interfaces (RCSIs) .....	469
15.7	Service instance segregation .....	472
15.8	Service instance selection and identification .....	472
15.9	Service priority selection .....	473
15.10	Service access protection .....	474
16.	Principles of Provider Bridged Network (PBN) operation .....	475
16.1	PBN overview .....	475
16.2	Provider Bridged Network (PBN) .....	476
16.3	Service instance connectivity .....	479
16.4	Service provider learning of customer end station addresses .....	480
16.5	Detection of connectivity loops through attached networks .....	480
16.6	Network management .....	481
17.	Management Information Base (MIB) .....	482
17.1	Internet Standard Management Framework .....	482
17.2	Structure of the MIB .....	482
17.2.1	Structure of the IEEE8021-TC-MIB .....	483
17.2.2	Structure of the IEEE8021-BRIDGE-MIB .....	485
17.2.3	Structure of the IEEE8021-SPANNING-TREE MIB .....	490
17.2.4	Structure of the IEEE8021-Q-BRIDGE-MIB .....	492
17.2.5	Structure of the IEEE8021-PB-MIB .....	499
17.2.6	Structure of the IEEE8021-MSTP-MIB .....	500
17.2.7	Structure of the IEEE8021-CFM-MIB .....	503
17.2.8	Structure of the IEEE8021-PBB-MIB .....	509
17.2.9	Structure of the IEEE8021-DDCFM-MIBs .....	512
17.2.10	Structure of the IEEE8021-PBBTE-MIB .....	514
17.2.11	Structure of the TPMR MIB .....	517
17.2.12	Structure of the IEEE8021-FQTSS-MIB .....	519
17.2.13	Structure of the Congestion Notification MIB .....	520
17.2.14	Structure of the IEEE8021-SRP-MIB .....	522
17.2.15	Structure of the MVRP extension MIB .....	524
17.2.16	Structure of the MIRP MIB .....	524
17.2.17	Structure of the PFC MIB .....	525
17.2.18	Structure of the IEEE80221-TEIPS MIB .....	525
17.2.19	Structure of the IEEE8021-SPB-MIB .....	527
17.2.20	Structure of the IEEE8021-EVB-MIB .....	531
17.2.21	Structure of the IEEE8021-ECMP-MIB .....	534
17.3	Relationship to other MIBs .....	535
17.3.1	Relationship of the IEEE8021-TC-MIB to other MIB modules .....	535
17.3.2	Relationship of the IEEE8021-BRIDGE-MIB to other MIB modules .....	536
17.3.3	Relationship of the IEEE8021-RSTP MIB to other MIB modules .....	538
17.3.4	Relationship of the IEEE8021-Q-BRIDGE-MIB to other MIB modules .....	538
17.3.5	Relationship of the IEEE8021-PB-BRIDGE MIB to other MIB modules .....	540
17.3.6	Relationship of the IEEE8021-MSTP-MIB to other MIB modules .....	540
17.3.7	Relationship of the IEEE8021-CFM-MIB to other MIB modules .....	540
17.3.8	Relationship of the IEEE8021-PBB-MIB to other MIB modules .....	541
17.3.9	Relationship of the IEEE8021-DDCFM to other MIB modules .....	543
17.3.10	Relationship of the IEEE8021-PBBTE-MIB to other MIB modules .....	543
17.3.11	Relationship of the TPMR MIB to other MIB modules .....	543
17.3.12	Relationship of the IEEE8021-FQTSS-MIB to other MIB modules .....	544
17.3.13	Relationship of the IEEE802-CN-MIB to other MIB modules .....	544

17.3.14	Relationship of the IEEE8021-SRP-MIB to other MIB modules .....	544
17.3.15	Relationship of the IEEE8021-MVRPX-MIB to other MIB modules .....	544
17.3.16	Relationship of the IEEE8021-MIRP-MIB to other MIB modules .....	545
17.3.17	Relationship of the PFC MIB to other MIB modules .....	545
17.3.18	Relationship of the IEEE8021-TEIPS-MIB to other MIB modules .....	545
17.3.19	Relationship of the of the IEEE8021-SPB-MIB to other MIB modules .....	545
17.3.20	Relationship of the IEEE8021-EVB-MIB to other MIB modules .....	545
17.3.21	Relationship of the of the IEEE8021-ECMP-MIB to other MIB modules .....	545
17.4	Security considerations .....	546
17.4.1	Security considerations of the IEEE8021-TC-MIB .....	546
17.4.2	Security considerations of the IEEE8021-BRIDGE-MIB .....	546
17.4.3	Security considerations of the IEEE8021-SPANNING-TREE MIB .....	547
17.4.4	Security considerations of the IEEE8021-Q-BRIDGE-MIB .....	548
17.4.5	Security considerations of the IEEE8021-PB-MIB .....	549
17.4.6	Security considerations of the IEEE8021-MSTP-MIB .....	549
17.4.7	Security considerations of the IEEE8021-CFM-MIB .....	549
17.4.8	Security considerations of the IEEE8021-PBB-MIB .....	552
17.4.9	Security considerations of the IEEE8021-DDCFM-MIB .....	552
17.4.10	Security considerations of the IEEE8021-PBBTE-MIB .....	553
17.4.11	Security considerations of the TMR MIB .....	554
17.4.12	Security considerations of the IEEE8021-FQTSS-MIB .....	554
17.4.13	Security considerations of the Congestion Notification MIB .....	555
17.4.14	Security considerations of the IEEE8021-SRP-MIB .....	556
17.4.15	Security considerations of the IEEE8021-MVRPX-MIB .....	557
17.4.16	Security considerations of the IEEE8021-MIRP-MIB .....	557
17.4.17	Security considerations for the PFC MIB .....	558
17.4.18	Security considerations of the IEEE8021-TEIPS-MIB .....	558
17.4.19	Security considerations of the IEEE8021-SPB-MIB .....	558
17.4.20	Security considerations of the IEEE8021-EVB-MIB .....	559
17.4.21	Security considerations of the IEEE8021-ECMP-MIB .....	560
17.5	Dynamic component and Port creation.....	561
17.5.1	Overview of the dynamically created Bridge entities .....	561
17.5.2	Component creation .....	562
17.5.3	Port creation .....	563
17.6	MIB operations for service interface configuration.....	573
17.6.1	Provisioning PBN service interfaces .....	573
17.6.2	Provisioning Backbone Bridged Network service interfaces .....	576
17.7	MIB modules, .....	582
17.7.1	Definitions for the IEEE8021-TC-MIB module .....	582
17.7.2	Definitions for the IEEE8021-BRIDGE-MIB module .....	593
17.7.3	Definitions for the IEEE8021-SPANNING-TREE-MIB module .....	633
17.7.4	Definitions for the IEEE8021-Q-BRIDGE-MIB module .....	651
17.7.5	Definitions for the IEEE8021-PB-MIB module .....	697
17.7.6	Definitions for the IEEE8021-MSTP-MIB module .....	715
17.7.7	Definitions for the CFM MIB modules .....	744
17.7.8	Definitions for the IEEE8021-PBB-MIB module .....	826
17.7.9	Definitions for the IEEE8021-DDCFM-MIB module .....	849
17.7.10	Definitions for the IEEE8021-PBBTE-MIB module .....	867
17.7.11	Definitions for the IEEE8021-TMR-MIB module .....	884
17.7.12	Definitions for the IEEE8021-FQTSS-MIB module .....	898
17.7.13	Definitions for the IEEE8021-CN-MIB module .....	909
17.7.14	Definitions for the IEEE8021-SRP-MIB module .....	945
17.7.15	Definitions for the IEEE8021-MVRPX-MIB module .....	961
17.7.16	Definitions for the IEEE8021-MIRP-MIB module .....	966

17.7.17	Definitions for the IEEE8021-PFC-MIB module .....	972
17.7.18	Definitions for the IEEE8021-TEIPS-V2-MIB module .....	976
17.7.19	Definitions for the IEEE8021-SPB-MIB module .....	990
17.7.20	Definitions for the IEEE8021-EVB-MIB module .....	1027
17.7.21	Definitions for the IEEE8021-ECMP-MIB module .....	1056
18.	Principles of Connectivity Fault Management operation .....	1064
18.1	Maintenance Domains and DoSAPs .....	1065
18.2	Service instances and MAs .....	1067
18.3	Maintenance Domain Levels .....	1068
19.	CFM entity operation .....	1072
19.1	Maintenance Points .....	1072
19.2	MA Endpoints (MEPs) .....	1073
19.2.1	MEP identification .....	1073
19.2.2	MEP functions .....	1074
19.2.3	MEP architecture .....	1074
19.2.4	MP Type Demultiplexer .....	1076
19.2.5	MP Multiplexer .....	1076
19.2.6	MP Level Demultiplexer .....	1076
19.2.7	MP OpCode Demultiplexer .....	1076
19.2.8	MEP Continuity Check Receiver .....	1077
19.2.9	MEP Continuity Check Initiator .....	1077
19.2.10	MP Loopback Responder .....	1078
19.2.11	MEP Loopback Initiator .....	1078
19.2.12	MEP Linktrace Initiator .....	1078
19.2.13	MEP LTI SAP .....	1078
19.2.14	MEP Linktrace SAP .....	1078
19.2.15	MEP CCM Database .....	1078
19.2.16	MEP Fault Notification Generator .....	1078
19.2.17	MEP Decapsulator Responder (DR) .....	1079
19.2.18	MEP RFM Receiver .....	1079
19.3	MIP Half Function .....	1079
19.3.1	MHF identification .....	1079
19.3.2	MHF functions .....	1079
19.3.3	MHF architecture .....	1080
19.3.4	MHF Level Demultiplexer .....	1080
19.3.5	MHF Type Demultiplexer .....	1080
19.3.6	MHF OpCode Demultiplexer .....	1080
19.3.7	MHF Multiplexer .....	1080
19.3.8	MHF Loopback Responder .....	1080
19.3.9	MHF Continuity Check Receiver .....	1081
19.3.10	MIP CCM Database .....	1081
19.3.11	MHF Linktrace SAP .....	1082
19.3.12	MHF DR .....	1082
19.3.13	MHF RFM Receiver .....	1082
19.4	MP addressing .....	1082
19.5	Linktrace Output Multiplexer (LOM) .....	1083
19.6	Linktrace Responder .....	1083
20.	CFM protocols .....	1085
20.1	Continuity Check protocol .....	1086

20.1.1	MAC status reporting in the CCM .....	1088
20.1.2	Defects and Fault Alarms .....	1088
20.1.3	CCM reception .....	1089
20.2	Loopback protocol .....	1089
20.2.1	LBM transmission .....	1090
20.2.2	LBM reception and LBR transmission .....	1090
20.2.3	LBR reception .....	1091
20.3	Linktrace protocol .....	1091
20.3.1	LTM origination .....	1092
20.3.2	LTM reception, forwarding, and replying .....	1093
20.3.3	LTR reception .....	1094
20.4	CFM state machines .....	1095
20.5	CFM state machine timers .....	1095
20.5.1	LTFwhile .....	1097
20.5.2	CCIwhile .....	1097
20.5.3	errorCCMwhile .....	1097
20.5.4	xconCCMwhile .....	1097
20.5.5	LBIwhile .....	1097
20.5.6	FNGwhile .....	1097
20.5.7	mmCCMwhile .....	1097
20.5.8	mmLocwhile .....	1097
20.5.9	mmFNGwhile .....	1097
20.5.10	rMEPwhile .....	1097
20.6	CFM procedures .....	1098
20.6.1	CCMtime() .....	1098
20.7	Maintenance Domain variable .....	1098
20.7.1	mdLevel .....	1098
20.8	MA variables .....	1098
20.8.1	CCMinterval .....	1098
20.9	MEP variables .....	1098
20.9.1	MEPactive .....	1099
20.9.2	enableRmepDefect .....	1099
20.9.3	MAdefectIndication .....	1100
20.9.4	allRMEPsDead .....	1100
20.9.5	lowestAlarmPri .....	1100
20.9.6	presentRDI .....	1100
20.9.7	MEPprimaryVID .....	1100
20.9.8	presentTraffic .....	1100
20.9.9	presentmmLoc .....	1100
20.9.10	ISpresentTraffic .....	1101
20.9.11	ISpresentmmLoc .....	1101
20.9.12	EpMEP .....	1101
20.10	MEP Continuity Check Initiator variables .....	1101
20.10.1	CCIenabled .....	1101
20.10.2	CCIsentCCMs .....	1101
20.10.3	MACstatusChanged .....	1101
20.10.4	Npaths .....	1101
20.10.5	flowHash[ ] .....	1102
20.10.6	pathN .....	1102
20.10.7	CCMcnt .....	1102
20.11	MEP Continuity Check Initiator procedures .....	1102
20.11.1	xmitCCM() .....	1102
20.12	MEP Continuity Check Initiator state machine .....	1103
20.13	MHF Continuity Check Receiver variables .....	1103

20.13.1	MHFrcvdCCM .....	1104
20.13.2	MHFCCMPDU .....	1104
20.14	MHF Continuity Check Receiver procedures .....	1104
20.14.1	MHFprocessCCM() .....	1104
20.15	MHF Continuity Check Receiver state machine .....	1104
20.16	MEP Continuity Check Receiver variables .....	1104
20.16.1	CCMreceivedEqual .....	1105
20.16.2	CCMequalPDU .....	1105
20.16.3	CCMreceivedLow .....	1105
20.16.4	CCMlowPDU .....	1105
20.16.5	rcvdMacAddress .....	1105
20.16.6	rcvdRDI .....	1105
20.16.7	rcvdInterval .....	1105
20.16.8	rcvdPortState .....	1106
20.16.9	rcvdInterfaceStatus .....	1106
20.16.10	rcvdSenderId .....	1106
20.16.11	rcvdFrame .....	1106
20.16.12	CCMsequenceErrors .....	1106
20.16.13	rcvdTrafficBit .....	1106
20.17	MEP Continuity Check Receiver procedures .....	1106
20.17.1	MEPprocessEqualCCM() .....	1106
20.17.2	MEPprocessLowCCM() .....	1107
20.18	MEP Continuity Check Receiver state machine .....	1107
20.19	Remote MEP variables .....	1108
20.19.1	rMEPCCMdefect .....	1108
20.19.2	rMEPlastRDI and rMEPlastRDI[i] .....	1108
20.19.3	rMEPlastPortState .....	1109
20.19.4	rMEPlastInterfaceStatus .....	1109
20.19.5	rMEPlastSenderId .....	1109
20.19.6	rCCMreceived .....	1109
20.19.7	rMEPmacAddress .....	1109
20.19.8	rMEPportStatusDefect .....	1109
20.19.9	rMEPinterfaceStatusDefect .....	1109
20.19.10	lastPathN .....	1109
20.20	Remote MEP state machine .....	1110
20.21	Remote MEP Error variables .....	1110
20.21.1	errorCCMreceived .....	1111
20.21.2	errorCCMlastFailure .....	1111
20.21.3	errorCCMdefect .....	1111
20.22	Remote MEP Error state machine .....	1111
20.23	MEP Cross Connect variables .....	1111
20.23.1	xconCCMreceived .....	1112
20.23.2	xconCCMlastFailure .....	1112
20.23.3	xconCCMdefect .....	1112
20.24	MEP Cross Connect state machine .....	1112
20.25	MEP Mismatch variables .....	1113
20.25.1	mmCCMreceived .....	1113
20.25.2	mmCCMdefect .....	1113
20.25.3	mmCCMTime .....	1113
20.25.4	disableLocdefect .....	1113
20.25.5	mmLocdefect .....	1113
20.26	MEP Mismatch state machines .....	1114
20.27	MP Loopback Responder variables .....	1115
20.27.1	LBMreceived .....	1115

20.27.2	LBMPDU .....	1115
20.28	MP Loopback Responder procedures .....	1115
20.28.1	ProcessLBM() .....	1115
20.28.2	xmitLBR() .....	1116
20.29	MP Loopback Responder state machine .....	1116
20.30	MEP Loopback Initiator variables .....	1117
20.30.1	LBMstosend .....	1117
20.30.2	nextLBMtransID .....	1117
20.30.3	expectedLBRtransID .....	1117
20.30.4	LBIactive .....	1117
20.30.5	xmitReady .....	1117
20.30.6	LBRreceived .....	1117
20.30.7	LBRPDU .....	1117
20.31	MEP Loopback Initiator transmit procedures .....	1118
20.31.1	xmitLBM() .....	1118
20.32	MEP Loopback Initiator transmit state machine .....	1119
20.33	MEP Loopback Initiator receive procedures .....	1119
20.33.1	ProcessLBR() .....	1119
20.34	MEP Loopback Initiator receive state machine .....	1120
20.35	MEP Fault Notification Generator variables .....	1120
20.35.1	fngPriority .....	1120
20.35.2	fngDefect .....	1121
20.35.3	fngAlarmTime .....	1121
20.35.4	fngResetTime .....	1121
20.35.5	someRMEPCCMdefect .....	1121
20.35.6	someMACstatusDefect .....	1121
20.35.7	someRDId defect .....	1121
20.35.8	highestDefectPri .....	1121
20.35.9	highestDefect .....	1121
20.36	MEP Fault Notification Generator procedures .....	1122
20.36.1	xmitFaultAlarm() .....	1122
20.37	MEP Fault Notification Generator state machine .....	1122
20.38	MEP Mismatch Fault Notification Generator variables .....	1123
20.38.1	mfngAllowed .....	1123
20.38.2	mmdefectIndication .....	1123
20.38.3	mfngAlarmTime .....	1123
20.38.4	mfngResetTime .....	1123
20.39	MEP Mismatch Fault Notification Generator procedures .....	1123
20.39.1	xmitFaultAlarm() .....	1123
20.40	MEP Mismatch Fault Notification Generator state machine .....	1124
20.41	MEP Linktrace Initiator variables .....	1124
20.41.1	nextLTMtransID .....	1124
20.41.2	ltmReplyList .....	1125
20.42	MEP Linktrace Initiator procedures .....	1126
20.42.1	xmitLTM() .....	1127
20.43	MEP Linktrace Initiator receive variables .....	1127
20.43.1	LTRreceived .....	1127
20.43.2	LTRPDU .....	1128
20.44	MEP Linktrace Initiator receive procedures .....	1128
20.44.1	ProcessLTR() .....	1128
20.45	MEP Linktrace Initiator receive state machine .....	1128
20.46	Linktrace Responder variables .....	1129
20.46.1	nPendingLTRs .....	1129
20.46.2	LTMreceived .....	1129

20.46.3	LTMPDU .....	1129
20.47	LTM Receiver procedures .....	1129
20.47.1	ProcessLTM() .....	1129
20.47.2	clearPendingLTRs() .....	1133
20.47.3	ForwardLTM() .....	1134
20.47.4	enqueLTR() .....	1134
20.48	LTM Receiver state machine .....	1136
20.49	LTR Transmitter procedure .....	1136
20.49.1	xmitOldestLTR() .....	1136
20.50	LTR Transmitter state machine .....	1136
20.51	CFM PDU validation and versioning .....	1137
20.51.1	Goals of CFM PDU versioning .....	1137
20.51.2	PDU transmission .....	1137
20.51.3	PDU validation .....	1138
20.51.4	Validation pass .....	1138
20.51.5	Execution pass .....	1139
20.51.6	Future extensions .....	1140
20.52	PDU identification .....	1140
20.53	Use of transaction IDs and sequence numbers .....	1141
21.	Encoding of CFM PDUs .....	1142
21.1	Structure, representation, and encoding .....	1142
21.2	CFM encapsulation .....	1142
21.3	CFM request and indication parameters .....	1143
21.3.1	destination_address parameter .....	1143
21.3.2	source_address parameter .....	1143
21.4	Common CFM Header .....	1144
21.4.1	MD Level .....	1144
21.4.2	Version .....	1144
21.4.3	OpCode .....	1144
21.4.4	Flags .....	1145
21.4.5	First TLV Offset .....	1145
21.5	TLV format .....	1145
21.5.1	General format for CFM TLVs .....	1145
21.5.2	Organization-Specific TLV .....	1146
21.5.3	Sender ID TLV .....	1147
21.5.4	Port Status TLV .....	1149
21.5.5	Interface Status TLV .....	1149
21.5.6	Data TLV .....	1150
21.5.7	End TLV .....	1150
21.6	CCM format .....	1151
21.6.1	Flags .....	1151
21.6.2	First TLV Offset .....	1152
21.6.3	Sequence Number .....	1152
21.6.4	Maintenance association Endpoint Identifier .....	1153
21.6.5	Maintenance Association Identifier .....	1153
21.6.6	Defined by ITU-T Y.1731 (02/2008) .....	1155
21.6.7	Optional CCM TLVs .....	1155
21.7	LBM and LBR formats .....	1156
21.7.1	Flags .....	1156
21.7.2	First TLV Offset .....	1156
21.7.3	Loopback Transaction Identifier .....	1156
21.7.4	Additional LBM/LBR TLVs .....	1156

21.7.5	PBB-TE MIP TLV .....	1157
21.8	LTM format .....	1158
21.8.1	Flags .....	1158
21.8.2	First TLV Offset .....	1158
21.8.3	LTM Transaction Identifier .....	1158
21.8.4	LTM TTL .....	1159
21.8.5	Original MAC Address .....	1159
21.8.6	Target MAC Address .....	1159
21.8.7	Additional LTM TLVs .....	1159
21.8.8	LTM Egress Identifier TLV .....	1159
21.9	LTR format .....	1160
21.9.1	Flags .....	1160
21.9.2	First TLV Offset .....	1161
21.9.3	LTR Transaction Identifier .....	1161
21.9.4	Reply TTL .....	1161
21.9.5	Relay Action .....	1161
21.9.6	Additional LTR TLVs .....	1161
21.9.7	LTR Egress Identifier TLV .....	1162
21.9.8	Reply Ingress TLV .....	1162
21.9.9	Reply Egress TLV .....	1163
22.	CFM in systems .....	1166
22.1	CFM shims in Bridges .....	1166
22.1.1	Preliminary positioning of MPs .....	1166
22.1.2	CFM and the Forwarding Process .....	1167
22.1.3	Up/Down separation of MPs .....	1169
22.1.4	Service instances over multiple Bridges .....	1171
22.1.5	Multiple VID service instances .....	1173
22.1.6	Untagged CFM PDUs .....	1173
22.1.7	MPs and non-VLAN aware Bridges .....	1173
22.1.8	MPs and other standards .....	1174
22.1.9	CFM and IEEE 802.3-2012 Clause 57 OAM .....	1176
22.2	Maintenance Entity creation .....	1176
22.2.1	Creating Maintenance Domains and MAs .....	1177
22.2.2	Creating MEPs .....	1177
22.2.3	Creating MIPs .....	1179
22.2.4	CFM configuration errors .....	1180
22.3	MPs, Ports, and MD Level assignment.....	1181
22.4	Stations and CFM .....	1181
22.5	Scalability of CFM.....	1182
22.6	CFM in Provider Bridges.....	1183
22.6.1	MPs and C-VLAN components .....	1183
22.6.2	Maintenance C-VLAN on a Port-based service interface .....	1184
22.6.3	Maintenance C-VLAN on a C-tagged service interface .....	1185
22.6.4	MPs and Port-mapping S-VLAN components .....	1185
22.7	Management Port MEPs and CFM in the enterprise environment.....	1187
22.8	Implementing CFM on Bridges that implement earlier revisions of IEEE Std 802.1Q ....	1188
23.	MAC status propagation .....	1190
23.1	Model of operation.....	1191
23.1.1	MAC Status Shim (MSS) .....	1192
23.1.2	Relationship of CFM to the MSS .....	1193
23.2	MAC Status Protocol (MSP) overview.....	1193

23.3	MSP state machines .....	1198
23.4	State machine timers .....	1199
23.4.1	linkNotifyWhen .....	1199
23.4.2	linkNotifyWhile .....	1199
23.4.3	macNotifyWhile .....	1199
23.4.4	macRecoverWhile .....	1199
23.5	MSP performance parameters .....	1199
23.5.1	LinkNotify .....	1200
23.5.2	LinkNotifyWait .....	1200
23.5.3	LinkNotifyRetry .....	1200
23.5.4	MACNotify .....	1200
23.5.5	MACNotifyTime .....	1200
23.5.6	MACRecoverTime .....	1200
23.6	State machine variables.....	1200
23.6.1	BEGIN .....	1200
23.6.2	addConfirmed .....	1200
23.6.3	disableMAC .....	1200
23.6.4	disabledMAC .....	1200
23.6.5	disableMSS .....	1201
23.6.6	lossConfirmed .....	1201
23.6.7	macOperational .....	1201
23.6.8	mssOperational .....	1201
23.6.9	prop .....	1201
23.6.10	rxAck .....	1201
23.6.11	rxAdd .....	1201
23.6.12	rxAddConfirm .....	1201
23.6.13	rxLoss .....	1201
23.6.14	rxLossConfirm .....	1201
23.6.15	txAck .....	1201
23.6.16	txAdd .....	1201
23.6.17	txAddConfirm .....	1202
23.6.18	txLoss .....	1202
23.6.19	txLossConfirm .....	1202
23.7	State machine procedures .....	1202
23.8	Status Transition state machine (STM).....	1202
23.9	Status Notification state machine (SNM) .....	1203
23.10	Receive Process .....	1203
23.11	Transmit Process.....	1203
23.12	Management of MSP .....	1203
23.13	MSPDU transmission, addressing, and protocol identification .....	1204
23.13.1	Destination MAC Address .....	1204
23.13.2	Source MAC Address .....	1204
23.13.3	Priority .....	1205
23.13.4	EtherType use and encoding .....	1205
23.14	Representation and encoding of octets .....	1205
23.15	MSPDU structure.....	1205
23.15.1	Protocol Version .....	1206
23.15.2	Packet Type .....	1206
23.16	Validation of received MSPDUs .....	1206
23.17	Other MSP participants.....	1206
24.	Bridge performance .....	1207
24.1	Guaranteed Port Filtering Rate .....	1207

24.2	Guaranteed Bridge Relaying Rate .....	1207
24.3	RSTP performance requirements .....	1207
25.	Support of the MAC Service by PBBNs.....	1209
25.1	Service transparency .....	1211
25.2	Customer service interface.....	1211
25.3	Port-based service interface .....	1212
25.4	S-tagged service interface .....	1213
25.5	I-tagged service interface.....	1215
25.6	Service instance segregation .....	1217
25.7	Service instance selection and identification .....	1217
25.8	Service priority and drop eligibility selection.....	1218
25.9	Service access protection .....	1218
	25.9.1 Class II redundant LANs access protection .....	1220
	25.9.2 Class III simple redundant LANs and nodes access protection .....	1221
25.10	Support of the MAC Service by a PBB-TE Region .....	1222
	25.10.1 Provisioning TESIs .....	1223
	25.10.2 ESP forwarding behavior .....	1224
25.11	Transparent service interface .....	1225
26.	Principles of Provider Backbone Bridged Network (PBBN) operation .....	1227
26.1	PBBN overview .....	1227
26.2	PBBN example.....	1228
26.3	B-VLAN connectivity.....	1230
26.4	Backbone addressing .....	1231
	26.4.1 Learning individual backbone addresses at a PIP .....	1232
	26.4.2 Translating backbone destination addresses at a CBP .....	1232
	26.4.3 Backbone addressing considerations for CFM MPs .....	1233
26.5	Detection of connectivity loops through attached networks.....	1233
26.6	Scaling of PBBs .....	1233
	26.6.1 Hierarchal PBBNs .....	1234
	26.6.2 Peer PBBNs .....	1234
26.7	Network management .....	1234
26.8	CFM in PBBs.....	1235
	26.8.1 CFM over Port-based and S-tagged service interfaces .....	1240
	26.8.2 CFM over I-tagged Service Interfaces .....	1241
	26.8.3 CFM over hierarchal E-NNI .....	1241
	26.8.4 CFM over peer E-NNI .....	1241
26.9	CFM in a PBB-TE Region.....	1242
	26.9.1 Addressing PBB-TE MEPs .....	1242
	26.9.2 TESI identification .....	1243
	26.9.3 PBB-TE MEP placement in a Bridge Port .....	1243
	26.9.4 PBB-TE MIP placement in a Bridge Port .....	1243
	26.9.5 TESI Maintenance Domains .....	1243
	26.9.6 PBB-TE enhancements of the CFM protocols .....	1244
	26.9.7 Addressing Infrastructure Segment MEPs .....	1246
	26.9.8 Infrastructure Segment identification .....	1246
	26.9.9 Infrastructure Segment MEP placement in a Bridge Port .....	1247
	26.9.10 Infrastructure Segment Maintenance Domains .....	1247
	26.9.11 IPS extensions to Continuity Check operation .....	1247
26.10	Protection switching for point-to-point TESIs.....	1249
	26.10.1 Introduction .....	1249
	26.10.2 1:1 point-to-point TESI protection switching .....	1250

26.10.3	Protection Switching state machines .....	1253
26.11	IPS in PBB-TE Region .....	1258
26.11.1	Infrastructure Segment monitoring .....	1259
26.11.2	1:1 IPS .....	1260
26.11.3	IPS Control entity .....	1263
26.11.4	1:1 IPS state machines .....	1264
26.11.5	M:1 IPS .....	1264
26.12	Mismatch defect.....	1270
26.13	Signaling VLAN registrations among I-components .....	1271
27.	Shortest Path Bridging (SPB) .....	1272
27.1	Protocol design requirements.....	1274
27.2	Protocol support .....	1275
27.3	Protocol design goals .....	1276
27.4	ISIS-SPB VLAN configuration .....	1276
27.4.1	SPT Region and ISIS-SPB adjacency determination .....	1278
27.5	ISIS-SPB information .....	1279
27.6	Calculating CIST connectivity.....	1280
27.7	Connectivity between regions in the same domain.....	1281
27.8	Calculating SPT connectivity .....	1281
27.8.1	ISIS-SPB overload .....	1282
27.9	Loop prevention .....	1282
27.10	SPVID and SPSourceID allocation.....	1283
27.11	Allocation of VIDs to FIDs.....	1284
27.12	SPBV SPVID translation .....	1285
27.13	VLAN topology management.....	1285
27.14	Individual addresses and SPBM .....	1286
27.14.1	Loop mitigation .....	1287
27.14.2	Loop prevention .....	1287
27.15	SPBM group addressing .....	1288
27.16	Backbone service instance topology management .....	1289
27.17	Equal cost shortest paths, ECTs, and load spreading.....	1290
27.18	Connectivity Fault Management for SPBM .....	1290
27.18.1	SPBM MA types .....	1291
27.18.2	SPBM MEP placement in a Bridge Port .....	1291
27.18.3	SPBM MIP placement in a Bridge Port .....	1291
27.18.4	SPBM modifications of the CFM protocols .....	1292
27.19	Using SPBV and SPBM modes .....	1293
27.19.1	Shortest Path Bridging—VID .....	1293
27.19.2	Shortest Path Bridging—MAC .....	1295
27.20	Security considerations .....	1297
28.	ISIS-SPB Link State Protocol.....	1298
28.1	ISIS-SPB control plane MAC.....	1298
28.2	Formation and maintenance of ISIS-SPB adjacencies.....	1299
28.3	Loop prevention .....	1300
28.4	The Agreement Digest .....	1300
28.4.1	Agreement Digest Format Identifier .....	1301
28.4.2	Agreement Digest Format Capabilities .....	1301
28.4.3	Agreement Digest Convention Identifier .....	1301
28.4.4	Agreement Digest Convention Capabilities .....	1302
28.4.5	Agreement Digest Edge Count .....	1302
28.4.6	The Computed Topology Digest .....	1302

28.5	Symmetric shortest path tie breaking.....	1303
28.6	Symmetric ECT framework.....	1304
28.7	Symmetric ECT .....	1305
28.8	ECT Algorithm details.....	1306
28.9	ECT Migration.....	1307
28.9.1	Use of a new ECT Algorithm in SPBV .....	1308
28.9.2	Use of a new ECT Algorithm in SPBM .....	1308
28.10	MAC address registration.....	1309
28.11	Circuit IDs and Port Identifiers.....	1309
28.12	ISIS-SPB TLVs.....	1310
28.12.1	MT-Capability TLV .....	1310
28.12.2	SPB MCID sub-TLV .....	1311
28.12.3	SPB Digest sub-TLV .....	1311
28.12.4	SPB Base VLAN-Identifiers sub-TLV .....	1312
28.12.5	SPB Instance sub-TLV .....	1313
28.12.6	SPB Instance Opaque ECT Algorithm sub-TLV .....	1315
28.12.7	SPB Link Metric sub-TLV .....	1316
28.12.8	SPB Adjacency Opaque ECT Algorithm sub-TLV .....	1317
28.12.9	SPBV MAC address sub-TLV .....	1317
28.12.10	SPBM Service Identifier and Unicast Address (ISID-ADDR) sub-TLV .....	1319
29.	DDCFM operations and protocols.....	1322
29.1	Principles of DDCFM operation.....	1322
29.1.1	Data-driven and data-dependent faults (DDFs) .....	1322
29.1.2	Basic principle to diagnose and isolate DDFs .....	1322
29.2	DDCFM Entity operation .....	1325
29.2.1	DDCFM implementation .....	1325
29.2.2	FPT RR .....	1326
29.2.3	RR-related parameters .....	1327
29.2.4	Reflection Target and RFM Receiver .....	1328
29.2.5	RPT-related parameters .....	1328
29.2.6	Decapsulator Responder (DR) .....	1329
29.2.7	SFM Originator .....	1330
29.3	DDCFM protocols .....	1330
29.3.1	RR variables .....	1330
29.3.2	RR Filter procedures .....	1332
29.3.3	RR Encapsulation procedures .....	1333
29.3.4	RR Transmit procedure .....	1334
29.3.5	RR-related state machines .....	1335
29.3.6	RFM Receiver variables .....	1337
29.3.7	RFM Receiver procedure .....	1337
29.3.8	DR variables .....	1338
29.3.9	DR procedures .....	1339
29.3.10	Decapsulator Responder state machine .....	1340
29.4	Encoding of DDCFM PDUs.....	1340
29.4.1	RFM and SFM Header .....	1340
29.4.2	RFM format .....	1341
29.4.3	SFM format .....	1342
30.	Principles of congestion notification .....	1344
30.1	Congestion notification design requirements .....	1344
30.2	Quantized Congestion Notification protocol (QCN) .....	1346
30.2.1	The CP algorithm .....	1347

30.2.2	Basic RP algorithm .....	1348
30.2.3	RP algorithm with timer .....	1349
30.3	Congestion Controlled Flow (CCF) .....	1350
30.4	Congestion Notification Priority Value (CNPV) .....	1351
30.5	Congestion Notification tag (CN-TAG) .....	1351
30.6	Congestion Notification Domain (CND) .....	1351
30.7	Multicast data .....	1352
30.8	Congestion notification and additional tags .....	1352
31.	Congestion notification entity operation .....	1354
31.1	Congestion aware Bridge Forwarding Process .....	1354
31.1.1	Congestion Point (CP) .....	1355
31.1.2	CP ingress multiplexer .....	1355
31.2	Congestion aware end station functions .....	1355
31.2.1	Output flow segregation .....	1356
31.2.2	Per-CNPV station function .....	1357
31.2.3	Flow Select Database .....	1359
31.2.4	Flow multiplexer .....	1359
31.2.5	CNM demultiplexer .....	1359
31.2.6	Input flow segregation .....	1359
31.2.7	End station input queue .....	1360
31.2.8	Reception selection .....	1360
32.	Congestion notification protocol .....	1361
32.1	CND operations .....	1361
32.1.1	CND defense .....	1361
32.1.2	Automatic CND recognition .....	1363
32.1.3	Variables controlling CND defense .....	1363
32.2	CN component variables .....	1364
32.2.1	cngMasterEnable .....	1365
32.2.2	cngCnmTransmitPriority .....	1365
32.2.3	cngDiscardedFrames .....	1365
32.2.4	cngErroredPortList .....	1365
32.3	Congestion notification per-CNPV variables .....	1365
32.3.1	cncpDefModeChoice .....	1365
32.3.2	cncpAlternatePriority .....	1366
32.3.3	cncpAutoAltPri .....	1366
32.3.4	cncpAdminDefenseMode .....	1366
32.3.5	cncpCreation .....	1366
32.3.6	cncpLdpInstanceChoice .....	1366
32.3.7	cncpLdpInstanceSelector .....	1366
32.4	CND defense per-Port per-CNPV variables .....	1367
32.4.1	cnpdDefModeChoice .....	1367
32.4.2	cnpdAdminDefenseMode .....	1367
32.4.3	cnpdAutoDefenseMode .....	1368
32.4.4	cnpdLdpInstanceChoice .....	1368
32.4.5	cnpdLdpInstanceSelector .....	1368
32.4.6	cnpdAlternatePriority .....	1368
32.4.7	cnpdXmitCnpvCapable .....	1368
32.4.8	cnpdXmitReady .....	1368
32.4.9	cncpDoesEdge .....	1369
32.4.10	cnpdAcceptsCnTag .....	1369
32.4.11	cnpdRcvdCnpv .....	1369

32.4.12	cnpdRcvdReady .....	1369
32.4.13	cnpdIsAdminDefMode .....	1369
32.4.14	cnpdDefenseMode .....	1370
32.5	CND defense procedures .....	1370
32.5.1	DisableCnpvRemapping() .....	1370
32.5.2	TurnOnCnDefenses() .....	1370
32.5.3	TurnOffCnDefenses() .....	1370
32.6	CND defense state machine .....	1370
32.7	Congestion notification protocol .....	1371
32.8	CP variables .....	1372
32.8.1	cpMacAddress .....	1373
32.8.2	cpId .....	1373
32.8.3	cpQSp .....	1373
32.8.4	cpQLen .....	1373
32.8.5	cpQLenOld .....	1373
32.8.6	cpW .....	1373
32.8.7	cpQOffset .....	1373
32.8.8	cpQDelta .....	1373
32.8.9	cpFb .....	1373
32.8.10	cpEnqued .....	1374
32.8.11	cpSampleBase .....	1374
32.8.12	cpDiscardedFrames .....	1374
32.8.13	cpTransmittedFrames .....	1374
32.8.14	cpTransmittedCnms .....	1374
32.8.15	cpMinHeaderOctets .....	1374
32.9	CP procedures .....	1374
32.9.1	Random .....	1374
32.9.2	NewCpSampleBase() .....	1374
32.9.3	EM_UNITDATA.request (parameters) .....	1375
32.9.4	GenerateCnmPdu() .....	1375
32.10	RP per-Port per-CNPV variables .....	1376
32.10.1	rpppMaxRps .....	1376
32.10.2	rpppCreatedRps .....	1376
32.10.3	rpppRpCentiseconds .....	1377
32.11	RP group variables .....	1377
32.11.1	rpgEnable .....	1377
32.11.2	rpgTimeReset .....	1377
32.11.3	rpgByteReset .....	1377
32.11.4	rpgThreshold .....	1378
32.11.5	rpgMaxRate .....	1378
32.11.6	rpgAiRate .....	1378
32.11.7	rpgHaiRate .....	1378
32.11.8	rpgGd .....	1378
32.11.9	rpgMinDecFac .....	1378
32.11.10	rpgMinRate .....	1378
32.12	RP timer .....	1378
32.12.1	RpWhile .....	1379
32.13	RP variables .....	1379
32.13.1	rpEnabled .....	1379
32.13.2	rpByteCount .....	1379
32.13.3	rpByteStage .....	1379
32.13.4	rpTimeStage .....	1379
32.13.5	rpTargetRate .....	1379
32.13.6	rpCurrentRate .....	1380

32.13.7	rpFreeze .....	1380
32.13.8	rpLimiterRate .....	1380
32.13.9	rpFb .....	1380
32.14	RP procedures .....	1380
32.14.1	ResetCnm .....	1380
32.14.2	TestRpTerminate .....	1381
32.14.3	TransmitDataFrame .....	1381
32.14.4	ReceiveCnm .....	1381
32.14.5	ProcessCnm .....	1382
32.14.6	AdjustRates .....	1382
32.15	RP rate control state machine .....	1382
32.16	Congestion notification and encapsulation interworking function .....	1384
33.	Encoding of congestion notification PDUs .....	1386
33.1	Structure, representation, and encoding .....	1386
33.2	CN-TAG format .....	1386
33.2.1	Flow Identifier .....	1387
33.3	Congestion Notification Message (CNM) .....	1387
33.4	Congestion Notification Message PDU format .....	1388
33.4.1	Version .....	1388
33.4.2	ReservedV .....	1388
33.4.3	Quantized Feedback .....	1389
33.4.4	Congestion Point Identifier .....	1389
33.4.5	cnmQOffset .....	1389
33.4.6	cnmQDelta .....	1389
33.4.7	Encapsulated priority .....	1389
33.4.8	Encapsulated destination MAC address .....	1389
33.4.9	Encapsulated MSDU length .....	1389
33.4.10	Encapsulated MSDU .....	1389
33.4.11	CNM Validation .....	1390
34.	Forwarding and Queuing Enhancements for time-sensitive streams (FQTSS) .....	1391
34.1	Overview .....	1391
34.2	Detection of SRP domains .....	1391
34.3	The bandwidth availability parameters .....	1392
34.3.1	Relationships among bandwidth availability parameters .....	1392
34.3.2	Bandwidth availability parameter management .....	1393
34.4	Deriving actual bandwidth requirements from the size of the MSDU .....	1393
34.5	Mapping priorities to traffic classes for time-sensitive streams .....	1394
34.6	End station behavior .....	1396
34.6.1	Talker behavior .....	1396
34.6.2	Listener behavior .....	1397
35.	Stream Reservation Protocol (SRP) .....	1398
35.1	Multiple Stream Registration Protocol (MSRP) .....	1399
35.1.1	MSRP and Shared Media .....	1400
35.1.2	Behavior of end stations .....	1400
35.1.3	Behavior of Bridges .....	1402
35.1.4	SRP domains and status parameters .....	1402
35.2	Definition of the MSRP application .....	1402
35.2.1	Definition of internal state variables .....	1403
35.2.2	Definition of MRP elements .....	1405

35.2.3	Provision and support of Stream registration service .....	1415
35.2.4	MSRP Attribute Propagation .....	1419
35.2.5	Operational reporting and statistics .....	1424
35.2.6	Encoding .....	1424
35.2.7	Attribute value support requirements .....	1425
36.	Priority-based Flow Control (PFC) .....	1426
36.1	PFC operation .....	1426
36.1.1	Overview .....	1426
36.1.2	PFC primitives .....	1427
36.1.3	Detailed specification of PFC operation .....	1428
36.2	PFC aware system queue functions .....	1429
36.2.1	PFC Initiator .....	1430
36.2.2	PFC Receiver .....	1430
37.	Enhanced Transmission Selection (ETS).....	1432
37.1	Overview.....	1432
37.1.1	Relationship to other transmission selection algorithms .....	1432
37.2	ETS configuration parameters .....	1432
37.3	ETS algorithm.....	1432
37.4	Legacy configuration .....	1433
38.	Data Center Bridging eXchange protocol (DCBX).....	1434
38.1	Overview.....	1434
38.2	Goals .....	1434
38.3	Types of DCBX attributes .....	1434
38.3.1	Informational attributes .....	1434
38.4	DCBX and LLDP.....	1434
38.4.1	Asymmetric attribute passing .....	1435
38.4.2	Symmetric attribute passing .....	1436
39.	Multiple I-SID Registration Protocol (MIRP) .....	1438
39.1	MIRP overview .....	1438
39.1.1	Behavior of I-components .....	1440
39.1.2	Behavior of B-components .....	1440
39.2	Definition of the MIRP application .....	1440
39.2.1	Definition of MRP elements .....	1440
39.2.2	Alternate MIRP model for B-components .....	1443
39.2.3	Use of “new” declaration capability .....	1445
39.2.4	Attribute value support requirements .....	1445
39.2.5	MRP Message filtering .....	1445
40.	Edge Virtual Bridging (EVB) .....	1446
40.1	EVB architecture without S-channels.....	1447
40.2	EVB architecture with S-channels.....	1448
40.3	Asymmetric EVB architecture without S-channels .....	1450
40.4	EVB status parameters .....	1450
40.4.1	EVBMode = Not supported .....	1452
40.4.2	EVBMode = EVB Bridge .....	1452
40.4.3	EVBMode = EVB station .....	1452

41.	VSI Discovery and Configuration Protocol (VDP)	1453
41.1	VSI manager ID TLV definition	1453
41.1.1	TLV type	1453
41.1.2	TLV information string length	1453
41.1.3	VSI Manager ID	1454
41.2	VDP association TLV definitions	1454
41.2.1	TLV type	1454
41.2.2	TLV information string length	1455
41.2.3	Status	1455
41.2.4	VSI Type ID (VTID)	1456
41.2.5	VSI Type Version	1456
41.2.6	VSIIID format	1456
41.2.7	VSIIID	1456
41.2.8	Filter Info format	1457
41.2.9	Filter Info field	1457
41.2.10	VDP TLV type and Status semantics	1459
41.3	Organizationally defined TLV definitions	1460
41.3.1	TLV type	1461
41.3.2	TLV information string length	1461
41.3.3	Organizationally unique identifier (OUI) or Company ID (CID)	1461
41.3.4	Organizationally defined information	1461
41.4	Validation rules for VDP TLVs	1461
41.5	VDP state machines	1461
41.5.1	State machine conventions	1461
41.5.2	Bridge VDP state machine	1462
41.5.3	Station VDP state machine	1463
41.5.4	VDP state machine timers	1464
41.5.5	VDP state machine variables and parameters	1464
41.5.6	Command-Response TLV field references in state machines	1467
41.5.7	VDP state machine procedures	1467
42.	S-Channel Discovery and Configuration Protocol (CDCP)	1469
42.1	CDCP discovery and configuration	1469
42.2	CDCP state machine overview	1469
42.3	CDCP configuration state machine	1470
42.4	CDCP configuration variables	1471
42.4.1	AdminChnCap	1471
42.4.2	AdminRole	1472
42.4.3	AdminSVIDWants	1472
42.4.4	LastLocalSVIDPool	1472
42.4.5	LastRemoteSVIDList	1472
42.4.6	LastSVIDWants	1472
42.4.7	LocalSVIDPool	1472
42.4.8	OperChnCap	1472
42.4.9	OperRole	1472
42.4.10	OperSVIDList	1473
42.4.11	RemoteChnCap	1473
42.4.12	RemoteRole	1473
42.4.13	RemoteSVIDList	1473
42.4.14	schState	1473
42.5	CDCP configuration procedures	1473
42.5.1	SetSVIDRequest (OperRole, AdminSVIDWants, OperSVIDList)	1473
42.5.2	RxSVIDConfig (OperSVIDList, LastRemoteSVIDList)	1474

42.5.3	TxSVIDConfig (OperChnCap, RemoteChnCap, LastLocalSVIDPool, RemoteSVIDList, OperSVIDList) .....	1474
43.	Edge Control Protocol (ECP) .....	1475
43.1	ECP operation .....	1475
43.2	Edge Control Sublayer Service (ECSS) .....	1476
43.3	ECP state machines .....	1476
43.3.1	State machine conventions .....	1476
43.3.2	Overview .....	1476
43.3.3	Edge Control Protocol Data Unit (ECPDU) .....	1477
43.3.4	ECP transmit state machine .....	1478
43.3.5	ECP receive state machine .....	1479
43.3.6	ECP state machine timers .....	1479
43.3.7	ECP state machine variables and parameters .....	1480
43.3.8	ECP state machine procedures .....	1481
44.	Equal Cost Multiple Paths (ECMP).....	1482
44.1	SPBM ECMP.....	1482
44.1.1	ECMP Operation .....	1482
44.1.2	ECMP ECT Algorithm .....	1483
44.1.3	Loop prevention for ECMP .....	1485
44.2	Support for Flow Filtering .....	1485
44.2.1	Flow filtering tag (F-TAG) .....	1486
44.2.2	F-TAG processing .....	1487
44.2.3	Forwarding process extension for flow filtering .....	1488
44.2.4	TTL Loop mitigation .....	1489
44.2.5	CFM for ECMP with flow filtering .....	1489
44.2.6	Operation with selective support for flow filtering .....	1491
	Annex A (normative) PICS proforma—Bridge implementations .....	1492
	Annex B (normative) PICS proforma—End station implementations .....	1553
	Annex C (normative) Designated MSRP Node (DMN) Implementations .....	1567
	Annex D (normative) IEEE 802.1 Organizationally Specific TLVs .....	1584
	Annex E (normative) Notational conventions used in state diagrams .....	1692
	Annex F (informative) Shared and Independent VLAN Learning (SVL and IVL) .....	1694
	Annex G (informative) MAC method-dependent aspects of VLAN support.....	1703
	Annex H (informative) Interoperability considerations.....	1705
	Annex I (informative) Priority and drop precedence.....	1711
	Annex J (informative) CFM protocol design and use.....	1719
	Annex K (informative) TPMR use cases .....	1727
	Annex L (informative) Operation of the credit-based shaper algorithm .....	1732

Annex M (normative) Support for PFC in link layers without MAC Control.....	1749
Annex N (informative) Buffer requirements for PFC.....	1750
Annex O (informative) Preserving the integrity of FCS fields in MAC Bridges .....	1755
Annex P (informative) Frame duplication and misordering .....	1762
Annex Q (informative) Bibliography.....	1765

## Figures

Figure 6-1—Internal organization of the MAC sublayer .....	61
Figure 6-2—Provider Instance Ports (PIPs) .....	79
Figure 6-3—B-Component CBP .....	82
Figure 6-4—Example of operation of Port-and-Protocol-based classification .....	86
Figure 6-5—Service access priority selection .....	88
Figure 6-6—Two back-to-back EISS Multiplex Entities .....	94
Figure 6-7—Two back-to-back Backbone Service Instance Multiplex Entities .....	95
Figure 6-8—Backbone Service Instance Multiplex Entities with example CFM shims .....	95
Figure 6-9—Two back-to-back Up and Down TESI Multiplex Entities .....	98
Figure 6-10—Supporting the ISS with signaled priority .....	99
Figure 6-11—Two back-to-back Up and Down Infrastructure Segment Multiplex Entities .....	100
Figure 7-1—VLAN Bridging overview .....	103
Figure 8-1—A Bridged Network .....	108
Figure 8-2—VLAN Bridge architecture .....	110
Figure 8-3—MAC Bridge architecture .....	111
Figure 8-4—Relaying MAC frames .....	113
Figure 8-5—Observation of network traffic .....	113
Figure 8-6—Operation of Spanning Tree Protocol Entity .....	113
Figure 8-7—Operation of MRP .....	114
Figure 8-8—Management Port transmission and reception .....	114
Figure 8-8—Infrastructure Segment MEP placement in a PNP .....	115
Figure 8-9—Bridge Port Transmit and Receive .....	117
Figure 8-10—TPMR Port Transmit and Receive .....	118
Figure 8-11—Forwarding Process functions .....	119
Figure 8-12—Logical points of attachment of the Higher Layer and Relay Entities .....	152
Figure 8-13—Effect of control information on the forwarding path .....	153
Figure 8-14—Per-Port points of attachment .....	153
Figure 8-15—Single point of attachment—relay permitted .....	154
Figure 8-16—Single point of attachment—relay not permitted .....	154
Figure 8-17—Effect of Port State .....	155
Figure 8-18—Controlled and Uncontrolled Port connectivity .....	155
Figure 8-19—Ingress/egress control information in the forwarding path .....	156
Figure 9-1—VLAN TCI format .....	160
Figure 9-2—I-TAG TCI format .....	161
Figure 10-1—Example—Attribute value propagation from one station .....	164
Figure 10-2—Example—Attribute value propagation from two stations .....	165
Figure 10-3—Example—Registrations as pointers to the sources of declarations .....	165
Figure 10-4—MRP architecture .....	167
Figure 10-5—Format of the major components of an MRPDU .....	190
Figure 10-6—Operation of MMRP for a single VLAN Context .....	196
Figure 10-7—Example Directed Graph .....	197
Figure 10-8—Example of MMRP propagation in a VLAN Context .....	199
Figure 11-1—Operation of MVRP .....	208
Figure 12-1—Relationships among CFM managed objects .....	270
Figure 12-2—Relationship among BEB managed objects .....	287
Figure 12-3—SPB managed objects (MOs) .....	339
Figure 12-4—Relationships among EVB Bridge managed objects .....	355
Figure 12-5—Relationship among EVB station managed objects .....	356
Figure 13-1—Diagrammatic conventions for spanning tree topologies .....	373
Figure 13-2—Physical topology and active topology .....	374
Figure 13-3—Port Roles and Port States .....	374

Figure 13-4—A Backup Port .....	375
Figure 13-5—“Ring Backbone” example .....	375
Figure 13-6—An MST Bridge network .....	377
Figure 13-7—CIST Priority Vectors, Port Roles, and MST Regions .....	378
Figure 13-8—MSTI Active Topology in Region 2 .....	379
Figure 13-9—CIST and MSTI active topologies in Region 1 of the example network .....	392
Figure 13-10—Agreements and Proposals .....	396
Figure 13-11—CIST and MSTI Active Topologies in Region 2 of Figure 13-6 .....	397
Figure 13-12—Enhanced Agreements .....	398
Figure 13-13—Spanning tree protocol state machines—overview and relationships .....	409
Figure 13-14—MSTP overview notation .....	410
Figure 13-15—Port Timers state machine .....	440
Figure 13-16—Port Receive state machine .....	440
Figure 13-17—Port Protocol Migration state machine .....	441
Figure 13-18—Bridge Detection state machine .....	441
Figure 13-19—Port Transmit state machine .....	442
Figure 13-20—Port Information state machine .....	443
Figure 13-21—Port Role Selection state machine .....	444
Figure 13-22—Disabled Port role transitions .....	445
Figure 13-23—Port Role Transitions state machine—MasterPort .....	446
Figure 13-24—Port Role Transitions state machine—RootPort .....	447
Figure 13-25—Port Role Transitions state machine—DesignatedPort .....	448
Figure 13-26—Port Role Transitions state machine—AlternatePort and BackupPort .....	449
Figure 13-27—Port State Transition state machine .....	449
Figure 13-28—Topology Change state machine .....	451
Figure 13-29—L2 Gateway Port Receive state machine .....	452
Figure 14-1—RST, MST, SPT, and STP Configuration BPDU format .....	456
Figure 14-2—STP TCN BPDU format .....	456
Figure 14-3—MSTI Configuration Message parameters and format .....	462
Figure 15-1—Internal organization of the MAC sublayer in a PBN .....	465
Figure 15-2—Port-based service interface to a PBN .....	466
Figure 15-3—Port-based service interface to a PBN .....	467
Figure 15-4—C-tagged service interface to a PBN .....	467
Figure 15-5—C-tagged service interface to a PBN .....	467
Figure 15-6—Customer Edge Ports (CEPs) .....	468
Figure 15-7—S-tagged service interface to a PBN .....	468
Figure 15-8—S-tagged interface to a PBN .....	469
Figure 15-9—RCSIs to a PBN .....	469
Figure 15-10—Remote Customer Access Ports (RCAPs) .....	470
Figure 15-11—C-tagged RCSI to a PBN .....	471
Figure 15-12—Port-based RCSI to a PBN .....	471
Figure 15-13—Provider Network Port (PNP) interface .....	472
Figure 16-1—PBN with interface examples .....	476
Figure 16-2—Examples of remote customer service access via a second PBN .....	478
Figure 16-3—Access service separation and “Hairpin Switching” .....	479
Figure 17-1—C-VLAN component internal LAN managed system .....	538
Figure 17-2—I/B-component internal LAN managed system .....	542
Figure 18-1—One Maintenance Domain: operator’s view .....	1066
Figure 18-2—One service instance: operator’s view .....	1067
Figure 18-3—One service instance: customer’s view .....	1067
Figure 18-4—MEP and MIP Symbols .....	1068
Figure 18-5—MAs: one service instance in a provider network .....	1069
Figure 18-6—MAs: Expansion of Figure 18-5 .....	1070
Figure 18-7—MEPs, MIPs, and MD Levels .....	1071

Figure 19-1—CFM Protocol shims .....	1072
Figure 19-2—MA Endpoint (MEP) .....	1075
Figure 19-3—MIP Half Function (MHF) .....	1081
Figure 19-4—LOM shim .....	1083
Figure 19-5—LOM architecture .....	1083
Figure 20-1—MEP state machines—overview and relationships .....	1096
Figure 20-2—MEP Continuity Check Initiator state machine .....	1103
Figure 20-3—MHF Continuity Check Receiver state machine .....	1104
Figure 20-4—MEP Continuity Check Receiver state machine .....	1108
Figure 20-5—Remote MEP state machine .....	1110
Figure 20-6—Remote MEP Error state machine .....	1111
Figure 20-7—MEP Cross Connect state machine .....	1112
Figure 20-8—MEP Traffic Field Mismatch state machine .....	1114
Figure 20-9—MEP Local Mismatch state machine .....	1114
Figure 20-10—MP Loopback Responder state machine .....	1116
Figure 20-11—MEP Loopback Initiator transmit state machine .....	1119
Figure 20-12—MEP Loopback Initiator receive state machine .....	1120
Figure 20-13—MEP Fault Notification Generator state machine .....	1122
Figure 20-14—MEP Mismatch Fault Notification Generator state machine .....	1124
Figure 20-15—MEP Linktrace Initiator receive state machine .....	1128
Figure 20-16—Linktrace Responder, MEPs, MHFs, and LOMs .....	1130
Figure 20-17—LTM Receiver state machine .....	1136
Figure 20-18—LTR Transmitter state machine .....	1137
Figure 22-1—MEPs and MIPs distinguished by VID (incomplete picture) .....	1167
Figure 22-2—Alternate view of Forwarding process .....	1168
Figure 22-3—Combining per-VLAN MPs into two shims .....	1169
Figure 22-4—More complete picture of MP placement in a Bridge Port .....	1170
Figure 22-5—Service instance spanning two Bridges protected by Up MPs .....	1172
Figure 22-6—Service instance spanning two Bridges protected by Down MPs .....	1172
Figure 22-7—MP placement in a non-VLAN aware Bridge Port .....	1174
Figure 22-8—MP placement relative to other standards .....	1175
Figure 22-9—Creating MEPs and MIPs .....	1178
Figure 22-10—CFM in a Provider Edge Bridge C-tagged service interface .....	1184
Figure 22-11—CFM in a Provider Edge Bridge C-tagged RCSI .....	1186
Figure 22-12—Up MEPs in a Management Port .....	1187
Figure 22-13—CFM in the enterprise environment .....	1188
Figure 22-14—CFM on a Bridge that implements IEEE Std 802.1Q-2005 .....	1189
Figure 23-1—TPMR connecting two Bridge Ports .....	1190
Figure 23-2—TPMR chain connecting Bridge Ports .....	1190
Figure 23-3—MSSs and the MSPE .....	1192
Figure 23-4—Adding connectivity .....	1194
Figure 23-5—Losing connectivity .....	1195
Figure 23-6—TPMR recovery .....	1196
Figure 23-7—Notification from one end of the link to the other .....	1197
Figure 23-8—Immediate MAC status notification at the end of a link .....	1197
Figure 23-9—MSPE state machine overview .....	1198
Figure 23-10—Status Transition state machine (STM) .....	1202
Figure 23-11—Status Notification state machine (SNM) .....	1203
Figure 23-12—MSPDU structure .....	1205
Figure 25-1—Internal organization of the MAC sublayer in a PBBN .....	1209
Figure 25-2—PBB terminology .....	1210
Figure 25-3—Customer service interface types .....	1211
Figure 25-4—Port-based service interface .....	1212
Figure 25-5—Port-based interface equipment .....	1213

Figure 25-6—Encapsulated service frames at ISS .....	1214
Figure 25-7—S-tagged service interface .....	1214
Figure 25-8—S-tagged service interface equipment .....	1215
Figure 25-9—I-tagged service interface .....	1216
Figure 25-10—I-tagged service interface equipment .....	1216
Figure 25-11—S-tagged and Port-based service interface access classifications .....	1219
Figure 25-12—I-tagged service interface access protection classifications .....	1220
Figure 25-13—Internal organization of the MAC sublayer in a PBB-TE Region .....	1222
Figure 25-14—PBB-TE Region .....	1224
Figure 25-15—Transparent service interface .....	1226
Figure 25-16—Transparent service interface equipment .....	1226
Figure 26-1—PBBN example .....	1228
Figure 26-2—CFM shim model .....	1235
Figure 26-3—CFM example applied to a Port-based and S-tagged service interface .....	1236
Figure 26-4—CFM example applied to an I-tagged Service Interface .....	1237
Figure 26-5—CFM example applied to a hierarchal E-NNI, CBP-PIP Demarc .....	1238
Figure 26-6—CFM example applied to a peer E-NNI, CBP-PIP .....	1239
Figure 26-7—Independent ESPs using the same ESP-DAs and ESP-VIDs .....	1243
Figure 26-8—PBB-TE MEP placement in a CBP .....	1244
Figure 26-9—Independent Infrastructure Segments distinguished by SMP-SA .....	1247
Figure 26-10—Infrastructure Segment MEP placement in a PNP .....	1248
Figure 26-11—Protection switching architecture .....	1249
Figure 26-12—PBB-TE point-to-point protection switching .....	1251
Figure 26-13—Mapping data traffic to the protection entity .....	1252
Figure 26-14—Relationships of the Protection switching state machines—overview .....	1253
Figure 26-15—Hold-off state machine .....	1257
Figure 26-16—Clear Manual Switch state machine .....	1257
Figure 26-17—Service Mapping state machine .....	1258
Figure 26-18—Segment terminology and properties .....	1259
Figure 26-19—Infrastructure Segment monitoring .....	1260
Figure 26-20—Working Segment and Protection Segment .....	1260
Figure 26-21—Nested IPGs .....	1261
Figure 26-22—IPS Control entity .....	1263
Figure 26-23—M:1 IPS .....	1265
Figure 26-24—M:1 IPS state machines .....	1266
Figure 26-25—M:1 Hold-off state machine .....	1269
Figure 26-26—Protection Segment Selection state machine .....	1270
Figure 27-1—Configuring VLAN support in an SPT Region (example) .....	1277
Figure 27-2—SPBM group MAC address—general format .....	1288
Figure 27-3—SPBM group MAC addresses—source rooted SPT .....	1289
Figure 27-4—SPBM group MAC addresses—shared tree .....	1289
Figure 27-5—SPBM MEP placement in a CBP .....	1292
Figure 27-6—SPBV campus network example .....	1294
Figure 27-7—SPT Bridge Network using SPBM example .....	1296
Figure 28-1—Agreement Digest field format .....	1301
Figure 28-2—MT-Capability TLV .....	1310
Figure 28-3—SPB MCID sub-TLV .....	1311
Figure 28-4—SPB Digest sub-TLV .....	1311
Figure 28-5—SPB Base VLAN-Identifiers sub-TLV .....	1312
Figure 28-6—SPB Instance sub-TLV .....	1313
Figure 28-7—SPB Instance Opaque ECT-ALGORITHM sub-TLV .....	1315
Figure 28-8—ECMP ECT-ALGORITHM sub-TLV .....	1316
Figure 28-9—SPB Link Metric sub-TLV .....	1316
Figure 28-10—SPB Adjacency Opaque ECT-ALGORITHM sub-TLV .....	1317

Figure 28-11—SPBV MAC Address sub-TLV .....	1318
Figure 28-12—SPBM Service Identifier and Unicast Address sub-TLV .....	1319
Figure 29-1—Forward path test (FPT) .....	1323
Figure 29-2—Return path test (RPT) .....	1324
Figure 29-3—Combination of FPT and RPT .....	1325
Figure 29-4—Detailed functions of RR .....	1326
Figure 29-5—RFM Receiver on an non-MP .....	1329
Figure 29-6—Return Path DR .....	1330
Figure 29-7—RR Filter state machine .....	1335
Figure 29-8—RR Encapsulation state machine .....	1336
Figure 29-9—RR Transmit state machine .....	1336
Figure 29-10—RFM Receiver state machine .....	1338
Figure 29-11—Decapsulator Responder state machine .....	1340
Figure 30-1—Congestion detection in QCN CP .....	1347
Figure 30-2—Sampling (reflection) probability in QCN CP as a function of $ F_b $ .....	1347
Figure 30-3—QCN RP operation .....	1348
Figure 30-4—Byte Counter and Timer interaction with Rate Limiter .....	1350
Figure 30-5—CP–RP peering in VLAN Bridged Network .....	1352
Figure 30-6—CP–RP peering in PBBN .....	1353
Figure 31-1—CPs and congestion aware queues in a Bridge .....	1354
Figure 31-2—Congestion aware queue functions in an end station .....	1356
Figure 31-3—Per-CNPV station function .....	1358
Figure 32-1—CND defense state machine .....	1371
Figure 32-2—RP rate control state machine .....	1383
Figure 32-3—CP–RP peering in any hierarchical Bridged Network .....	1384
Figure 34-1—Queuing model for a Talker station .....	1396
Figure 35-1—Operation of MSRP .....	1399
Figure 35-2—Format of the components of the reservation FirstValue fields .....	1409
Figure 35-3—Format of the components of the Domain FirstValue .....	1414
Figure 36-1—PFC peering .....	1426
Figure 36-2—PFC Receiver state diagram for priority n .....	1428
Figure 36-3—PFC aware system queue functions .....	1430
Figure 36-4—PFC aware system queue functions with Link Aggregation .....	1431
Figure 38-1—DCBX Asymmetric State Machine .....	1436
Figure 38-2—Symmetric State Machine .....	1437
Figure 39-1—Operation of MIRP in an I-component .....	1439
Figure 39-2—Operation of MIRP in a B-component .....	1439
Figure 39-3—Alternate model for MIRP in a B-component .....	1444
Figure 40-1—EVB architecture overview .....	1446
Figure 40-2—EVB architecture without S-channels .....	1448
Figure 40-3—EVB archichtecture with S-channel .....	1448
Figure 40-4—EVB components and internal LANs with S-channels .....	1449
Figure 40-5—EVB architecture without S-channels, with EVB Bridge S-VLAN component .....	1451
Figure 40-6—EVB architecture without S-channels, with EVB station S-VLAN component .....	1451
Figure 41-1—VSI manager ID TLV .....	1453
Figure 41-2—VDP association TLV .....	1454
Figure 41-3—VID Filter Info format .....	1458
Figure 41-4—MAC/VID filter format .....	1458
Figure 41-5—GroupID/VID filter format .....	1459
Figure 41-6—GroupID/MAC/VID filter format .....	1459
Figure 41-7—Organizationally defined TLV .....	1461
Figure 41-8—Bridge VDP state machine .....	1462
Figure 41-9—Station VDP state machine .....	1463
Figure 42-1—CDCP state machine—Station role .....	1470

Figure 42-2—CDCP state machine—Bridge role .....	1471
Figure 43-1—Example ECP exchange .....	1475
Figure 43-2—ECPDU structure .....	1477
Figure 43-3—ECP transmit state machine .....	1478
Figure 43-4—ECP receive state machine .....	1479
Figure 44-1—Flow FilteringTCI format .....	1486
Figure 44-2—SPBM VID MEP and ECMP path MEP placement in a CBP .....	1490
Figure C-1—CSN backbone .....	1567
Figure C-2—Bridge’s CSN model for bandwidth reservation .....	1568
Figure C-3—Talker MSRPDU flow .....	1569
Figure C-4—Listener MSRPDU flow .....	1569
Figure C-5—IEEE DMN Device Attribute IE .....	1571
Figure C-6—DMN Confirmation Transaction .....	1573
Figure C-7—Bandwidth reservation—bridge model for IEEE 802.11 BSS (STA downstream Port) .....	1576
Figure C-8—Bandwidth reservation—bridge model for IEEE 802.11 BSS (STA upstream Port) .....	1576
Figure C-9—Bandwidth reservation—bridge model for IEEE 802.11 BSS (direct link setup) .....	1577
Figure C-10—MSRP/IEEE 802.11 query flows .....	1577
Figure C-11—MSRP/802.11 Talker STA to Listener STA reservation flows .....	1578
Figure C-12—MSRP/802.11 “Bridged” Listener to Talker STA reservation flows .....	1579
Figure C-13—MSRP/802.11 Listener STA to “Bridged” Talker reservation flows .....	1579
Figure D-1—Port VLAN ID TLV format .....	1585
Figure D-2—Port And Protocol VLAN ID TLV format .....	1585
Figure D-3—VLAN Name TLV format .....	1586
Figure D-4—Protocol Identity TLV format .....	1587
Figure D-5—VID Usage Digest TLV format .....	1588
Figure D-6—Management VID TLV format .....	1588
Figure D-7—Link Aggregation TLV format .....	1589
Figure D-8—Congestion Notification TLV format .....	1590
Figure D-9—ETS Configuration TLV format .....	1591
Figure D-10—ETS Recommendation TLV format .....	1593
Figure D-11—Priority-based Flow Control Configuration TLV format .....	1594
Figure D-12—Application Priority TLV format .....	1595
Figure D-13—EVB TLV format .....	1597
Figure D-14—CDCP TLV structure .....	1600
Figure F-1—Connecting independent VLANs—1 .....	1695
Figure F-2—Connecting independent VLANs—2 .....	1696
Figure F-3—Duplicate MAC addresses .....	1696
Figure F-4—Asymmetric VID use: “multi-netted server” .....	1697
Figure F-5—Asymmetric VLAN use: “Rooted-Multipoint” .....	1699
Figure F-6—Rooted-Multipoint with tagged interfaces .....	1700
Figure F-7—SPBV VLAN Shared Learning and VID Translation .....	1701
Figure G-1—Example of IEEE 802.3 MAC frame format .....	1703
Figure H-1—Static filtering inconsistency .....	1707
Figure H-2—Interoperability with MAC Bridges: example 1 .....	1708
Figure H-3—Interoperability with MAC Bridges: example 2 .....	1709
Figure H-4—Interoperability between Port-based and Port-and-Protocol-based classification .....	1710
Figure J-1—Up MPs in a CFM Port .....	1724
Figure K-1—TPMR as UNI demarcation device .....	1727
Figure K-2—TPMRs with aggregated links .....	1728
Figure K-3—Multiple TPMRs .....	1728
Figure K-4—Recovery at the end of a chain .....	1729
Figure K-5—Near simultaneous recoveries .....	1730
Figure K-6—Near simultaneous failure and recovery .....	1730
Figure K-7—Loss with quick recovery .....	1731

Figure L-1—Credit-based shaper operation—no conflicting traffic .....	1734
Figure L-2—Credit-based shaper operation—conflicting traffic .....	1735
Figure L-3—Credit-based shaper operation—burst traffic .....	1736
Figure L-4—Interference and latency .....	1740
Figure L-5—Burst behavior and credit .....	1740
Figure L-6—Fan-in scenario .....	1744
Figure L-7—Permanent delay scenario .....	1745
Figure L-8—Building up buffer occupancy—1 .....	1746
Figure L-9—Building up buffer occupancy—2 .....	1746
Figure L-10—Building up buffer occupancy—3 .....	1747
Figure L-11—Building up buffer occupancy—4 .....	1747
Figure M-1—PFC PDU format .....	1749
Figure N-1—PFC delays .....	1750
Figure N-2—Delay model .....	1751
Figure N-3—Worst-case delay .....	1752
Figure O-1—Converting a CRC to an FCS .....	1757
Figure O-2—Detection Lossless Circuit .....	1757
Figure O-3—Field change adjustment .....	1759
Figure O-4—Field insertion adjustment .....	1760
Figure P-1—Frame duplication scenario .....	1763
Figure P-2—Frame misordering scenario .....	1764

## Tables

Table 6-1—Bridge transit delay .....	68
Table 6-2—Priority Code Point encoding .....	76
Table 6-3—Priority Code Point decoding .....	76
Table 6-4—Priority regeneration .....	77
Table 6-5—Default SRP domain boundary port priority regeneration override values .....	78
Table 6-6—Service Access Priority .....	89
Table 6-7—Encapsulated Addresses EtherType .....	96
Table 8-1—C-VLAN and MAC Bridge component Reserved addresses .....	122
Table 8-2—S-VLAN component Reserved addresses .....	123
Table 8-3—TPMR component Reserved addresses .....	123
Table 8-4—Recommended priority to traffic class mappings .....	126
Table 8-5—Transmission selection algorithm identifiers .....	128
Table 8-6—Ageing time parameter value .....	131
Table 8-7—Combining Static and Dynamic Filtering Entries for an individual MAC address .....	140
Table 8-8—Combining Static Filtering Entry and MAC Address Registration Entry for “All Group Addresses” and “All Unregistered Group Addresses” .....	141
Table 8-9—Forwarding or Filtering for specific group MAC addresses .....	142
Table 8-10—Forwarding or Filtering with Dynamic Reservation Entries .....	143
Table 8-11—Determination of whether a Port is in a VID’s member set .....	144
Table 8-12—Standard LLC address assignment .....	148
Table 8-13—ISIS-SPB reserved addresses .....	150
Table 8-14—ISIS-SPB Recommended Address Usage .....	151
Table 8-15—CCM group destination MAC addresses .....	157
Table 8-16—LTM group destination MAC addresses .....	157
Table 9-1—IEEE 802.1Q EtherType allocations .....	160
Table 9-2—Reserved VID values .....	160
Table 9-3—Reserved I-SID values .....	162
Table 10-1—MRP application addresses .....	170
Table 10-2—MRP EtherType values .....	171
Table 10-3—Applicant state table .....	184
Table 10-4—Registrar state table .....	185
Table 10-6—PeriodicTransmission state table .....	186
Table 10-5—LeaveAll state table .....	186
Table 10-7—MRP timer parameter values .....	187
Table 12-1—Component table entry managed object .....	220
Table 12-2—Port table entry .....	221
Table 12-3—ISS Port Number table entry .....	222
Table 12-4—Bandwidth Availability Parameter Table row elements .....	326
Table 12-5—Transmission Selection Algorithm Table row elements .....	327
Table 12-6—Priority Regeneration Override Table row elements .....	327
Table 12-7—CN component managed object row elements .....	328
Table 12-8—CN component priority managed object row elements .....	329
Table 12-10—Congestion Point managed object row elements .....	330
Table 12-9—CN Port priority managed object row elements .....	330
Table 12-11—Reaction Point port priority managed object row elements .....	331
Table 12-12—Reaction Point group managed object row elements .....	331
Table 12-13—SRP Bridge Base Table row elements .....	332
Table 12-14—SRP Bridge Port Table row elements .....	332
Table 12-15—SRP Latency Parameter Table row elements .....	333
Table 12-16—SRP Stream Table row elements .....	333
Table 12-17—SRP Reservations Table row elements .....	334

Table 12-15—Priority-based Flow Control objects .....	334
Table 12-17—EVB system base table .....	358
Table 12-18—EVB system parameter defaults .....	360
Table 12-20—VSI table entry .....	361
Table 12-19—SBP table entry .....	361
Table 12-21—VSI MAC/VLAN table entry .....	363
Table 12-22—UAP table entry .....	364
Table 12-23—UAP table entry parameters .....	364
Table 12-24—S-channel interface table entry .....	365
Table 12-25—URP table entry .....	366
Table 12-26—ECP table entry .....	367
Table 13-1—Configuration Digest Signature Key .....	383
Table 13-2—Sample Configuration Digest Signature Keys .....	384
Table 13-3—Bridge and Port Priority values .....	402
Table 13-4—Port Path Cost values .....	403
Table 13-5—Timer and related parameter values .....	411
Table 17-1—Structure of the MIB modules .....	482
Table 17-2—IEEE8021-TC-MIB Structure .....	484
Table 17-3—IEEE8021-BRIDGE-MIB structure and relationship to IETF RFC 4188 and this standard .....	485
Table 17-4—IEEE 802.1D objects not in the IEEE8021-BRIDGE-MIB .....	490
Table 17-5—IEEE8021-SPANNING-TREE MIB structure and relationship to IETF RFC 4318 and this standard .....	490
Table 17-6—Clause 12 objects not in the IEEE8021-SPANNING-TREE MIB .....	492
Table 17-7—IEEE8021-QBRIDGE MIB structure and relationship to IETF RFC 4363 and this standard .....	493
Table 17-8—Clause 12 management not in IEEE8021-Q-BRIDGE-MIB .....	498
Table 17-9—IEEE8021-PB-MIB structure and relationship to this standard .....	499
Table 17-10—IEEE8021-MSTP-MIB structure and relationship to this standard .....	501
Table 17-11—IEEE8021-CFM-MIB correspondence between variables, managed objects, and MIB objects .....	503
Table 17-12—IEEE8021-CFM-V2-MIB correspondence between variables, managed objects, and MIB objects .....	507
Table 17-13—IEEE8021-PBB-MIB structure and relationship to this standard .....	509
Table 17-14—IEEE8021-DDCFM-MIB structure and relationship to this standard .....	512
Table 17-15—IEEE8021-PBBTE-MIB Structure and relationship to this standard .....	514
Table 17-16—Example of ieee8021PbbTeTeSiEspTable .....	516
Table 17-17—IEEE8021-TPMR-MIB Structure and relationship to this standard .....	517
Table 17-18—FQTS MIB structure and object cross reference .....	519
Table 17-19—Variables, managed object tables, and MIB objects .....	520
Table 17-20—SRP MIB structure and object cross reference .....	522
Table 17-21—IEEE8021-MVRPX-MIB structure and relationship to this standard .....	524
Table 17-22—IEEE8021-MIRP-MIB structure and relationship to this standard .....	524
Table 17-23—Variables, managed object tables, and MIB objects .....	525
Table 17-24—IEEE8021-TE IPS MIB Structure and relationship to this standard .....	525
Table 17-25—IEEE8021-SPB-MIB structure and relationship to this standard .....	527
Table 17-26—EVB MIB structure and object cross reference .....	531
Table 17-27—IEEE8021-ECMP-MIB structure and relationship to this standard .....	534
Table 17-28—PBB-TE required MIB compliances .....	543
Table 17-30—Sensitive managed objects: variables in dot1agCfmMdTable .....	551
Table 17-29—Sensitive managed objects: tables and notifications .....	551
Table 17-32—Sensitive managed objects (of DDCFM) for read .....	553
Table 17-31—Sensitive managed objects (of DDCFM): tables and notifications .....	553

Table 17-33—Sensitive managed objects (of EVB): tables and notifications .....	560
Table 17-34—Sensitive managed objects (of EVB) for read .....	560
Table 17-35—Provider Bridge service interface parameters .....	574
Table 17-36—PBB service interface parameters .....	577
Table 19-1—Actions taken by MP OpCode Demultiplexers .....	1077
Table 19-2—SAP use for LTMs and LTRs .....	1084
Table 20-1—Fault Alarm defects and priorities .....	1089
Table 20-2—Deriving enableRmepDefect and Port Status TLV in a Bridge .....	1099
Table 21-1—CFM PDU Encapsulation: Length/Type Media .....	1143
Table 21-2—CFM PDU Encapsulation: LLC Media .....	1143
Table 21-3—Common CFM Header format .....	1144
Table 21-4—OpCode Field range assignments .....	1144
Table 21-5—TLV format .....	1145
Table 21-6—Type Field values .....	1146
Table 21-8—Sender ID TLV format .....	1147
Table 21-7—Organization-Specific TLV format .....	1147
Table 21-9—Port Status TLV format .....	1149
Table 21-10—Port Status TLV values .....	1149
Table 21-11—Interface Status TLV format .....	1149
Table 21-13—Data TLV format .....	1150
Table 21-14—End TLV format .....	1150
Table 21-12—Interface Status TLV values .....	1150
Table 21-15—CCM format .....	1151
Table 21-16—CCM Interval field encoding .....	1152
Table 21-17—CCM Maintenance Association Identifier field format: Maintenance Domain present ....	1153
Table 21-18—CCM Maintenance Association Identifier field format: Maintenance Domain not present .....	1153
Table 21-19—Maintenance Domain Name Format .....	1154
Table 21-20—Short MA Name Format .....	1154
Table 21-21—LBM and LBR formats .....	1156
Table 21-22—PBB-TE MIP TLV format .....	1157
Table 21-23—LTM format .....	1158
Table 21-24—LTM Flags field .....	1158
Table 21-26—LTR format .....	1160
Table 21-27—LTR Flags field .....	1160
Table 21-25—LTM Egress Identifier TLV format .....	1160
Table 21-28—Relay Action field values .....	1161
Table 21-29—LTR Egress Identifier TLV format .....	1162
Table 21-30—Reply Ingress TLV format .....	1162
Table 21-31—Ingress Action field values .....	1163
Table 21-33—Egress Action field values .....	1164
Table 21-32—Reply Egress TLV format .....	1164
Table 22-1—MEP creation .....	1178
Table 22-2—MIP creation .....	1179
Table 22-3—Bandwidth required for CCMs for 1 MA .....	1182
Table 22-4—Bandwidth required for CCMs for 1000 MAs .....	1183
Table 23-1—Time sequence diagram symbols .....	1193
Table 23-2—MSP performance parameters .....	1199
Table 23-3—MSP EtherType assignment .....	1205
Table 23-4—MSP Packet Types .....	1206
Table 24-1—Transmission and reception delays .....	1208
Table 26-1—Backbone Service Instance Group address OUI .....	1231
Table 26-8—Protection Requests Hierarchy .....	1254
Table 27-1—Allocation of VIDs to FIDs and FIDs to MSTIDs in an SPT Region (example) .....	1277

Table 28-1—Bridge Priority Masking .....	1306
Table 29-1—RFM format .....	1341
Table 29-2—SFM format .....	1342
Table 32-1—LLDP instance selection managed object overrides .....	1364
Table 32-2—CND defense mode selection managed object overrides .....	1364
Table 32-3—Determining cnpdIsAdminDefMode and cnpdDefenseMode .....	1370
Table 32-4—Correspondence of QCN and CCF message fields .....	1372
Table 32-5—NewCpSampleBase() return value as a function of cpFb .....	1375
Table 33-3—CNM Encapsulation: Length/Type Media .....	1387
Table 33-1—CN-TAG Encapsulation: Length/Type Media .....	1387
Table 33-2—CN-TAG Encapsulation: LLC Media .....	1387
Table 33-5—Congestion Notification Message PDU .....	1388
Table 33-4—CNM Encapsulation: LLC Media .....	1388
Table 34-1—Recommended priority to traffic class mappings for SR classes A and B .....	1395
Table 34-2—Recommended priority to traffic class mappings for SR class B only .....	1395
Table 35-1—AttributeType Values .....	1405
Table 35-2—AttributeLength Values .....	1406
Table 35-4—MSRP FirstValue NumberOfValues example .....	1407
Table 35-3—FourPackedEvent Values .....	1407
Table 35-5—TSPEC components examples .....	1411
Table 35-6—Reservation Failure Codes .....	1413
Table 35-7—SR class ID .....	1414
Table 35-8—Summary of Talker primitives .....	1416
Table 35-9—Summary of Listener primitives .....	1416
Table 35-11—Incoming Listener attribute propagation per port .....	1421
Table 35-10—Talker attribute propagation per port .....	1421
Table 35-12—Updating Dynamic Reservation Entries .....	1422
Table 35-14—Listener Declaration Type Summation .....	1423
Table 35-13—Updating operIdleSlope(N) .....	1423
Table 41-1—VDP TLV types .....	1454
Table 41-2—Flag values in VDP requests .....	1455
Table 41-3—Error types in VDP responses .....	1455
Table 41-5—VSIID format values .....	1456
Table 41-4—Flag values in VDP responses .....	1456
Table 41-6—Filter Info format values .....	1457
Table 43-1—ECP subtypes .....	1477
Table 44-1—ECMP ECT-ALGORITHM values .....	1485
Table 44-2—F-TAG EtherType .....	1486
Table C-1—SRP to MoCA PQoS Transaction mapping .....	1574
Table C-2—SRP TSPEC to MoCA TSPEC mapping .....	1575
Table C-3—SRP StreamID to MoCA PQoS Flow transaction mapping .....	1575
Table C-4—SRP to MLME QoS Services mapping .....	1581
Table C-5—EDCA-AC for AV Streams .....	1582
Table C-6—HCCA for AV Streams .....	1583
Table D-1—IEEE 802.1 Organizationally Specific TLVs specified in this standard .....	1584
Table D-2—Port and protocol capability/status .....	1586
Table D-3—Link Aggregation capability/status .....	1589
Table D-4—Priority assignment table .....	1591
Table D-5—Traffic class bandwidth assignment table .....	1592
Table D-6—TSA Assignment Table .....	1592
Table D-7—PFC Enable bit vector .....	1595
Table D-8—Application Priority Table .....	1596
Table D-9—Sel field values .....	1596
Table D-10—RRSAT flag values and meanings .....	1598

Table D-11—EVB Mode values .....	1599
Table D-12—IEEE 802.1 extension MIB object group conformance requirements .....	1607
Table D-13—IEEE 802.1/LLDP extension MIB object cross reference .....	1608
Table E-1—State machine symbols .....	1693
Table I-1—Traffic type to traffic class mapping .....	1712
Table I-2—Traffic type acronyms .....	1714
Table I-3—Defining traffic types .....	1715
Table I-5—Defining traffic types—Credit-based shaper support of SR classes A and B .....	1716
Table I-4—Defining traffic types—Credit-based shaper support of SR class B only .....	1716
Table I-6—Priority Code Point encoding .....	1718
Table I-7—Priority Code Point decoding .....	1718
Table J-1—Provider MD Level allocation .....	1720
Table J-2—IEEE / ITU-T terminology differences .....	1720
Table N-1—IEEE 802.3 Interface Delays .....	1753



# IEEE Standard for Local and metropolitan area networks—

## Bridges and Bridged Networks

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### 1. Overview

IEEE 802<sup>®</sup> Local Area Networks (LANs, 3.93)<sup>1</sup> of all types can be connected together with Media Access Control (MAC) Bridges (3.130) or Virtual Local Area Network (VLAN) Bridges (3.259), collectively known as Bridges (3.22). This standard defines the operation of Bridges and Bridged Networks. VLANs facilitate the administration of logical groups of stations. Stations in the same VLAN communicate as if they were on the same LAN, while traffic between VLANs is restricted. Management of VLAN Bridges and stations allows stations to be added to, removed from, or moved between VLANs.

This standard further extends the specification of VLAN Bridges to enable a service provider organization to use a common infrastructure of Bridges and LANs to offer the equivalent of separate LANs, Bridged, or Virtual Bridged Networks to independent customer organizations.

This standard specifies protocols and protocol entities within the architecture of Bridges that provide capabilities for detecting, verifying, and isolating connectivity failures in Bridged Networks. These capabilities can be used in networks operated by multiple independent organizations, each with restricted management access to each other’s equipment.

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