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Santa Clara Marriott
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Commodity Profilers for Developers

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Agenda

- Commodity Profile Overview
- Commodity Profile CIM Elements Overview
- CPU Commodity Diagnostic Profile
- FC HBA Commodity Diagnostic Profile
- Ethernet NIC Commodity Diagnostic Profile
- Disk Drive Commodity Diagnostic Profile

Commodity Profile Overview

Disclaimer.

- The information in this presentation represents a snapshot of work in progress within the DMTF
- This information is subject to change. The Standard Specifications remain the normative reference for all information
- See the Distributed Management Task Force (DMTF) Web site.
- <http://www.dmtf.org/standards/cdm>

Target Audience

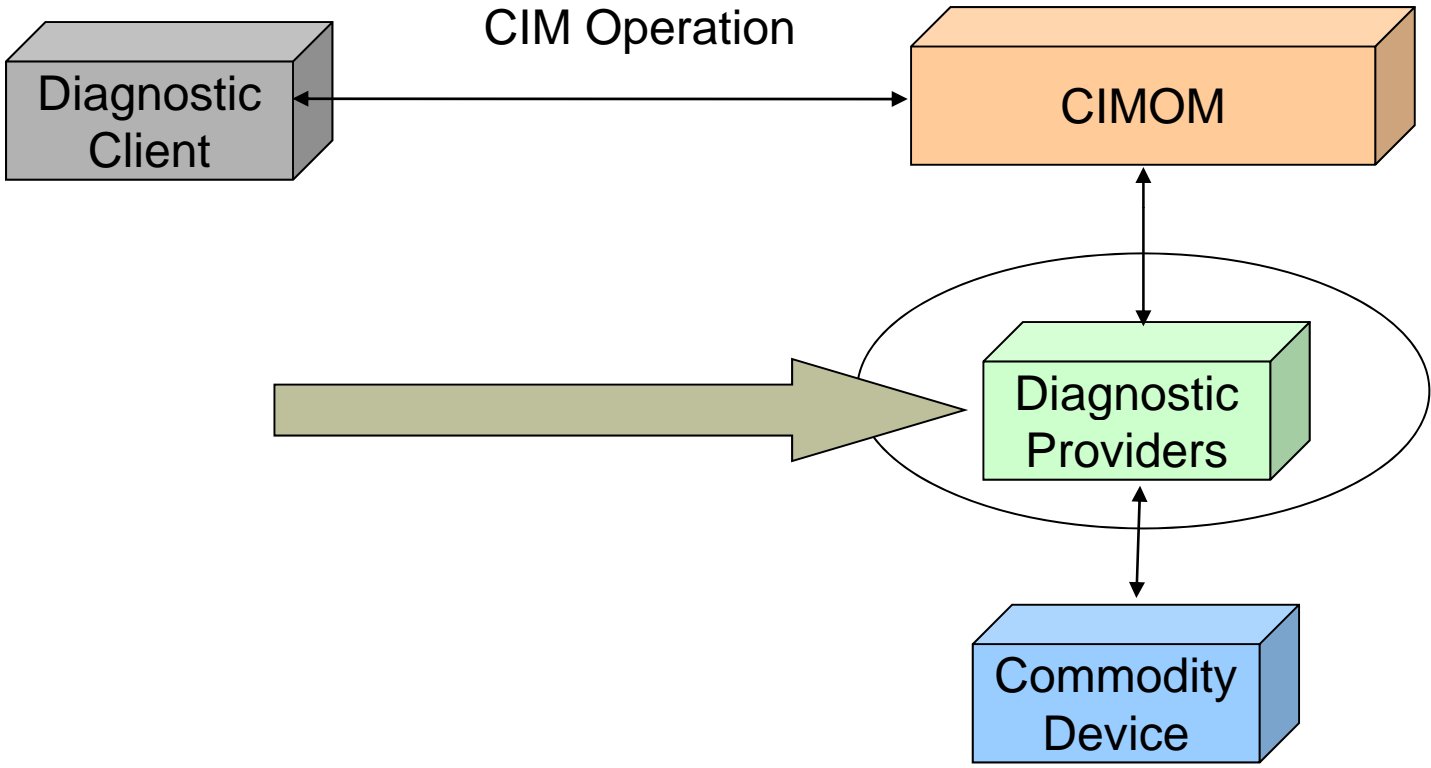
- Vendors developing interoperable client applications to manage diagnostics using CIM/WBEM
- Vendors developing standardized diagnostics using CIM/WBEM
- Software developers
- Software architects
- Engineering managers
- Project managers



Commodity Profile Objectives

- Specialize the generic CDM 2.0 profile for a particular device (e.g. CPU, Disk, etc)
- Use the CDM 2.0 infrastructure to define device specific tests and execution controls

CDM Architecture





DMTF Bodies

- Diagnostics Special Interest Group (DIAG SIG)
 - Domain experts & diagnostic test experts
 - Member site:
 - <http://www.dmtf.org/apps/org/workgroup/schema-sc/diag>

Commodity Profiles

- CDM v2.0 only provides the framework for running interoperable diagnostic tests; e.g.
 - How to start, stop, suspend
 - How to manage execution (duration, loops, etc)
 - How to log results and errors
- Commodity profiles extend the CDM v2.0 model to define the specific tests and controls needed for a particular device

Commodity Diagnostic Profile

CIM Elements

Overview



Commodity Diagnostics Target Users

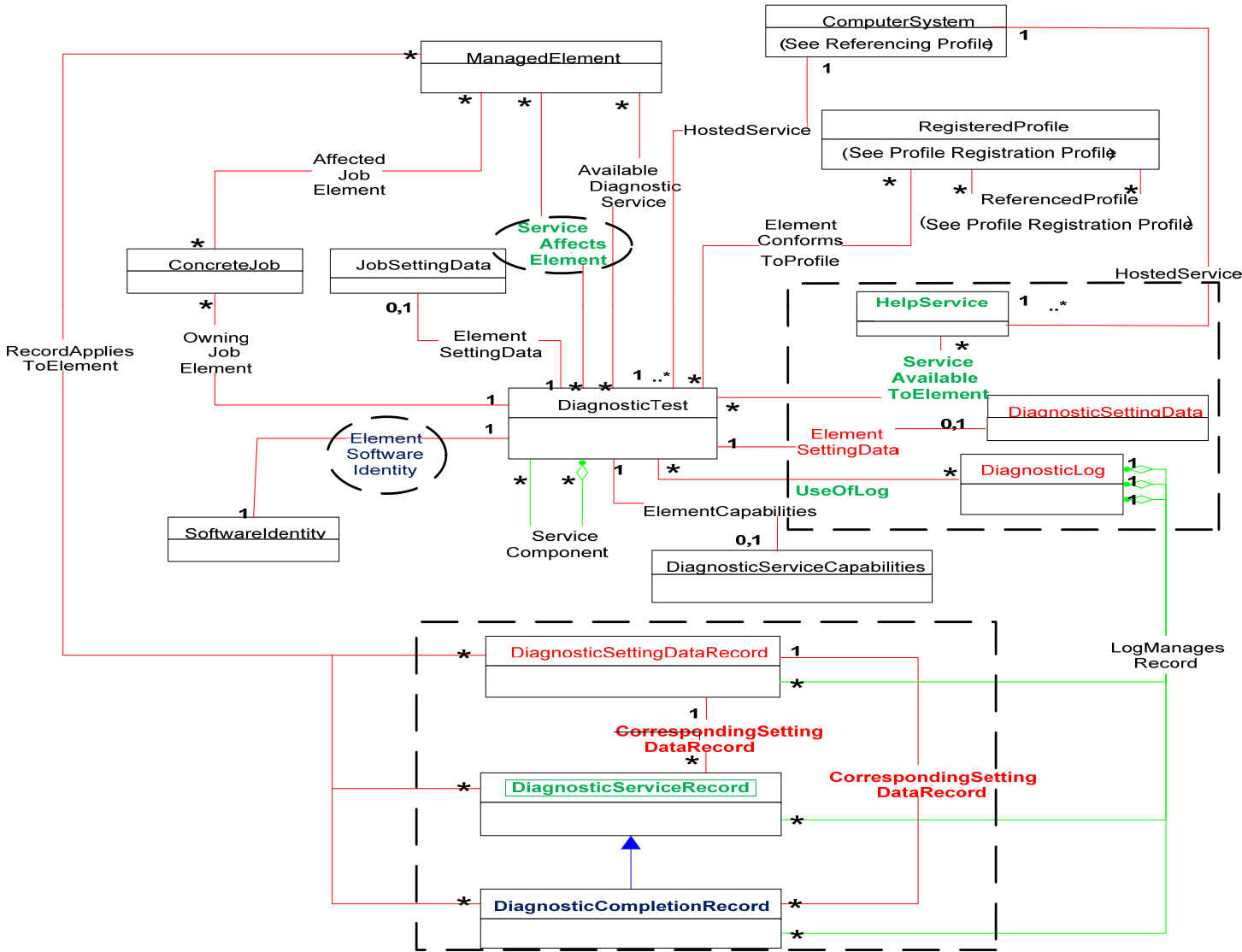
- By vendor QC before product shipment
- By vendor technical support at customer site
- By vendor to diagnose defects in returned product
- By customer to monitor the health of their equipment



Commodity Diagnostics General Characteristics

- Status test – pass/fail overall health test
- Stress test
- Technology specific tests to verify device functionality

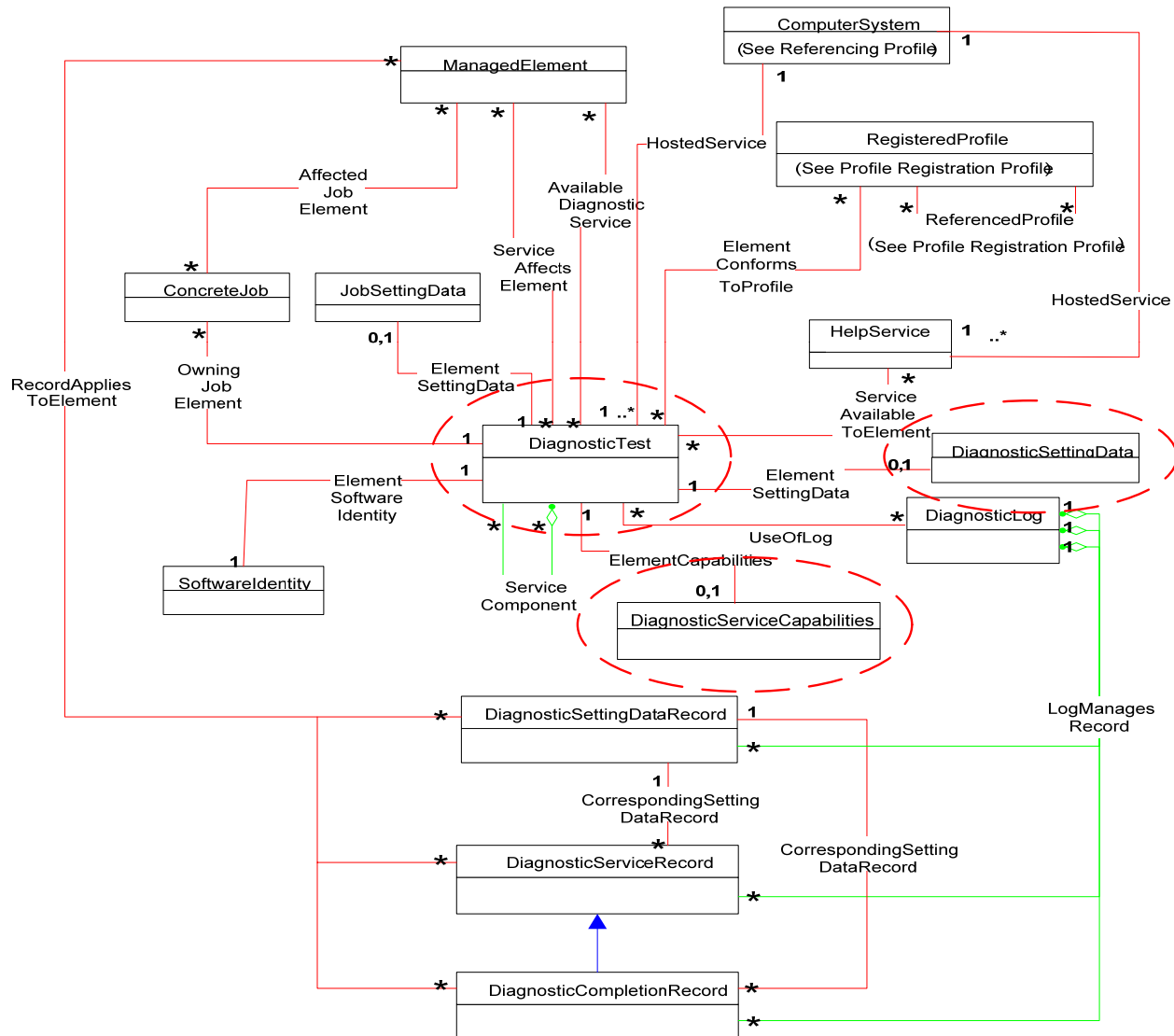
CDM v2.0 UML



Commodity Diagnostic CIM Elements

- CIM_DiagnosticTest only defines generic tests (Functional, Health, etc)
- CIM_DiagnosticSettingData only defines generic test controls (# iterations, duration, etc)
- CIM_DiagnosticServiceCapabilities only defines generic capabilities

Commodity Diagnostic UML



Commodity Profile Design Pattern

- Subclass from `CIM_DiagnosticTest` to define device specific tests. Note: Some tests may be optional
- Subclass from `CIM_DiagnosticSettingData` to define device specific test arguments that can be passed to `CIM_DiagnosticTest.RunDiagnosticService`
- Subclass from `CIM_DiagnosticServiceCapabilities` to define the device specific arguments that are supported by the diagnostic



Commodity Diagnostic Profiles

- CPU
- FC HBA
- Ethernet NIC
- Disk Drive

CPU

Commodity Diagnostic Profile

DSP1105

CIM Elements

- CIM_CPUDIagnosticTest
- CIM_CPUDIagnosticSettingData
- CIM_CPUDIagnosticServiceCapabilities

CIM_CPUDiagnosticTest

Test Name	Criteria	ElementName	CPUTestType	TestType *
Register	Optional	CPU Register Test	2	(2) Functional
Instruction	Optional	CPU Instruction Test	3	(2) Functional
FPU Instruction	Optional	CPU FPU Instruction Test	4	(2) Functional
Mixed Instruction Width	Mandatory	CPU Mixed Instruction Width Test	5	(2) Functional
Paging and Protected Mode Entry	Mandatory	CPU Paging and Protected Mode Entry Test	6	(2) Functional
Virtual Machine	Mandatory	CPU Virtual Machine Test	7	(2) Functional
Exceptions	Optional	CPU Exceptions Test	8	(2) Functional
Status	Mandatory	CPU Status Test	9	(2) Functional (4) Health Check
Power Management	Mandatory	CPU Power Management Test	10	(2) Functional
Speed	Mandatory	CPU Speed Test	11	(2) Functional
Voltage	Optional	CPU Voltage Test	12	(2) Functional
Stress	Mandatory	CPU Stress Test	13	(3) Stress
Cache	Mandatory	CPU Cache Test	14	(2) Functional
IPC	Optional	CPU IPC Test	15	(2) Functional

Test Arguments

CIM_CPUDIagnosticSettingData

CIM_CPUDIagnosticServiceCapabilities

- CPUSpeeds
- CPUVoltages
- Seed
- LoopControl *
- LoopControlParameter *

* inherited

FC HBA

Commodity Diagnostic Profile

DSP1104

CIM Elements

- CIM_FCHBADiagnosticTest
- CIM_FCHBADiagnosticSettingData
- CIM_FCHBADiagnosticServiceCapabilities



CIM_FCHBADiagnosticTest

Test Name	Criteria	ElementName	FCHBATestType	TestType
Beacon	Optional	FC HBA Beacon Test	2	(2) Functional
Echo	Mandatory	FC HBA Echo Test	3	(3) Stress (5) Access Test
External Loopback	Mandatory	FC HBA External Loopback Test	4	(2) Functional (5) Access Test
Host Bus Loopback	Optional	FC HBA Host Bus Loopback Test	5	(2) Functional
Internal Loopback	Mandatory	FC HBA Internal Loopback Test	6	(2) Functional
Ping	Mandatory	FC HBA Ping Test	7	(5) Access Test
Reset	Mandatory	FC HBA Reset Test	8	(2) Functional
Self	Mandatory	FC HBA Self Test	9	(2) Functional
Status	Mandatory	FC HBA Status Test	10	(4) Health Check

Test Arguments

CIM_FCHBADiagnosticSettingData

CIM_FCHBADiagnosticServiceCapabilities

- PacketSizes
- LinkSpeeds
- LoopbackLayers (PHY, MAC)
- SupportedExecutionControls *
- OtherSupportedExecutionControls *

* inherited

Ethernet NIC

Commodity Diagnostic Profile

DSP1107

CIM Elements

- CIM_EthernetNICDiagnosticTest
- CIM_EthernetNICDiagnosticSettingData
- CIM_EthernetNICDiagnosticServiceCapabilities



CIM_EthernetNICDiagnosticTest

Test Name	Criteria	ElementName	EthernetNICTestType	TestType
MAC Register	Mandatory	Ethernet NIC MAC Register Test	2	(2) Functional
Physical Register	Mandatory	Ethernet NIC Physical Register Test	3	(2) Functional
Internal Loopback	Optional	Ethernet NIC Internal Loopback Test	4	(2) Functional
External Loopback	Mandatory	Ethernet NIC External Loopback Test	5	(5) Access Test
Beacon	Optional	Ethernet NIC Beacon Test	6	(2) Functional
Self	Optional	Ethernet NIC Self Test	7	(2) Functional
Status	Optional	Ethernet NIC Status Test	8	(4) Health Check
Ping	Optional	Ethernet NIC Ping Test	9	(5) Access Test
Embedded Processor	Optional	Ethernet NIC Embedded Processor Test	10	(2) Functional
IRQ	Mandatory	Ethernet NIC IRQ Test	11	(2) Functional

Test Arguments

CIM_EthernetNICDiagnosticSettingData

CIM_EthernetNICDiagnosticServiceCapabilities

- TargetDevice
- EchoMechanism
- LUN
- BufferSizes
- BufferPattern
- PingMechanism

Disk Drive Commodity Diagnostic Profile DSP1113

CIM Elements

- CIM_DiskDriveDiagnosticTest
- CIM_DiskDriveDiagnosticSettingData
- CIM_DiskDriveDiagnosticServiceCapabilities



CIM_DiskDriveDiagnosticTest

Test Name	Criteria	ElementName	DiskDriveTestType	TestType *
Short Self	Mandatory	Disk Drive Short Self Test	2	(2) Functional (6) Media Verify
Extended Self	Optional	Disk Drive Extended Self Test	3	(2) Functional (6) Media Verify
Region Self	Optional	Disk Drive Region Self Test	4	(2) Functional (6) Media Verify
Sequential Read	Mandatory	Disk Drive Sequential Read Test	5	(2) Functional (6) Media Verify
Random Read	Optional	Disk Drive Random Read Test	6	(2) Functional (6) Media Verify
Region Read	Optional	Disk Drive Region Read Test	7	(2) Functional (6) Media Verify
Sequential Read-Write-Read Compare	Mandatory	Disk Drive Sequential Read-Write-Read CompareTest	8	(2) Functional (6) Media Verify
Random Read-Write-Read Compare	Optional	Disk Drive Random Read-Write-Read CompareTest	9	(2) Functional (6) Media Verify
Region Read-Write-Read Compare	Optional	Disk Drive Region Read-Write-Read CompareTest	10	(2) Functional (6) Media Verify
Sequential Internal Verify	Optional	Disk Drive Sequential Internal Verify Test	11	(2) Functional (6) Media Verify
Status	Mandatory	Disk Drive Status Test	12	(4) Health
Grown Defect	Optional	Disk Drive Grown Defect Test	13	(2) Functional
4K Alignment	Optional	Disk Drive 4K Alignment Test	14	(2) Functional
Power Management	Optional	Disk Drive Power Management Test	15	(2) Functional

Test Arguments

CIM_DiskDriveDiagnosticSettingData

CIM_DiskDriveDiagnosticServiceCapabilities

- LBA Start
- LBA End
- Seed
- DataSize
- DataPattern



Commodity Diagnostic Profiles Roadmap

- CPU (DSP1105)
- Ethernet NIC (DSP1107)
- FC HBA (DSP1104)
- Disk Drive (DSP1113)
- RAID Controller (DSP11xx)
- System Memory (DSP1108)
- Graphics Processing Unit (DSP1109)
- Optical Drive (DSP1110)
- Fan (DSP1111)
- Alarm Device (DSP1112)

Questions

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