tmforum

Frameworx 10

Information Framework R9.0

Product Conformance Certification Report

Hewlett-Packard
OSS Assurance Suite Version 1.4

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1 Introduction

1.1 Executive Summary

This document provides details of Hewlett-Packard's (HP) self-assessment and TM Forum's certification of the HP OSS Assurance Suite V1.4 against TM Forum's Information Framework Release 9.0 Domains/Aggregate Business Entities.

1.2 Representation of HP OSS Assurance Suite V1.4 Functionality/Capability

HP offers products and solutions for enterprise IT operations and for communication service providers (CSP) operations support systems (OSS). Due to this broad portfolio HP is positioned exceptionally to address the convergence of IT and Telco: Services become an Internet and All-IP based technology, Service Production platforms become IT infrastructures, CSP joins IT Operations and eTOM applies ITIL processes. HP's offering comprises IT tools with Telco Extensions (e.g. HP uCMDB for IT configuration management with its Telco extension for SID) or "carrier grade" specific tools (e.g. HP TeMIP for Fault Management of big CSP Networks).

This assessment was done based on the specific SID extensions to the uCMDB, which is the primary data store of several HP Assurance applications. These extensions of the model have been implemented primarily for and in context of the Service Quality Management. However, any HP assurance application using the uCMDB is taking advantage of these SID based extensions.

HP applies its "NGOSS Blueprints" to describe the functional offerings and description of solutions for different customer cases. The NGOSS Blueprints are defined in a version 1.4 as "HP OSS Assurance Suite V1.4". It comprises an agreed set of solutions with defined products and integrations. See [HP NGOSS BP] for understanding the Blueprints and explanations about specific solutions, which have been also used to assess against TM Forum's Process Framework (eTOM, see parallel assessment) . The paper is available to download from the TM Forum website area for this Assessment Report.

The following products of HP have been assessed, as they use the uCMDB as their native data system. They are assessed against SID 9.0:

- **HP UCMDB** V8.04
  with HP Telco Universe for SID support

- **HP SQM** V2.3
  based on HP Business Availability Center (BAC) 8.04

Two other products are referred to in context:

- **Operations Manager i** V8.10 as Operators Resource Fault and "Service Health" Management
  based on uCMDB.

- **HP Service Manager** V7.11
  implementing ITIL Incident, Problem and Change Management
  with Telco Extensions V1.0 for SID and eTOM support

See also Product Scope in section 2.2. Documentation of products is listed in section 3.6.3.

Note, while the Frameworx Assessment was carried out on the above product versions, there are more recent versions for the above products with additional functionality.

1.3   Mapping Technique Employed

Based on the certification scope the list of ABEs (Aggregated Business Entities) is defined. The entities, association classes and dependent entities for each ABE in scope are allocated for the assessment.

SID model files and addendum specifications are analyzed for the entities' and association classes' definitions to determine their roles.

In the mapping assessment, attributes explicit to the entities and association classes are listed, as well as inherited attributes. In case the inherited entity is also assessed, these attributes are not listed again.

This information is used to map each entity's or association class' attribute to the appropriate product's attribute to show how the model is supported. For each (when needed) mapping item - attribute type, possible values and comments are provided.

Note: Only the off-the-shelf configuration of SID entities in HP uCMDB was assessed (using product documentation). However, it is possible to extend the models by standard administration tools of uCMDB. See also note at end of section 2.1.

2 Assessment Scope

2.1 Information Framework Scope and Mapping

Figure 2.1 illustrates the Information Framework Level 1 ABEs (blue border) that were presented in scope for the Assessment, and the blue textual callouts represent the components of the HP OSS Assurance Suite that were assessed and support the corresponding SID ABEs.

The gray callout indicates the ABEs, which are supported thru ITIL means, but not assessed against SID.
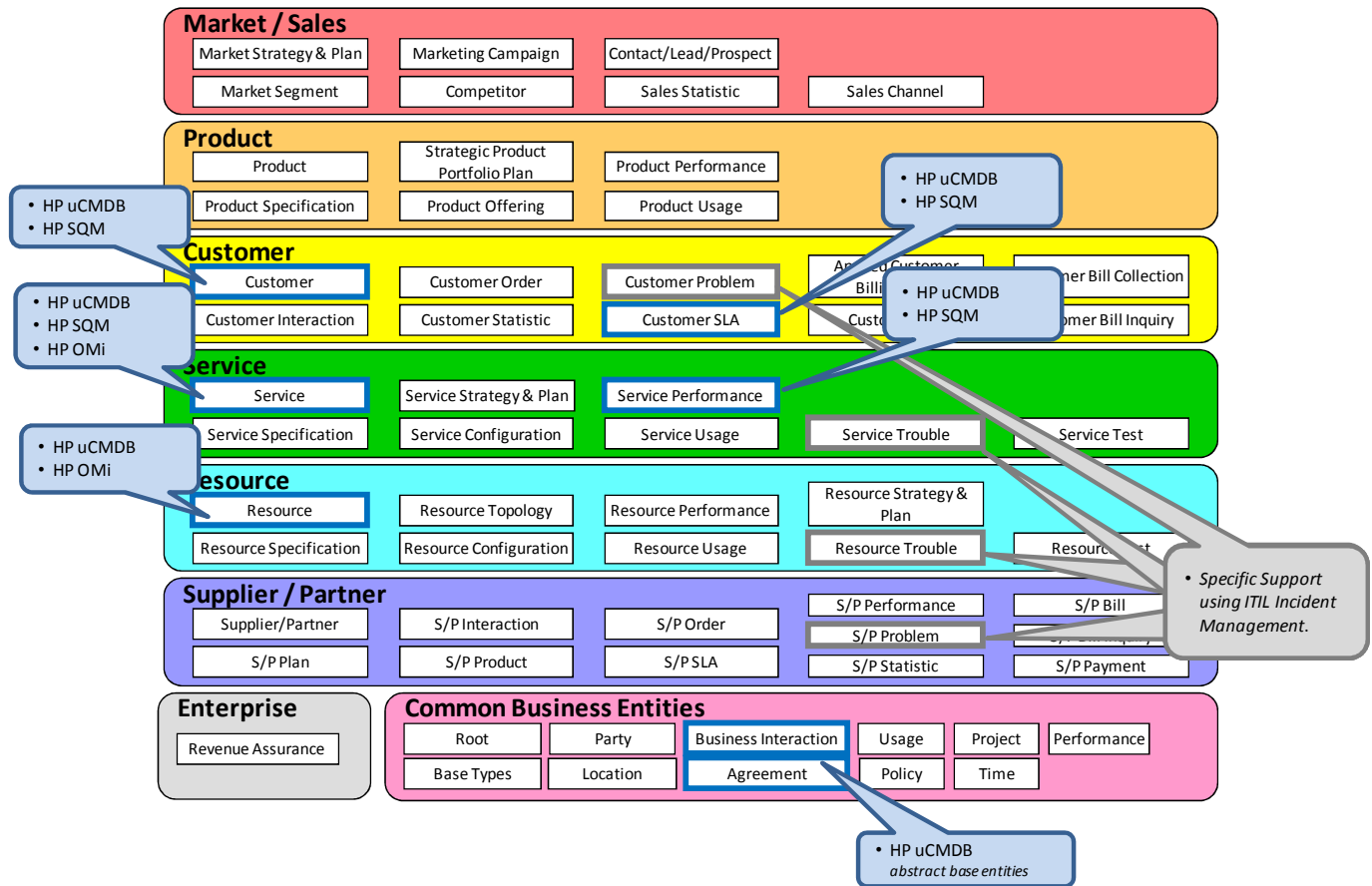
Figure 2.1 Information Framework - HP OSS Assurance Suite V1.4 - ABEs in Scope

The SID ABEs Customer Problem, Service Problem, Resource Trouble, S/P Problem are indicated to raise a specific topic: these ABEs are not in the scope of the assessment, but they are supported in HP Assurance by an ITIL conformant Incident and Problem Management. This is a very typical requirement to the OSS market today.

The specific aspects of eTOM combined with ITIL are also explained in [HP NGOSS BP]. In particular it is relevant, when looking the TMF Process Framework (see also the results of the HP Assessment).

A more granular information is shown in the Table 2.1 below, which provides lowest level ABEs actually assessed against the Information Framework:

Information Framework (SID) Domain	Information Framework (SID) ABE in Scope
Common Business Entities	Agreement
	Business Interaction
Customer	Customer
	Customer Service Level Agreement
Resource	Resource
	Resource / CompoundResource
	Resource / PhysicalResource
	Resource / PhysicalResource / Hardware
	Resource / PhysicalResource / PhysicalDevice
	Resource / LogicalResource
	Resource / LogicalResource / DeviceInterface
	Resource / LogicalResource / LogicalDevice
	Resource / LogicalResource / Managed Transmission
	Resource / LogicalResource / Managed Transmission / Termination Point
	Resource / LogicalResource / Network
	Resource / LogicalResource / Protocol Services
Service	Service / Service
	Service / CustomerFacing Service/ CustomerFacing Service
	Service / ResourceFacing Service/ ResourceFacing Service
	Service Performance/ Service Level Spec

Table 2.1 Information Framework – HP OSS Assurance Suite V1.4 - Assessed ABEs

Note: The HP OSS Assurance Suite does not provide a full Service and Resource Inventory, i.e. entities and attributes of ABEs are supported off the shelf, as they are needed by assurance applications. Therefore the resulting conformance levels are restricted, as often only required core entities and attributes are covered. It is possible to extend the models by standard administration tools of uCMDB, when needed.

2.2   Product Scope

Taking up the products listed in section 1.2, they can be associated to TM Forum Information Framework ABEs, as shown in Figure 2.2 below. The figure takes up the simplified HP NGOSS Functional Blueprint (cf. [HP NGOSS BP] "The Functional Blueprint") and maps the products of the assessed assurance solution to the functional building blocks:

- orange blocks indicate the products as listed in section 1.2,
- blue blocks indicate other functional building blocks of HP offering for assurance, not in assessment.

The blue textual callouts represent the TM Forum Information Framework ABEs that were assessed and that are supported by HP's OSS domain areas.

The gray callouts are provided for information about ITIL means, but the products not assessed against SID (see also section 2.1).
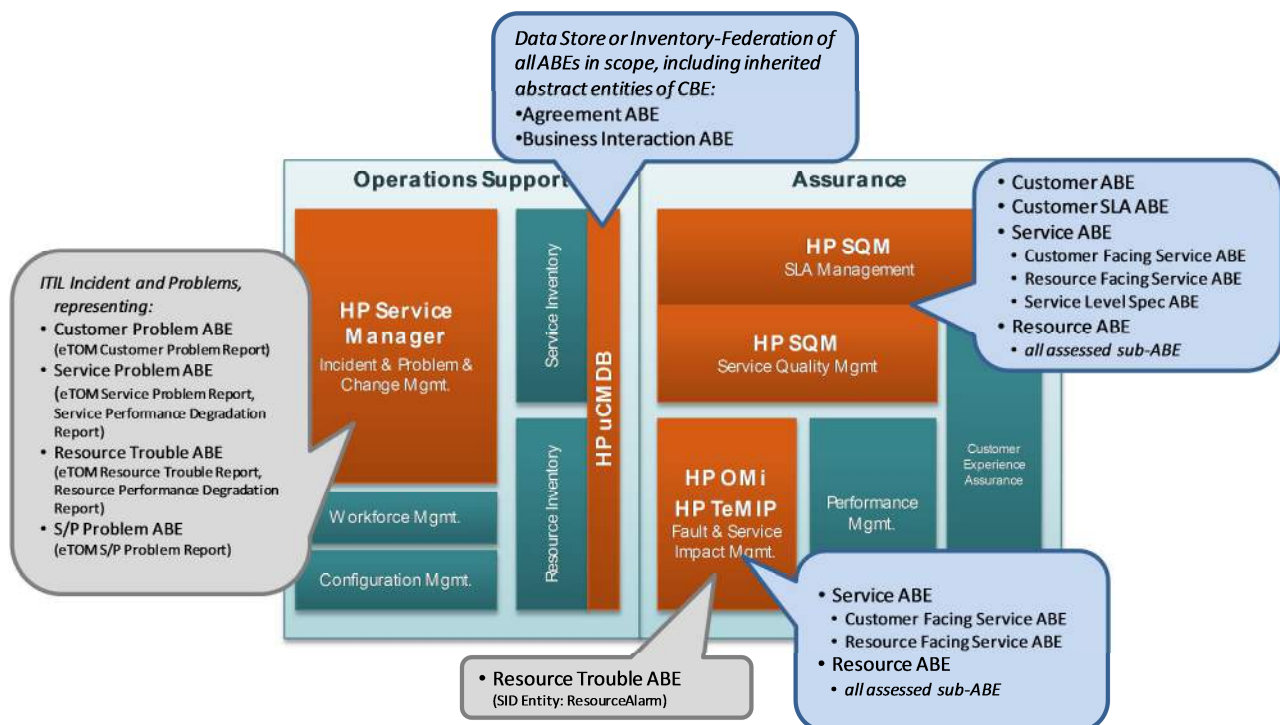
Figure 2.2 HP OSS Assurance Suite V1.4 - Product Scope

The scope of the assessment was based on those products, directly related to and using SID entities. In particular the SQM product was driving the modeling of uCMDB Configuration Item Types, to be matching the SID definitions.

Brief description of product mappings:

- **HP uCMDB** is the basis for several HP OSS Assurance Suite products. Its data models apply the notion of configuration items (CI) and CI-Types (CIT) to specify the possible CIs and their relationship. The uCMDB data modeling facilities have been used to realize the SID extensions, and can be used to configure further extensions, e.g. for SID entities, which are not provided off-the-shelf. uCMDB is also used as integration means between assurance applications and the 3rd party inventories; these inventories are federated into uCMDB. The Inventory data is then also visible to HP OSS Assurance Suite as SID compliant CIs, independent, if the Inventories are directly conformant or not.

- **HP SQM** based on Business **Availability Center (BAC)** implements the Service Quality Management. It was the driver of uCMDB's SID extension. It enables for operational SQM (working on RFS) as well as for customer individual (CFS) SLA monitoring (note: other tools are available for mass market services)

- **HP Operations Manager i** (**OMi**) is used for Fault Management and the Service Health Management. It collects events from underlying domain management systems (e.g. HP NNM for IP Network Management or HP Operations Manager for IT Systems Management). As it is using uCMDB as its primary data system, it works also the SID entities and knows the hierarchy of services down to resources, to enable service impact analysis of events, with mapping to "service health indicators". These indicators are cumulated e.g. into Availability KPIs, forwarded to SQM.

  Note: HP TeMIP can be used as Umbrella Fault Management and allows integration of uCMDB based OMi and SQM thru TeMIP Service Console. See also the parallel assessment for TM Forum Process Framework.

Not part of assessment, but mentioned regarding the ITIL support:

- **HP Service Manager** provides ITIL conformant Incident, Problem and Change Management, realizing various eTOM L3 process elements.

3 Self-Assessment – ABE Mapping Descriptions

3.1 Entities supported per ABE in Scope

This table shows which core (marked "(C)") and dependent entities of the ABE's in scope (see section 2.1) are supported off-the-shelf by HP OSS Assurance Suite, and which are not:

Information Framework (SID) Domain	Information Framework (SID) ABE	Information Framework (SID) Entity in Scope	Comment
CBE	Root Business Entities	RootEntity (C)	Supported together with "Entity" thru one CI-Type: Telecom. See Mapping. Derived CI-Types are: Business (BusinessInteraction), Interaction (BusinessInteractionItem), Customer, ManagementDomain, Product, Resource, Service.
		Entity	Supported together with "RootEntity" thru one CI-Type: Telecom. See above.
		ManagedEntity	Supported with single Attributes in CI-Type "Resource". See Mapping.
		ManagementDomain	See [Note 2]
		Collection	See [Note 2]
		Capacity	See [Note 2]
		Role	See [Note 2]
		Entity Role	See [Note 2]
		EntitySpecification	See [Note 2]
		Specification	See [Note 2]
		SpecificationRole	See [Note 2]
		ManagementInfo	See [Note 2]
		RootEntityType	See [Note 2]
	Business Interaction	BusinessInteraction (C)	Supported, see Mapping.
		BusinessInteractionItem	Supported, see Mapping.
		Notifcation	Supported, see Mapping.
		Request	Supported, see Mapping.
		Response	Supported, see Mapping.
		BusinessInteractionRole	See [Note 2]
		BusinessInteractionRelationship	See [Note 2]

Information Framework (SID) Domain	Information Framework (SID) ABE	Information Framework (SID) Entity in Scope	Comment
		RequestResponseRelationship	See [Note 2]
		BusinessInteractionLocation	See [Note 2]
		BusinessInteractiontType	See [Note 2]
		BusinessInteractionItemPrice	See [Note 2]
		InteractionToInteractionRelationship	See [Note 2]
		PartyInteractionRole	See [Note 2]
		CustomerAccountInteractionRole	See [Note 2]
		BusinessInteractionVersion	See [Note 2]
		BusinessInteractionSpec	See [Note 2]
	Agreement	Agreement (C)	Supported, see Mapping.
		AgreementItem	Supported, see Mapping.
		ServiceLevelAgreement	Supported, see Mapping.
		ServiceLevelAgreementItem	Supported, see Mapping.
		ServiceLevelAgreement	Supported, see Mapping.
		AgreementApproval	See [Note 2]
		AgreementAuthorization	See [Note 2]
		AgreementTermOrCondition	See [Note 2]
Customer	Customer	Customer (C)	Specific support for PartyRole attributes.See Mapping.
		CustomerAccount (C)	See [Note 2]
		CustomerAccountContact	See [Note 2]
		CustomerAccountRelationship	See [Note 2]
		CustomerCreditProfile	See [Note 2]
		CustomerAccountTaxExemption	See [Note 2]
		CustCreditProfileReference	See [Note 2]
	Customer Service Level Agreement	CustomerServiceLevelAgreement (C)	Supported, see Mapping.
Service	Service	Service[Note 1][Note 1][Note 1][Note 1][Note 1] (C)	Supported, see Mapping.
		ServiceBusinessActor	See [Note 2]
		ServiceUtilizationDetails	See [Note 2]
		ServiceRole	See [Note 2]

Information Framework (SID) Domain	Information Framework (SID) ABE	Information Framework (SID) Entity in Scope	Comment
		ServiceCharacteristicValue	See [Note 2]
		OwnsServiceDetails	See [Note 2]
		ServicePRDependency	See [Note 2]
		ServiceLRDependency	See [Note 2]
	Service / Customer Facing Service	CustomerFacingService[Note 1] (C)	Supported, see Mapping.
		ServicePackage	Supported, see Mapping.
		Connectivity	See [Note 2]
		IPsecVPNService	See [Note 2]
		CustomerFacingServiceComposite	See [Note 2]
		CustomerFacingServiceAtomic	See [Note 2]
	Service / Resource Facing Service	ResourceFacingService[Note 1] (C)	Supported, see Mapping.
		ServiceBundle[Note 1]	Supported, see Mapping.
		ResourceFacingServiceAtomic	See [Note 2]
		ResourceFacingServiceComposite	See [Note 2]
		BandwidthService	See [Note 2]
		CoS1Bundle	See [Note 2]
		CoS1Bundle	See [Note 2]
		CoS1Bundle	See [Note 2]
		CoS1Bundle	See [Note 2]
		ProtocolServiceDetails	See [Note 2]
	Service Performance / Service Level Spec	ServiceLevelSpecification (C)	Supported, see Mapping.
		ServiceLevelObjective	See [Note 2], Note: SLOs are realized by HP Assurance application specific means.
		KeyPerformanceIndicatorSLSParm	See [Note 2]
		KeyQualityIndicatorSLSParm	See [Note 2]
		NegotiatedServiceLevelSpec	See [Note 2]
		ServiceLevelSpecApplicability	See [Note 2]
		ServiceLevelSpecConsequence	See [Note 2], Note: ServiceLevelSpecConsequence are realized by HP Assurance application specific means, such as event creation or ticket creation

Information Framework (SID) Domain	Information Framework (SID) ABE	Information Framework (SID) Entity in Scope	Comment
		ServiceLevelSpecParameter	See [Note 2]
		TemplateServiceLevelSpec	See [Note 2]
Resource	Resource	Resource (C)	Supported, see Mapping.
		ResourceCharacteristicValue	See [Note 2]
	Resource / Compound Resource	CompoundResource (C)	Supported, see Mapping.
		ResourcePort	Supported, see Mapping.
		ResourceElement	See [Note 2]
		ResourceCollection	See [Note 2]
		ResourcePort	See [Note 2]
		LogicalAspectCompoundResourceDetails	See [Note 2]
		PhysicalAspectCompoundResourceDetails	See [Note 2]
		CompoundResourceAspectDetails	See [Note 2]
		CompoundAspectCompoundResourceDetails	See [Note 2]
		CompoundResourceRole	See [Note 2]
	Resource / Physical Resource	PhysicalResource (C)	Supported, see Mapping.
		PhysicalLink	See [Note 2]
	Resource / Physical Resource / Hardware	Hardware (C)	Supported, see Mapping.
		ManagedHardware	See [Note 2]
		PhysicalPort	Supported, see Mapping.
		PhysicalConnector	See [Note 2]
		PhysicalContainer	See [Note 2]
		Cable	See [Note 2]
		PPortAspectCompoundResourceDetails	See [Note 2]
	Resource / Physical Resource / Physical Device	PhysicalDevice	Supported, see Mapping.
		PhysicalDeviceAtomic	See [Note 2]
		PhysicalDeviceComposite	See [Note 2]
	Resource / Logical Resource	LogicalResource	Supported, see Mapping.
		ReplacementSet	See [Note 2]
		ResourceRolePartyRoleDetails	See [Note 2]

Information Framework (SID) Domain	Information Framework (SID) ABE	Information Framework (SID) Entity in Scope	Comment
		LogicalPhysicalResource	See [Note 2]
	Resource / Logical Resource / Device Interface	DeviceInterface (C)	Supported, see Mapping.
		Logical Interface	Supported, see Mapping.
		DeviceSubInterface	See [Note 2]
		ATMInterface	See [Note 2]
		EthernetInterface	See [Note 2]
		LoopbackInterface	See [Note 2]
		SerialInterface	See [Note 2]
		TokenRingInterface	See [Note 2]
		MediaInterface	See [Note 2]
		NullInterface	See [Note 2]
		DeviceInterfaceMgmtDetails	See [Note 2]
		ServiceDeviceInterfaceDetails	See [Note 2]
	Resource / Logical Resource / Logical Device	Logical Device (C)	Supported, see Mapping.
		LogicalDeviceAtomic	See [Note 2]
		LogicalDeviceComposite	See [Note 2]
	Resource / Logical Resource / Managed Transmission	ManagedTransmissionEntity (C)	See [Note 2]
		Pipe	Supported, see Mapping.
		Connection	Supported, see Mapping.
		Trail	Supported, see Mapping.
	Resource / Logical Resource / Managed Transmission / Termination Point	TerminationPoint (C)	Supported, see Mapping.
		ConnectionTerminationPoint	Supported, see Mapping.
		TrailTerminationPoint	Supported, see Mapping.
		TPAspectCompoundResource Details	See [Note 2]
	Resource / Logical Resource / Network	NetworkDomain (C)	Supported, see Mapping.
		Network (C)	Supported, see Mapping.
		LayerNetwork	Supported, see Mapping.
		SubNetwork	Supported, see Mapping.
		IPSubnet	See [Note 2]
		LAN	See [Note 2]
		AutonomousSystem	See [Note 2]

Information Framework (SID) Domain	Information Framework (SID) ABE	Information Framework (SID) Entity in Scope	Comment
		ExcludedPortsDetail	See [Note 2]
		NetworkAtomic	See [Note 2]
		NetworkComposite	See [Note 2]
	Resource / Logical Resource / Protocol Services	Protocol (C)	Supported, Also sub-ordinated Protocol ABE are supported, but not assessed here. See Mapping.

3.2   Common Business Entity Domain

All mapping tables show per ABE:

- mapping of SID Entities (in scope as in section above)
  to a CIT (Configuration-Item-Type) in UCMDB

- mapping of SID Attributes (required marked "(R)", and optional)
  to CIT attributes.

Parents are appended to the Entity or CIT names (e.g. ":Telecom").

Derived attributes are not listed, if the parent entity is assessed in this or another of the 3 packages. In case the parent entity is not assessed, derived attributes are listed and preceded with their parent entity or CIT (e.g. "Telecom::").

The value and description column provides specific comments about the support of the entity or the attribute, and quotes text from [HP Telco Uni] (*in italics*).

3.2.1   Root Business Entities ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
RootEntity	**Telecom**			The Telecom CI-Type represents the SID Entities RootEntity and Entity, with their attributes in one class. Derived CI-Types are: Business, Interaction, Customer, Management, Product, Resource, Service. *The Telecom CI Type is a container for all the telecom entities as integrated in the SQM platform. The underlying model is conform to the TMF SID model. It contains most of the core entities of the different ABE. Unfortunately, it is not yet possible to define its own universe within BAC and consequently, the Telecom Universe inherits from the IT Universe. It also provides the common attributes and relations shared by all Telecom entities.*
objectID (R)		sid_object_identifier		*This is a string, and is used to unambiguously distinguish between different object instances. It is the naming attribute of the object. This is a REQUIRED attribute.*

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
commonName (R)		sid_common_name		*This is a string, and represents a user-friendly identifier of an object. It is a (possibly ambiguous) name by which the object is commonly known in some limited scope (such as an organization) and conforms to the naming conventions of the country or culture with which it is associated. It is NOT used as a naming attribute (i.e., to uniquely identify an instance of the object). This is a REQUIRED attribute.*
description		sid_description		*This is a string, and defines a textual free-form description of the object. This is an optional attribute.*
Entity: RootEntity	**Telecom**			Same CIT as for RootEntity. The Telecom CI Type represents the SID Entities RootEntity and Entity, with their attributes in one class. See RootEntity above.
Version (R)		sid_version		*This is a graphic string that identifies the version of the object formatted as vmajor_minor (v1_0)*
ManagedEntity: Entity	**Resource: Telecom**			Inherits all attributes of: Telecom. ManagedEntity is not supported as an own class, but its attributes are supported with the Resource CI-Type. See Resource Entity..
managementMethodCurrent (R)		Resource::sid_mgmt_method_current	Values include: 0: Unknown 1: None 2: CLI 3: SNMP 4: TL1 5: CMIP 6: Proprietary	Attribute supported with CI-Type "Resource". *This is an enumerated integer that defines the particular type of management method that is currently being used.*
managementMethodSupported (R)		Resource::sid_mgmt_method_supported	Values include: 0: Unknown 1: None 2: CLI 3: SNMP 4: TL1 5: CMIP 6: Proprietary	Attribute supported with CI-Type "Resource". *This is an array of integers that define the different management methods that are supported by this object.*

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
ManagementDomain: RootEntity	**Management: Telecom**			Inherits all attributes of: Telecom. *A ManagementDomain class represents a special grouping of ManagedEntities that has two important properties. First, it is used to partition managed objects into a meaningful logical grouping. One important use of such a grouping is to provide a means to define which EMS (as well as which NMS) manages, monitors, etc. which set of devices. It also provides a means to show how management functions are distributed and scaled.*

3.2.2 Business Interaction ABE

Information Framework (SID) Entity/Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from Ref*)
Business Interaction	**Business: Telecom**			Inherits all attributes of: Telecom. Direct Mapping. Parent for Agreement, Notifcation, Request, Response. *A BusinessInteraction is an arrangement, contract, communication or joint activity between one or more PartyRoles, ResourceRoles, or CustomerAccounts. A BusinessInteraction may consist of one or more BusinessInteractionItems. A BusinessInteractionItem may refer to a Product, Service, Resource, or one of their specifications. There are five types of BusinessInteractions: Requests, Responses, Notifications, Agreements, and Instructions.*
ID (R)		Telecom::sid_object_identifier		*This is a string, and is used to unambigously distinguish between different object instances. It is the naming attribute of the object. This is a REQUIRED attribute.*
interactionDate (R)		sid_date_start		*Date interaction initiated.*
interactionStatus (R)		sid_business_status		*The current condition of an interaction, such as open, in research, closed, and so forth.*
interactionDateCompleted		sid_date_stop		*The date on which an interaction is closed or completed.*

Information Framework (SID) Entity/Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from Ref*)
Description (R)		sid_collection_type	Values include: 1: Set 2: OrderedSet 3: Sequence 4: Bag	Description is concretized in form of two characteristic attributes: collection-type and collection ordering: *This is an enumerated integer that defines the type of Collection that this object is.* *A Set does not contain duplicate elements, and does not impose an order on its elements.* *An OrderedSet is like a Set, except that it does impose an order on its contents.* *A Bag is like a Set, except that it may contain duplicates.* *A Sequence is like a Bag, except that the elements are ordered.*
BusinessInteractionItem	**Interaction: Telecom**			Inherits all attributes of: Telecom. *The purpose for the BusinessInteraction expressed in terms of a ProductSpecification, ProductOffering, ServiceSpecification or ResourceSpecification or may refer to a Product, Service, or Resource.*
quantity		sid_quantity		*Quantity of an interaction item involved in an interaction.*
Action (R)		sid_action		*The action to take for an InteractionItem, such as add, change, remove.*
Notification: Business Interaction	**Notification: Business**			Inherits all attributes of: Business, Telecom. *A communication that informs about something that has or will happen. A Notification is typically one-sided, in that no Response is expected. A Notification can be created as the result of a Request; for example, a Trouble Report may result in Notifications being sent to affected Parties. A Notification is a type of Business Interaction.*
Request: Business Interaction	**Request: Business**			Inherits all attributes of: Business, Telecom. *The act of asking that something be done that typically involves a Response. Request is a type of Business Interaction.*
Response: Business Interaction	**Response: Business**			Inherits all attributes of: Business, Telecom. *A reply to a Request.*

3.2.3 Agreement ABE

Information Framework (SID) Entity/Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from Ref*)
Agreement: Business Interaction	**Agreement: Business**			Inherits all attributes of: Business, Telecom. Direct Mapping. Parent for ServiceLevelAgreement and its children. *A type of BusinessInteraction that represents a contract or arrangement, either written or verbal and sometimes enforceable by law.*
agreementDocumentNumber		sid_document_number		*A reference number assigned to an Agreement that follows a prescribed numbering system.*
AgreementStatementOfIntent		sid_statement_of_intent		*An overview and goals of the Agreement.*
agreementPeriod (R)		Start Date		Agreement period is supported using further property attributes and policies managed by the services level management application of HP BAC (SQM basis). It provides Start-Date, Ende-Date, Calendars. Define Agreement Properties, p81-p83.
		End Date		
AgreementItem: BusinessInteractionItem	**Agreement Item: Interaction**			Inherits all attributes of: Interaction, Telecom. *The purpose for an Agreement expressed in terms of a Product, Service, Resource, and/or their respective specifications, inherited from BusinessInteractionItem.*
ServiceLevelAgreement: Agreement	**Service Level Agreement: Agreement**			Inherits all attributes of: Agreement, Business, Telecom. *A service level agreement (SLA) is a type of agreement that represents a formal negotiated agreement between two parties designed to create a common understanding about products, services, priorities, responsibilities, and so forth. The SLA is a set of appropriate procedures and targets formally or informally agreed between parties in order to achieve and maintain specified Quality of Service. Inherited from BusinessInteraction and Agreement business entities*
ServiceLevelAgreementItem: AgreementItem	**Service Level Agreement Item: Agreement Item**			Inherits all attributes of: AgreementItem, Interaction, Telecom. *The purpose for a ServiceLevelAgreement expressed in terms of a Product, Service, Resource, and/or their respective specifications, inherited from BusinessInteractionItem and in terms of*

Information Framework (SID) Entity/Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from Ref*)
				ServiceLevelSpecification(s).

3.3   Customer Domain

3.3.1   Customer ABE

Information Framework (SID) Entity/Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from Ref*)
Customer: PartyRole	**Customer: Telecom**			Inherits all attributes of: Telecom. Note: Customer is simplified as it does not inherit from PartyRole. However, required attributes can be supported using the inherited attributes of CIT Telecom. HP provides more details for assurance with two child of customer: Retail and WholeSlide. *A person or organization that buys products and services from the enterprise or receives free offers or services. This is modeled as a Party playing the role of Customer. A Customer is a type of PartyRole.* *Customers can also be other service providers who resell the enterprises products, other service providers that lease the enterprise's resources for utilization by the other service provider's products and services, and so forth.*
partyRole:: partyRoleId (R)		Telecom::sid_object _identifier		*This is a string, and is used to unambiguously distinguish between different object instances. It is the naming attribute of the object. This is a REQUIRED attribute.*
partyRole:: status (R)		Telecom::sid_descri ption		Inherited attribute deccription ca be used to reflect the status.
partyRole:: validFor (R)		Start Date End Date		In HP assurance applications a partyRole's validity is associated with the party's Agreement with the service provider. Hence the attribute is supported indirect thru the CIT Agreement, as for the agreementPeriod. See Entity Agreement and Attribute AgreementPeriod above.
partyRole:: name		*CustomerSLA::sqm_ customer_name*		Customer Name is stored with child Customer Service Level Agreement
customerID (R)		Telecom::sid_object _identifier		*This is a string, and is used to unambigously distinguish between different object instances. It is the naming attribute of the object. This is a REQUIRED attribute.*
customerStatus (R)		sid_customer_statu s	Active, inactive, prospective.	*The current condition of a customer.*
customerRank		sid_rank		*Degree of importance relative to other customers.*

3.3.2 Customer Service Level Agreement ABE

Information Framework (SID) Entity/Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from Ref*)
CustomerServiceLevelAgreement: ServiceLevelAgreement	**Customer SLA: Service Level Agreement**			Inherits all attributes of: ServiceLevelAgreement, Agreement, BusinesInteraction, Telecom. Specific SLA Type, Child of Service Level Agreement. Another SLA Type is Operation SLA.

3.4   Service Domain

3.4.1   Service ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
Service: RootEntity	**Service: Telecom**			CI-Type Service inherits attributes from CI-Type Telecom (i.e. SID RootEntity and Entity) and adds the two attributes of ManagedEntity. See Root Business Entities ABE. *A Service represents logical functionality that is packaged as part of a Product. Its two principal subclasses are CustomerFacingService and ResourceFacingService.*
enabled (R)				See [Note 3]. The attribute is not part of the uCMDB SID model, but is supported by different means, e.g. such as free configurable A service is "enabled", when monitored is switched on by assurance applications.
hasStarted				See [Note 1]
isMandatory				See [Note 1]
startMode				See [Note 1]
isStateful				See [Note 1]

3.4.2   Service / Customer Facing Service ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
CustomerFacing Service: Service	**Customer Facing Service: Service**			Inherits all attributes of: Service, Telecom. The CIT is parent of several HP Assurance specific defined services, such as: Answering Machine Call Management Help Desk Internet Access Live TV Enabler Electronic Program Guide MMS Service SMS Service WAP Service Online Storage Text Message TV Channels View Bill Voice Class Of Service CoS Data CoS Stream CoS Voice VPN Service *A CustomerFacingService is an abstraction that defines the characteristics and behavior of a particular Service as seen by the Customer or other appropriate PartyRole. This means that this PartyRole purchases, leases, uses and/or is otherwise directly aware of this type of Service. This is in direct contrast to ResourceFacingServices, which support CustomerFacingServices but are NOT seen or purchased directly by the Customer.*
cfsStatus				See [Note 3]. The attribute is not part of the uCMDB SID model, but is supported by different means, e.g. such as free configurable "Health Indicators" or KPIs within products of OMi or SQM, both based on BAC (see also [HP OMi Concepts], Health Indicators, p133f)

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
ServicePackage: CustomerFacing ServiceComposite: Customer Facing Service	**Service Package: Customer Facing Service**			Inherits all attributes of: Customer Facing Service, Service, Telecom. Note: the CIT is direct child of CIT Customer Facing Service, SID CustomerFacingServiceComposite is not supported. However, CustomerFacingServiceComposite does not have own attributes to be inherited. *Multiple ServicePackages will simply be aggregated by a ProductBundle, and appear as separate ProductComponents. A ServicePackage is the entity that models the requirements of the CustomerFacingService. Thus, ServicePackages can specify different packaging of CustomerFacingServices that are sold to the Customer.*

3.4.3   Service / Resource Facing Service ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
ResourceFacing Service: Service	**Resource Facing Service: Service**			Inherits all attributes of: Service, Telecom. The CIT is parent of several HP Assurance specific defined services, such as: Access Service Broadband Service Digital Center Live TV Infrastructure APN Service Delivery Platform Carrier mobile network Transmission Layer TV Bouquet MPLS Service *A ResourceFacingService is an abstraction that defines the characteristics and behavior of a particular Service that is not directly seen or purchased by the Customer. ResourceFacingServices are "internal" Services that are required to support a CustomerFacingService. The Customer purchases CustomerFacingServices, and is not aware of the ResourceFacingServices which support the CustomerFacingService(s) that is being purchased directly by the Customer*
rfsStatus				See [Note 3]. The attribute is not part of the uCMDB SID model, but is supported by different means, e.g. such as free configurable "Health Indicators" or KPIs within products of OMi or SQM, both based on BAC (see also [HP OMi Concepts], Health Indicators, p133f)

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
ServiceBundle: ResourceFacing ServiceComposite: ResourceFacing Service	**Service Bundle: Resource Facing Service**			Inherits all attributes of: Resource Facing Service, Service, Telecom. Note: the CIT is direct child of CIT Resource Facing Service, SID ResourceFacingServiceComposite is not supported. However, ResourceFacingServiceComposite does not have own attributes to be inherited. *ServiceBundles specify the set of ResourceFacingServices that each CustomerFacingService requires. ServiceBundles are a natural way to implement the requirements of a ServicePackage, and are related to a ServicePackage through the ServicePackageUsesServiceBundles aggregation.*
hasMultipleQoS Types				See [Note 1]

3.4.4   Service Performance/ Service Level Spec ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
ServiceLevelSpe cification	**Service Level Specification: Management**			Inherits all attributes of: Management, Telecom. Note: • Inheritance of CIT comes from earlier models. SID does not require any parent of ServiceLevelSpecification. • SLOs and ServiceLevelSpecConsequence are realized by HP Assurance application specific means. *As defined in the SID model: "A pre-defined or negotiated set of Service Level Objectives, and consequences that occur, if the objectives are not met."*
validFor				See [Note 3]. The validity of a concrete SLA is associated with the SLA, using HP assurance application specific means.

3.5 Resource Domain

3.5.1 Resource ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
Resource: ManagedEntity	**Resource: Telecom**			CI-Type Resource inherits attributes from CI-Type Telecom (i.e. SID RootEntity and Entity) and adds the two attributes of ManagedEntity. See Root Business Entities ABE. *This is the abstract base class for all entities that are inherently manageable and make up a Product.*
ManagedEntity::managementMethodCurrent		sid_mgmt_method_current	Values include: 0: Unknown 1: None 2: CLI 3: SNMP 4: TL1 5: CMIP 6: Proprietary	Attribute of ManagedEntity added here. *This is an enumerated integer that defines the particular type of management method that is currently being used.*
ManagedEntity:: managementMethodSupported		sid_mgmt_method_supported	Values include: 0: Unknown 1: None 2: CLI 3: SNMP 4: TL1 5: CMIP 6: Proprietary	Attribute of ManagedEntity added here. *This is an array of integers that define the different management methods that are supported by this object.*
usageState		sid_usage_state	It includes the following values: 0: Unknown 1: Not Installed 2: Installed 3: Inactive 4: Idle 5: Active, but able to communicate 6: Busy (Active and unable to communicate)	*This is an enumerated integer that defines the current usage of the object. Value 2 means that the object is installed (or otherwise activated) but no other information about its state is available. Values 3-6 imply that the object is Installed, and provide further information as to its state.*

3.5.2 Resource Domain: Compound Resource ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description (comment or *quote from [HP Telco Uni]*)**
CompoundRe source: Resource	**Compound Resource: Resource**			Inherits all attributes of: Resource, Telecom. *This is the abstract base class for all composite entities that are inherently manageable and make up a Product. It is used to describe managed entities that are collections of other managed entities. A key point is that each managed entity that is part of a CompoundResource can be individually managed as either a PhysicalResource or a LogicalResource.*
ResourcePort: CompoundRe source	**Port: Compound Resource**			Inherits all attributes of: Compound Resource, Resource, Telecom. *The ResourcePort class abstracts the concept of a set of Ports from G.805, and is a type of ResourceElement that consists only of logical termination points (TrailTerminationPointSource, TrailTerminationPointSink, and TrailTerminationPointBiDirectional, to be precise) and PhysicalPorts. This enables the ResourcePort to take on the physical and logical characteristics of a "port" as defined in G.805.*
isEdgeResourc ePort		sid_is_edge_por t		*This is a Boolean attribute. If the value of this attribute is TRUE, then this ResourcePort is located at the edge of a Network or SubNetwork.*

3.5.3   Physical Resource ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
PhysicalResource: Resource	**Physical Resource: Resource**			Inherits all attributes of: Resource, Telecom. *This is an abstract base class for describing different types of hardware that constitute a Product. It has two main purposes: (1) to collect common attributes and relationships for all hardware, and (2) to provide a convenient, single point where relationships with other managed objects can be defined.*
manufactureDate		sid_manufacture_date		*This is a string attribute that defines the date of manufacture of this item in the fixed format "dd/mm/yyyy". This is an optional attribute.*
otherIdentifier				See [Note 1]
powerState				See [Note 1]
serialNumber (R)		sid_physical_resource_serial_number		*This is a string that represents a manufacturer-allocated number used to identify different instances of the same hardware item. The ModelNumber and PartNumber attributes are used to identify different types of hardware items.*
versionNumber		sid_physical_resource_version_number		*This is a string that identifies the version of this object. This is an optional attribute.*

3.5.4 Physical Resource / Hardware ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
Hardware: PhysicalResou rce	**Hardware: PhysicalRes ource**			Inherits all attributes of: PhysicalResource, Resource, Telecom. *This is an abstract base class that represents any type of hardware entity that exists as an atomic unit that is not a PhysicalLink or a PhysicalConnector. Hardware is defined as any component that has a distinct physical identity and can be a component of a PhysicalDevice. An object has a physical identity if it has a physical manifestation that enables it to be held and have a label attached to it. Thus, software, files, protocols, and policies are not physical objects.* Note: CIT Hardware is parent of non-SID CIT such as Card and Sub-Rack.
depth				See [Note 1]
height				See [Note 1]
measurement Units (R)				See [Note 1]
weight				See [Note 1]
weightUnits (R)				See [Note 1]
width				See [Note 1]
PhysicalPort: ManagedHard ware: Hardware	**Physical Port: Hardware**			Inherits all attributes of: Hardware, Resource, Telecom. Note: the CIT is direct child of CIT Hardware, SID ManagedHardware is not supported. *This class represents an actual or potential end point of a topological (physical) link, and corresponds directly to a physical port on a topology map. PhysicalPorts are always contained by another physical object - they can't exist by themselves. The two most common examples are PhysicalPorts on a Card and on a Chassis.*
duplexMode (R)		sid_physical_po rt_duplex_mod e	Values are: 0: Unknown 1: Full Duplex 2: Half Duplex	*This is an enumerated integer that defines the duplex mode of this port.*
ifType (R)				See [Note 1]
portNumber (R)		sid_physical_po rt_port_number		*This is a non-zero integer that uniquely identifies this PhysicalPort instance from all other instances.*

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
typeOfPPort (R)		sid_physical_port_type	Values include: 0: Unknown 1: Ethernet 2: FastEthernet 3: Auto-Sensing 4: GigabitEthernet 5: FastGigabitEthernet 6: DS-0 7: DS-1 8: DS-3 9: T1 10: T3 11: E1 12: E3 13: OC-3 14: OC-12 15: OC-48 16: OC-192 17: RS-232C	*This is an enumerated integer that defines the particular type of PhysicalPort this instance is.*
vendorPortName				See [Note 1]
ManagedHardware:: additionalInfo				See [Note 1]
ManagedHardware:: administrativeState (R)				See [Note 3], managed directly by Fault Management applications.
ManagedHardware:: physicalAlarmReportingEnabled (R)				See [Note 3], managed directly by Fault Management applications (depends on NE's mgmt. protocol, API etc.)
ManagedHardware:: physicalAlarmStatus (R)				See [Note 3], managed by Event/Alarm-Severity directly by Fault Management applications.
ManagedHardware:: coolingRequirements				See [Note 1]
ManagedHardware:: hardwarePurpose				See [Note 1]

3.5.5 Physical Resource / Physical Device ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description (comment or *quote from [HP Telco Uni]*)**
PhysicalDevice: PhysicalResource	**Physical Device: PhysicalResource**			Inherits all attributes of: PhysicalResource, Resource, Telecom. *This is an abstract base class for representing hardware devices that can be managed. This class represents a convenient aggregation point for combining different aspects of a device (e.g., the cables, connectors, cards, power supplies, and other objects that together make up the device). Examples of this class include routers and switches, computers, and other end-devices that are managed.* This CIT is parent of other CIT, for specific purpose of SQM application: Acquisition Server CMTS Distribution Server DSLAM Enabler Server EPG Server Serving GPRS Server Gateway Equipment Router Equipment Switch Equipment RADIUS Server STB Storage Server
backplaneIndependent		sid_physical_device_backplane_independent		*This is a boolean attribute that, if TRUE, indicates that this ManagedDevice has independent backplanes that can be managed separately. This is an optional attribute.*
backplaneNumber		sid_physical_device_backplane_number		*This is an integer that defines the number of backplanes that this device has. This is an optional attribute.*
configurationOrder				See [Note 1]
deviceGroupID		sid_physical_device_group_identifier		*This is a string, and is used to uniquely identify this device as a member of a group of devices. This is an optional attribute.*
isComposite		sid_physical_device_is_composite		*This is a Boolean attribute that, if TRUE, means that this physical device is in reality made up of a set of physical devices, each of which can be individually managed. This is an optional attribute.*
canMixPower				See [Note 1]

3.5.6 Logical Resource ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description (comment or *quote from [HP Telco Uni]*)**

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description (comment or *quote from [HP Telco Uni]*)**
LogicalResource: Resource	**Logical Resource: Resource**			Inherits all attributes of: Resource, Telecom. *This is an abstract base class for describing different logical aspects of devices (e.g., DeviceInterfaces) that constitute a Product. It has two main purposes: (1) to collect common attributes and relationships for all logical entities, and (2) to provide a convenient, single point where relationships with other managed objects can be defined.*
lrStatus		sid_logical_resource_status	The following values are defined: 0: Unknown 1: OK 2: Initializing 3: Starting 4: Paused 5: Stopping 6: Stopped 7: Degraded 8: Stressed 9: Predicted Failure 10: Error - General 11: Error - Non Recoverable 12: Not Installed or Not Present 13: In Maintenance 14: Unable To Contact 15: Lost Communications	*This is an enumerated integer whose value indicates the current status of the object.*
serviceState		sid_logical_resource_service_status	Its values are: 0: Unknown 1: In Service 2: Out of Service 3: Testing 4: In Maintenance 5: Not Available 6: Not Applicable	*This is an enumerated integer that defines the availability and usage (i.e., the service state) of this LogicalResource.*
isOperational (R)		sid_logical_resource_operational_status		*This attribute is used to define the operational status of the object, and is implemented as a Boolean: TRUE means that the object is currently operational, and FALSE means that the object is not currently operational.*

3.5.7 Logical Resource / Device Interface ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description (comment or *quote from [HP Telco Uni]*)**
DeviceInterface: LogicalResource	**Device Interface: Interface**			Inherits all attributes of: Interface, LogicalResource, Resource, Telecom. The parent CIT "Interface" is not in current SID version. However, its attributes are captured with SID's DeviceInterface. *A DeviceInterface is a concrete class that represents the (logical) interface or sub-interface of a device. This is not a transmission entity; rather, DeviceInterfaces are used to program Services and LogicalResources on a Device. The combination of a LogicalDevice and a DeviceInterface is what a developer programs to define Services that run on the device.*
customerInterface Number		sid_customer_i nterface_numb er		*This is the number of this particular device interface using a naming methodology defined by the Customer.*
deviceConfigMeth od				See [Note 1]
hasCarrierDetect				See [Note 1]
hasDataLink				See [Note 1]
isInterfaceEnable d		Interface::sid_in terface_status		This attribute is supported thru the parent CIT "Interface" (see above comment). *This is a Boolean attribute that, if TRUE, means that this device is logically enabled and can send and receive transmissions. If the value of this attribute is FALSE, then it is disabled and cannot send or receive transmissions.*
vendorInterfaceN umber		sid_vendor_inte rface_number		*This is the number of this particular device interface using vendor specific naming. This attribute is required, because this is the how the vendor refers to this attribute.*

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description** (comment or *quote from [HP Telco Uni]*)
Logical Interface: DeviceInterface	**Logical Interface: Interface**			Inherits all attributes of: Interface, LogicalResource, Resource, Telecom. Note: The CIT does not inherit from DeviceInterface, only from CIT Interface, so only one attribute is supported. *A Logical Interface is an abstract class that represents the logical (virtual) interface or sub-interface.* This CIT is parent of other CIT, for specific purpose of SQM application: Mobile Network Interface Interface Gb Interface Gi Interface Gn Interface Gp Interface Iu
DeviceInterface:: customerInterface Number		sid_customer_i nterface_numb er		See [Note 1]
DeviceInterface:: deviceConfigMeth od				See [Note 1]
DeviceInterface:: hasCarrierDetect				See [Note 1]
DeviceInterface:: hasDataLink				See [Note 1]
DeviceInterface:: isInterfaceEnable d		Interface::sid_in terface_status		This attribute is supported thru the parent CIT "Interface" (see above comment). *This is a Boolean attribute that, if TRUE, means that this device is logically enabled and can send and receive transmissions. If the value of this attribute is FALSE, then it is disabled and cannot send or receive transmissions.*
DeviceInterface:: vendorInterfaceN umber		sid_vendor_inte rface_number		See [Note 1]

3.5.8   Logical Resource / Logical Device ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
LogicalDevice: LogicalResource	**Logical Device: LogicalResource**			Inherits all attributes of: LogicalResource, Resource, Telecom. *This class represents a convenient aggregation point for combining different aspects of a device.* This CIT is parent of other CIT, for specific purpose of SQM application: Controller Acquisition Controller Distribution Controller BSC MMS-C RNC SMS-C Transceiver Decoder Encoder Multiplexer Gateway GGSN SGSN WAP Gateway Router SMPP router Switch
configBackupLocation				See [Note 1]
configRunningLocation				See [Note 1]
configurationMethod (R)				See [Note 1]
configurationMode				See [Note 1]
isLoopbackSet				See [Note 1]
isNullInterfaceSet				See [Note 1]
monitorMethod				See [Note 1]
numberOfConfigurationsPresent		sid_configurations_available:integer_list		*This is an integer attribute that defines the total number of configurations that are stored in this particular Resource (NOT in the management system).*
protocolsRunning		sid_protocols_running_list		*This is an array of strings, one for each protocol that is currently running on this Resource.*
isMultiBootSystem		sid_multiboot_system		*The isMultiBootSystem is a Boolean attribute. If its value is TRUE, then this LogicalDevice can have multiple OperatingSystems running concurrently.*
currentRunningOS				See [Note 1]
hasMultipleInstalledOSs				See [Note 1]

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
policydecision point				See [Note 1]

3.5.9   Logical Resource / Managed Transmission ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
Pipe: ManagedTransmissionEntity: LogicalResource	**Pipe: Logical Resource**			Inherits all attributes of: LogicalResource, Resource, Telecom. Note: the CIT is direct child of CIT LogicalResource, ManagedTransmissionEntity is not supported. *A Pipe is a class of managed objects which ensures the transfer of information between two TerminationPoints.* This CIT is parent of other CIT, for specific purpose of SQM application: Permanent Virtual Circuit Switched Virtual Circuit Segment Leg Tunnel
isUniDirectional		sid_pipe_dire ction	It can be: 0 – Unknown 1 – UniDirectional 2 – BiDirectional 3 – Unicast 4 – Multicast 5 – Broadcast	*This is an integer attribute.*
operatingLayerR ate		sid_pipe_rate		*This is a string attribute that defines the current operating layer rate of this Trail or Connection.*
ManagedTrans missionEntity:: additionalInfo				See [Note 1]
ManagedTrans missionEntity:: mteAdministrati veState				See [Note 3], managed directly by Fault Management applications.
ManagedTrans missionEntity:: logicalAlarmRep ortingEnabled				See [Note 3], managed directly by Fault Management applications (depends on NE's mgmt. protocol, API etc.)
ManagedTrans missionEntity:: logicalAlarmStat us				See [Note 3], managed by Event/Alarm-Severity directly by Fault Management applications.

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
ManagedTransmissionEntity:: isMTEOperational				See [Note 1]
ManagedTransmissionEntity:: operationalState				See [Note 1]
Connection: Pipe	**Connection: Pipe**			Inherits all attributes of: Pipe, LogicalResource, Resource, Telecom. *This is a class of managed objects responsible for the transparent transfer of information between ConnectionTerminationPoints. A Connection is a component of a Trail. Several connections can be bundled into a higher rate trail. A sequence of one or more Connections are linked together to form a Trail. A Connection may be either uni- or bi-directional.* This CIT is parent of other CIT, for specific purpose of SQM application: Channel
Trail: Pipe	**Trail: Pipe**			Inherits all attributes of: Pipe, LogicalResource, Resource, Telecom. *Trail is a class of managed objects in layer networks which is responsible for the integrity of transfer of characteristic information from one or more other layer networks. A Trail is composed of two TrailTerminationPoints and one or more Connections and associated ConnectionTerminationPoints.*

3.5.10 Logical Resource / Managed Transmission / Termination Point ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
TerminationPoint: ManagedTransmissionEntity: LogicalResource	**Termination Point: Logical Resource**			Inherits all attributes of: Logical Resource, Resource, Telecom. Note: the CIT is direct child of CIT Logical Resource, SID ManagedTransmissionEntity is not supported. *This is an abstract class that terminates transport entities, such as trails and connections. This object class is a basic object class from which subclasses, such as TrailTerminationPoint and ConnectionTerminationPoint, are derived.* This CIT is parent of other CIT, for specific purpose of SQM application: Core EndPoint Site EndPoint
direction		sid_termnation_point_direction	Values include: 0: Unknown 1: Sources Traffic 2: Sinks Traffic 3: Carries Traffic Bi-directionally	*This is an enumerated integer, and defines whether this object instance carries traffic uni-directionally or bi-directionally.*
vendorTPName		sid_termination_point_vendor_name		*This is a string that contains the vendor-specific name of this TerminationPoint. This is different from the CommonName attribute, which represents a system-wide naming structure for all ManagedObjects. For example, an Alcatel CTP might be identified as LG1-STS12CA-13 (line group 1, STS-12, concatenated, side A, time slot 13).*
typeOfTP		sid_termination_point_type		*This is an enumerated integer that is used to define the type of this particular TP. Values include: 0: unknown 1: uni-directional, source 2: uni-directional, sink 3: bi-directional, source 4: bi-directional, sink*
endPointLabel				See [Note 1]
ManagedTransmissionEntity:: additionalInfo				See [Note 1]
ManagedTransmissionEntity:: mteAdministrativeState				See [Note 3], managed directly by Fault Management applications.
ManagedTransmissionEntity:: logicalAlarmReportingEnabled				See [Note 3], managed directly by Fault Management applications (depends on NE's mgmt. protocol, API etc.)
ManagedTransmissionEntity:: logicalAlarmStatus				See [Note 3], managed by Event/Alarm-Severity directly by Fault Management applications.

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description** (comment or *quote from [HP Telco Uni]*)
ManagedTransmissionEntity:: isMTEOperational				See [Note 1]
ManagedTransmissionEntity:: operationalState				See [Note 1]
ConnectionTerminationPoint: TerminationPoint	**Connection Termination Point: TerminationPoint**			Inherits all attributes of: Termination Point, Logical Resource, Resource, Telecom. *This is an actual or potential end point of a Network connection. For example, this can represent a logical channel or a timeslot on a physical link. All PhysicalPorts connect to at least one type of CTP.*
connectionState				See [Note 1]
tpMappingMode		sid_ctp_mapping_mode	Values include: 0: Unknown 1: Neither terminated nor available for mapping 2: Terminated but unavailable for mapping 3: Mappable at lower rates 4: Mappable at its maximum layer rate	*This is an enumerated integer that defines the current mapping mode of this CTP. This defines how this CTP will support connections - at its maximum layer rate, at lower layer rates, or both.*
TrailTerminationPoint:' TerminationPoint	**Trail Termination Point: TerminationPoint**			Inherits all attributes of: Termination Point, Logical Resource, Resource, Telecom. *This is an abstract class whose purpose is to group different types of TrailTerminationPoints. This enables a single composition (CTPsInTrail) to be run to this class, which is then inherited by its subclasses. This is deemed better than building three relationships between the (currently) three types of TrailTerminationPoints and the CTP class. Note that each has the same containment relationship.*

3.5.11 Logical Resource / Network ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
NetworkDomain: ManagementDomain	**Network Domain Specification: Management**			Inherits all attributes of: Management, Telecom. Note: CIT Management is identical with SID ManagementDomain. *A NetworkDomain represents a set of ManagedPhysicalEntities that share a common set of administrative and operational characteristics. Primary among these is the use of a common naming methodology. A NetworkDomain is used to partition ManagedEntity instances into logical groupings (e.g., operational and/or administrative groups) that are controlled by one or more common managers. NetworkDomains provide one way to administer and control the operational characteristics of a set of ManagedEntities.*
Network: ResourceCollection: CompoundResource	**Network: Compound Resource**			Inherits all attributes of: Compound Resource, Resource, Telecom. Note: the CIT is direct child of CIT Compound Resource, SID ResourceCollection is not supported. However, ResourceCollection does not have own attributes to be inherited. *A Network is a managed object that represents an aggregation of interconnected telecommunications and management objects capable of exchanging information. The reason that a Network is subclassed from ResourceCollection is that it is important that a Network be able to represent physical as well as logical characteristics and behavior of this collection of telecommunications and management objects.* Network is parent of: Layer Network (SID) SubNetwork (SID) Home Network (non-SID)
networkAdministrativeState				See [Note 1]
networkAlarmStatus				See [Note 3], managed by Event/Alarm-Severity directly by Fault Management applications.
isNetworkOperational				See [Note 1]
layerRates		sid_layer_rates_list		*This is a comma-separated Sequence of string attributes. Each string identifies a communication rate that is supported by this Network.*

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	**Entity (CIT)**	**Attribute**	**Value**	**Description** (comment or *quote from [HP Telco Uni]*)
LayerNetwork: NetworkComposite: Network	**Layer Network: Network**			Inherits all attributes of: Network, Compound Resource, Resource, Telecom. Note: the CIT is direct child of CIT Network, SID NetworkComposite is not supported. However, NetworkComposite does not have own attributes to be inherited. *A LayerNetwork is defined by the complete set of AccessGroups of the same type that may be associated for the purpose of transferring information.* LayerNetwork is child of CIT Network
SubNetwork: NetworkAtomic: Network	**SubNetwork: Network**			Inherits all attributes of: Network, Compound Resource, Resource, Telecom. Note: the CIT is direct child of CIT Network, SID NetworkAtomic is not supported. However, NetworkAtomic does not have own attributes to be inherited. *A subnetwork is an abstraction provided by the EMS to the NMS that describes the potential for subnetwork connections.* SubNetwork is parent of several HP Assurance specific CIT: Access Network ADSL Network Cable Network Radio Access Network Broadband Network Core Network 2.5/3G Core Packet Network VPN Core Network IP Network MPLS Network Intra PLMN backbone Ring
connectionRates				See [Note 1]
subNetworkType				See [Note 1]

3.5.12 Logical Resource / Protocol Services ABE

SID Entity / Attributes	HP OSS Assurance Suite Mapping			
Entity / Attribute	Entity (CIT)	Attribute	Value	Description (comment or *quote from [HP Telco Uni]*)
Protocol: LogicalResource	**Protocol: Logical Resource**			Inherits all attributes of: Logical Resource, Resource, Telecom. Protocol is parent of several entities, supported by HP Assurance off the shelf, but not assessed here: • Bridging Protocol • LAN Protocol • Management Protocol • Routed Protocol • Routing Protocol • Signaling Protocol • Switching Protocol • WAN Protocol *A Protocol is a formal set of rules and conventions that governs how two entities exchange information (usually over one or more types of network media). This is an abstract base class for representing Protocols that can be managed. This class represents a convenient aggregation point for defining how Protocols are managed and used.*
currentPortNumber		sid_protocol_port_number		*This is a non-negative integer that defines the port number used by this protocol.*
isEphemeral		sid_protocol_ephemeral_port_support		*This is a Boolean attribute. If its value is TRUE, then this protocol can use ephemeral port numbers. If its value is FALSE, then this protocol will only use well-defined port numbers.*
protocolDirection		sid_protocol_direction	Values are: 0: input 1: output 2: bi-directional	*This is an enumerated integer that defines the direction of this protocol.*
portRangeStart		sid_protocol_port_range_start		*This non-negative integer defines the lower range of allowable port numbers to use.*
portRangeEnd		sid_protocol_port_range_end		*This non-negative integer defines the upper range of allowable port numbers to use.*

3.6   Process Mappings - Works Cited

3.6.1   Notes

[Note 1]   The attribute is not supported by HP Assurance applications off-the-shelf, but can be configured if needed.

[Note 2]   The entity is not supported by HP applications of the shelf, but can be configured if needed.

[Note 3]   The attribute is not supported as part of data model, but supported by different means in applications. In addition, it can be configured in the data-model if needed.

3.6.2   TMF documents

[GB922V9]   TMF GB922 SID Release 9, part of TMF Frameworx R11

3.6.3   Product documents

[HP NGOSS BP]   HP NGOSS Blueprint and Solutions, Basic information for the TMF product assessments based on HP's OSS Assurance Suite V1.4, "White Paper HP NGOSS Blueprint and Solutions.pdf".
The paper is available to download from the TM Forum website at the following location:
http://www.tmforum.org/HPOSSAssuranceSolution/12277/home.html.

The following documentations are available, if not mentioned otherwise, on the HP support web pages under http://support.openview.hp.com/selfsolve/manuals. You may need to register first.

[HP SQM UG]   HP Service Quality Management Solution, User Guide, Version 1.0
"hp_sqm_solution_user_guide_v1.0.pdf"

[HP Telco Uni]   Telecom Universe, Reference Guide
"hp_sqm_solution_telco_universe_reference_guide.pdf"

[HP Telco Uni WP]   Telecom Universe White Paper
"HP SQM Solution - Telecom Universe White Paper.pdf"

[HP OMi Concepts]   HP Operations Manager I for the Windows, Software Version: 8.10, Concepts Guide
"OMi8.10_Concepts_Guide.pdf"

4   Information Framework (SID) Conformance

4.1   Information Framework – Conformance Overview

The following chart is an overview of the conformance levels granted to the ABEs presented in scope for the HP OSS Assurance Suite, Information Framework Assessment. Each ABE was measured using an Information Framework (SID) conformance scale of 1–7, with 1 being lowest, 3 being the acceptable minimum, and 7 being the highest level of conformance.
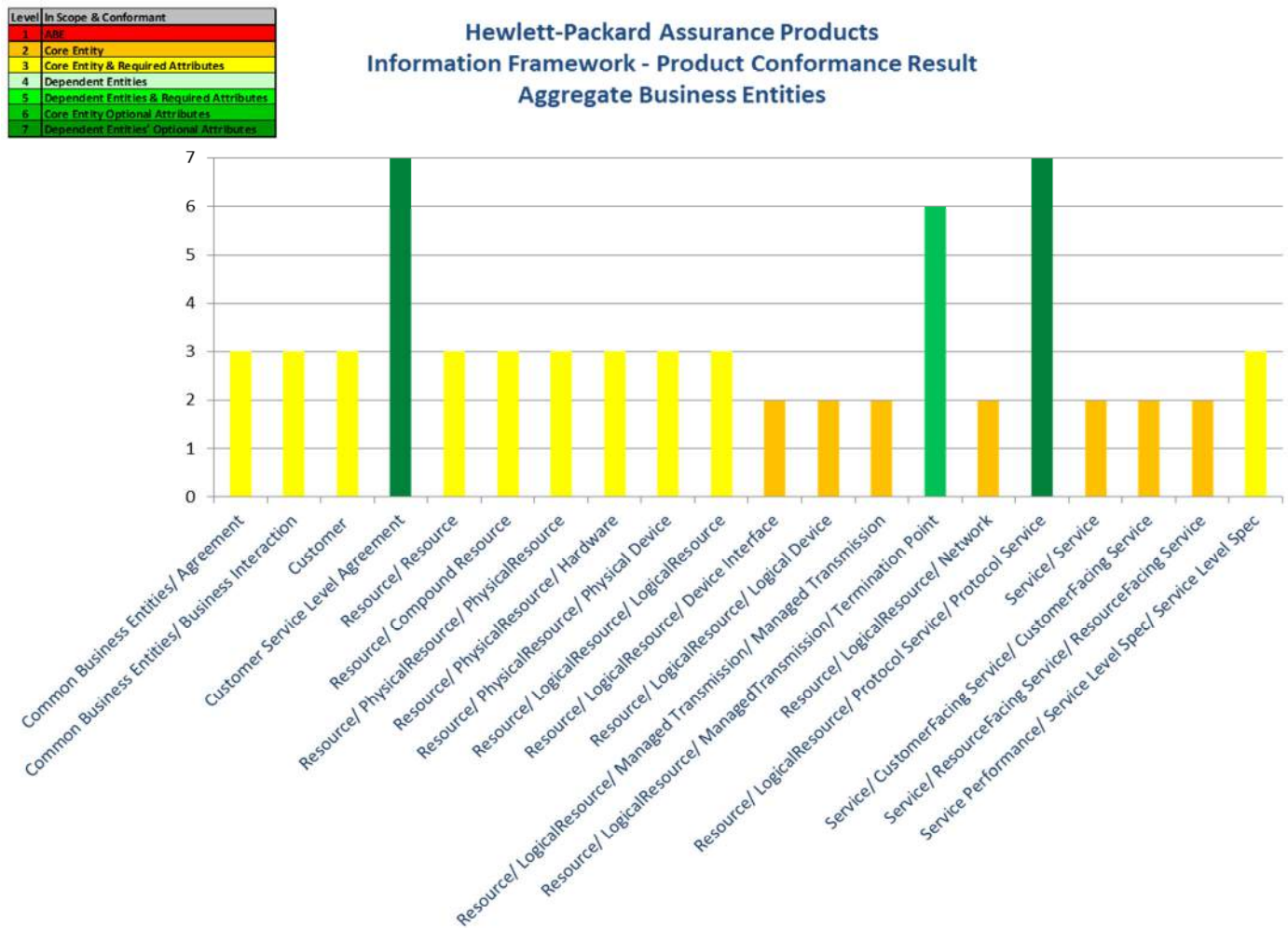

Figure 4.1 HP OSS Assurance Suite V1.4 – Conformance Scores

The conformance levels granted were based on the following TM Forum scoring rules:

Product & Solution: Information Framework (SID) Conformance Score Descriptions	
Conformance Score	**Qualifier**
Conformance Score 1	The content of the model is compatible with a subset of the Information Framework (SID) ABEs that define its domain coverage. This provides two interacting components/solutions with a common vocabulary and model structure. The subset represents the scope of the model, expressed in Information Framework (SID) domains and ABEs.
Conformance Score 2	The model has achieved Conformance Score of 1 and the content of the ABE, part of the domain coverage and defined in the model, contains the ABE's core business entity or entities.
Conformance Score 3	The model has achieved Conformance Score of 2 and the required attributes of the ABE's core entity or entities are defined in the model.
Conformance Score 4	The model has achieved Conformance Score of 3 and dependent entities within the ABE's are defined in the model.
Conformance Score 5	The model has achieved Conformance Score of 4 and the required attributes of the ABE's dependent entities are defined in the model.
Conformance Score 6	The model has achieved Conformance Score of 5 and all attributes of the ABE's core entities are defined in the model.
Conformance Score 7	The model has achieved Conformance Score of 6 and all attributes of the ABE's dependent entities are defined in the model.

Figure 4.2 TM Forum Information Framework – Conformance Scoring Rules

4.2 Information Framework – Detailed Conformance Result

Table 4.1 HP OSS Assurance Suite V1.4 – Detailed Conformance Result

Information Framework (SID) Conformance			
Information Framework (SID) Domain* (please see note at the bottom of the page)	Information Framework (SID) ABE	Conformance Level	Comment
Common Business Entities	Business Interaction	3	Core entity, required attributes.
	Agreement	3	Core entity, required attributes.
Customer	Customer	3	Core entity, required attributes.
	Customer Service Level Agreement	7	Core entity, required attributes, dependent entities, required attributes of dependent entities, all attributes of the core entity, all attributes of dependent entities.
Resource	Resource	3	Core entity, required attributes.
	Compound Resource	3	Core entity, required attributes.
	PhysicalResource/ PhysicalResource	3	Core entity, required attributes.
	PhysicalResource/ Hardware	3	Core entity, required attributes.
	PhysicalResource/ Physical Device	3	Core entity, required attributes.
	LogicalResource/ LogicalResource	3	Core entity, required attributes.
	LogicalResource/ Device Interface	2	Core entity, missing core entity required attributes
	LogicalResource/ Logical Device	2	Core entity, missing core entity required attributes
	LogicalResource/ Managed Transmission/ Managed Transmission	2**	Core entity, missing some core entity required attributes
	LogicalResource/ Managed Transmission/ Termination Point	6	Core entity, required attributes, dependent entities, required attributes of dependent entities, all attributes of the core entity, required attributes of dependent entities.
	LogicalResource/ Network	2**	Core entity, missing some core entity required attributes

Information Framework (SID) Conformance			
Information Framework (SID) Domain* (please see note at the bottom of the page)	**Information Framework (SID) ABE**	**Conformance Level**	**Comment**
	LogicalResource/ Protocol Service	7	This ABE has only one entity "Protocol" therefore it can be accounted for as core and dependent. Core entity, required attributes, dependent entities, required attributes of dependent entities, all attributes of the core entity, all attributes of dependent entities.
Service	**Service**	2	Core entity, required attributes not mapped
	Service/ CustomerFacing Service	2	Core entity, required attributes not mapped
	Service/ ResourceFacing Service	2	Core entity, required attributes not mapped
	Service Performance/ Service Level Spec/ Service Level Spec	3	Core entity, required attributes

* Several ABEs within each domain being in scope for conformance assessment are linked to a note ([Note 1], [Note 2]) which provides the following explanation by Hewlett -Packard: The entity/attribute is not supported by HP Assurance applications off-the-shelf, but can be configured if needed, or is realized by application specific means ([Note 3]).

** Due to editorial discrepancies in addenda documents for SID V9.0, these attributes do not have required/optional definitions in SID 9.0 documentation. These attributes were assessed against the definitions defined in the addenda for SID 8.0 which states that they are required attributes. The HP products assessed do not support these attributes off-the-shelf.