

ISO/IEC 11989:2010-03 (E)

Information technology – iSCSI management API

CONTENTS

FOREWORD.....	10
1 Scope.....	12
2 Normative references	12
3 Document conventions	12
4 Background technical information	14
4.1 Terms, definitions and abbreviations	14
4.2 Concepts.....	17
4.2.1 Library and plugins	17
4.2.2 Object ID	18
4.2.3 Object ID list.....	19
4.2.4 The Shared Node versus Non-shared Nodes	19
4.2.5 Logical HBA	20
4.2.6 Target OIDs and Logical Unit OIDs	20
4.2.7 Software Initiators versus Hardware Initiators	21
4.2.8 iSCSI session and connection parameters	22
4.2.9 Class relationship diagram	23
5 Constants and types.....	24
5.1 IMA_WCHAR.....	24
5.2 IMA_BYTE	24
5.3 IMA_BOOL	24
5.4 IMA_XBOOL.....	24
5.5 IMA_UINT	24
5.6 IMA_UINT16.....	24
5.7 IMA_UINT32.....	24
5.8 IMA_UINT64.....	24
5.9 IMA_DATETIME	24
5.10 IMA_OBJECT_VISIBILITY_FN	24
5.11 IMA_OBJECT_PROPERTY_FN.....	25
5.12 IMA_OBJECT_TYPE	25
5.12.1 Format.....	25
5.12.2 Fields	26
5.13 IMA_STATUS	27
5.13.1 Macros	27
5.13.2 Non-error statuses.....	27
5.13.3 Error statuses.....	28
5.14 IMA_OID	31
5.14.1 Format.....	31
5.14.2 Fields	31
5.14.3 Remarks	31
5.15 IMA_OID_LIST	32
5.15.1 Format.....	32
5.15.2 Fields	32
5.15.3 Remarks.....	32
5.16 IMA_NODE_NAME.....	32
5.16.1 Format.....	32
5.16.2 Remarks.....	32

5.17	IMA_NODE_ALIAS	32
	5.17.1 Format.....	32
	5.17.2 Remarks.....	32
5.18	IMA_IP_ADDRESS	33
	5.18.1 Format.....	33
	5.18.2 Fields	33
5.19	IMA_HOST_NAME	33
	5.19.1 Format.....	33
	5.19.2 Remarks.....	33
5.20	IMA_HOST_ID.....	33
	5.20.1 Format.....	33
	5.20.2 Fields	34
	5.20.3 Remarks.....	34
5.21	IMA_TARGET_ADDRESS	34
	5.21.1 Format.....	34
	5.21.2 Fields	34
	5.21.3 Remarks.....	34
5.22	IMA_ADDRESS_KEY	34
	5.22.1 Format.....	34
	5.22.2 Fields	35
	5.22.3 Remarks.....	35
5.23	IMA_ADDRESS_KEYS	35
	5.23.1 Format.....	35
	5.23.2 Fields	35
	5.23.3 Remarks.....	35
5.24	IMA_STATIC_DISCOVERY_TARGET	36
	5.24.1 Format.....	36
	5.24.2 Fields	36
	5.24.3 Remarks.....	36
5.25	IMA_DISCOVERY_ADDRESS_PROPERTIES	36
	5.25.1 Format.....	36
	5.25.2 Fields	36
	5.25.3 Remarks.....	37
5.26	IMA_STATIC_DISCOVERY_TARGET_PROPERTIES	37
	5.26.1 Format.....	37
	5.26.2 Fields	37
	5.26.3 Remarks.....	37
5.27	IMA_IP_PROPERTIES	37
	5.27.1 Format.....	37
	5.27.2 Fields	38
	5.27.3 Remarks.....	39
5.28	IMA_LIBRARY_PROPERTIES	39
	5.28.1 Format.....	39
	5.28.2 Fields	39
	5.28.3 Remarks.....	40
5.29	IMA_PLUGIN_PROPERTIES	40
	5.29.1 Format.....	40
	5.29.2 Fields	40
	5.29.3 Remarks.....	41

5.30	IMA_NODE_PROPERTIES.....	41
5.30.1	Format.....	41
5.30.2	Fields	41
5.30.3	Remarks.....	42
5.31	IMA_LHBA_PROPERTIES.....	42
5.31.1	Format.....	42
5.31.2	Fields	43
5.31.3	Remarks.....	43
5.32	Upper Level Protocol (ULP) flags	43
5.33	IMA_PHBA_PROPERTIES	44
5.33.1	Format.....	44
5.33.2	Fields	44
5.33.3	Remarks.....	46
5.34	IMA_DISCOVERY_PROPERTIES	47
5.34.1	Format.....	47
5.34.2	Fields	47
5.34.3	Remarks.....	48
5.35	IMA_PHBA_DOWNLOAD_IMAGE_TYPE.....	48
5.35.1	Format.....	48
5.35.2	Fields	48
5.35.3	Remarks.....	49
5.36	IMA_PHBA_DOWNLOAD_IMAGE_PROPERTIES.....	49
5.36.1	Format.....	49
5.36.2	Fields	49
5.36.3	Remarks.....	49
5.37	IMA_ISNS_DISCOVERY_METHOD.....	49
5.37.1	Format.....	49
5.37.2	Fields	50
5.37.3	Remarks.....	50
5.38	IMA_PHBA_DOWNLOAD_PROPERTIES	50
5.38.1	Format.....	50
5.38.2	Fields	50
5.38.3	Remarks.....	51
5.39	IMA_IPSEC_PROPERTIES	51
5.39.1	Format.....	51
5.39.2	Fields	51
5.39.3	Remarks.....	51
5.40	IMA_MIN_MAX_VALUE.....	51
5.40.1	Format.....	51
5.40.2	Fields	52
5.40.3	Remarks.....	52
5.41	IMA_BOOL_VALUE.....	53
5.41.1	Format.....	53
5.41.2	Fields	53
5.42	IMA_MAC_ADDRESS.....	53
5.42.1	Format.....	53
5.42.2	Remarks.....	53
5.43	IMA_LNP_PROPERTIES.....	53
5.43.1	Format.....	53

5.43.2	Fields	54
5.43.3	Remarks.....	54
5.44	IMA_PNP_PROPERTIES.....	54
5.44.1	Format.....	54
5.44.2	Fields	54
5.44.3	Remarks.....	55
5.45	IMA_PNP_STATISTICS.....	55
5.45.1	Format.....	55
5.45.2	Fields	55
5.45.3	Remarks.....	56
5.46	IMA_NETWORK_PORTAL_PROPERTIES.....	56
5.46.1	Format.....	56
5.46.2	Fields	56
5.46.3	Remarks.....	56
5.47	IMA_PHBA_STATUS.....	56
5.47.1	Format.....	56
5.47.2	Values	56
5.47.3	Remarks.....	56
5.48	IMA_NETWORK_PORT_STATUS	57
5.48.1	Format.....	57
5.48.2	Fields	57
5.48.3	Remarks.....	58
5.49	IMA_TARGET_DISCOVERY_METHOD	58
5.49.1	Format.....	58
5.49.2	Fields	58
5.50	IMA_TARGET_PROPERTIES.....	58
5.50.1	Format.....	58
5.50.2	Fields	59
5.50.3	Remarks.....	59
5.51	IMA_TARGET_ERROR_STATISTICS.....	60
5.51.1	Format.....	60
5.51.2	Fields	60
5.51.3	Remarks.....	61
5.52	IMA_LU_PROPERTIES	62
5.52.1	Format.....	62
5.52.2	Fields	62
5.52.3	Remarks.....	63
5.53	IMA_DEVICE_STATISTICS	63
5.53.1	Format.....	63
5.53.2	Fields	64
5.53.3	Remarks.....	64
5.54	IMA_STATISTICS_PROPERTIES.....	64
5.54.1	Format.....	64
5.54.2	Fields	64
5.54.3	Remarks.....	65
5.55	IMA_AUTHMETHOD	65
5.55.1	Format.....	65
5.55.2	Fields	65
5.56	IMA_CHAP_INITIATOR_AUTHPARMS.....	66

5.56.1	Format.....	66
5.56.2	Fields	66
5.56.3	Remarks.....	67
5.57	IMA_SRP_INITIATOR_AUTHPARMS	67
5.57.1	Format.....	67
5.57.2	Fields	67
5.57.3	Remarks.....	68
5.58	IMA_KRB5_INITIATOR_AUTHPARMS	68
5.58.1	Format.....	68
5.58.2	Fields	68
5.58.3	Remarks.....	68
5.59	IMA_SPKM_INITIATOR_AUTHPARMS	68
5.59.1	Format.....	68
5.59.2	Fields	69
5.59.3	Remarks.....	69
5.60	IMA_INITIATOR_AUTHPARMS	69
5.60.1	Format.....	69
5.60.2	Fields	70
5.60.3	Remarks.....	70
6	APIs	70
6.1	APIs by Category	70
6.1.1	Library and Plugin APIs	70
6.1.2	Node APIs	71
6.1.3	Logical HBA APIs	71
6.1.4	Physical HBA APIs	72
6.1.5	Network Portal APIs	73
6.1.6	Logical Network Port (LNP) APIs	73
6.1.7	Physical Network Port (PNP) APIs.....	73
6.1.8	Target APIs	73
6.1.9	Logical Unit (LU) APIs	74
6.1.10	Miscellaneous APIs	75
6.2	APIs by Name	76
6.2.1	IMA_AddDiscoveryAddress.....	78
6.2.2	IMA_AddStaticDiscoveryTarget	79
6.2.3	IMA_DeregisterForObjectPropertyChanges	81
6.2.4	IMA_DeregisterForObjectVisibilityChanges.....	81
6.2.5	IMA_ExposeLu	82
6.2.6	IMA_FreeMemory	83
6.2.7	IMA_GenerateNodeName	84
6.2.8	IMA_GetAddressKeys.....	85
6.2.9	IMA_GetAssociatedPluginOid	86
6.2.10	IMA_GetDataPduInOrderProperties	87
6.2.11	IMA_GetDataSequenceInOrderProperties.....	88
6.2.12	IMA_GetDefaultTime2RetainProperties	89
6.2.13	IMA_GetDefaultTime2WaitProperties.....	90
6.2.14	IMA_GetDeviceStatistics	91
6.2.15	IMA_GetDiscoveryAddressOidList	92
6.2.16	IMA_GetDiscoveryAddressProperties	93
6.2.17	IMA_GetDiscoveryProperties	94

6.2.18	IMA_GetErrorRecoveryLevelProperties	95
6.2.19	IMA_GetFirstBurstLengthProperties.....	96
6.2.20	IMA_GetImmediateDataProperties.....	97
6.2.21	IMA_GetInitialR2TProperties	98
6.2.22	IMA_GetInitiatorAuthParms	99
6.2.23	IMA_GetInUseInitiatorAuthMethods	100
6.2.24	IMA_GetIppProperties	101
6.2.25	IMA_GetIppsecProperties.....	102
6.2.26	IMA_GetLhbaOidList	103
6.2.27	IMA_GetLhbaProperties	104
6.2.28	IMA_GetLibraryProperties	105
6.2.29	IMA_GetLnpOidList	105
6.2.30	IMA_GetLnpProperties	106
6.2.31	IMA_GetLuOid.....	107
6.2.32	IMA_GetLuOidList	108
6.2.33	IMA_GetLuProperties	109
6.2.34	IMA_GetMaxBurstLengthProperties	110
6.2.35	IMA_GetMaxConnectionsProperties	111
6.2.36	IMA_GetMaxOutstandingR2TProperties	112
6.2.37	IMA_GetMaxRecvDataSegmentLengthProperties	113
6.2.38	IMA_GetNetworkPortalOidList	114
6.2.39	IMA_GetNetworkPortalProperties	115
6.2.40	IMA_GetNetworkPortStatus	115
6.2.41	IMA_GetNodeProperties	116
6.2.42	IMA_GetNonSharedNodeOidList.....	117
6.2.43	IMA_GetObjectType	118
6.2.44	IMA_GetPhbaDownloadProperties.....	119
6.2.45	IMA_GetPhbaOidList	120
6.2.46	IMA_GetPhbaProperties	121
6.2.47	IMA_GetPhbaStatus	122
6.2.48	IMA_GetPluginOidList	122
6.2.49	IMA_GetPluginProperties	123
6.2.50	IMA_GetPnpOidList.....	124
6.2.51	IMA_GetPnpProperties	125
6.2.52	IMA_GetPnpStatistics.....	126
6.2.53	IMA_GetSharedNodeOid	127
6.2.54	IMA_GetStaticDiscoveryTargetOidList.....	128
6.2.55	IMA_GetStaticDiscoveryTargetProperties	129
6.2.56	IMA_GetStatisticsProperties	130
6.2.57	IMA_GetSupportedAuthMethods.....	131
6.2.58	IMA_GetTargetErrorStatistics	132
6.2.59	IMA_GetTargetOidList.....	133
6.2.60	IMA_GetTargetProperties	135
6.2.61	IMA_IsPhbaDownloadFile.....	136
6.2.62	IMA_LuInquiry	137
6.2.63	IMA_LuReadCapacity	139
6.2.64	IMA_LuReportLuns	141
6.2.65	IMA_PhbaDownload	143
6.2.66	IMA_PluginIOctl.....	144

6.2.67	IMA_RegisterForObjectPropertyChanges	146
6.2.68	IMA_RegisterForObjectVisibilityChanges	147
6.2.69	IMA_RemoveDiscoveryAddress	148
6.2.70	IMA_RemoveStaleData	149
6.2.71	IMA_RemoveStaticDiscoveryTarget	150
6.2.72	IMA_SetDataPdInOrder	151
6.2.73	IMA_SetDataSequenceInOrder	152
6.2.74	IMA_SetDefaultGateway	153
6.2.75	IMA_SetDefaultTime2Retain	154
6.2.76	IMA_SetDefaultTime2Wait	155
6.2.77	IMA_SetDnsServerAddress	156
6.2.78	IMA_SetErrorRecoveryLevel	157
6.2.79	IMA_SetFirstBurstLength	159
6.2.80	IMA_SetImmediateData	160
6.2.81	IMA_SetInitialR2T	161
6.2.82	IMA_SetInitiatorAuthMethods	162
6.2.83	IMA_SetInitiatorAuthParms	163
6.2.84	IMA_SetIpConfigMethod	164
6.2.85	IMA_SetIsnsDiscovery	166
6.2.86	IMA_SetMaxBurstLength	167
6.2.87	IMA_SetMaxConnections	169
6.2.88	IMA_SetMaxRecvDataSegmentLength	170
6.2.89	IMA_SetMaxOutstandingR2T	171
6.2.90	IMA_SetNetworkPortallpAddress	172
6.2.91	IMA_SetNodeAlias	173
6.2.92	IMA_SetNodeName	174
6.2.93	IMA_SetSendTargetsDiscovery	176
6.2.94	IMA_SetSlpDiscovery	177
6.2.95	IMA_SetStaticDiscovery	178
6.2.96	IMA_SetStatisticsCollection	179
6.2.97	IMA_SetSubnetMask	181
6.2.98	IMA_UnexposeLu	182
7	Implementation compliance	183
8	Notes	183
8.1	Client Usage Notes	183
8.1.1	Persisted Object IDs	183
8.1.2	Reserved Fields	183
8.1.3	Event Notification Within a Single Client	183
8.1.4	Event Notification and Multi-Threading	184
8.1.5	IPsec Security	184
8.1.6	Transmission of Authorization Parameters	184
8.1.7	Target OIDs and iSCSI Targets	184
8.1.8	Configuration Changes and the IMA_STATUS_REBOOT_NECESSARY status	184
8.2	Library Implementation Notes	184
8.2.1	Object IDs	184
8.2.2	Multi-threading Support	184
8.2.3	Event Notification and Multi-Threading	184
8.2.4	Structure Packing	185

8.2.5	Calling Conventions.....	185
8.3	Plugin Implementation Notes.....	185
8.3.1	Object IDs.....	185
8.3.2	Reserved Fields.....	185
8.3.3	Multi-threading Support.....	185
8.3.4	Event Notification to Different Clients.....	185
8.3.5	Event Notification and Multi-Threading.....	185
8.3.6	IPsec Security.....	185
8.3.7	Persistence of Authorization Parameters.....	186
8.3.8	Executing SCSI Commands and Operating System Compatibility.....	186
8.3.9	Executing SCSI Commands and Session Management.....	186
8.3.10	Plugin IOCTLs.....	186
8.3.11	Target OIDs and Logical Unit OIDs.....	186
Annex A (informative)	Device Names.....	187
Annex B (informative)	Coding Examples.....	188
Bibliography	198