Device Apps Network Efficiency Architecture

Candidate Version 1.0 – 18 Mar 2014

Open Mobile Alliance

OMA-AD-DANE-V1_0-20140318-C

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Figures

1. Scope

This document provides the architecture for the DANE V1.0 Enabler. This architecture is based on the requirements as listed in the DANE Requirement Document [DANE-RD].

2. References

2.1 Normative References

[3GPP TS 23.203] "Policy and charging control architecture", 3rd Generation Partnership Project (3GPP), URL: http://www.3gpp.org/ftp/Specs/archive/23_series/23.203/

[DANE-RD] "DANE Requirements", Open Mobile Alliance™, OMA-RD-DANE-V1_0-20130425-D.doc, URL:http://www.openmobilealliance.org/

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt

2.2 Informative References

[OMADICT] "Dictionary for OMA Specifications", Version 2.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_9, URL:http://www.openmobilealliance.org/

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Device App	An application running on the device that uses device/network resources
Device Service Optimizer	An entity residing in the device, managing the interaction between Device Apps and device/network resources
PCRF	See [3GPP TS 23.203]

3.3 Abbreviations

3GPP	3rd Generation Partnership Project
API	Application Programming Interface
App	Application
DM	Device Management
DSO	Device Service Optimizer
E-UTRAN	Evolved Universal Terrestrial Radio Access Network
GBR	Guaranteed Bit Rate
IP	Internet Protocol
OMA	Open Mobile Alliance
PCRF	Policy and Charging Rules Function
QCI	QoS Class Identifier
QoE	Quality of Experience
QoS	Quality of Service
RN_API	Apps Registration and Events Notification API
TCP	Transmission Control Protocol
URL	Uniform Resource Locator
Wi-Fi	Wireless Fidelity

4. Introduction

This document defines the architecture of the DANE Enabler based on the DANE Requirements Document [DANE-RD].

The focus of the DANE V1.0 is the standardization of the DSO entity, in terms of the interfaces towards, on one side, Device Apps and, on the other side, Wireless Network Policy Manager.

In this context, this Architecture Document defines any needed functional components and interfaces.

4.1 Version 1.0

This architecture document covers the requirements of DANE V1.0 [DANE-RD].

The document aims to cover architectural aspects related to the interfaces for the following areas:

- Registration of Device Apps to DSO (Device Apps requests for particular QoS levels)
- Notification of events from DSO to registered Device Apps
- Interaction between the DSO and Wireless Network Policy Manager

5. Architectural Model

The DANE architecture supports all function as specified in [DANE-RD].

Following sections will describe DANE architecture diagram, functional components and interfaces.

5.1 Dependencies

There are no dependencies.

5.2 Architectural Diagram

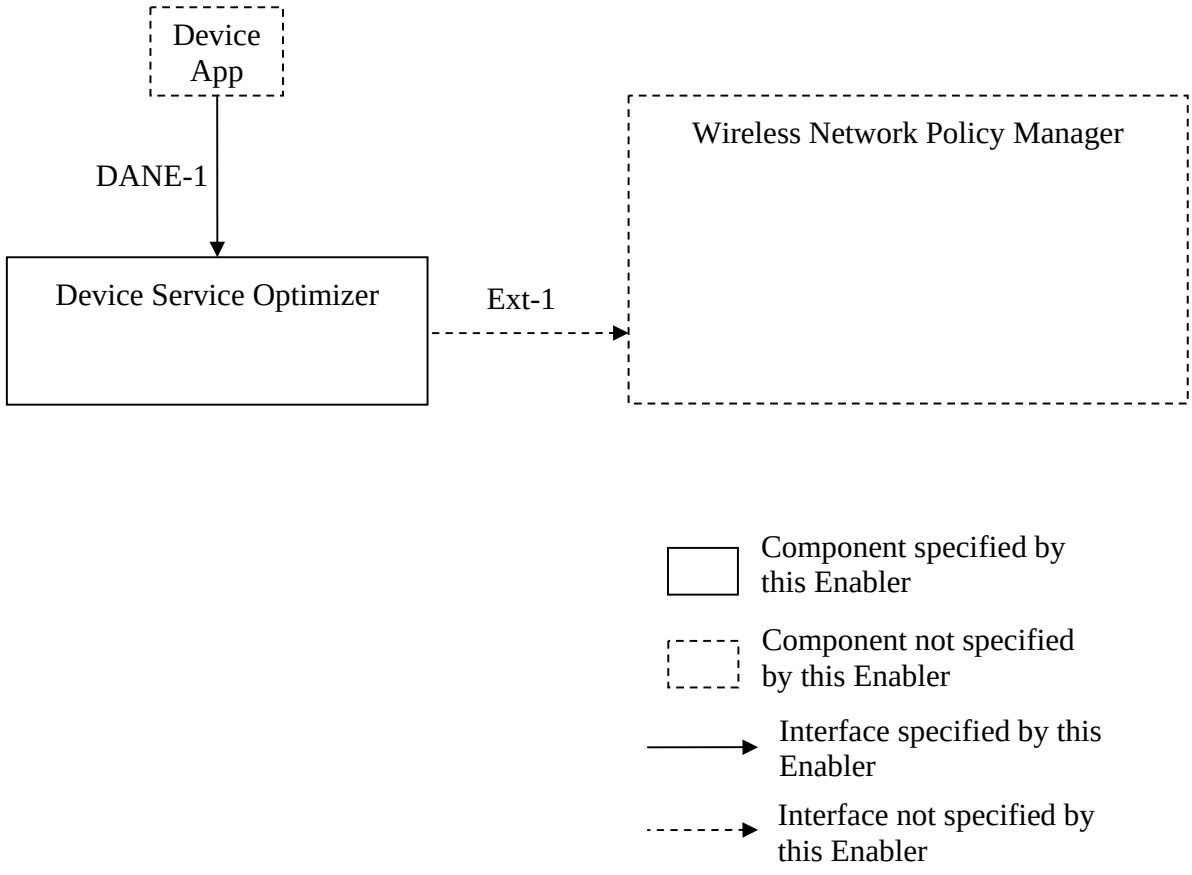

Figure 1: DANE Architectural Diagram

5.3 Functional Components and Interfaces

5.3.1 DANE Enabler Functional Components

5.3.1.1 Device Service Optimizer

The Device Service Optimizer (DSO) is a functional component within DANE V1.0 enabler which is responsible for:

- receiving and managing Device Apps registration requests (through DANE-1), for specific QoS levels
- detecting whether or not the Device has, with the Wireless Network, an already established bearer that could support the QoS level requested by the Device Apps
- initiation of bearer establishment by interacting with Wireless Network Policy Manager for the requested QoS
- notifying back the registered Device Apps about the occurrence of particular Events (e.g. decreased actual QoS level)

5.3.1.2 Entities external to the DANE enabler (Informative)

Device App

A native or web-based App running on the Device and able to ask DSO for a certain QoS level (through DANE-1 interface).

Wireless Network Policy Manager

The entity responsible for QoS policy definition and activation in a certain Wireless Network.

In the case of 3GPP Wireless Network, the Policy Manager typically would be the PCRF.

5.3.2 Interfaces

5.3.2.1 DANE-1

The interface exposed by DSO and used by Device Apps.

This interface is used by Device Apps to request registration for a certain QoS level (the registration can be for all the IPflows handled by the App or only for some of them).

Through this interface Device Apps registered to DSO also receive Event Notifications (e.g. decreased actual QoS level) in response to specific requests.

5.3.2.2 Ext-1 (Informative)

This interface is used by DSO shall be able to initiate bearer establishment with Wireless Network Policy Manager receive from the DSO the requests for the establishment of bearers for a specific with a certain QoS level.

The example of Ext-1could be OMA RESTful QoS API exposed by the PCRF over the Rx interface.

5.4 Security Considerations

The security considerations described in this section apply to any DANE enabler implementation, and these considerations may result in different deployment models. Any particular security mechanism relevant to DANE enabler is addressed in the [DANE-TS].

Any deployment of DANE enabler needs to ensure that all the applications exploiting DANE-1 interface are authenticated and authorized.

5.5 Charging Considerations

Not applicable.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version V1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-AD-DANE-V1_0	30 May 2013	All	Baseline architecture document
	28 Jul 2013	2.1; 2.2; 3.2; 3.3; 4; 4.1 5.2; 5.3	Incorporates agreed CRs: OMA-CD-DANE-2013-0001-CR_Introduction_Terminology_References; OMA-CD-DANE-2013-0002R04-CR_Architectural_Diagram; OMA-CD-DANE-2013-0003R03-CR_Components_Interfaces.
	26 Sep 2013	5.2 5.3.2.2	Incorporates agreed CR: OMA-CD-DANE-2013-0008R01-CR_External_Interface_in_Architectural_Diagram
	18 Feb 2014	2.1, 5.3.1.2, 5.3.2.2	Changes have been applied to close the comments received during AD Formal Review.
	20 Feb 2014	5.3.1, 5.3.2	Changes have been applied to close the comments received during AD Formal Review.
Candidate Version OMA-AD-DANE-V1_0	18 Mar 2014	n/a	Status changed to Candidate by TP TP Ref # OMA-TP-2014-0057-INP_DANE_V1_0_AD_for_Candidate_approval