



Liberty Content SMS and MMS Specification

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Abstract:

The Liberty Content SMS and MMS Specification (ID-SIS-CSM) layers on MM7 to add identity-based invocation and addressing. It leverages the Liberty ID Web Services Framework (ID-WSF) to do this. It enables Principals wielding Liberty identities to access Value Added Services (VAS), such that privacy is preserved and mobile spam is controlled, while allowing the Value Added Service Providers (VASPs) to offer more personalized service using controlled sharing of user and device attributes. The user is identified independently of delivery channel and, indeed, multiple channels can be supported.

The ID-SIS-CSM consists of Mobile Originated (MO) and Mobile Terminated (MT) interfaces that are quite independent, but can be combined to form round trip scenarios. The MO interface allows a mobile Principal to invoke, by sending a message, a VAS using Liberty Single Sign On (SSO) such that the VASP has assurance of the Principal's identity and is able to further invoke ID Web Services on behalf of the Principal. The MT interface allows a VASP that has obtained a Principal's discovery or MT resource offering to send messages and content to the Principal by invoking the MT ID Web Service.

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1. Introduction

MM7 [MM7] is an industry standard for mobile messaging that has enjoyed success especially in MMS content and messaging, yet it is generic enough to be used for other messaging technologies like SMS and can be easily translated to other protocols such as SMPP. MM7 is a regular Web Service that is based on SOAP 1.1 with attachments [SOAPAttach] and with MIME multipart content [RFC2387].

Liberty ID Web Services Framework (ID-WSF) is an enabling technology that allows identity-based access and addressing to be added to existing web services, such as MM7. ID-WSF adds certain elements to convey the identity information, such as SAML assertions, and requires little or no alteration to the SOAP body. It allows an existing Web Service to be leveraged to create a new ID-enabled web service. The objective of this document is to describe just such a protocol and service: the ID-SIS-CSM.

ID-SIS-CSM is an identity service because (i) messages are addressed to an identifiable Principal, (ii) the Principal's consent to receive messages from a VASP is conveyed using robust Liberty ID-WSF mechanisms that prevent the VASPs from forging the consent, and (iii) the ID-WSF mechanisms also enable better privacy.

Scope: This specification specifies identity web services interfaces between an identity messaging server (MO and MT roles, defined later), an IdP, and a VASP.

Out of scope: This specification does NOT specify interfaces between an identity messaging server and rest of the messaging system. Any references to MM7 and MMSC are for illustration, only. Non-messaging identity web services are out of scope as well, but they are defined in other Liberty Alliance specifications.

1.1. Motivation

Many popular Value Added Service Providers (VASP) deliver content to the mobile phones of their users. In some cases, mobile content delivery is the primary service offered, for example, services that offer ring tones or phone logos and screen savers. In other cases, mobile messaging is used by a VASP to enhance its other services, for example, airlines offer to send short messages about flight status. In order for a VASP to send messages to a mobile phone of a user, it needs both access to a delivery system as well as the mobile phone number of the user. In many cases, however, the nature of the service does not justify the privacy hazard that occurs when the user has to give her mobile phone number. This specification aims to overcome this problem by suggesting the use of the Liberty ID-WSF specifications to exchange pseudonymous or anonymous identifiers for the users between the VASP and the delivery system.

Many of the aforementioned service providers offer their services through a Short Message Service (SMS) interface. That is, end users can request some service, information, or content by sending a short message from their phone to a well-known short number. Typically, the short number identifies the service provider and the message structure is rigorously defined to carry the necessary request information. For example, a user may obtain a ring tone by sending "RING Feel" to 12345. Typically, users find these services and instructions through advertisements. To reply with the content, the VASP again needs the mobile phone number of the user. It is important to note that the same user may at other times access the VASP through a normal browser session. It would be advantageous if the VASP would have the possibility to recognize the user independently from the service access channel, browser, or messaging.

For all VASPs, it is beneficial to provide highly personalized content. This is especially true for the SMS-based services described above, as the user interface in this case is very poor. Consider a horoscope service. For example, to offer a proper service, it would need the birthday of the user, but typing something like "HS 15.4.1972" is much more cumbersome than simply "HS." The ID-WSF framework allows for VASPs to discover and use identity services for the user, e.g., for personal profile information, geolocation, etc.

1.2. Mobile Originated (MO) Scenario and Roles

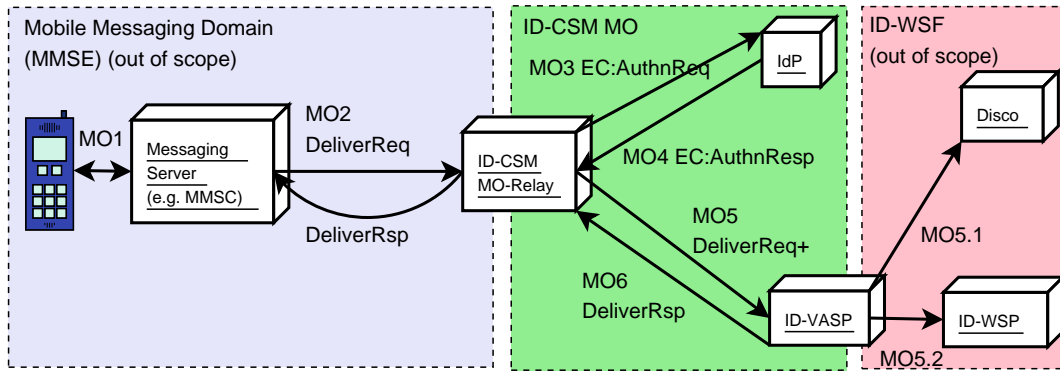


Figure 1. MO Scenario and Roles

In the MO scenario, a principal sends a message (MO1) to a number, usually a *short code*. The message is processed by a messaging server, such as an MMSC. The messaging server understands, perhaps from the short code, that the message should be forwarded (MO2, e.g., DeliverReq) to the *MO-Relay*. Everything up to this point is in the Mobile Messaging Domain and out of scope for this specification. Suffice to say that mechanisms like MM7 or SMPP may be used on interface (MO2).

Upon receiving the message, MO-Relay proceeds to perform Single Sign On using an *IdP*. This involves sending an *AuthnFed* request (MO3) using one of the protocols profiled later, e.g., LECP, ECP, or SSOS.

The IdP uses a *mobile authentication method* to authenticate the Principal. Exactly how this happens is not within the scope of this specification, but perhaps a trusted MSISDN HTTP header was passed to convey the SIM card-based network layer authentication. This would assume that the IdP can trust the MO-Relay - most probably they would be in same trusted network and operated by the same business entity.

The IdP generates a SAML assertion with *AuthnStmt* containing the Principal's pseudonymous *NameID*, to be consumed by the *ID-VASP*, and *AttributeStmt*, containing *ID-WSF Discovery Bootstrap* that allows ID Web Services to be invoked. The assertion is sent (MO4) to the MO-Relay, which forwards it (MO5, <DeliverReq> + <AuthnResp>) to the ID-VASP. This is effectively an unsolicited authentication response. It knows to which ID-VASP to send the message by mapping the number or short code to the ID-VASP's end point URL for MO interface. Presumably, there is some routing table or other implementation-dependent means for determining this. All of this happens using one of the protocols profiled later in this document, e.g., LECP, ECP, or SSOS.

Now, the ID-VASP consumes the assertion, notices that the user is valid, and interprets the service request. The ID-VASP may perform any desired processing, but finally it has to reply (MO6, <DeliverRsp>) to the MO-Relay, confirming that the message, sent by the user, was correctly received. Upon (MO6), the MO-Relay may acknowledge the message to the messaging server (e.g., <DeliverRsp> to MMSC) which may take any appropriate and necessary action in the mobile network.

If the VAS involves a reply with content, the MT scenario will be used to send this reply. While the ID-VASP will not know the Principal's phone number, it will have the means to make an ID Web Service call that conveys enough information for the MT-Relay to figure out the phone number and other parameters needed to send the content to the Principal. At any rate, the content will be sent asynchronously with respect to message (MO6).

In processing the message (MO5, <DeliverReq>), the ID-VASP may invoke ID Web Services. Typically, it would invoke (MO5.1) the *Discovery Service* to find out the end point for the ID Web Service of interest and then call (MO5.2) the ID-WSP to obtain some service, or perhaps attributes about the Principal or her handset. All these interactions are *enabled* by the present specification, but use regular ID-WSF mechanisms and are therefore not in the scope of this specification.

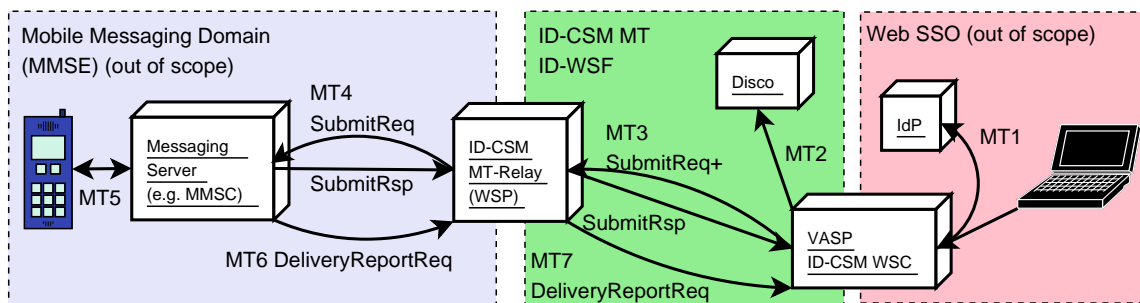
Roles defined

149 ID-SIS-CSM MO-Relay This entity acts as LECP, ECP, or SSOS WSC in order to effectuate SSO and to pass the
150 message to the ID-VASP. It will also have to talk some messaging protocol, such as MM7
151 or SMPP towards the Mobile Messaging Domain. How this happens is not within the scope
152 of this specification. The MO-Relay is a functional entity acting on behalf of the user in the
153 Liberty-based interactions. The concrete realization of this entity is not within the scope
154 of this document, e.g., MO-Relay may be one or several logical elements at the whim of the
155 implementer.

156 IdP There is nothing special about this entity other than that it must accept mobile authentication.
157 How it does this is not within the scope of this specification. Any Liberty ID-FF 1.2-
158 ID-WSF 1.1-, or SAML 2.0-certified IdP can be used. As IdPs are well-specified in other
159 specifications, they will not be further described in this specification.

160 ID-VASP This is a special type of VASP that speaks the protocol described in this specification (steps
161 5 and 6). An ID-VASP may also make ID-WSF Web Service calls such as calling the ID-
162 SIS-CSM MT service to send content requested by the Principal. The latter aspect employs
163 normal mechanisms documented in Liberty ID-WSF specifications and will not be discussed
164 further in this specification.

165 1.3. Mobile Terminated (MT) Scenario and Roles



166
167 **Figure 2. MT Scenario and Roles**

168 In the MT scenario, the Principal performs a Single Sign On (SSO) (MT1) using some federated identity protocol with
169 which we do not have to concern ourselves except to the extent that the VASP, which acts as an *ID-SIS-CSM WSC*,
170 will receive a discovery bootstrap containing a *resource offering* (RO) for the discovery service. The SSO operation
171 could be the MO scenario, above, or it could be something else, perhaps a LUAD or web-based SSO. The RO may
172 also have been received earlier by other means, such as a previously created subscription.

173 The ID-SIS-CSM WSC discovers (MT2) the *ID-SIS-CSM MT-Relay* using the discovery service indicated by the RO
174 in the bootstrap. As a precondition for this to succeed, the ID-SIS-CSM MT-Relay must have been registered for the
175 Principal. This registration may have happened by a request of the Principal, previously, and using standard ID-WSF
176 protocols, or it could have happened using some implementation-dependent, out-of-band method, such as a default
177 value or bulk registration. All this is standard ID-WSF usage and will not be discussed further within this document.

178 The ID-SIS-CSM WSC contacts (MT3, e.g., **<SubmitReq+>**) the ID-SIS-CSM MT-Relay using the ID-WSF-based
179 protocol described in this document. The ID-SIS-CSM MT-Relay contacts (MT4, e.g., **<SubmitReq>**) the messaging
180 server (e.g., MMSC) or other Mobile Messaging Domain entity to request delivery (MT5) of the message. In reply
181 to (MT4, e.g., **<SubmitRsp>**), the ID-SIS-CSM MT-Relay will get confirmation about acceptance of the message for
182 delivery which it passes (MT3) back to ID-SIS-CSM WSC.

183 If the ID-SIS-CSM WSC requested a *delivery receipt*, this will be sent asynchronously. Generally, the messaging
184 server will send (MT6, **<DeliveryReportReq>**) the delivery receipt to ID-SIS-CSM MT-Relay in a way that is not
185 within the scope of this specification and the MT-Relay will send (MT7) a *notification* to the ID-SIS-CSM WSC.

186 **Roles defined**

187 **ID-SIS-CSM MT-Relay** This entity acts as an ID Web Services Provider that sends mobile messages to the Principal.
188 It has an ID-WSF-based interface, specified in the present document, and a Mobile Messaging
189 Domain interface, perhaps MM7 or SMPP, that is not within the scope of this document.

190 The MT-Relay is a functional entity acting on behalf of the user in the Liberty-based
191 interactions. The concrete realization of this entity is not within the scope of this document,
192 e.g., the MT-Relay may be one or several logical elements at the whim of the implementer.

193 **ID-SIS-CSM WSC** This is an ID-WSF-based ID Web Services Client that speaks the client half of the protocol
194 described in this document. It usually also has some federation framework SP interface for
195 SSO (MT1), but that interface is not within the scope of this document as long as it allows
196 discovery or an ID-SIS-CSM MT service RO to be obtained.

197 **Disco** This is a regular ID-WSF discovery service [[LibertyDisco12](#)]. While this entity is
198 architecturally necessary, there is nothing special about it. Any certified ID-WSF discovery
199 service implementation can be used and thus will not be discussed further within this
200 document.

201 **1.4. Combined MO and MT Scenario**

202 In this scenario, the Principal uses the MO to request some service which is then delivered using MT. It essentially
203 combines MO and MT scenarios, but also creates the requirement that the ID-VASP has to be able to send a reply
204 message using the WSP offered by ID-SIS-CSM MT-Relay. Since the MO scenario states that the ID-VASP must be
205 able to call any ID Web Service, this requirement is trivially satisfied.

206 If the terminal or the MT-Relay needs to correlate the MT message to the MO message (i.e., MT is legitimate only if
207 there was corresponding MO), it MAY use the <**LinkedID**> element, see [[MM7](#)], Section 8.7.1.3 "Features," p.109.

208 **1.5. Combined MT and MO Scenario**

209 In this scenario, the VASP, or any other entity that acts as an ID-SIS-CSM WSC, sends a message, using the MT
210 scenario, to the Principal, requesting a reply. If the Principal replies, the MO scenario is used to deliver the reply to
211 the VASP, which, in this case, acts in the ID-VASP role.

212 This scenario generates two special requirements.

213 1. The message sent in MT must be replyable, e.g., perhaps it appears to have been sent from the short code of the
214 ID-VASP.

215 2. It must be possible to correlate the MO message to the MT message. This can be accomplished either

216 a. by the content of the reply, e.g., the reply must contain the code that was sent in the MT message, or

217 b. by using some messaging level correlation mechanism.

218 Obviously, there are certain dangers in sending messages to the Principal and asking her to reply to them. A sensible
219 protection against these threats is to limit in the MT-Relay or the Mobile Messaging Domain, e.g., in the MMSC, the
220 possible "From" addresses that a given ID-SIS-CSM WSC can spoof.

221 1.6. Notational Conventions

222 This document is a Liberty ID Web Services Interface Specification that normatively specifies the ID-SIS-CSM
223 Service.

224 In case of disagreement between the present document and any guidelines or XML schema descriptions, this document
225 is prescriptive. Any published errata is hereby incorporated to this document by reference and as such is normative.

226 The key words "MUST," "MUST NOT," "REQUIRED," "SHALL," "SHALL NOT," "SHOULD," "SHOULD NOT,"
227 "RECOMMENDED," "MAY," and "OPTIONAL" in this specification are to be interpreted as described in IETF
228 [RFC2119].

229 N.B. [MM7] and colloquial messaging terminology is used where ever possible even when Liberty
230 terminology collides.

231 1.7. Derivation of ID-SIS-CSM from MM7, ID-FF, SAML 2.0, and ID-WSF

232 The ID-SIS-CSM MO service is formed by extending Liberty ID-FF 1.2 LECP [LibertyBindProf], Section 3.2.4
233 "Liberty-Enabled Client and Proxy Profile," or SAML 2.0 ECP [SAMLProf2], Section 4.2 "Enhanced Client or Proxy
234 (ECP) Profile," by adding an MM7 [MM7] payload to the message (MO5, <DeliverReq> + <AuthnResp>), or by
235 employing regular Liberty ID-WSF Single Sign-On Service [LibertyAuthn11], to obtain an assertion which is then
236 added to the MM7 payload of message (MO5). All stipulations of these specifications are incorporated, unless
237 expressly waived in this specification.

238 Different federation framework versions (i.e., LECP vs. ECP vs. SSOS) are accommodated by separate profiles that
239 appear as part of this specification. All implementations MUST implement the ECP-based profile while the LECP
240 and SSOS-based profiles are OPTIONAL. An implementation SHOULD state which versions it supports.

241 The ID-SIS-CSM MT service is formed from MM7 [MM7] by adding ID-WSF 1.1 [LibertySOAPBinding12]-
242 specified SOAP headers to convey the identity of the Principal and addressing. All stipulations of these specifications
243 are incorporated, unless expressly waived in this specification.

244 Both MO and MT services can be implemented using various versions and sub-versions of the MM7 specification. All
245 implementations MUST support [MM7] (the specific version) and MAY support other versions. An implementation
246 SHOULD state which versions it supports. Note that this restriction does not apply to the MO2 and MT4 interfaces.

247 1.8. Compliance

248 This specification defines an interface to which an *implementation* and an *instance* (deployment, ID-VASP) of ID-SIS-
249 CSM service MUST conform. For an ID-VASP to be ID-SIS-CSM compliant, it MUST adhere to all aspects of the
250 specification.

251 A minimally-compliant ID-SIS-CSM implementation MAY choose not to support optional features of this specifica-
252 tion. Such an implementation may be labeled as an "ID-SIS-CSM implementation" provided that publicly available
253 documentation about the implementation clearly discloses which optional parts of the schema and which features are
254 not supported. All other features and schema are assumed to be supported. A deployment of an implementation
255 that is not capable of supporting the full schema SHOULD only register the discovery option keywords that accurately
256 reflect its capabilities.

257 An implementation that only supports Mobile-Originated operation is termed an "ID-SIS-CSM MO implementation."
258 Within the MO scenario, the ID-SIS-CSM MO-Relay and ID-VASP roles exist. If an implementation only supports
259 one of the roles, its labeling MUST indicate which.

260 An implementation that only supports Mobile-Terminated operation is termed an "ID-SIS-CSM MT implementation."
261 Within the MT scenario, the ID-SIS-CSM MT-Relay and ID-SIS-CSM WSC roles exist. If an implementation only
262 supports one of the roles, its labeling MUST indicate which.

263 An implementation that supports all of the schema and features specified in this document, including Annex, in all roles
264 MAY be labeled as a "full ID-SIS-CSM implementation." An implementation that falls short on any feature or part of
265 the schema MUST NOT be labeled as a "full ID-SIS-CSM implementation." A "full ID-SIS-CSM implementation"
266 deployment MAY administratively, or via configuration, restrict the schema and features.

267 An ID-SIS-CSM implementation MUST publicly disclose which federation framework, ID-WSF, and MM7 versions
268 it supports. Labeling of an implementation that does not yet support SAML 2.0 must be qualified by the designator
269 "(interim)."

270 A deployment that supports all of the schema and features specified in this document MAY be labeled as a "full
271 ID-SIS-CSM deployment" or a "full ID-SIS-CSM service." To meet full ID-SIS-CSM deployment status, all of the
272 schema and features MUST be supported for all Principals wishing to use them, barring a policy decision excluding
273 some Principal.

274 A deployment that only supports some subset of ID-SIS-CSM may still be labeled as an "ID-SIS-CSM deployment"
275 or an "ID-SIS-CSM service" provided that the deployment publicly discloses the subset that it supports.

276 An ID-SIS-CSM deployment or instance MUST publicly disclose which federation framework, ID-WSF, and MM7
277 versions it supports. Labeling of a deployment or implementation that does not yet support SAML 2.0 must be
278 qualified by designator "(interim)."

279 1.9. Namespaces

280 In the discovery registrations, the MT service is registered as *service type*

281 urn:liberty:id-sis-csm:2006-02

282
283

284 The addressing extensions, as well as legacy messaging extensions, described in the Annex are in their own namespace,
285 called "csm:" and denoted by the same URN as is used for *service type*. The extension points of MM7 addressing are
286 presumed to be defined in respective MM7 schema, here prefixed as "mm7:."

287 **Table 1. Referenced XML namespaces**

Prefix	URI	Description
mm7:	URI of chosen MM7 version	MM7 version, such as [MM7]. Some other specifications refer to this namespace as "tns:."
csm:	urn:liberty:id-sis-csm:2006-02	This service.
ds:	urn:liberty:disco:2004-04	Liberty ID-WSF Discovery Service [LibertyDisco12]
xml:	http://www.w3.org/TR/REC-xml	XML Definition [XML] (for xml:lang)
xs:	http://www.w3.org/2002/XMLSchema	XML Schema Definition [Schema1-2]

2. MO Service

2.1. MO5 Message

The MO5 message MUST be a valid MM7 message, including SOAP attachments and MIME multipart/related components, if needed. Typically, it is a <DeliverReq> message.

It may have been constructed by the MO-Relay or it may be passed almost directly from some source, such as MMSC or MO2 message (<DeliverReq>). Since MO2 generally is not signed, the MO-Relay has great license in sanitizing or re-crafting the message before it is passed on as MO5.

MO5 MUST NOT contain valid <Sender> information since this is conveyed by the single sign-on elements (e.g., SAML 2.0 <Response> or ID-FF 1.2 <AuthnResp>). If the message is being tunneled, the MO-Relay MUST sanitize this information away.

MO5 MUST contain, depending on profile, a <Response>, see [SAMLCore2] Section 3.3.3 "Element <Response>," or an <AuthnResponse>, see [LibertyProtSchema], element. This element MUST be passed in the SOAP <Body> right after the MM7 message (e.g., after <DeliverReq>) and MUST contain a SAML attribute statement describing a Discovery Bootstrap, see Section 6. "SAML AttributeDesignator for Discovery ResourceOffering" of [LibertyDisco12].

MO5 MUST contain HTTP and SOAP headers as mandated by profile, see below.

2.2. MO6 Message

The MO6 message MUST be a valid MM7 response, including SOAP attachments and MIME multipart/related components, if needed. This specification does not specify any extensions over MM7 for this message. Typically, it is a <DeliverRsp> message.

MO6 may be correlated to MO5 by virtue of the HTTP request - response mechanism. However, the ID-VASP SHOULD observe MM7 correlation requirements.

2.3. Other MO Processing Rules

If delivery receipt was requested at the MO2 interface, the MO-Relay SHOULD generate it upon receiving MO6.

2.4. MO ECP Profile

The MO-Relay MUST act in Enhanced Client role and the ID-VASP MUST act in SAML 2.0 SP role.

Normal ECP protocol MUST be implemented, as specified in [SAMLProf2], Section 4.2 "Enhanced Client or Proxy (ECP) Profile," with the following modifications:

a. The MO-Relay generates an unsigned <AuthnRequest> and sends (MO3) it to the IdP, i.e., the protocol starts at step 4, and

b. The message (MO5) in step 7 ("ECP Conveys <Response> to SP using PAOS") MUST have PAOS-related headers described in [SAMLProf2], Section 4.2.4.5 "PAOS Response Header Block: ECP to SP."

320 MO5 MUST have a **<Response>** element in its SOAP **<Body>**, as described above.

321 **2.5. MO LECP Profile**

322 The MO-Relay MUST act in LEC role and the ID-VASP MUST act in SP role.

323 Normal LECP protocol is implemented, as specified in [[LibertyBindProf](#)], Section 3.2.4 "Liberty-Enabled Client and
324 Proxy Profile," with the following modifications:

325 a. The MO-Relay generates an unsigned **<AuthnRequest>** and sends (MO3) it to the IdP, i.e., the protocol starts at
326 step 4, and

327 b. The message in step 7 ("Posting the Form Containing the **<AuthnResponse>**") MUST use MO5 format,
328 described above. It MUST NOT be the LARES-based. MO5 MUST have the HTTP headers described in
329 [[LibertyBindProf](#)], Section 3.2.4.1 "Liberty-Enabled Indications."

330 MO5 MUST have **<AuthnResponse>** element in its SOAP **<Body>**, as described above.

331 **2.6. MO ID-WSF 1.1 SSOS Profile**

332 The MO-Relay MUST act in LUAD role and the ID-VASP MUST act in SP role [[LibertyAuthn11](#)].

333 1. The MO-Relay invokes the AS in the normal fashion to authenticate itself and SSOS to obtain the discovery
334 bootstrap.

335 2. The MO-Relay adds the **<AuthnResponse>** element from step 1 to the MO5 and sends it to the end point
336 indicated by *AssertionConsumerServiceURL* meta-data element of the ID-VASP.

337 3. The ID-VASP replies with MO6.

3. MT Service

3.1. MT3 Message and Its Response

The MT3 message MUST be a valid MM7 message, including SOAP attachments and MIME multipart/related components, if needed.

The MT-Relay MUST look in the <Recipients> container and if it finds *identity addressing tokens*, see [Section 4.2](#), convert them to messaging addresses as needed by backend technology. If it finds other addresses than identity addressing tokens, the behavior is implementation-dependent. The MT-Relay may, in this case, act as a regular MMSC or it may ignore such addresses or even flag an error.

MT3 MUST have SOAP headers prescribed by the profile, see below.

Response to MT3 MUST have SOAP headers prescribed by the profile, see below.

3.2. MT7 Message and Its Response

The MT7 message MUST be a valid MM7 message, including SOAP attachments and MIME multipart/related components, if needed.

It may have been constructed by MT-Relay or it may be passed almost directly from some source, such as MMSC or MT6 message. Since MT6 generally is not signed, MT-Relay has great license in sanitizing or re-crafting the message before it is passed on as MT7.

MT7 SHOULD NOT contain valid <Sender> information, unless it is not privacy sensitive, e.g., the Sender only identifies a well-known system entity such as the VASP. If the message is being tunneled, the MT-Relay MUST sanitize this information away.

MT7 is just a regular MM7 response. It does not have any ID-WSF properties. Determining the end point for sending an MT7 message is out of scope.

3.3. MT ID-WSF 1.1 Profile

MT3 is enhanced by adding the SOAP headers and signatures described in [[LibertySOAPBinding12](#)] and [[LibertySecMech12](#)] to it as is customary for ID-WSF 1.1-based services.

The MT-Relay creates a <Recipients> container, overwriting any previous <Recipients> container using the method described in [Section 4.2](#)

Once the <Recipients> has been constructed, the MT-Relay sends the message to the messaging server (e.g., MMSC) over the MT4 interface. The messaging server is expected to reply over this same interface with an MM7 response.

The MT-Relay sanitizes away from the MT4 response any identifiable information and uses it as the MT3 response.

The MT-Relay decorates the MT3 response with the SOAP headers and signatures described in [[LibertySOAPBinding12](#)] and [[LibertySecMech12](#)] as is customary for ID-WSF 1.1-based services.

4. Protocol Features

4.1. Discovery Registrations

Only the MT service needs to be registered in the discovery service with its service type. The MO "service" is not a service in an ID-WSF sense and, therefore, can not be registered.

The following discovery option keywords MAY be registered

urn:liberty:id-sis-csm:2006-02:deliveryreceipt Delivery receipts are supported

urn:liberty:id-sis-csm:2006-02:framework:sms The MT service is SMS-capable

urn:liberty:id-sis-csm:2006-02:framework:mm7 Regular, non-Liberty, MM7 is supported

urn:liberty:id-sis-csm:2006-02:framework:idwsf1.1 Liberty ID-WSF 1.1 framework [LibertyIDWSF10SCR] is supported

4.1.1. Discovery Options to Indicate Supported MM7 Versions

An implementation MAY indicate its support for a specific version of the MM7 protocol by registering a discovery option of form

```
urn:liberty:id-sis-csm:2006-02:support:<mm7-ns-uri>
```

where the `<mm7-ns-uri>` is the namespace URI of the supported MM7 version. For example (very long so it may wrap out of right edge):

```
urn:liberty:id-sis-csm:2006-02:support:http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-6-MM7-1-4
```

An implementation MAY register multiple such options to indicate support for multiple versions.

4.1.2. Implementation-Dependent Discovery Options

The implementers and deployers MAY define additional discovery option keywords to meet their special needs, provided that these keywords are properly qualified, e.g., using the domain name of the inventor to avoid conflicts. Such additional keywords MUST NOT start with urn:liberty. Some potential uses for additional keywords include advertising commercial properties such as cost or charging model so that a VASP can choose an appropriate gateway to use.

4.2. Addressing One Message to Multiple Recipients

An ID-SIS-CSM message may be addressed to any number of recipients, including one, identified by *identity addressing tokens*. The identity addressing token is an abstract notion that allows identity to be carried in the addressing field. Specific instances of the identity addressing token are defined in profiles, such as [Section 4.2.1](#). A message may also be addressed to resolvable addresses, such as MSISDN or RFC822 addresses.

When an identity addressing token of some type is included in an MM7 `<To>`, `<Cc>`, or `<Bcc>` container, it conveys that the Principal has consented to receive messages from the sender as all Liberty-defined mechanisms require the user to be present, at some time in past no further than the validity period of the identity addressing token. In other words, for the VASP to have obtained the identity addressing token, the user must have performed a single sign-on somewhere and allowed the identity addressing token to be discovered or obtained.

408 The identity addressing token is carried in the MM7 message by placing it in the **<Extension>** element in an MM7
409 **<To>**, **<Cc>**, or **<Bcc>** container, see [Section 6](#).

410 4.2.1. Using Liberty ID-WSF 1.1 ResourceID for Addressing

411 When using Liberty ID-WSF 1.1, the addressing information is expressed by a **<ResourceID>** or an **<EncryptedResourceID>**
412 **<ResourceID>** element. To bind the addressing to credentials, an **<IdentityAddressingToken>** container is intro-
413 duced such that it contains both **<ResourceID>** or **<EncryptedResourceID>** and **<CredentialRef>** elements. The
414 latter is used to reference a SAML assertion that serves as a credential. The **<IdentityAddressingToken>** acts as
415 *identity addressing token* in the sense of [Section 4.2](#).

416 Schema

```
417 <xs:element name="IdentityAddressingToken"  
418   type="csm:IdentityAddressingTokenType" />  
419 <xs:complexType name="IdentityAddressingTokenType">  
420   <xs:sequence>  
421     <xs:group ref="ds:ResourceIDGroup" minOccurs="1" maxOccurs="1" />  
422     <xs:element name="CredentialRef" type="xs:IDREF"  
423       minOccurs="0" maxOccurs="1" />  
424   </xs:sequence>  
425 </xs:complexType>  
426  
427
```

428 The ResourceIDGroup expresses either a **<ResourceID>** or an **<EncryptedResourceID>**. There MUST be exactly
429 either one or another. An **<IdentityAddressingToken>** can address only one Principal. Use multiple tokens for
430 addressing multiple Principals.

431 N.B. Addressing a single Principal works using this same mechanism: just supply only one **<Iden-**
432 **tiyAddressingToken>**. This approach is somewhat different that in some other ID-WSF-based
433 services where the credentials in the SOAP header implicitly specify the targeted Principal. With
434 the **<IdentityAddressingToken>**, the credentials in the SOAP header can still affect determination
435 of the Principal because they can be referenced using **<CredentialRef>**.

436 **<CredentialRef>** contains a "pointer" to the credential assertion, typically carried somewhere in SOAP headers. The
437 contents of the **<CredentialRef>** element MUST match the ID XML attribute of the corresponding SAML assertion.
438 **<CredentialRef>** SHOULD be used, but there may be special scenarios, e.g., in a trusted network, where it can be
439 dispensed.

440 Example

```
441 <Assertion ID="CREDI-1234156154574djask"> ... </Assertion>  
442 ...  
443 <IdentityAddressingToken>  
444   <ResourceID>http://mt-gw.com/4m0B82k15csaUxs</ResourceID>  
445   <CredentialRef>CREDI-1234156154574djask</CredentialRef>  
446 </IdentityAddressingToken>  
447  
448
```

449 The MT-Relay is responsible for performing discovery registrations such that Principals using the same MT-Relay can
450 indeed be identified as such by the ID-SIS-CSM WSC. It is RECOMMENDED that the MT-Relay uses the same end
451 point and security mechanism for all Principals. If different end points are used, the ID-SIS-CSM WSC may be lead
452 to believe that they point to different MT-Relays and, thus, can not be batched.

453 4.3. Mixing Frameworks

454 ID-SIS-CSM is designed such that the choice of Single Sign-On framework (a.k.a. Federation Framework) is
455 independent of the Identity Web Services Framework and vice versa. Thus, it is possible to use SAML 2.0 SSO
456 and ID-WSF 1.1 together. See [[LibertyCrossFramework](#)] for guidance.

457 **4.4. Securing Attached Message Contents**

458 Following MM7, the ID-SIS-CSM allows message contents to be carried partially or entirely as MIME attachments
459 [[SOAPattach](#)]. When such attachments are used, they MAY be secured as described in [[wss-swa](#)]. The message
460 payload MAY use its own security mechanism. Such security mechanisms are outside the scope of this document.

5. Guidance

5.1. VASP Aggregation

As content messaging is an existing industry with value chains and solutions in place, it is desirable to keep them as much as they are. One particular player that has emerged is a *VASP Aggregator*.

A VASP Aggregator interacts with one or multiple mobile operators on behalf of a large number of VASPs. This allows mobile operators to maintain only few contact points to the vast number of VASPs out there.

ID-SIS-CSM supports the VASP aggregator model and, indeed, a VASP Aggregator can add a lot of value to its VASPs by interfacing ID-SIS-CSM to legacy protocols that are already used in industry and by acting as systems integrator.

There are two basic cases of VASP aggregation that need to be handled differently under ID-SIS-CSM due to the ability to reply and to privacy requirements.

1. Aggregation of many simple VASPs

- aggregator acts as ID-VASP,
- VASPs may continue to talk old protocols (aggregator translates), and
- Use *temporary* NameIDs to preserve privacy and avoid collusion (same NameID towards all aggregated VASPs, but different ID is used every time).

2. Aggregation of VASPs that need to remember state about users

- must use *persistent* NameID,
- every aggregated VASP must have a different persistent NameID in order to avoid collusion,
- this means that we need a separate ID-VASP for every underlying VASP,
- aggregator operates a farm of *virtual* ID-VASPs, one per short code, and
- as long as virtualization can be managed efficiently, aggregator's business will be good and add value to VASPs.

5.2. Accounting and Customer Care

A real life problem that is common in the content messaging industry is that users repudiate VASP transactions. Customer Care generally needs to handle such requests and they need an easy way to verify the claims of the customers.

Accounting only for the money at the granularity of any access to short code is insufficient. A way to check the transactions per short code per user is needed.

Under ID-SIS-CSM aggregation, the aggregated VASP logs are likely to show only NameID, but the Customer Care center can be trusted by the operator and thus can map from the NameIDs back to the MSISDN.

490 **6. Using ID-SIS-CSM with MM7 XML Schema**

491 To address a message to multiple recipients, see [Section 4.2](#), the identity addressing tokens **MUST** be placed in the
492 **<mm7:Extension>** container in the **<To>**, **<Cc>**, or **<Bcc>** container of an MM7 message as if the AddressGroup
493 schema element contained a choice with

```
494 <xs:element name="Extension" type="mm7:anyDataType" />
```

495

496

497

498

7. Examples

The following examples illustrate some ID-SIS-CSM protocol exchanges and the ID-WSF SOAP binding around them. These examples are not normative. In fact, they even make use of the ability to use other versions of MM7 than that specified in [MM7].

7.1. MO Round Trip

Assuming the following plain MM7 message, carried on https transport, on MO2 interface,

```
POST /send.x HTTP/1.0
HOST: 192.168.70.72
SOAPACTION: ""
X-FH-EXTERNAL-MESSAGE-ID: Q0FL6sProLUAAEV3AAAACQAAAAAMAAAA
X-FH-CONNECTION-ID: 3184
X-FH-ROUTING-FROM: +44679501170/TYPE=PLMN
CACHE-CONTROL: no-cache
USER-AGENT: demo/1.5
CONNECTION: keep-alive
ACCEPT: text/html, image/gif, image/jpeg, *; q=.2, */*; q=.2
PRAGMA: no-cache
CONTENT-LENGTH: 1844
CONTENT-TYPE: multipart/related;
    boundary="fh-mms-multipart-boundary-11059-1128352777535";
    type="text/xml"; start="<cid-550@192.168.115.10>"

--fh-mms-multipart-boundary-11059-1128352777535
Content-Type: text/xml; charset="utf-8"
Content-ID: <cid-550@192.168.115.10>

<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope
  xmlns:soap-env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://schemas.xmlsoap.org/soap/envelope/soap-envelope.xsd">
  <soap-env:Header>
    <TransactionID
      soap-env:mustUnderstand="1"
      xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0 REL-5-MM7-1-0.xsd">
      fh-transaction-id-11058-1128352777534
    </TransactionID>
  </soap-env:Header>
  <soap-env:Body>
    <DeliverReq
      xmlns="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-0 REL-5-MM7-1-0.xsd">
      <MM7Version>5.3.0</MM7Version>
      <LinkedID>0001CE41150A4AC</LinkedID>
      <Sender>
        <Number>44679501170</Number>
      </Sender>
      <Recipients>
        <To>
          <ShortCode>55555</ShortCode>
        </To>
      </Recipients>
      <TimeStamp>2005-10-03T15:19:37-00:00</TimeStamp>
      <Priority>Normal</Priority>
      <Content
        allowAdaptations="true"
```

```
560         href="&lt;0001CE41150A4AD@demo.com> "  
561         type="MMS" />  
562     </DeliverReq>  
563 </soap-env:Body>  
564 </soap-env:Envelope>  
565 --fh-mms-multipart-boundary-11059-1128352777535  
566 Content-Type: multipart/mixed; boundary="fh-mms-multipart-next-part-1128352777441-0-95054"  
567 Content-ID: <0001CE41150A4AD@demo.com>  
568  
569 --fh-mms-multipart-next-part-1128352777441-0-95054  
570 content-length: 5  
571 Content-Type: text/plain;charset=utf-8  
572  
573 Games  
574 --fh-mms-multipart-next-part-1128352777441-0-95054--  
575  
576 --fh-mms-multipart-boundary-11059-1128352777535--  
577  
578
```

579 the MO-Relay could send following MO3 message to the IdP.

```
580 POST /ecplogin HTTP/1.0  
581 SOAPACTION: http://www.oasis-open.org/committees/security  
582 X-MSISDN: 44679501170  
583 CONTENT-TYPE: text/xml  
584  
585 <soap:Envelope  
586   xmlns:lib="urn:liberty:iff:2003-08"  
587   xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">  
588   <soap:Header>  
589     <paos:Request  
590       xmlns:paos="urn:liberty:paos:2003-08"  
591       messageID="1"  
592       responseConsumerURL="https://g-wsc.liberty-iop.org:8643/MM7-CS"  
593       service="urn:oasis:names:tc:SAML:2.0:profiles:SSO:ecp"  
594       soap:Actor="http://schemas.xmlsoap.org/soap/actor/next"  
595       soap:mustUnderstand="1"/>  
596     <ecp:Request  
597       xmlns:ecp="urn:oasis:names:tc:SAML:2.0:profiles:SSO:ecp"  
598       IsPassive="0"  
599       ProviderName="g-wsc"  
600       soap:Actor="http://schemas.xmlsoap.org/soap/actor/next"  
601       soap:mustUnderstand="1">  
602       <sa:Issuer  
603         xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion">  
604         https://g-wsc.liberty-iop.org:8643/sp.xml  
605       </sa:Issuer>  
606       <sp:IDPList xmlns:sp="urn:oasis:names:tc:SAML:2.0:protocol"/>  
607     </ecp:Request>  
608   </soap:Header>  
609   <soap:Body>  
610     <sp:AuthnRequest  
611       xmlns:sp="urn:oasis:names:tc:SAML:2.0:protocol"  
612       AssertionConsumerServiceURL="https://g-ecp.liberty-iop.org:8083/SP-P"  
613       ForceAuthn="false"  
614       ID="RYijvfbg_BGdjZlgxD63W"  
615       IsPassive="false"  
616       IssueInstant="2005-10-03T16:58:28Z"  
617       ProtocolBinding="urn:oasis:names:tc:SAML:2.0:bindings:PAOS"  
618       ProviderName="g-wsc"  
619       Version="2.0">  
620     <sa:Issuer  
621       xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"  
622       Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">  
623       https://g-wsc.liberty-iop.org:8643/sp.xml  
624     </sa:Issuer>
```

```

625     <sp:NameIDPolicy
626       AllowCreate="true"
627       Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent"/>
628     <sp:RequestedAuthnContext Comparison="exact">
629       <sa:AuthnContextClassRef
630         xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion">
631         urn:oasis:names:tc:SAML:2.0:ac:classes:MobileOneFactorContract
632       </sa:AuthnContextClassRef>
633     </sp:RequestedAuthnContext>
634   </sp:AuthnRequest>
635 </soap:Body>
636 </soap:Envelope>
637
638

```

639 This **<AuthnRequest>** is synthesized on behalf of the SP whose provider ID is <https://g-wsc.liberty-iop.org:8643/sp.xml>. Note that the request is performed by the MO-Relay on behalf of another provider (the Content Provider or VASP) and therefore the request is not signed.

```

642 HTTP/1.0 200 Ok
643 CONTENT-LENGTH: 5857
644 CONTENT-TYPE: application/vnd.paos-response+xml
645
646 <soap:Envelope
647   xmlns:lib="urn:liberty:iff:2003-08"
648   xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
649   <soap:Header>
650     <ecp:Response
651       xmlns:ecp="urn:oasis:names:tc:SAML:2.0:profiles:SSO:ecp"
652       AssertionConsumerServiceURL="https://g-wsc.liberty-iop.org:8643/SP-P"
653       soap:actor="http://schemas.xmlsoap.org/soap/actor/next"
654       soap:mustUnderstand="1"/>
655   </soap:Header>
656   <soap:Body>
657     <sp:Response
658       xmlns:sp="urn:oasis:names:tc:SAML:2.0:protocol"
659       ID="R43axB2w-lIc4g-nSoqZp"
660       InResponseTo="RYijvfBg_BGdjZlxD63W"
661       IssueInstant="2005-10-03T16:58:30Z"
662       Version="2.0">
663       <sa:Issuer
664         xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
665         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
666         https://g-ds.liberty-iop.org:8681/idp.xml
667       </sa:Issuer>
668       <sp:StatusCode Value="urn:oasis:names:tc:SAML:2.0:status:Success"/>
669     </sp:Response>
670     <sa:Assertion
671       xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
672       ID="ARFA7ZbsmMFLMY_Cw6S5"
673       IssueInstant="2005-10-03T16:58:30Z"
674       Version="2.0">
675       <sa:Issuer
676         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
677         https://g-ds.liberty-iop.org:8681/idp.xml
678       </sa:Issuer>
679       <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
680         <ds:SignedInfo>
681           <ds:CanonicalizationMethod
682             Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
683           <ds:SignatureMethod
684             Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
685           <ds:Reference URI="#ARFA7ZbsmMFLMY_Cw6S5">
686             <ds:Transforms>
687               <ds:Transform
688

```

```

689         Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
690     <ds:Transform
691         Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
692     </ds:Transforms>
693     <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
694     <ds:DigestValue>AmHQxTnGRTLdu4lKt+Xx/S5gxxs=</ds:DigestValue>
695     </ds:Reference>
696 </ds:SignedInfo>
697 <ds:SignatureValue>TGqw/+QD...3U64zX0=</ds:SignatureValue>
698 </ds:Signature>
699 <sa:Subject>
700     <sa:NameID
701         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent"
702         NameQualifier="https://g-ds.liberty-iop.org:8681/idp.xml">
703         P5NgEgPo0VGx0Au9Vx0Rl
704     </sa:NameID>
705     <sa:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer">
706         <sa:SubjectConfirmationData
707             NotOnOrAfter="2005-10-03T17:08:29Z"
708             Recipient="https://g-wsc.liberty-iop.org:8643/SP-P"/>
709     </sa:SubjectConfirmation>
710 </sa:Subject>
711 <sa:Conditions
712     NotBefore="2005-10-03T16:53:30Z"
713     NotOnOrAfter="2005-10-03T17:08:30Z">
714     <sa:AudienceRestriction>
715         <sa:Audience>https://g-wsc.liberty-iop.org:8643/sp.xml</sa:Audience>
716     </sa:AudienceRestriction>
717 </sa:Conditions>
718 <sa:AuthnStatement
719     AuthnInstant="2005-10-03T16:58:30Z"
720     SessionIndex="1128358709-1">
721     <sa:AuthnContext>
722         <sa:AuthnContextClassRef>
723             urn:oasis:names:tc:SAML:2.0:ac:classes:Password
724         </sa:AuthnContextClassRef>
725     </sa:AuthnContext>
726 </sa:AuthnStatement>
727 <sa:AttributeStatement>
728     <sa:Attribute>
729         ID-WSF1.1 DS ResourceOffering with appropriate credentials would go in here
730     </sa:Attribute>
731 </sa:AttributeStatement>
732 </sa:Assertion>
733 </sp:Response>
734 </soap:Body>
735 </soap:Envelope>
736
737
738
739

```

740 The next step in the mobile-originated sequence is that the MO-Relay sends an unsolicited PAOS response (MO5),
741 along with the original MM7 message, to the ID-VASP. The Response is appended after the regular MM7 message
742 (DeliverReq).

743 The MO5 message might be like:

```

744 POST /MM7-CS HTTP/1.0
745 AUTHORIZATION: Basic c3ltbGFiczpzeWlsYWJz
746 SOAP_ACTION:
747 CONTENT-TYPE: multipart/related;
748     type=text/xml; start="</cmvt256/mm7-submit>";
749     boundary=1128358710_2078917053
750
751 --1128358710_2078917053

```

```

752 CONTENT-ID: <cid-550@192.168.115.10>
753 CONTENT-TYPE: text/xml; charset="utf-8"
754
755 <soap:Envelope
756   xmlns:lib="urn:liberty:iff:2003-08"
757   xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
758   <soap:Header>
759     <mm7:TransactionID
760       xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2"
761       soap:actor="http://schemas.xmlsoap.org/soap/actor/next"
762       soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding"
763       soap:mustUnderstand="1">TIDszsxyhQptODEPnpGtCEG
764     </mm7:TransactionID>
765   </soap:Header>
766   <soap:Body id="bdy">
767     <mm7:DeliverReq
768       xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2">
769       <mm7:MM7Version>5.3.0</mm7:MM7Version>
770       <mm7:LinkedID>0001CE41150A4AC</mm7:LinkedID>
771       <mm7:Recipients>
772         <mm7:To>
773           <mm7:ShortCode>55555</mm7:ShortCode>
774         </mm7:To>
775       </mm7:Recipients>
776       <mm7:TimeStamp>2005-10-03T15:19:37-00:00</mm7:TimeStamp>
777       <mm7:Priority>Normal</mm7:Priority>
778       <mm7:Content
779         allowAdaptations="true"
780         href="&lt;0001CE41150A4AD@demo.com>"
781         type="MMS"/>
782     </mm7:DeliverReq>
783     <sp:Response
784       xmlns:sp="urn:oasis:names:tc:SAML:2.0:protocol"
785       ID="R43axB2w-lIc4g-nSoqZp"
786       InResponseTo="RYijvfbg_BGdjZlqxD63W"
787       IssueInstant="2005-10-03T16:58:30Z"
788       Version="2.0">
789       <sa:Issuer
790         xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
791         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
792         https://g-ds.liberty-iop.org:8681/idp.xml
793       </sa:Issuer>
794       <sp:Status>
795         <sp:StatusCode Value="urn:oasis:names:tc:SAML:2.0:status:Success"/>
796       </sp:Status>
797       <sa:Assertion
798         xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
799         ID="ARFA7ZbsmMFLMY_Cw6S5"
800         IssueInstant="2005-10-03T16:58:30Z"
801         Version="2.0">
802         <sa:Issuer
803           Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
804           https://g-ds.liberty-iop.org:8681/idp.xml
805         </sa:Issuer>
806         <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
807           <ds:SignedInfo>
808             <ds:CanonicalizationMethod
809               Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
810             <ds:SignatureMethod
811               Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
812             <ds:Reference URI="#ARFA7ZbsmMFLMY_Cw6S5">
813               <ds:Transforms>
814                 <ds:Transform
815                   Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
816                 <ds:Transform
817                   Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
818               </ds:Transforms>

```

```

819         <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
820         <ds:DigestValue>AmHQxTnGRTLdu4lKt+Xx/S5gxxs=</ds:DigestValue>
821     </ds:Reference>
822 </ds:SignedInfo>
823 <ds:SignatureValue>TGqw/+QD...C13U6 4zX0=</ds:SignatureValue>
824 </ds:Signature>
825 <sa:Subject>
826     <sa:NameID
827         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent"
828         NameQualifier="https://g-ds.liberty-iop.org:8681/idp.xml">
829         P5NgEgPo0VGx0Au9Vx0R1
830     </sa:NameID>
831     <sa:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer">
832         <sa:SubjectConfirmationData
833             NotOnOrAfter="2005-10-03T17:08:29Z"
834             Recipient="https://g-wsc.liberty-iop.org:8643/SP-P"/>
835     </sa:SubjectConfirmation>
836 </sa:Subject>
837 <sa:Conditions
838     NotBefore="2005-10-03T16:53:30Z"
839     NotOnOrAfter="2005-10-03T17:08:30Z">
840     <sa:AudienceRestriction>
841         <sa:Audience>https://g-wsc.liberty-iop.org:8643/sp.xml</sa:Audience>
842     </sa:AudienceRestriction>
843 </sa:Conditions>
844 <sa:AuthnStatement
845     AuthnInstant="2005-10-03T16:58:30Z"
846     SessionIndex="1128358709-1">
847     <sa:AuthnContext>
848         <sa:AuthnContextClassRef>
849             urn:oasis:names:tc:SAML:2.0:ac:classes:Password
850         </sa:AuthnContextClassRef>
851     </sa:AuthnContext>
852 </sa:AuthnStatement>
853 <sa:AttributeStatement>
854
855     The ID-WSF1.1 DS ResourceOffering with appropriate credentials would go in here
856
857 </sa:AttributeStatement>
858 </sa:Assertion>
859 </sp:Response>
860 </soap:Body>
861 </soap:Envelope>
862
863 --1128358710_2078917053
864 CONTENT-ID: <0001CE41150A4AD@demo.com>
865 CONTENT-TYPE: multipart/mixed; boundary="fh-mms-multipart-next-part-1128352777441-0-95054"
866
867 --fh-mms-multipart-next-part-1128352777441-0-95054
868 CONTENT-LENGTH: 5
869 CONTENT-TYPE: text/plain;charset=utf-8
870
871 Games
872
873 --fh-mms-multipart-next-part-1128352777441-0-95054--
874
875 --1128358710_2078917053--
876
877

```

878 As may be seen, this message contained a discovery bootstrap with appropriate credentials. This allows the ID-VASP
879 to contact other ID Web Services as needed to satisfy the request of the Principal. Eventually, the ID-VASP responds
880 with MO6 which could look like this:

```

881 HTTP/1.0 200 Ok
882 CONTENT-LENGTH: 817

```

```
883 CONTENT-TYPE: text/xml
884
885 <soap:Envelope
886   xmlns:lib="urn:liberty:iff:2003-08"
887   xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
888   <soap:Header>
889     <mm7:TransactionID
890       xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2"
891       soap:actor="http://schemas.xmlsoap.org/soap/actor/next"
892       soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding"
893       soap:mustUnderstand="1">TIDszsxyhQptODEPnpGtCEG
894     </mm7:TransactionID>
895   </soap:Header>
896   <soap:Body>
897     <mm7:DeliverRsp
898       xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2">
899       <mm7:MM7Version>5.3.0</mm7:MM7Version>
900       <mm7:Status>
901         <mm7:StatusCode>1000</mm7:StatusCode>
902         <mm7:StatusText>Success</mm7:StatusText>
903         <mm7:Details>
904           <mm7:Description>Request Processed successfully</mm7:Description>
905         </mm7:Details>
906       </mm7:Status>
907     </mm7:DeliverRsp>
908   </soap:Body>
909 </soap:Envelope>
910
911
```

912 This message is pretty much a standard MM7 message without any Liberty-specific content. The MO-Relay will then
913 pass this message as the response to MO2. The MMSC will match the response to MO2 using the TransactionID
914 MM7 header.

915 7.2. MT Round Trip

916 An ID-SIS-CSM WSC that wishes to send a message to the principal would first use discovery service to discover the
917 end point and credentials for contacting the MT-Relay. Armed with these, it could send an MT3 message like:

```
918 POST /MM7-PSBEARER HTTP/1.0
919 AUTHORIZATION: Basic c3ltbGFicpzeWlsYWJz
920 SOAP_ACTION:
921 CONTENT-TYPE: multipart/related; type=text/xml;
922   start="</cmvt256/mm7-submit>";
923   boundary=1128358715_143302914
924
925 --1128358715_143302914
926 CONTENT-ID: </cmvt256/mm7-submit>
927 CONTENT-TYPE: text/xml; charset="utf-8"
928
929 <soap:Envelope
930   xmlns:lib="urn:liberty:iff:2003-08"
931   xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
932   <soap:Header>
933     <Correlation S:mustUnderstand="1"
934       id="uuid:an0CrHcakhhtKqMSozX2"
935       actor="http://schemas.../next"
936       messageID="uuid:efefefef-aaaa-ffff-cccc-eeeeffffbbbbb"
937       timestamp="2112-03-15T11:12:12Z"/>
938     <Provider providerID="https://g-wsc.liberty-iop.org:8643/SP-P"
939       affiliationID="affiliation.example.com"
940       S:mustUnderstand="1"
941       id="A9kendan...542"
942       actor="http://schemas.../next"/>
943   </soap:Header>
944   <wsse:Security
```

```

944     xmlns:wss="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-w
945 ssecurity-secext-1.0.xsd">
946     <sa:Assertion
947       xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
948       ID="CREDI-6f21BJANxsx8hzWW8D"
949       IssueInstant="2005-10-03T16:58:32Z"
950       Version="2.0">
951       <sa:Issuer
952         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
953         https://g-ds.liberty-iop.org:8681/idp.xml
954       </sa:Issuer>
955       <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
956         <ds:SignedInfo>
957           <ds:CanonicalizationMethod
958             Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
959           <ds:SignatureMethod
960             Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
961           <ds:Reference URI="#CREDI-6f21BJANxsx8hzWW8D">
962             <ds:Transforms>
963               <ds:Transform
964                 Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
965               <ds:Transform
966                 Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
967             </ds:Transforms>
968             <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
969             <ds:DigestValue>nJXIYiH8Rl6x+aOSK37QdHmzyhQ=</ds:DigestValue>
970           </ds:Reference>
971           </ds:SignedInfo>
972           <ds:SignatureValue>An+EiTVBQEWKZF5akC...EnEiEw=</ds:SignatureValue>
973         </ds:Signature>
974       <sa:Subject>
975         <sa:NameID
976           Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent"
977           NameQualifier="https://mt-relay.liberty-iop.org:8681/wsp.xml">
978           PaQUIFO-dqnwIfN9yE92T
979         </sa:NameID>
980         <sa:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer" />
981       </sa:Subject>
982       <sa:Conditions
983         NotBefore="2005-10-03T16:53:32Z"
984         NotOnOrAfter="2005-10-03T17:08:32Z">
985         <sa:AudienceRestriction>
986           <sa:Audience>https://g-wsc.liberty-iop.org:8643/sp.xml</sa:Audience>
987         </sa:AudienceRestriction>
988       </sa:Conditions>
989       <sa:AuthnStatement AuthnInstant="2005-10-03T16:58:32Z">
990         <sa:AuthnContext>
991           <sa:AuthnContextClassRef>
992             urn:oasis:names:tc:SAML:2.0:ac:classes:Password
993           </sa:AuthnContextClassRef>
994         </sa:AuthnContext>
995       </sa:AuthnStatement>
996     </sa:Assertion>
997   </wss:Security>
998   <mm7:TransactionID
999     xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2"
1000     soap:actor="http://schemas.xmlsoap.org/soap/actor/next"
1001     soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding"
1002     soap:mustUnderstand="1">TIDUiVaYo8-BOWlGphIi8In
1003   </mm7:TransactionID>
1004 </soap:Header>
1005 <soap:Body id="bdy">
1006   <mm7:SubmitReq
1007     xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2">
1008     <mm7:MM7Version>5.3.0</mm7:MM7Version>
1009     <mm7:SenderIdentification>
1010       <mm7:VASPID>symlabs</mm7:VASPID>

```

```

1011     <mm7:Password>symlabs</mm7:Pass word>
1012     <mm7:SenderAddress>
1013         <mm7:ShortCode>55555</mm7:ShortCode>
1014     </mm7:SenderAddress>
1015 </mm7:SenderIdentification>
1016 <mm7:Subject>ID-CSM-DEMO</mm7:Subject>
1017 <mm7:To>
1018     <mm7:Extension>
1019         <csm:IdentityAddressingToken xmlns: csm="urn:liberty:id-sis-csm:2006-02">
1020             <ds:ResourceID xmlns:ds="urn:liberty:disco:2004-04">
1021                 http://mt-gw.com/4m0B82k15csaUxs
1022             </ds:ResourceID>
1023             <csm:CredentialRef>CREDI-6f21BJANxsx8hzWW8D</csm:CredentialRef>
1024         </csm:IdentityAddressingToken>
1025     </mm7:Extension>
1026 </mm7:To>
1027 <mm7:Content href="HREF49vH9ByyRzVzgIPg7EEs" />
1028 </mm7:SubmitReq>
1029 </soap:Body>
1030 </soap:Envelope>

```

```

1031
1032 --1128358715_143302914
1033 CONTENT-ID: HREF49vH9ByyRzVzgIPg7EEs
1034 CONTENT-TYPE: multipart/mixed; boundary=1128358715_2078917053
1035
1036 --1128358715_2078917053
1037 CONTENT-TRANSFER-ENCODING: base64
1038 CONTENT-TYPE: image/gif
1039
1040 R01GODlhGQA1AIQAAP/3SUqvJpE8OFBBu IgDvUMAADS=
1041
1042 --1128358715_2078917053
1043 CONTENT-TYPE: text/plain; charset=UTF-8
1044
1045 To load games click
1046
1047 http://192.168.160.57/symlabs/games.jad
1048
1049 --1128358715_2078917053--
1050
1051 --1128358715_143302914--
1052
1053

```

1054 The SOAP headers and the To: field in the message body contain all the necessary material for determining to whom
 1055 the message is destined. Note that the <IdentityAddressingToken> in the To: body field points to the assertion in
 1056 the WS-Security SOAP header.

1057 The MT-Relay will figure out the MSISDN according to this information, perhaps using some other ID Web Service
 1058 call that is not shown here and is out of scope. Calling these services is facilitated by the fact that the MT3 request
 1059 contains the discovery bootstrap. Once the MSISDN is known, the MT-Relay will send the MM7 portion of the
 1060 message to the MMSC (MT4).

```

1061 POST /mm7extadapter HTTP/1.0
1062 AUTHORIZATION: Basic c3ltbGFicpzeWlsYWJz
1063 SOAP_ACTION:
1064 CONTENT-TYPE: multipart/related; type=text/xml; start="</cmvt256/mm7-submit>"; boundary=1128358716_2078917053
1065
1066
1067 --1128358716_2078917053
1068 CONTENT-ID: </cmvt256/mm7-submit>
1069 CONTENT-TYPE: text/xml; charset="utf-8"
1070
1071 <soap:Envelope
1072     xmlns:lib="urn:liberty:iff:2003-08"

```

```

1073 xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
1074 <soap:Header>
1075   <mm7:TransactionID
1076     xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2"
1077     soap:actor="http://schemas.xmlsoap.org/soap/actor/next"
1078     soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding"
1079     soap:mustUnderstand="1">TIDg6a2bQinFSNr2i7ZFwLr
1080   </mm7:TransactionID>
1081 </soap:Header>
1082 <soap:Body id="bdy">
1083   <mm7:SubmitReq
1084     xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2">
1085     <mm7:MM7Version>5.3.0</mm7:MM7Version>
1086     <mm7:SenderIdentification>
1087       <mm7:VASPID>symlabs</mm7:VASPID>
1088       <mm7:SenderAddress>
1089         <mm7:ShortCode>55555</mm7:ShortCode>
1090       </mm7:SenderAddress>
1091     </mm7:SenderIdentification>
1092     <mm7:Recipients>
1093       <mm7:To>
1094         <mm7:Number>679501170</mm7:Number>
1095       </mm7:To>
1096     </mm7:Recipients>
1097     <mm7:Subject>ID-CSM-DEMO</mm7:Subject>
1098     <mm7:Content
1099       href="HREF49vH9ByyRzVzgIPg7EEs"
1100       type="MULTIMEDIA_HIGH"/>
1101     </mm7:SubmitReq>
1102   </soap:Body>
1103 </soap:Envelope>
1104
1105 --1128358716_2078917053
1106 CONTENT-ID: HREF49vH9ByyRzVzgIPg7EEs
1107 CONTENT-TYPE: multipart/mixed; boundary=1128358715_2078917053
1108
1109
1110 --1128358715_2078917053
1111 CONTENT-TRANSFER-ENCODING: base64
1112 CONTENT-TYPE: image/gif
1113
1114 R0lGODlhGQA1AIQAAP/IgDvUMAADS=
1115
1116 --1128358715_2078917053
1117 CONTENT-TYPE: text/plain; charset=UTF-8
1118
1119 To load games click
1120
1121 http://192.168.160.57/symlabs/games.jad
1122
1123 --1128358715_2078917053--
1124
1125
1126
1127 --1128358716_2078917053--
1128
1129

```

7.3. MT to Multiple Recipients

This example illustrates sending a message to multiple recipients by listing their **<IdentityAddressingToken>** elements in the **<To>** field in the body of the SOAP message, whilst one or more SAML assertions could be included in the WS-Security header for access control purposes. The **<CredentialsRef>** element links a specific ResourceId with the assertion corresponding to such user.

```
1135 POST /MM7-PSBEARER HTTP/1.0
1136 AUTHORIZATION: Basic c3ltbGFic2pzeWlsYWJz
1137 SOAP_ACTION:
1138 CONTENT-TYPE: multipart/related; type=text/xml;
1139   start="</cmvt256/mm7-submit>";
1140   boundary=1128358715_143302914
1141
1142 --1128358715_143302914
1143 CONTENT-ID: </cmvt256/mm7-submit>
1144 CONTENT-TYPE: text/xml; charset="utf-8"
1145
1146 <soap:Envelope
1147   xmlns:lib="urn:liberty:iff:2003-08"
1148   xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
1149   <soap:Header>
1150     <wsa:MessageID
1151       xmlns:wsa="http://www.w3.org/2005/03/addressing"
1152       id="#MID">uuid:an0CrHcakhhtKqMSozX2
1153     </wsa:MessageID>
1154     <Correlation S:mustUnderstand="1"
1155       id="uuid:an0CrHcakhhtKqMSozX2"
1156       actor="http://schemas.../next"
1157       messageID="uuid:efefefef-aaaa-ffff-cccc-eeeeffffbbbb"
1158       timestamp="2112-03-15T11:12:12Z"/>
1159     <Provider providerID="https://g-wsc.liberty-iop.org:8643/SP-P"
1160       affiliationID="affiliation.example.com"
1161       S:mustUnderstand="1"
1162       id="A9kendan...542"
1163       actor="http://schemas.../next"/>
1164
1165     <wsse:Security
1166       xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecuri
1167 ty-secext-1.0.xsd">
1168       <sa:Assertion
1169         xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
1170         ID="CREDI-6f21BJANxsx8hzWW8D"
1171         IssueInstant="2005-10-03T16:58:32Z"
1172         Version="2.0">
1173         <sa:Issuer
1174           Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
1175           https://g-ds.liberty-iop.org:8681/idp.xml
1176         </sa:Issuer>
1177         <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
1178           <ds:SignedInfo>
1179             <ds:CanonicalizationMethod
1180               Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/>
1181             <ds:SignatureMethod
1182               Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
1183             <ds:Reference URI="#CREDI-6f21BJANxsx8hzWW8D">
1184               <ds:Transforms>
1185                 <ds:Transform
1186                   Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
1187                 <ds:Transform
1188                   Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/>
1189               </ds:Transforms>
1190             <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
1191             <ds:DigestValue>nJXIYiH8Rl6x+aOSK37QdHmzyhQ=</ds:DigestValue>
1192             </ds:Reference>
1193           </ds:SignedInfo>
1194           <ds:SignatureValue>An+EiTvbQEWK...EnEIew=</ds:SignatureValue>
1195         </ds:Signature>
1196       </sa:Subject>
1197       <sa:NameID
1198         Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent"
1199         NameQualifier="https://mt-relay.liberty-iop.org:8681/wsp.xml">
1200         UVWXYZ
1201       </sa:NameID>
```

```

1202     <sa:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer" />
1203 </sa:Subject>
1204 <sa:Conditions
1205   NotBefore="2005-10-03T16:53:32Z"
1206   NotOnOrAfter="2005-10-03T17:08:32Z">
1207   <sa:AudienceRestriction>
1208     <sa:Audience> https://g-wsc.liberty-iop.org:8643/sp.xml</sa:Audience>
1209   </sa:AudienceRestriction>
1210 </sa:Conditions>
1211 <sa:AuthnStatement AuthnInstant="2005-10-03T16:58:32Z">
1212   <sa:AuthnContext>
1213     <sa:AuthnContextClassRef>
1214       urn:oasis:names:tc:SAML:2.0:ac:classes:Password
1215     </sa:AuthnContextClassRef>
1216   </sa:AuthnContext>
1217 </sa:AuthnStatement>
1218 </sa:Assertion>
1219
1220 <sa:Assertion
1221   xmlns:sa="urn:oasis:names:tc:SAML:2.0:assertion"
1222   ID="CREDI-1234156154574djask"
1223   IssueInstant="2005-10-03T16:58:32Z "
1224   Version="2.0">
1225   <sa:Issuer
1226     Format="urn:oasis:names:tc:SAML:2.0:nameid-format:entity">
1227     https://g-ds.liberty-iop.org:8681/idp.xml
1228   </sa:Issuer>
1229   <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
1230     <ds:SignedInfo>
1231       <ds:CanonicalizationMethod
1232         Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
1233       <ds:SignatureMethod
1234         Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
1235       <ds:Reference URI="#CREDI-1234156154574djask">
1236         <ds:Transforms>
1237           <ds:Transform
1238             Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
1239           <ds:Transform
1240             Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
1241         </ds:Transforms>
1242         <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
1243         <ds:DigestValue>nJXIYiH8Rl6x+aOSK3 7QdHmzyhQ=</ds:DigestValue>
1244       </ds:Reference>
1245     </ds:SignedInfo>
1246     <ds:SignatureValue>An+EiTV...BcOEnEiEw=</ds:SignatureValue>
1247   </ds:Signature>
1248   <sa:NameID
1249     Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent"
1250     NameQualifier="https://mt-relay.liberty-iop.org:8681/wsp.xml">
1251     PaQUIF0-dqnwIfn9yE92T
1252   </sa:NameID>
1253   <sa:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer" />
1254 </sa:Subject>
1255 <sa:Conditions
1256   NotBefore="2005-10-03T16:53:32Z"
1257   NotOnOrAfter="2005-10-03T17:08:32Z">
1258   <sa:AudienceRestriction>
1259     <sa:Audience>https://g-wsc.liberty-iop.org:8643/sp.xml</sa:Audience>
1260   </sa:AudienceRestriction>
1261 </sa:Conditions>
1262 <sa:AuthnStatement AuthnInstant="2005-10-03T16:58:32Z">
1263   <sa:AuthnContext>
1264     <sa:AuthnContextClassRef>
1265       urn:oasis:names:tc:SAML:2.0:ac:classes:Password
1266     </sa:AuthnContextClassRef>
1267   </sa:AuthnContext>
1268 </sa:AuthnContext>

```

```

1269     </sa:AuthnStatement>
1270 </sa:Assertion>
1271 </wsse:Security>
1272
1273 <mm7:TransactionID
1274   xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2"
1275   soap:actor="http://schemas.xmlsoap.org/soap/actor/next"
1276   soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding"
1277   soap:mustUnderstand="1">TIDUi VaYo8-BOWlGphIi8In
1278 </mm7:TransactionID>
1279 </soap:Header>
1280 <soap:Body id="bdy">
1281   <mm7:SubmitReq
1282     xmlns:mm7="http://www.3gpp.org/ftp/Specs/archive/23_series/23.140/schema/REL-5-MM7-1-2">
1283     <mm7:MM7Version>5.3.0</mm7:MM7Version>
1284     <mm7:SenderIdentification>
1285       <mm7:VASPID>symlabs</mm7:VASPID>
1286       <mm7:Password>symlabs</mm7:Password>
1287       <mm7:SenderAddress>
1288         <mm7:ShortCode>55555</mm7:ShortCode>
1289       </mm7:SenderAddress>
1290     </mm7:SenderIdentification>
1291     <mm7:To>
1292       <mm7:Extension>
1293         <csm:IdentityAddressingToken xmlns:csm="urn:liberty:id-sis-csm:2006-02">
1294           <ds:ResourceID xmlns:ds="urn:liberty:disco:2004-04">
1295             http://mt-gw.com/4m0B82k15csaUxs
1296           </ds:ResourceID>
1297           <csm:CredentialRef>CREDI-6f21BJANxsx8hzWW8D</csm:CredentialRef> <!-- see 1st a7n -->
1298         </csm:IdentityAddressingToken>
1299         <csm:IdentityAddressingToken xmlns:csm="urn:liberty:id-sis-csm:2006-02">
1300           <ds:ResourceID xmlns:ds="urn:liberty:disco:2004-04">
1301             http://mt-gw.com/abababab
1302           </ds:ResourceID>
1303           <ds:CredentialRef>CREDI-1234156154574djask</ds:CredentialRef> <!-- see 2nd a7n -->
1304         </csm:IdentityAddressingToken>
1305       </mm7:Extension>
1306     </mm7:To>
1307     <mm7:Subject>ID-CSM-DEMO</mm7:Subject>
1308     <mm7:Content
1309       href="HREF49vH9ByyRzVzgiPg7EEs" />
1310   </mm7:SubmitReq>
1311 </soap:Body>
1312 </soap:Envelope>
1313
1314 --1128358715_143302914
1315 CONTENT-ID: HREF49vH9ByyRzVzgiPg7EEs
1316 CONTENT-TYPE: multipart/mixed; boundary=1128358715_2078917053
1317
1318 --1128358715_2078917053
1319 CONTENT-TRANSFER-ENCODING: base64
1320 CONTENT-TYPE: image/gif
1321
1322 R0lGODlhGQA1AIQAAP/3SUqvJpE8OFBBuIgdvUMAADs =
1323
1324 --1128358715_2078917053
1325 CONTENT-TYPE: text/plain; charset=UTF-8
1326
1327 To load games click
1328
1329 http://192.168.160.57/symlabs/games.jad
1330
1331 --1128358715_2078917053--
1332
1333 --1128358715_143302914--
1334
1335

```

8. Annex: Legacy Messaging Features

This informational annex contains further guidance about how to combine an optional extension of the MM7 protocol with the Liberty identity wrapper, providing such optional extension a unified messaging mechanism which complements the standard MM7 protocol.

8.1. Representation of Content

1. The ID-SIS-CSM messages SHOULD represent the contents of the message as a MIME multipart. The MM7 <Content> element SHOULD contain a reference to the Content-ID of the corresponding MIME multipart.

2. The MM7 <Content> element SHOULD have type XML attribute that indicates the type of multimedia content present. Possible values are:

MULTIMEDIA_HIGH MMS content

MULTIMEDIA_LOW EMS or NSM content

TEXT SMS content

Additional values may be defined in future specifications. Experimental and non-official values MUST start by "X-," e.g., X-MY-FORMAT.

An example of an MM7 <Content> element is:

```
<mm7:Content href="HREF49vh9ByyRzVzgIPg7EEs" type="MULTIMEDIA_HIGH" />
```

See the full examples for illustrations of the MIME multipart structure.

8.2. SMS Support

Additional [SMS] messaging parameters can be passed as attribute-value Pairs using the <MessageExtraData> element.

Mode Message processing mode. Either transparent or notTransparent

SMSText Alternate representation of SMS message content.

DataCodingScheme How message content is encoded. If in conflict with SMSMessageClass, the latter shall prevail.

SMSMessageClass Indication of call of the message, affecting presentation and retention of the message. See [SMS] for further details.

UserDataHeader Allows indication of SMS message headers.

UserData Message content in binary.

ProtocolIdentifier Allows the protocol to be identified for SMS messages.

SIMSubstitution Boolean (true or false) that indicates whether a message on SIM card should be substituted by the present message. By default, the message in slot 0 is substituted. Other slots can be indicated using ProtocolIdentifier.

1370 **Example**

```

1371 <csm:MessageExtraData>
1372   <csm:element>
1373     <csm:key>Mode</csm:key>
1374     <csm:value>transparent</csm:value>
1375   </csm:element>
1376   <csm:element>
1377     <csm:key>SIMSubstitution</csm:key>
1378     <csm:value>>true</csm:value>
1379   </csm:element>
1380 </csm:MessageExtraData>
1381
1382

```

1383 **8.3. Indication of Sending Preferences for MT**

1384 If the ID-SIS-CSM WSC wishes to indicate sending preferences, it should include **<PreferredChannels>** element. It
 1385 contains a list of technologies in order of preference. Possible technologies are:

- 1386 • SMS
- 1387 • MMS
- 1388 • WAPPUSH

1389 These only indicate preference. The message should be sent using the first technology that is compatible with the
 1390 type of the content. If none of the preferred technologies are compatible, the behavior is implementation-dependent.
 1391 The implementation may send it anyway using a technology that is compatible, but not listed, or it may reformat the
 1392 message to match one of the preferred technologies, or it may report an error.

1393 **Example**

```

1394 <mm7:PreferredChannels>
1395   <mm7:DeliverUsing>MMS</mm7:DeliverUsing>
1396   <mm7:DeliverUsing>SMS</mm7:DeliverUsing>
1397 </mm7:PreferredChannels>
1398
1399

```

1400 **8.4. Support for WAP Push**

1401 For improved WAP Push support, the ID-SIS-CSM WSC may include in the **<MessageExtraData>** element the
 1402 following information as attribute-value pairs.

1403	WAPPushType	Indicates the type of WAP Push message, such as ServiceIndication or ServiceLoading. See [WAPPUSH] for further information.
1404		
1405	WAPPushURL	Indicates message URL.
1406	WAPPushText	WAP Push message to be shown to user for ServiceIndication messages.
1407	WAPPushID	Message ID for WAP Push.
1408	WAPPushAction	The action that the terminal should take upon receiving a WAP Push message. For ServiceIndication messages, this can be:
1409		
1410		• signal-none

- 1411 • signal-low
- 1412 • signal-medium
- 1413 • signal-high
- 1414 For ServiceLoading messages, this can be:
- 1415 • execute-low
- 1416 • execute-high
- 1417 • cache

1418 **8.5. MMStatus Indications Regarding State of the Message**

1419 The following additional values for <MMStatus>, when used as mmDeliveryStatusType, are defined

- | | |
|-----------------|--|
| 1420 Processing | Message has been received, but may not have been sent to the terminal yet. |
| 1421 Canceled | Message has been canceled. |
| 1422 Replaced | Message has been replaced. |
| 1423 Delivered | Message has been delivered to the user. |

1424 Implementations and deployments MAY define additional <MMStatus> values, provided that such values start by an
1425 "X-" prefix. No future official status value will start by this prefix.

1426 **8.6. Querying State of MT messages**

1427 Once a message has been sent by VASP, it can query the state of the messages using the <QueryStatusReq> method.

1428 The message contains the following elements.

- | | |
|--------------------|---|
| 1429 TransactionID | A SOAP header that provides unique identification of the operation. |
| 1430 MessageType | Carried in SOAP body, indicates the type of the operation. |
| 1431 MM7Version | MM7 version indicator. |
| 1432 VASPID | Identification of the VASP. |
| 1433 VASID | Identification of the VAS. |
| 1434 MessageID | Identifier of the message whose status is being queried. |

1435 The status query is replied with the response element <QueryStatusRsp>. The following sub-elements are of interest.

- | | |
|--------------------|---|
| 1436 TransactionID | A SOAP header that provides unique identification of the operation. |
| 1437 MessageType | Carried in SOAP body, indicates the type of the operation. |
| 1438 MM7Version | MM7 version indicator. |
| 1439 StatusCode | Indication of the success of the operation. |
| 1440 StatusText | A human-readable description of the error code. |

1441 Details Optional free-format data to capture implementation-specific details.

1442 8.7. Additional Schema to Support Legacy Messaging

1443 To use SMS messages, see [Section 8.2](#), or WAP Push, see [Section 8.4](#). The `<cs:MessageExtraData>`
1444 MUST be placed in an `<mm7:Extension>` container in the MM7 message as if the `genericRSReqType`,
1445 `genericVASPRequestType`, and `genericResponseType` schemata contained

```
1446 <xs:element name="Extension" type="mm7:anyDataType"  
1447     minOccurs="0" maxOccurs="unbounded" />  
1448  
1449
```

1450 as the last member of the sequence.

1451 The `<cs:MessageExtraData>` container is described by the following schema.

```
1452 <xs:element name="MessageExtraData" type="cs:messageExtraDataType" />  
1453 <xs:complexType name="messageExtraDataType">  
1454   <xs:sequence maxOccurs="unbounded">  
1455     <xs:element name="element" type="cs:elementType" />  
1456   </xs:sequence>  
1457 </xs:complexType>  
1458  
1459 <xs:complexType name="elementType">  
1460   <xs:sequence>  
1461     <xs:element name="key" type="xs:string">  
1462     <xs:element name="value" type="xs:string">  
1463   </xs:sequence>  
1464 </xs:complexType>  
1465  
1466  
1467
```

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