SOFTWARE COMMUNICATIONS ARCHITECTURE SPECIFICATION

APPENDIX D: PLATFORM SPECIFIC MODEL - DOMAIN PROFILE DESCRIPTOR FILES

20 August 2015
Version: 4.1

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REVISION SUMMARY

Version	Revision	Date
Next <Draft>	Initial Draft Release	30 November 2010
Candidate Release	Initial Release	27 December 2011
4.0	ICWG Approved Release	28 February 2012
4.0.1	Incorporated transition to JTNC and applied SCA 4.0 Errata Sheet v1.0	01 October 2012
4.1<DRAFT>	Updated version and date to align with main specification and no further changes	31 December 2014
4.1	Updated version and date to align with main specification and no further changes **ICWG Approved**	20 August 2015

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APPENDIX D PLATFORM SPECIFIC MODEL (PSM) – DOMAIN PROFILE DESCRIPTOR FILES

D.1 SCOPE

This appendix defines a set of domain profile descriptor files used to achieve conformance with the SCA Platform Independent Model (PIM) as defined in the SCA.

D.1.1 Overview

The SCA provides architectural specifications for the deployment of communications software onto a Software Defined Radio (SDR) platform. The SDR provides a re-configurable platform, which can host software components written by various providers to support user driven functional services. The SCA requires its software components to provide information, called a domain profile, which describes their composition and configuration. The intent of this appendix is to define the format and content of this information unambiguously. The domain management functions use the component deployment information expressed in the Domain Profile. The information is used to start, initialize, and maintain applications installed within an SCA-compliant system.

SCA products may be realized using a variety of descriptor file formats (e.g. Document Type Definition (DTD), XML Schema Definition (XSD) schema, etc.).

D.1.2 Deployment Overview

The hardware devices and software components that make up an SCA system domain are described by a set of descriptor files that are collectively referred to as a Domain Profile. A Software Profile is the complete set of descriptor files that describe a particular software component – the composition depending on the type of component being described. These descriptor files describe the identity, capabilities, properties, and inter-dependencies of the hardware devices and software components that make up the system.

Figure 1 depicts the relationships between the SCA descriptor files that describe a system's hardware and software assets. The vocabulary within each of these files describes a distinct aspect of the hardware and software assets.

Within the Domain Profile, all software elements of the system are described by a Software Package Descriptor (SPD) and a Software Component Descriptor (SCD) file.

The software profile for an application consists of one Software Assembly Descriptor (SAD) file that references (directly or indirectly) one or more SPD, SCD, and Properties Descriptor (PRF) files. An SPD file contains the details of an application's software module that must be loaded and executed.

The SPD provides identification of the software (title, author, etc.) as well as the name of the code file (executable, library or driver), implementation details (language, OS, etc.), configuration and initialization properties (contained in a Properties File), dependencies to other SPDs and devices, and a reference to an SCD. The SPD also specifies the DeviceComponent

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dependencies for loading (processor kind, etc.) and processing (e.g., memory, process) the application software modules.

The SCD defines the interfaces supported and used by a specific component.
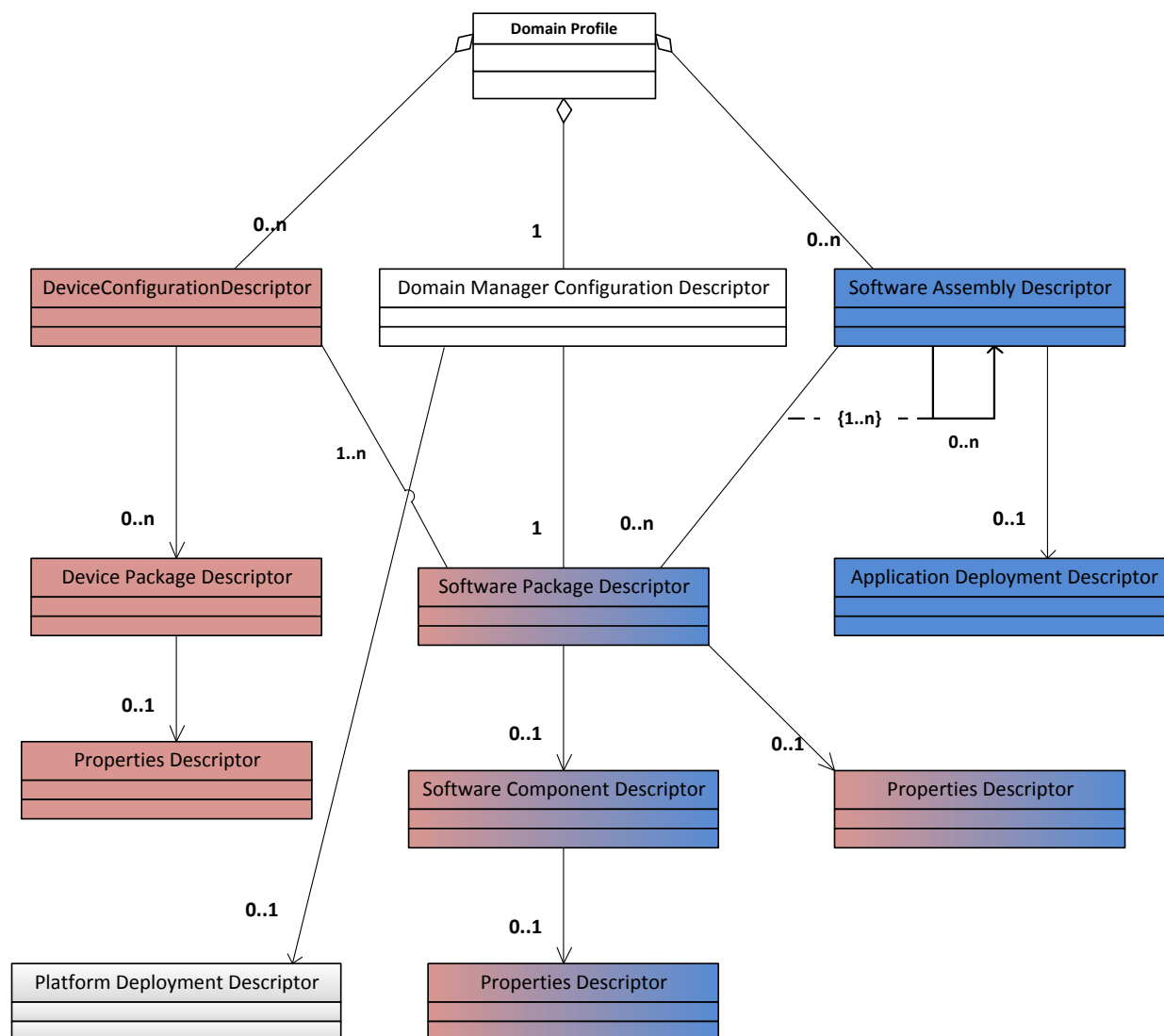
Figure 1: Relationships Between SCA Domain Profile File Types

Since applications are composed of multiple SW components, a SAD file is defined to determine the composition and configuration of the application. The SAD references all SPDs needed for this application, defines required connections between application components (connection of provides and uses ports / interfaces), defines needed connections to devices and services, provides additional information on how to locate the needed devices and services, defines any co-location (deployment) dependencies, and identifies a single component within the application as the assembly controller.

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Similar to the application SAD, a device manager has an associated Device Configuration Descriptor (DCD) file. The DCD identifies the devices and services associated with this device manager by referencing their associated SPDs. The DCD also defines properties for the specific device manager, enumerates the needed connections to services (file systems), and provides additional information on how to locate the domain manager. In addition to an SPD, a device may have a Device Package Descriptor (DPD) file which provides a description of the hardware device associated with this logical device including description, model, manufacturer, etc.

The implementation of the domain manager is described by the Domain Manager Configuration Descriptor (DMD) which provides the location of the SPD file for the specific *DomainManager* realization to be loaded. It also specifies the connections to other software components (services and devices) which are required by the DomainManagerComponent.

D.2 CONFORMANCE

D.2.1 Domain Profiles Conformance on the Part of an SCA Product

The elements of this appendix are not required to be used solely for a particular platform or application. The conceptual domain profile is realized in a technology specific representation. As technology specific domain profiles are introduced it is the intent that they will be functionally equivalent to the existing representations.

Conformance for an SCA product is at the level of usage as follows:
- An SCA product needs to be conformant with the semantics, schema and mandatory elements of a technology specific representation defined within this appendix.

D.2.2 Sample Conformance Statement

An SCA product can be identified as being conformant to a specific version of the SCA and the specific technology that the product realizes.
- "Product A is an SCA conformant waveform application in accordance with the SCA LW AEP and the CORBA/XML DTD platform."

D.3 CONVENTIONS

N/A.

D.4 NORMATIVE REFERENCES

N/A.

D.5 INFORMATIVE REFERENCES

N/A.

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D.6 ATTACHMENTS

This appendix includes the following descriptor file technologies defined in their associated appendix. Additional descriptor file technologies may be included in the future.

- APPENDIX D-1: PSM - Document Type Definition (DTD) Files