Allied Data Publication 34

(ADatP-34(J))

NATO Interoperability Standards and Profiles

Volume 3

Core Enterprise Services Implementation Specification

DECEMBER 2016

NCI Agency

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1. CORE ENTERPRISE SERVICES IMPLEMENTATION SPECIFICATION

1.1. INTRODUCTION

001. The Core Enterprise Services Framework ([NC3A CESF, 2009]) describes a set of Core Enterprise Services (CES) – sometimes referred to as the "what" of the NNEC CES. This section addresses the "how" by detailing the profile of functionality and mandated standards for each of the Spiral 1 CES.

002. For each Core Enterprise Service that is expected to be part of the Spiral 1 SOA Baseline, the following sections identify:

• Overview of the service

• Functionality that the service provides

• Mandated Standards

• Spiral 1 Implementation

1.2. SOURCES OF RECOMMENDATIONS

003. When constructing a profile of standards to use within a large organisation, there are a wide range of sources that provide input into the choices that need to be made.

004. The specific standards that are presented in the following sections have been compiled from various sources, including standards bodies, NATO agreed documents and practical experience of conducting experiments with nations and within projects.

005. Because of the time that it takes to ratify a standard or profile, the standards that are recommended in the SOA Baseline may not be the most recent or up to date versions. Some of the most important sources for defining the mandated set of standards for use in NATO are described in the following sections.

1.2.1. The WS-I Profiles

006. The Web Services Interoperability Organization has developed a collection of "profiles" that greatly simplify the interoperability of SOA Web services. Profiles provide implementation guidelines for how related Web services specifications should be used together for best interoperability between heterogeneous systems.

007. The general profile for service interoperability is called the Basic Profile, which describes how the core Web services specifications – such as Simple Object Access Protocol (SOAP), Web Service Description Language (WSDL) and Universal Description Discovery Integration (UDDI) – should be used together to develop interoperable Web services. Specifically, the profile identifies a set of non-proprietary Web services standards and specifications and

provides clarifications, refinements, interpretations and amplifications of them that promote interoperability.

008. In addition, the WS-I has a number of other profiles that are adopted in this specification.

009. This specification mandates the WS-I basic profile 1.1 (Second Edition), the WS-I Basic Security Profile (version 1.1), the WS-I Simple SOAP Binding Profile (version 1.0) and the Attachments Profile (version 1.0). In this specification there are exceptions to the use of some of the specifications included in the WS-I profiles. These exceptions as noted in the following table.

1.2.2. International Standards Organization

010. The ISO SOA Reference Architecture specifications establishes standardised vocabulary, guidelines and general technical principles underlying Service Oriented Architecture (SOA), including principles relating to functional design, performance, development, deployment and management.

011. Resource identifier: ISO/IEC FDIS 18384:2015

1.2.3. NATO Interoperability Standards and Profiles (NISP)

012. The NISP, otherwise known by its NATO reference, Allied Data Publication 34 (ADatP-34), is an agreed set of standards and profiles that are to be used to "provide the necessary guidance and technical components to support project implementations and transition to NATO Network Enabled Capability (NNEC)". It specifies which protocols are to be used at every level of the communications stack in different periods. As a ratified, official NATO document, it forms the primary NATO input into the standards that have been selected for implementation within the NNEC interoperability environment.

013. The standards that are mandated here will be submitted to the NISP (esp. vol.2) as upgrades for those recommended in the NISP, and will be included in future versions of the document.

1.3. NNEC SOA BASELINE PROFILE QUICK REFERENCE

014. This section details the mandated functionality and standards for each of the "Spiral 1". This "profile" of SOA specifications is summarised in the following table. In the cases where a version of a standard in the table deviates from the version of the standard in the WS-I profiles, the version of the standard explicitly defined in the table replaces the related version of the standard in the profile.

015. The last column of the table indicates in which WS-I profile(s) the standard or profile is referenced (if any). Therefore if a profile is quoted, it is mandatory to use it when implementing that service. The WS-I Profiles used are:

• WS-I Basic Profile 1.1

• WS-I Basic Security Profile 1.1

- WS-I Simple SOAP Binding Profile 1.0

- WS-I Attachments Profile 1.0

Table 1.1. CES Standards

Purpose	Standard Name	Mandated Version	Relationship with the WS-I profiles
XML	Extensible Markup Language (XML)	1.0 (Second Edition)	• WS-I Basic Profile • WS-I Simple SOAP Binding Profile • WS-I Attachments Profile
	Namespaces in XML	1.0	• WS-I Basic Profile • WS-I Simple SOAP Binding Profile • WS-I Attachments Profile
	XML Schema Part 1: Structures	1.0	WS-I Basic Profile
	XML Schema Part 2: Datatypes	1.0	WS-I Basic Profile
Messaging Service	HTTP	1.1	• WS-I Basic Profile • WS-I Simple SOAP Binding Profile
	HTTP State Management Mechanism	RFC 2965	WS-I Basic Profile
	SOAP	1.1	• WS-I Basic Profile • WS-I Simple SOAP Binding Profile
	WS-I Simple SOAP Binding Profile	1.0	
	WS-I Attachments Profile	1.0	
	WS-Reliable Messaging	1.2	
	WS-Addressing	1.0	

Purpose	Standard Name	Mandated Version	Relationship with the WS-I profiles
Pub/Sub Service	WS-Notification	1.3	
Translation Service	XSLT	2.0	
	XQuery	1.0	
	XML Schema	1.0	
	XPath	2.0	
Service Discovery Service	UDDI	3.0.2	Deviation from WS-I Basic Profile 1.1 (second edition). UDDI version 2 is not to be used.
	WSDL	1.1	• WS-I Basic Profile • WS-I Simple SOAP Binding Profile • WS-I Attachments Profile
Metadata Registry Service	ebXML	3.0	
Security Service	HTTP over TLS	RFC 2818	• WS-I Basic Profile • WS-I Attachments Profile
	TLS	1.0 (RFC 2246)	• WS-I Basic Profile • WS-I Basic Security Profile
	SSL	3.0	SSL is not to be used.
	X.509 Public Key Infrastructure Certificate and CRL Profile	RFC 2459	• WS-I Basic Profile • WS-I Basic Security Profile
	WS-Security: SOAP Message Security	1.1 (OASIS Standard Specification, 1 Feb. 2006)	WS-I Basic Security Profile
	Web Services Security: UsernameToken Profile	1.1 (OASIS Standard Specification, 1 Feb. 2006)	WS-I Basic Security Profile

Purpose	Standard Name	Mandated Version	Relationship with the WS-I profiles
	Web Services Security: X.509 Certificate Token Profile	1.1 (OASIS Standard Specification, 1 Feb. 2006)	WS-I Basic Security Profile
	Web Services Security: Rights Expression Language (REL) Token Profile	1.1 (OASIS Standard Specification, 1 Feb. 2006)	WS-I Basic Security Profile
	Web Services Security: Kerberos Token Profile	1.1 (OASIS Standard Specification, 1 Feb. 2006)	WS-I Basic Security Profile
	Web Services Security: SAML Token Profile	1.1 (OASIS Standard Specification, 1 Feb. 2006)	WS-I Basic Security Profile
	Web Services Security: SOAP Messages with Attachments (SwA) Profile	1.1 (OASIS Standard Specification, 1 Feb. 2006)	• WS-I Basic Profile • WS-I Basic Security Profile
	XML Encryption Syntax and Processing	W3C Recommendation 10 Dec. 2002	WS-I Basic Security Profile
	XML Signature Syntax and Processing	1.0 (Second Edition) W3C Rec. 10 June 2008	WS-I Basic Security Profile
	XPointer Framework	W3C Recommendation, 25 Mar. 2003	WS-I Basic Security Profile
	Information technology "Open Systems Interconnection" The Directory: Public-key and attribute certificate frameworks	Technical Corrigendum 1	WS-I Basic Security Profile
	Lightweight Directory Access Protocol : String Representation of Distinguished Names	RFC 4514	WS-I Basic Security Profile
	WS-Addressing	1.0	
	MIME Encapsulation of Aggregate Docu-	RFC 2555	WS-I Attachments Profile

Purpose	Standard Name	Mandated Version	Relationship with the WS-I profiles
	ments, such as HTML (MHTML)		
	Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies	RFC 2045	WS-I Attachments Profile
	Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types	RFC 2046	WS-I Attachments Profile
	Content-ID and Message-ID Uniform Resource Locators	RFC 2392	WS-I Attachments Profile
	WS-Security Utility	1.0	
	WS-Trust	1.4	
	WS-Federation	1.1	
	WS-Metadata Exchange	1.1	
	WS-Policy	1.5	
	WS-SecurityPolicy	1.3	
	SAML	2.0	
	XACML	2.0	
	XML Confidentiality Label Syntax	NC3A TN 1456	
	Binding of Metadata to Information Objects	NC3A TN 1455	
Enterprise Service Management	WS-Management	1.0	
Enterprise Directory Service	LDAP	3.0 (RFC 4510)	
	TLS	1.0	WS-I Basic Security Profile
	SASL using Kerberos v5 (GSSAPI)	RFC 4422, RFC 4752	

Purpose	Standard Name	Mandated Version	Relationship with the WS-I profiles
Collaboration Service	XMPP	1.0 (RFC 3920, RFC 3921)	

1.4. ISO/IEC SOA EMERGING STANDARDS

Table 1.2. ISO/IEC SOA Standards

Service Area	Title	URI
SOA	Information technology -- Reference Architecture for Service Oriented Architecture (SOA RA) -- Part 1: Terminology and Concepts for SOA	ISO/IEC FDIS 18384-1[a]
SOA	Information technology -- Reference Architecture for Service Oriented Architecture (SOA RA) -- Part 2: Reference Architecture for SOA Solutions	ISO/IEC FDIS 18384-2[b]
SOA	Information Technology -- Reference Architecture for Service Oriented Architecture (SOA) -- Part 3: Service Oriented Architecture Ontology	ISO/IEC FDIS 18384-3[c]

[a]http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=63104

[b]http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=63105

[c]http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=63106

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