



1

2

3

4

Document Number: DSP1014

Date: 2006-04-19

Version: 1.0.0

5 **Ethernet Port Profile**

6 **Document Type: Specification**

7 **Document Status: Preliminary Standard**

8 **Document Language: E**

9

10 Copyright Notice

11 Copyright © 2006 Distributed Management Task Force, Inc. (DMTF). All rights reserved.

12 DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems
13 management and interoperability. Members and non-members may reproduce DMTF specifications and
14 documents for uses consistent with this purpose, provided that correct attribution is given. As DMTF
15 specifications may be revised from time to time, the particular version and release date should always be
16 noted.

17 Implementation of certain elements of this standard or proposed standard may be subject to third party
18 patent rights, including provisional patent rights (herein "patent rights"). DMTF makes no representations
19 to users of the standard as to the existence of such rights, and is not responsible to recognize, disclose,
20 or identify any or all such third party patent right, owners or claimants, nor for any incomplete or
21 inaccurate identification or disclosure of such rights, owners or claimants. DMTF shall have no liability to
22 any party, in any manner or circumstance, under any legal theory whatsoever, for failure to recognize,
23 disclose, or identify any such third party patent rights, or for such party's reliance on the standard or
24 incorporation thereof in its product, protocols or testing procedures. DMTF shall have no liability to any
25 party implementing such standard, whether such implementation is foreseeable or not, nor to any patent
26 owner or claimant, and shall have no liability or responsibility for costs or losses incurred if a standard is
27 withdrawn or modified after publication, and shall be indemnified and held harmless by any party
28 implementing the standard from any and all claims of infringement by a patent owner for such
29 implementations.

30 For information about patents held by third-parties which have notified the DMTF that, in their opinion,
31 such patent may relate to or impact implementations of DMTF standards, visit
32 <http://www.dmtf.org/about/policies/disclosures.php>.

33

CONTENTS

34	Foreword	4
35	Introduction	5
36	1 Scope	7
37	2 Normative References.....	7
38	2.1 Approved References	7
39	2.2 References Under Development	7
40	2.3 Other References.....	7
41	3 Terms and Definitions	7
42	4 Symbols and Abbreviated Terms	8
43	5 Synopsis	9
44	6 Description	9
45	7 Implementation Requirements	10
46	7.1 CIM_EthernetPort.PermanentAddress	10
47	8 Methods.....	10
48	8.1 Profile Conventions for Operations.....	10
49	8.2 CIM_EthernetPort	11
50	9 Use Cases.....	11
51	9.1 Object Diagrams	11
52	9.2 Query MAC Address for an Interface.....	13
53	9.3 Determine Physical Connector for an Ethernet Address	13
54	10 CIM Elements.....	14
55	10.1 CIM_EthernetPort	14
56	10.2 CIM_RegisteredProfile.....	14
57	ANNEX A (informative) Change Log.....	15
58	ANNEX B (informative) Acknowledgments	16

59

60 Figures

61	Figure 1 – Ethernet Port Profile: Class Diagram.....	10
62	Figure 2 – Registered Profile	12
63	Figure 3 – Single Interface.....	13

64

65 Tables

66	Table 1 – Referenced Profiles	9
67	Table 2 – CIM Elements: Ethernet Port Profile.....	14
68	Table 3 – Class: CIM_EthernetPort	14
69	Table 4 – Class: CIM_RegisteredProfile.....	14

70

71

Foreword

72 The Ethernet Port Profile (DSP1014) was prepared by the Server Management Working Group.

73 DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems
74 management and interoperability.

75

Introduction

76 The information in this specification should be sufficient for a provider or consumer of this data to identify
77 unambiguously the classes, properties, methods, and values that shall be instantiated and manipulated to
78 represent and manage an Ethernet port and its associated configuration information. The target audience
79 for this specification is implementers who are writing CIM-based providers or consumers of management
80 interfaces that represent the component described in this document.

81

Ethernet Port Profile

82 1 Scope

83 The Ethernet Port Profile extends the management capability of referencing profiles by adding the
84 capability to represent an Ethernet port, its associated controller, and Ethernet interfaces. Associations
85 with the port's physical aspects and profile-implementation version information are modeled in this profile.

86 2 Normative References

87 The following referenced documents are indispensable for the application of this document. For dated
88 references, only the edition cited applies. For undated references, the latest edition of the referenced
89 document (including any amendments) applies.

90 2.1 Approved References

91 DMTF DSP0200, *CIM Operations over HTTP 1.2.0*

92 DMTF DSP0004, *CIM Infrastructure Specification 2.3.0*

93 DMTF DSP1000, *Management Profile Specification Template*

94 DMTF DSP1001, *Management Profile Specification Usage Guide*

95 2.2 References under Development

96 DMTF DSP1033, *Profile Registration Profile*

97 DMTF DSP1035, *Host LAN Network Port Profile*

98 2.3 Other References

99 ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards*,
100 <http://isotc.iso.org/livelink/livelink.exe?func=ll&objId=4230456&objAction=browse&sort=subtype>

101 Unified Modeling Language (UML) from the Open Management Group (OMG), <http://www.uml.org/>

102 3 Terms and Definitions

103 For the purposes of this document, the following terms and definitions apply.

104 3.1

105 **can**

106 used for statements of possibility and capability, whether material, physical, or causal

107 3.2

108 **cannot**

109 used for statements of possibility and capability, whether material, physical, or causal

- 110 **3.3**
111 **conditional**
112 indicates requirements to be followed strictly in order to conform to the document when the specified
113 conditions are met
- 114 **3.4**
115 **mandatory**
116 indicates requirements to be followed strictly in order to conform to the document and from which no
117 deviation is permitted
- 118 **3.5**
119 **may**
120 indicates a course of action permissible within the limits of the document
- 121 **3.6**
122 **need not**
123 indicates a course of action permissible within the limits of the document
- 124 **3.7**
125 **optional**
126 indicates a course of action permissible within the limits of the document
- 127 **3.8**
128 **referencing profile**
129 indicates a profile that owns the definition of this class and can include a reference to this profile in its
130 "Referenced Profiles" table
- 131 **3.9**
132 **shall**
133 indicates requirements to be followed strictly in order to conform to the document and from which no
134 deviation is permitted
- 135 **3.10**
136 **shall not**
137 indicates requirements to be followed strictly in order to conform to the document and from which no
138 deviation is permitted
- 139 **3.11**
140 **should**
141 indicates that among several possibilities, one is recommended as particularly suitable, without
142 mentioning or excluding others, or that a certain course of action is preferred but not necessarily required
- 143 **3.12**
144 **should not**
145 indicates that a certain possibility or course of action is deprecated but not prohibited

146 **4 Symbols and Abbreviated Terms**

147 The following symbols and abbreviations are used in this document.

- 148 **4.1**
149 **CIM**
150 Common Information Model

151 **4.2**
 152 **LAN**
 153 Local Area Network

154 **5 Synopsis**

155 **Profile Name:** Ethernet Port Profile
 156 **Version:** 1.0.0
 157 **Organization:** DMTF
 158 **CIM Schema Version:** 2.11
 159 **Central Class:** CIM_EthernetPort
 160 **Scoping Class:** CIM_ComputerSystem
 161 **Specializes:** DMTF Host LAN Network Port Profile 1.0

162 The Ethernet Port Profile extends the management capability of referencing profiles by adding the
 163 capability to represent an Ethernet interface in a managed system.

164 CIM_EthernetPort shall be the Central Class of this profile. The instance of CIM_EthernetPort shall be the
 165 Central Instance of this profile. CIM_ComputerSystem shall be the Scoping Class of this profile. The
 166 instance of CIM_ComputerSystem with which the Central Instance is associated through an instance of
 167 CIM_SystemDevice shall be the Scoping Instance of this profile.

168 Table 1 identifies profiles on which this profile has a dependency.

169 **Table 1 – Referenced Profiles**

Profile Name	Organization	Version	Description
Profile Registration Profile	DMTF	1.0	Mandatory
Host LAN Network Port Profile	DMTF	1.0	Specializes

170 **6 Description**

171 The Ethernet Port Profile specializes DMTF Host LAN Network Port Profile 1.0. The Ethernet Port Profile
 172 constrains the generalized model of a network port to usage for modeling an Ethernet port. This profile is
 173 limited to defining CIM elements and constraints beyond those defined in the specialized profile. To
 174 implement this profile, it is necessary to understand and implement the Host LAN Network Port Profile.

175 The following functionality is mandatory within the scope of this profile:

- 176 • a specification of the Ethernet port and related hardware
- 177 • network interfaces active over the network port

178 The following functionality is optional within the scope of this profile:

- 179 • modeling of the controller and its relationship with the Ethernet port

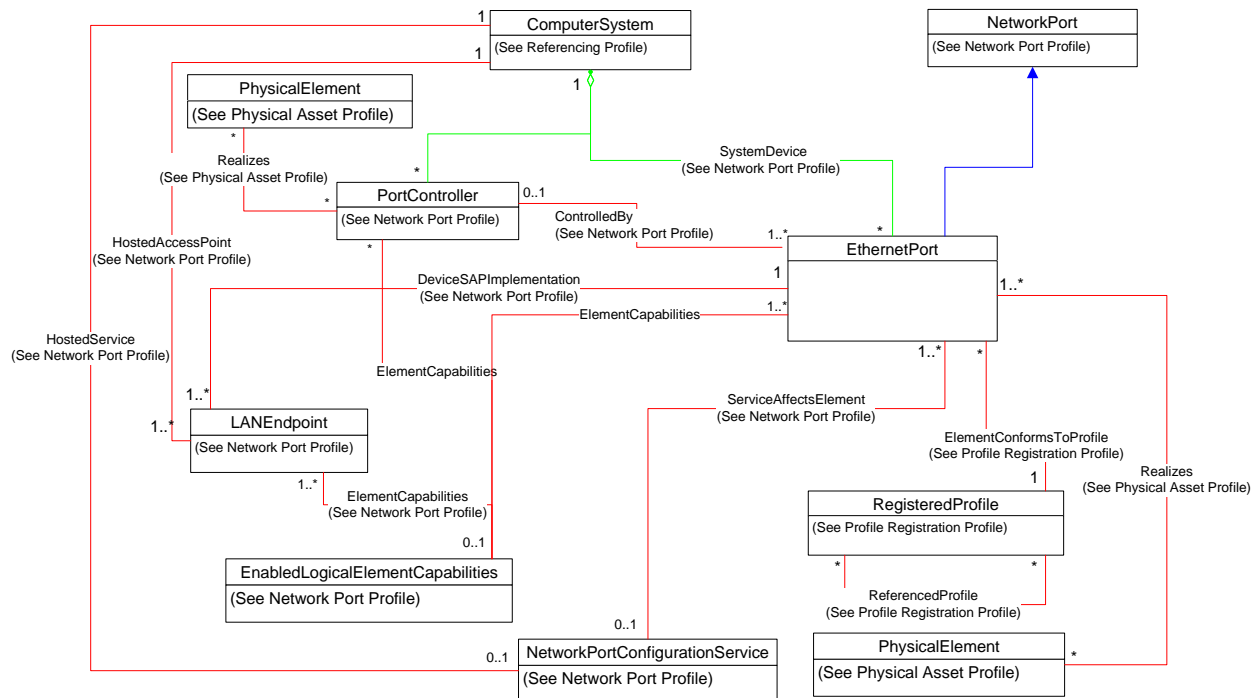
180 The following functionality is not covered in this profile:

- 181 • modeling of the networks in which the Ethernet interface participates

182 Figure 1 represents the class schema of the Ethernet Port Profile. The CIM_EthernetPort class is a
 183 subclass (specialization) of the CIM_NetworkPort class. It replaces the CIM_NetworkPort class as the
 184 subject for constraints defined in the Host LAN Network Port Profile. The CIM_EthernetPort class

Ethernet Port Profile

185 represents the Ethernet port. The CIM_LANEndpoint class represents an access point at the data-link
186 layer, which in this case is identified by a MAC address to which the Ethernet port will respond on the
187 network.



188

189

Figure 1 – Ethernet Port Profile: Class Diagram

190 7 Implementation Requirements

191 This section details the requirements related to the arrangement of instances and properties of instances
192 for implementations of this profile.

193 7.1 CIM_EthernetPort.PermanentAddress

194 When the permanent address is known, the PermanentAddress property shall be formatted as 12
195 contiguous uppercase hex digits (pattern "`^[0123456789ABCDEFabcdef]{12}$`"). When the permanent
196 address is not known, the PermanentAddress property shall be formatted as a zero-length string (pattern
197 `.{0}`).

198 8 Methods

199 This profile does not define any extrinsic methods beyond those defined in the Host LAN Network Port
200 Profile.

201 8.1 Profile Conventions for Operations

202 Support for operations for each profile class (including associations) is specified in the following
203 subclause.

204 The default list of operations is as follows:

- 205 • GetInstance
- 206 • Associators
- 207 • AssociatorNames
- 208 • References
- 209 • ReferenceNames
- 210 • EnumerateInstances
- 211 • EnumerateInstanceNames

212 **8.2 CIM_EthernetPort**

213 All operations are supported as for CIM_NetworkPort in the Host LAN Network Port Profile.

214 **9 Use Cases**

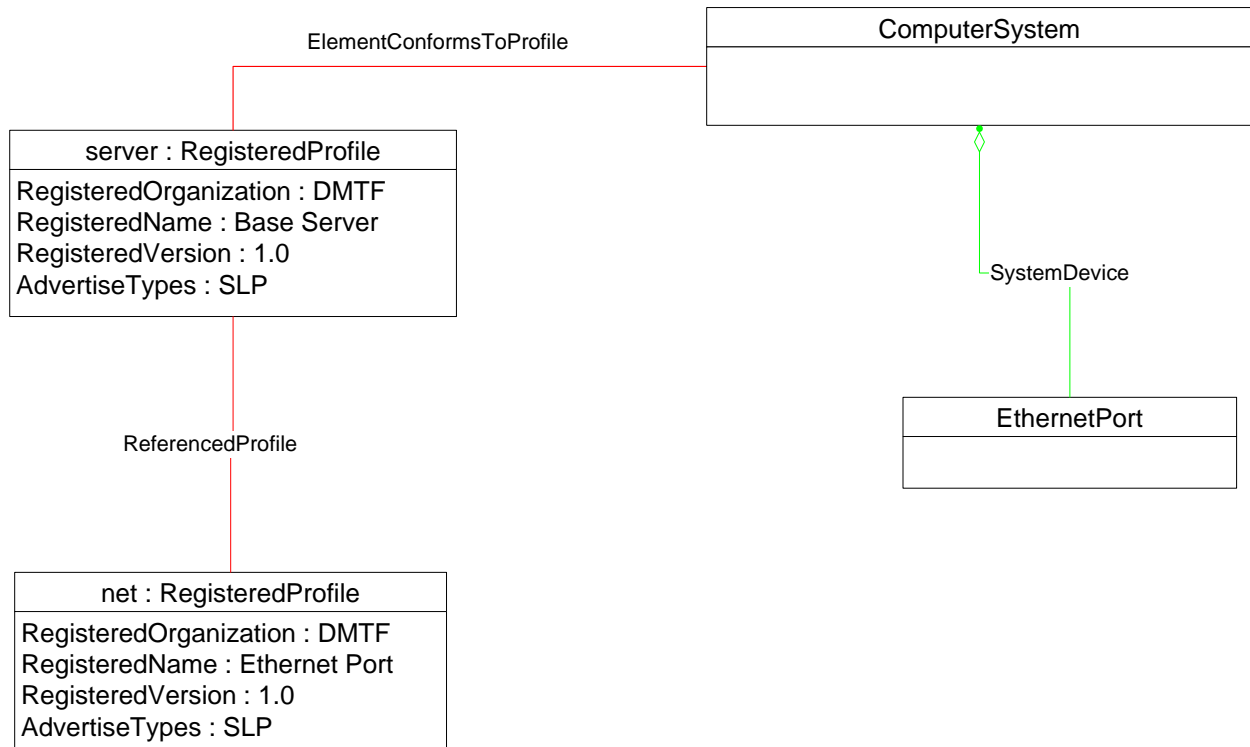
215 This section contains object diagrams and use cases for the Ethernet Port Profile.

216 **9.1 Object Diagrams**

217 The object diagram in Figure 2 shows how instances of CIM_RegisteredProfile are used to identify the
218 version of the Ethernet Port Profile with which an instance of CIM_EthernetPort and its associated
219 instances are conformant. An instance of CIM_RegisteredProfile exists for each profile that is
220 instrumented in the system. One instance of CIM_RegisteredProfile identifies the DMTF Base Server
221 Profile, version 1.0. The other instance identifies the Ethernet Port Profile, version 1.0.

222 The CIM_EthernetPort instance is scoped to an instance of CIM_ComputerSystem. This instance of
223 CIM_ComputerSystem is conformant with the DMTF Base Server Profile version 1.0 as indicated by the
224 CIM_ElementConformsToProfile association to the CIM_RegisteredProfile instance. The Scoping
225 Instance in Figure 2 is the CIM_ComputerSystem instance. The Central Instance is the
226 CIM_EthernetPort. The CIM_ReferencedProfile relationship between *BaseSystem* and *net* places the
227 CIM_EthernetPort instance within the scope of *net*. Thus, the CIM_EthernetPort instance is conformant
228 with the Ethernet Port Profile version 1.0.

Ethernet Port Profile

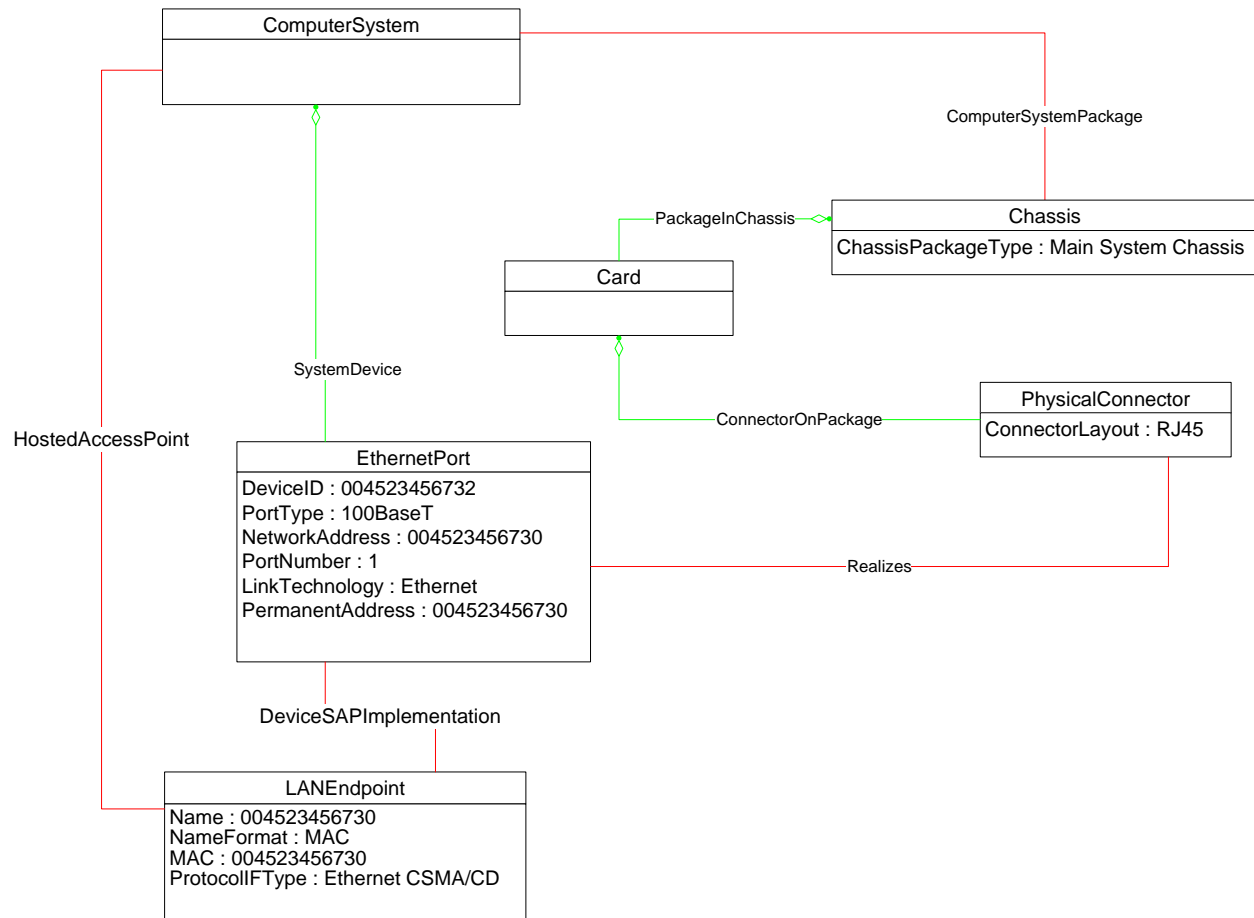


229

230

Figure 2 – Registered Profile

231 Figure 3 is a simple object diagram for a single Ethernet port that provides a single Ethernet interface.
232 The Ethernet port is represented by an instance of CIM_EthernetPort. The Ethernet interface is
233 represented by an instance of CIM_LANEndpoint.



234

235

Figure 3 – Single Interface

236 9.2 Query MAC Address for an Interface

237 A client can determine the MAC addresses in use for an Ethernet port as follows:

- 238 1) Find all instances of CIM_LANEndpoint that are associated with the CIM_EthernetPort through
- 239 an instance of CIM_DeviceSAPImplementation.
- 240 2) Query the MACAddress property of each instance of CIM_LANEndpoint.

241 9.3 Determine Physical Connector for an Ethernet Address

242 One or more MAC addresses may be associated with a given physical Ethernet interface. It is useful for a

243 client to be able to determine which CIM_PhysicalConnector is associated with a given Ethernet address.

- 244 1) Find the instance of CIM_EthernetPort that is associated with the CIM_LANEndpoint instance
- 245 through an instance of CIM_DeviceSAPImplementation.
- 246 2) Find the instance of CIM_PhysicalConnector that is associated with the CIM_EthernetPort
- 247 instance through an instance of CIM_Realizes.

248 **10 CIM Elements**

249 Table 2 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be
 250 implemented as described in Table 2. Section 7 may impose additional requirements on these elements.

251 **Table 2 – CIM Elements: Ethernet Port Profile**

Element Name	Requirement	Notes
Classes		
CIM_EthernetPort	Mandatory	See section 10.1.
CIM_RegisteredProfile	Mandatory	See section 10.2.
Indications		
None defined in this profile		

252 **10.1 CIM_EthernetPort**

253 CIM_EthernetPort represents the hardware and device aspects of an Ethernet interface. The constraints
 254 defined in Table 3 are in addition to those placed on the base CIM_NetworkPort class in the base Host
 255 LAN Network Port Profile.

256 **Table 3 – Class: CIM_EthernetPort**

Properties	Requirement	Notes
PortType	Mandatory	None
NetworkAddresses	Mandatory	Shall be formatted as 12 unseparated uppercase hex digits (pattern " <code>^[0123456789ABCDEFabcdef]{12}\$</code> ")
Capabilities	Mandatory	None
EnabledCapabilities	Mandatory	None
LinkTechnology	Mandatory	Match 2 ("Ethernet")
PermanentAddress	Mandatory	See section 7.1.

257 **10.2 CIM_RegisteredProfile**

258 CIM_RegisteredProfile identifies the Ethernet Port Profile in order for a client to determine whether an
 259 instance of CIM_LogicalModule is conformant with this profile. The CIM_RegisteredProfile class is
 260 defined by the Profile Registration Profile. With the exception of the mandatory values specified for the
 261 properties in Table 4, the behavior of the CIM_RegisteredProfile instance is defined by the Profile
 262 Registration Profile.

263 **Table 4 – Class: CIM_RegisteredProfile**

Properties	Requirement	Notes
RegisteredName	Mandatory	This property shall have a value of "Ethernet Port Profile".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	This property shall have a value of 2 (DMTF).

264

265
266
267
268

ANNEX A (informative)

Change Log

Version	Date	Description
1.0.0b	04/10/2006	Company Review edit

269
270
271
272

ANNEX B (informative)

Acknowledgments

273 The authors wish to acknowledge the following people.

274 **Editor:**

- 275 • Aaron Merkin – IBM

276 **Contributors:**

- 277 • Jon Hass – Dell
- 278 • Khachatur Papanyan – Dell
- 279 • Enoch Suen – Dell
- 280 • Jeff Hilland – HP
- 281 • Christina Shaw – HP
- 282 • Aaron Merkin – IBM
- 283 • Perry Vincent – Intel
- 284 • John Leung – Intel
- 285