Enabler Validation Plan for Mobile Codes

Candidate Version 1.0 – 13 Mar 2012

Open Mobile Alliance

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1. Scope

This document details the Validation plan for the Mobile Codes V1.0 Candidate Enabler Release. The successful accomplishment of the validation activities will be required for the Enabler to be considered for Approved status.

The validation plan for the Mobile Codes V1.0 Candidate Enabler Release specifications is based on testing expectations in the Enabler Test Requirements (ETR). While the specific test activities to be performed are described in the Enabler Test Specification (ETS) the test environment is described in this plan. This test environment details infrastructure, operational and participation requirements identified for the needed testing activities.

1.1   Assumptions

The following aspects pertaining to the validation of the MC V1.0 CER though IOP Testing are in-scope:

- Testing of Indirect Codes.

- Behaviours of the MC Client, Home CMP, Remote (Resolving) CMP.

- Behaviour of the MC Registry, where applicable.

- MC Client code scanning analytics Tracking & Reporting, where applicable.

1.2   Exclusions

The following aspects pertaining to the validation of the MC V1.0 CER though IOP Testing are out-of-scope:

- Testing of Direct Codes.

- Latency performance aspects of interactions between the MC Client and CMP, CMP to CMP and CMP to MC Registry as part of the Code Resolution applicable to Indirect Codes testing.

- Secure IP data connections are assumed for messaging communications between CMP to CMP and, where applicable, CMP to MCR; however, the manner in which such connections are furnished is implementation specific and not the focus of the Enabler functionality testing.

- U/I mechanism or format for communicating notifications received or generated by the MC Client to the end user is implementation specific and not the focus of the Enabler functionality testing.

- Consumption of the result (i.e. information or content returned) by the device applications after Code Resolution by the MC Client.

2. References

2.1 Normative References

[DATAMATRIX]	"Information technology — Automatic identification and data capture techniques — Data Matrix bar code symbology specification", ISO/IEC 16022:2006, URL: http://www.iso.org/iso/iso_catalogue/catalogue_ics/catalogue_detail_ics.htm?csnumber=44230
[IOPPROC]	"OMA Interoperability Policy and Process", Version 1.8, Open Mobile Alliance™, OMA-ORG-IOP_Process-V1_8, URL:http://www.openmobilealliance.org/
[MC-AD]	"OMA Mobile Codes 1.0 Architecture", Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[MC-ETR]	"OMA Mobile Codes 1.0 Enabler Test Requirements", 30 Nov 2010, Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[MC-ETS]	"OMA Mobile Codes 1.0 Enabler Test Specification (Draft)", 09 Jan 2012, Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[MC-RD]	"OMA Mobile Codes 1.0 Requirements", Open Mobile Alliance™, URL :http://www.openmobilealliance.org/
[MC-TS]	"OMA Mobile Codes 1.0 Technical Specification", Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[QR]	"Information technology — Automatic identification and data capture techniques — QR Code 2005 bar code symbology specification", ISO/IEC 18004:2006, URL: http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=43655
[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

[MC-ERELD]	"Enabler Release Definition for Mobile Codes 1.0", Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[OMADICT]	"Dictionary for OMA Specifications", Version 2.8, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_8, URL:http://www.openmobilealliance.org/
[OMAURI]	"URI Schemes for the Mobile Applications Environment", Version 1.0, Open Mobile Alliance™, URL:http://www.openmobilealliance.org/
[URI]	"RFC 3986. Uniform Resource Identifier (URI): Generic Syntax", IETF, http://www.ietf.org/rfc/rfc3986.txt.

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", are normative, unless they are explicitly indicated to be informative.

3.2   Definitions

Code Management Platform	The Code Management Platform provides a resolution service pertaining to Indirect Codes; it is normally capable of performing both the Code Clearing House (CCH) function and Code Resolution (CR) and may also interact with other Code Management Platforms, as required. In certain deployment scenarios, the CCH function and the CR function may be implemented in two separate Code Management platforms. (See Split-CMP-Parent and Split-CMP-Child).
Code Resolution (or Code Resolution function)	The process of mapping a Direct Code or an Indirect Code into either content to be consumed directly by the device, or the address of content (or a service) to be accessed by the device. Typically, Code Resolution for Indirect Codes requires access to network service.
Code Transfer	The ability for a Mobile Code Publisher to change the Resolving CMP for a single or multiple Indirect Code Identifiers.
Direct Code	A Mobile Code that contains either (a) content for direct consumption for the device, or (b) the address of the service to be accessed (typically a URI [**Error! Reference source not found.**]).
Home CMP	The CMP to which a particular MCC is configured to send all Code Resolution requests. Where applicable in a Split-CMP deployment scenario, the Home CMP may be a Split-CMP-Parent.
Indirect Code	A Mobile Code that contains an Indirect Code Identifier.
Indirect Code Identifier	An identifier in the Indirect Code that has to be resolved in order to access the intended content or service. See also Code Resolution.
Mobile Code	A 1D or 2D barcode as read by camera-equipped devices
Mobile Code Client	The MC Enabler software entity that resides in the device, and contains the functionality to acquire, decode, and extract the encoded information for further processing as required. This is often referred to as a Mobile Code Reader and these terms can be used synonymously.
Mobile Code Data Format	The syntactical description of the information contained within a Mobile Code.
Mobile Code Publisher	This is a brand (business, organisation or individual) who distributes certain content or services (e.g. an advertising campaign) to a mass audience by using Mobile Code scanning as a channel.
Mobile Code Registry	A local registry responsible for sub-allocation of Mobile Code Routing Prefixes within the ranges of Routing Prefixes obtained from OMNA. The Mobile Code Registry (MCR) also supports a data look-up facility accessible by authorised principals (e.g. CMPs or Split-CMP-Parents) for Routing Prefixes in its database.
Multi-lateral Arrangement	An arrangement amongst specific CMPs (including Split-CMP-Parents, where applicable) that are not associated with any Mobile Code Registry, in which the parties agreed to support each other in a multi-lateral way in order to manage sub-allocation of MC Routing Prefixes as well as discovery and updates thereof; details of such MLAs are not specified in the MC Enabler TS.
Remote CMP	The CMP that receives a Code Resolution request when the Home CMP (or Split-CMP-Parent, where applicable) is unable to resolve a particular Indirect Code Identifier.
Resolving CMP	The CMP (or Split-CMP-Child, where applicable) that is able to resolve a particular Indirect Code Identifier.
Symbology	The algorithm by which data is encoded as visual elements (typically arrangements of lines or squares), and the resultant "look and feel" for the user.

3.3   Abbreviations

1D	1-Dimensional
2D	2-Dimensional
CMP	Code Management Platform
CR	Code Resolution
DNS	Domain Name System
HTTP	Hypertext Transfer Protocol
ICI	Indirect Code Identifier
ID	Identifier
IEC	International Electrotechnical Commission
IOP	Interoperability
ISO	International Organization for Standardization
MC	Mobile Code
MCC	Mobile Code Client
MCR	Mobile Code Registry
MLA	Multi-lateral Arrangement
MNO	Mobile Network Operator
OMA	Open Mobile Alliance
OMNA	Open Mobile Naming Authority
QR	Quick Response, a type of barcode symbology [QR]
TS	Technical Specification
URI	Uniform Resource Identifier [**Error! Reference source not found.**]
URL	Uniform Resource Locator
XML	Extensible Markup Language

4. Enabler Validation Description

This document describes the test environment for IOP Testing of MC V1.0 Candidate Enabler Release.

The following characteristics and limitations apply to the mentioned IOP Testing:

- Virtual TestFest supporting remote testing of client and server implementations according to the MC Architecture.

- Different priority test cases according to the ETR and ETS requirements.

- Focus is placed on verification of the [MC-TS] in support of the basic use cases (i.e. involving MC Client, Home CMP, Remote CMP); additional interactions between the CMP and MC Registry, and MC Client Tracking & Reporting (where applicable) are also tested.

- Optional features (e.g. Code Transfer, MC Client Authentication and Secure ICI) are not tested in the current IOP Virtual TestFest Program.

5. TestFest Activities

5.1 Enabler Test Guidelines

In general, test cases for Mandatory features in the [MC-TS] are required. Whereas, test cases for Optional features in the [MC-TS] are conducted, where applicable, and when time and available resources during the TestFest permit.

Test Cases are executed in accordance with the priorities in Section 5.1.3.

5.1.1 Minimal Test Configuration

Equipment requirements to support Test Object are as follows:

Test Case Id	Test Object	Equipment Requirements
MC-1.0-int-001	MC Client	1 MC Client, 1 CMP Server
MC-1.0-int-002	MC Client	1 MC Client, 1 CMP Server
MC-1.0-int-003	MC Client	1 MC Client, 1 CMP Server
MC-1.0-int-004	MC Client	1 MC Client, 1 CMP Server
MC-1.0-int-005	Home CMP	1 MC Client, 1 CMP Server
MC-1.0-int-006	Home CMP	2 CMP Servers
MC-1.0-int-007	Home CMP	2 CMP Servers
MC-1.0-int-008	Remote (Resolving) CMP	2 CMP Servers
MC-1.0-int-009	Home CMP	1 MC Client, 1 CMP Server
MC-1.0-int-010	Home CMP and Remote (Resolving) CMP	2 CMP Servers
MC-1.0-int-011	CMP	1 CMP Server, 1 MCR Server
MC-1.0-int-012	CMP	1 MC Client, 2 CMP Servers, 1 MCR Server
MC-1.0-int-013	MCR	1 CMP Server, 1 MCR Server
MC-1.0-int-014	MCR	1 CMP Server, 1 MCR Server

5.1.2 Minimal Participation Guidelines

Recommended numbers of unique MC Client and Server implementations required to perform meaningful testing at the OMA IOP TestFest are as follows:

- MCC (MC Client): 3 or more.

- CMP (MC Server): 2.

- MCR (MC Server): 1.

Note: Given the nascent ecosystem of Indirect Mobile Codes, the number of Server vendors in the current global market tends to be highly concentrated. Hence, the ability to solicit server implementations from participating members will be limited. Alternatively, the Min/Max Time Limit for the MC Enabler may need to be extended over a longer than normal period to accommodate market development time scale of the Indirect Mobile Codes ecosystem worldwide.

5.1.3 Optimal TestFest Achievement Test Case Priority Guidelines

This list represents the current highest priority test cases that the participants should attempt to perform at the event. In order to facilitate maximum test coverage of the functionality of the enabler over a number of TestFests, this list may be modified by the IOP WG between test events to reflect the latest priorities. Therefore the ETS Test Cases listed below represent a subset of all the Test Cases for the Enabler that it is thought can be executed in a single test session at an OMA TestFest. It is

not intended to be the only tests executed at a TestFest, and teams are encouraged to execute more tests if they are able to do so in the time allowed.

Listing of tests to be performed at TestFest to achieve full coverage of the core capabilities and features of the MC Enabler is provided in Section 5.3.2.

Recommendations for prioritising the order of test cases are as follows:

Test Case Id	Special Conditions
PRIORITY 1:	
MC-1.0-int-001	Mandatory
MC-1.0-int-002	Mandatory
MC-1.0-int-004	Mandatory
MC-1.0-int-005	Mandatory
MC-1.0-int-006	Mandatory
MC-1.0-int-007	Mandatory
MC-1.0-int-008	Mandatory
MC-1.0-int-012	Mandatory
PRIORITY 2:	
MC-1.0-int-003	Mandatory only when *Tracking & Reporting* feature is implemented.
MC-1.0-int-009	Mandatory only when *Tracking & Reporting* feature is implemented.
MC-1.0-int-010	Mandatory only when *Tracking & Reporting* feature is implemented.
PRIORITY 3:	
MC-1.0-int-011	Mandatory only when associated with a MCR implementation.
MC-1.0-int-013	Mandatory only when a MCR is implemented.
MC-1.0-int-014	Mandatory only when a MCR is implemented.

5.2   Enabler Test Requirements

5.2.1   Test Infrastructure Requirements

- MCC needs to communicate with Home CMP over MC-1 Interface.

- Clients-Under-Test may contact Home CMP over wireless mobile Internet across a wide geographical distance (e.g. international roaming). Functional interactions between the MC Client and Home CMP are the primary focus of the IOP Testing and are agnostic to the data connectivity provided by the underlying wireless public mobile network or Wi-Fi network.

  - Hosting of mobile connectivity network is NOT required.

  - Client-under-Test is responsible for mobile data access; functionality only, not performance, is a gating factor.

  Editor's Note: (IOP-BRO Guidance) The influence of the transmission and transport layers on the enabler performance might be out of scope of the enabler. Also, as long as the timing and the origin location are not critical for the interface and protocol under test, there should be no loss in testing quality in bypassing the mobile data connectivity.

- CMP to CMP, and CMP to MCR (where applicable) messaging is communicated over MC-3 Interface, and MC-2 Interface (where applicable), respectively.

- CMP (Server) –Under-Test may contact another CMP, or the MCR (where applicable) over public Internet connections across a wide geographical distance (e.g. across mobile operator networks). Functional interactions between the CMP to CMP, and CMP to MCR (where applicable), are the primary focus of the IOP Testing and are agnostic to the secure data connectivity provided by the underlying network.

    - The specific method through which to provide such secure connections can be determined by the test engineer resources conducting the IOP Testing is are out-of-scope for the Virtual TestFest (i.e. dedicated Layer 1 TDM, or Layer 2/3 VPN over Internet, or shared public Internet connections using digital signature may be selected, as outlined in the [MC-TS] Section 9.3).

    - For maximum flexibility to facilitate remote IOP Testing, it is recommended that secure IP connections over public Internet are used. Hence, special dedicated network resource is not required.

5.2.2   Enabler Execution Flow

The following example flow illustrates a primary use case for resolution of a Mobile Code.
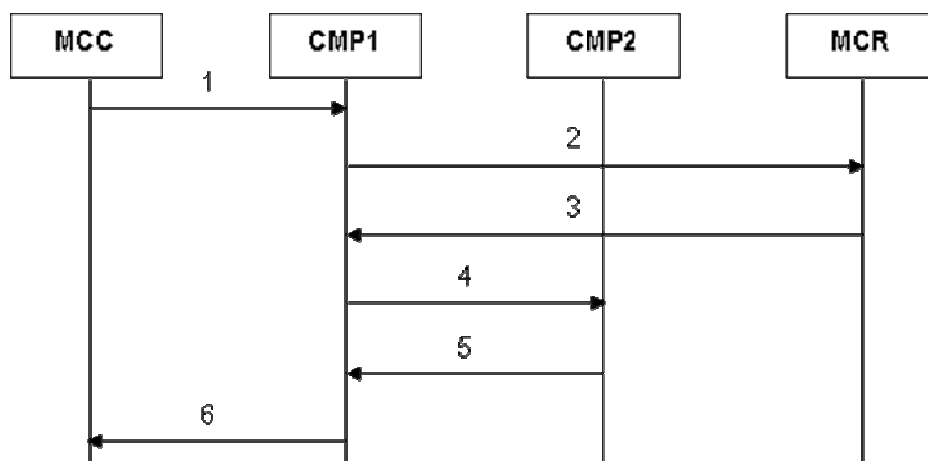
Figure 1: Example Call Flow – Remote CMP Resolves the ICI Involving Home CMP

Legend:
MCC= MC Client; ICI= Indirect Code Identifier
CMP1= Home CMP Server; **CMP2**= Remote CMP Server
MCR= MC Registry Server (optional; alternatively, a 'Lead CMP' in a MLA "Multi-lateral Arrangement")

Procedures for resolving an Indirect Mobile Code:

1. The MCC decodes a Mobile Code and sends the ICI to the Home CMP, CMP1, for resolution.

2. CMP1 checks the ICI and finds that it cannot resolve the ICI, then searches its local cache for information on the appropriate CMP2 (i.e., either another CMP or Split-CMP-Parent). This cache may be updated by querying the MCR using the MC-2 interface or receiving updates from the MCR over the MC-5 interface, or through Multi-lateral Arrangements.

3. When queried using the MC-2 interface, the MCR responds to CMP1 that CMP2 is responsible for resolving the ICI.

4. CMP1 sends the request to CMP2.

5. CMP2 resolves the ICI and sends the result to CMP1.

6. CMP1 sends the result to the MCC.

5.2.3 Test Content Requirements

- No elaborate Test Samples are required other than a small set of 2D Mobile Codes, as follows:

  - Direct Codes are not included in IOP Testing.

  - Indirect Codes encoded with arbitrary (but known) ICIs associated with content (e.g. URL, Business Card contact information, JPEG graphics). ICI associations to content are stored in the Resolving CMP; Code Resolution occurs upon reception of the ICI by the CMP, which then resolves the ICI (i.e. mapped) to content intended by the Code Publisher.

- Pre-set associations between 'ICI-to-Code Publisher content' are based on database table structures internal to the CMP and are implementation specific. Such test content is locally significant to the Resolving CMP. A critical factor is the prior knowledge of such associations and the ability to compare the SEND_MESSAGES and RECEIVE_MESSAGES between both ends of the message flows.

- Similarly, associations between 'ICI Routing Prefix-to-Resolving CMP Network Address' stored in the MCR are likewise locally significant only. Prior knowledge of this content should be coordinated to facilitate comparison of SEND_MESSAGES and RECEIVE_MESSAGES between both ends of the CMP and MCR message flows.

- In all cases above, there is no design requirement for any special Test Sample Mobile Codes, common test scripts or test sequences. All message flow structures must be generated as per the [MC-TS] applicable sections (see details in the specific ETS test cases).

5.2.4 Test Limitations

5.2.4.1 Physical

IOP Test Cases specified in the ETS are conducted remotely as part of the Virtual TestFest Program. It is expected that companies submitting prototype implementations will coordinate availability of test engineer resources for two-ended remote testing in a synchronised manner. OMA TestOnDemand capabilities may facilitate such coordinated remote testing scheduling.

5.2.4.2 Resources

- A list of hardware, software and network connectivity resource requirements is specified as below:

  - Mobile device(s) equipped with a valid subscription for mobile internet data services.

  - Use of the public Internet for data connectivity is assumed.

  - Secure Inter-CMP communications is assumed; however, the specific method to achieve this capability is implementation specific (see Section 5.2.1 herein).

  - For verification of Code Resolution results for Indirect Codes, prior knowledge of the mappings between specific ICI-Under-Test and the Code Publisher content is required.

  - For verification of discovery of the network addresses of Resolving CMP associated with the given ICIs, prior knowledge of such mappings is required.

- Test samples of 2D mobile codes can be provided on a local basis; i.e., there is no need to use standardized test samples across different test cases.

5.2.5 Test Restrictions

None. Availability of test engineer resources requires close coordination across geographic areas for remote IOP Testing. OMA TestOnDemand capabilities may facilitate such coordinated remote testing scheduling.

5.2.6 Test Tools

This section identifies the test tools required to support IOP Test Cases as per the ETS.

5.2.6.1 Existing Tools to be Used

None.

5.2.6.2 Test Tool Requirements

- No special test set is required; general-purpose data protocol analyser is acceptable.

- MC Network Components are assumed to be equipped with OAM Console capabilities (i.e. GUI interface).

- Home CMP, Remote CMP and MCR (where applicable) will be required to generate conformant SEND_MESSAGES and verify compliance of RECEIVED_MESSAGES, and vice versa, according to the ETS and applicable sections in the [MC-TS].

- Conformance of messages received by the MCC may be indirectly verified using the U/I on the Device (i.e., diverse, and implementation specific).

5.2.7 Resources Required

In addition to the list of resources in 5.2.4.2, qualified test engineer resources are required to conduct the IOP Test Cases as specified in the ETS. In particular, coordination for simultaneous availabilities of such human resources at both ends of the test case connections is critical (applicable to all two-ended communications) to ensure timely and efficient completion of the targeted test cases.

OMA TestOnDemand capabilities may facilitate such coordinated remote testing scheduling.

5.3 Tests to be Performed

Specific tests required by the Virtual TestFest validation activities are described in this section.

5.3.1 Entry Criteria for TestFest

Successful implementation of MC Clients and Servers requires a high-level understanding of the MC Enabler architecture [MC-AD] and detailed understanding of the technical specifications [MC-TS]. In particular, specific portions of the [MC-TS] pertaining to the MC component of interest (MCC, CMP or MCR, etc.) from the implementer perspective should warrant an in-depth review and understanding of the requisite system behaviours according to the [MC-TS].

In the ETS document [MC-ETS], a consensus decision was made that Section 5 therein covering Conformance Test Cases of the MC Enabler would not be specified; whereas, available resources were expended and focused on developing the Interoperability Test Cases in Section 6 therein. This prioritisation of available resources effectively imposes a reliance of the MC Enabler implementers to be intimately familiar with all Static Conformance Requirements (SCRs) representing various technical behaviours within each MC Component or Subsystem.

Note: SCRs are nothing but summarised snippets of the [MC-TS] itself, albeit organised in the context of different behaviours of the MC components specific to fulfilment of various functionalities of the MC Enabler. SCRs for MC Client and Sever are contained in Appendix B of the [MC-TS].

Consequently, even though no SCR conformance test cases are specified in the ETS, it is necessary and expected that TestFest participants are satisfied that all requisite SCRs pertaining to the MC Component of interest have been verified before hand within their own implementations, respectively, before interoperability testing across different implementations are attempted in the OMA IOP TestFest. The methods or conformance test cases with which SCR verifications are conducted are out-of-scope for the MC Enabler IOP TestFest.

The following tests need to be performed and passed by implementations by members wishing to participate in the TestFest. This ensures minimal requisite capability of the implementations. These SCR verifications are defined within the context of each MC IOP Test Case in the ETS [MC-ETS] and any special comments are noted.

Test Case Id	SCR references (see [MC-TS] Appendix B)
MC-1.0-int-001	MC-CR-C-001-M, MC-CR-C-002-M, MC-CR-C-003-M, MC-CR-C-004-M, MC-CR-C-005-M and MC-CR-C-006-M.
MC-1.0-int-002	MC-CR-C-002-M, MC-CR-C-003-M, MC-CR-C-004-M, MC-CR-C-005-M, MC-CR-C-006-M, MC-CR-C-008 and MC-CR-C-010-M. MC-CR-S-014-M to MC-CR-S-020-M, inclusively. MC-CR-S-025-M. MC-CR-S-027-M to MC-CR-S-029-M, inclusively. MC-CR-S-032-M.
MC-1.0-int-003	MC-TRP-C-001-M to MC-TRP-C-004-M, inclusively.
MC-1.0-int-004	Nil.
MC-1.0-int-005	MC-CR-S-001-M, MC-CR-S-006-M. MC-CR-S-013-M to MC-CR-S-015-M, inclusively. MC-CR-S-016-M and MC-CR-S-032-M.
MC-1.0-int-006	MC-CR-S-004-M, MC-CR-S-008-M and MC-CR-S-029-M.
MC-1.0-int-007	MC-CR-S-004-M. MC-CR-S-007-M to MC-CR-S-010-M, inclusively. MC-CR-S-028-M and MC-CR-S-029-M.
MC-1.0-int-008	MC-CR-S-001-M, MC-CR-S-003-M, MC-CR-S-006-M, MC-CR-S-015-M, MC-CR-S-016-M, MC-CR-S-026, MC-CR-S-029-M and MC-CR-S-033-M.
MC-1.0-int-009	MC-TRP-S-001-M, MC-TRP-S-003-M, MC-TRP-S-004-M and MC-TRP-S-009-M. MC-TRP-C-001-M to MC-TRP-C-004-M, inclusively.
MC-1.0-int-010	MC-TRP-S-009-M, MC-TRP-S-012-M and MC-TRP-S-014-M.
MC-1.0-int-011	MC-CR-S-004-M, MC-CR-S-011-M and MC-CR-S-012-M.

Test Case Id	SCR references (see [MC-TS] Appendix B)
MC-1.0-int-012	MC-GIC-C-001-M to MC-GIC-C-012-M, inclusively. MC-CR-S-001-M to MC-CR-S-010-M, inclusively. MC-CR-S-013-M to MC-CR-S-033-M, inclusively. MC-TRP-S-005-M to MC-TRP-S-007-M, inclusively. MC-TRP-S-015-M to MC-TRP-S-017-M, inclusively. MC-INT1-S-010-M to MC-INT1-S-012-M, inclusively. MC-INT2-S-010-M to MC-INT2-S-012-M, inclusively. MC-INT3-S-015-M to MC-INT3-S-017-M, inclusively. MC-INT4-S-008-M to MC-INT4-S-010-M, inclusively. MC-INT6-S-034-M to MC-INT4-S-036-M, inclusively. MC-EH-S-001-M to MC-EH-S-012-M, inclusively.
MC-1.0-int-013	MC-CR-S-004, MC-CR-S-011 and MC-CR-S-012. MC-INT2-S-001-M to MC-INT2-S-009-M, inclusively.
MC-1.0-int-014	MC-EH-S-001-M and MC-EH-S-002-M. MC-INT2-S-001-M; MC-INT2-S-010-M, MC-INT2-S-011-M and MC-INT2-S-012-M.

Table 1: Listing of Tests for Entry Criteria for TestFest

5.3.2   Testing to be Performed at TestFest

The following tests need to be performed to fully cover the range of capabilities of the enabler and are conducted in the TestFest. The tests are defined in the ETS [MC-ETS] and any special comments are noted.

Test Case Id	Special Conditions
MC-1.0-int-001	Mandatory
MC-1.0-int-002	Mandatory
MC-1.0-int-003	Mandatory only when *Tracking & Reporting* feature is implemented.
MC-1.0-int-004	Mandatory
MC-1.0-int-005	Mandatory
MC-1.0-int-006	Mandatory
MC-1.0-int-007	Mandatory
MC-1.0-int-008	Mandatory
MC-1.0-int-009	Mandatory only when *Tracking & Reporting* feature is implemented.
MC-1.0-int-010	Mandatory only when *Tracking & Reporting* feature is implemented.
MC-1.0-int-011	Mandatory only when associated with a MCR implementation.
MC-1.0-int-012	Mandatory
MC-1.0-int-013	Mandatory only when a MCR is implemented.
MC-1.0-int-014	Mandatory only when a MCR is implemented.

Table 2: Listing of Tests to be Performed at TestFest

5.4   Enabler Test Reporting

5.4.1   Problem Reporting Requirements

Normal Reporting, no special reporting is required

5.4.2   Enabler Test Requirements

Normal Reporting, no special reporting is required.

6. Approval Criteria

Pass-Criteria for each ETS test case completed must be fulfilled. Partial fulfilment of the Pass-Criteria (e.g., with certain exceptions or omissions thereto) of an ETS test case should be documented, which may be used as a basis for determining fulfilment of the ETS test case "with conditions".

Prerequisites for recognition as having passed IOP testing and "Approved by OMA" are as follows:

A) For **MC Client** implementations, completion and fulfilment of the following ETS test cases are prerequisites for recognition of the relevant portion of the [MC-TS] as successfully passing IOP testing:

Test Case Id	ETR Requirement Id	ETR Status
MC-1.0-int-001	MCC-MT-1	Mandatory
MC-1.0-int-002	MCC-MT-2	Mandatory
MC-1.0-int-004	MCC-MT-4	Mandatory

B) For **MC Client** implementations supporting 'Tracking & Reporting' feature, completion and fulfilment of the following ETS test case in addition to those in (A) above are prerequisites for recognition of the relevant portion of the [MC-TS] as successfully passing IOP testing:

Test Case Id	ETR Requirement Id	ETR Status
MC-1.0-int-003	MCC-MT-3	Mandatory only when *Tracking & Reporting* feature is implemented.

C) For **MC Server** implementations without association with any MCR, completion and fulfilment of the following ETS test cases are prerequisites for recognition of the relevant portion of the [MC-TS] as successfully passing IOP testing:

Test Case Id	ETR Requirement Id	ETR Status
MC-1.0-int-005	CMP-MT-1 and CMP-MT-2	Mandatory
MC-1.0-int-006	CMP-MT-3	Mandatory
MC-1.0-int-007	CMP-MT-4	Mandatory
MC-1.0-int-008	CMP-MT-5 and CMP-MT-6	Mandatory
MC-1.0-int-012	CMP-MT-12 and CMP-MT-13	Mandatory

D) For **MC Server** implementations supporting 'Tracking & Reporting' feature, completion and fulfilment of the following ETS test cases in addition to those in (C) above are prerequisites for recognition of the relevant portion of the [MC-TS] as successfully passing IOP testing:

Test Case Id	ETR Requirement Id	ETR Status
MC-1.0-int-009	CMP-MT-7	Mandatory only when *Tracking & Reporting* feature is implemented.
MC-1.0-int-010	CMP-MT-8 and CMP-MT-9	Mandatory only when *Tracking & Reporting* feature is implemented.

E) For **MC Server** implementations supporting 'MCR association', completion and fulfilment of the following ETS test cases in addition to those in (C) above are required prerequisites for recognition of the relevant portion of the [MC-TS] as successfully passing IOP testing:

Test Case Id	ETR Requirement Id	ETR Status
MC-1.0-int-011	CMP-MT-10 and CMP-MT-11	Mandatory only when associated with a MCR implementation.
MC-1.0-int-013	MCR-MT-1 and MCR-MT-2	Mandatory only when a MCR is implemented.
MC-1.0-int-014	MCR-MT-3	Mandatory only when a MCR is implemented.

Note: Prerequisites in (D) and (E) above are orthogonal to each other but may coincidentally be applicable to a MC Server implementation supporting the respective features.

6.1   Enabler Validation Test Cases

The following table lists the tests that are used for enabler validation.

Test Case Id	ETR Requirement Id	ETR Status	Notes
MC-1.0-int-001	MCC-MT-1	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-002	MCC-MT-2	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-003	MCC-MT-3	Mandatory only when *Tracking & Reporting* feature is implemented.	See ETS and ETR documents for details.
MC-1.0-int-004	MCC-MT-4	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-005	CMP-MT-1 and CMP-MT-2	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-006	CMP-MT-3	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-007	CMP-MT-4	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-008	CMP-MT-5 and CMP-MT-6	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-009	CMP-MT-7	Mandatory only when *Tracking & Reporting* feature is implemented.	See ETS and ETR documents for details.
MC-1.0-int-010	CMP-MT-8 and CMP-MT-9	Mandatory only when *Tracking & Reporting* feature is implemented.	See ETS and ETR documents for details.
MC-1.0-int-011	CMP-MT-10 and CMP-MT-11	Mandatory only when associated with a MCR implementation.	See ETS and ETR documents for details.
MC-1.0-int-012	CMP-MT-12 and CMP-MT-13	Mandatory	See ETS and ETR documents for details.
MC-1.0-int-013	MCR-MT-1 and MCR-MT-2	Mandatory only when a MCR is implemented.	See ETS and ETR documents for details.
MC-1.0-int-014	MCR-MT-3	Mandatory only when a MCR is implemented.	See ETS and ETR documents for details.

Table 3: Enabler Validation Test Cases

6.2   Non-Covered ETR Requirements

This section enumerates the ETR requirements for which ETS test cases are not specified due to the optional nature of the Enabler features as listed. Priorities for developing test cases for the current version of the ETS were determined by consensus of contributing members in OMA. Future versions of the ETS may include additional Non-Covered ETR requirements as motivated by identified needs.

If new information about limitations and/or infeasibility of testing of any of the ETR requirements is discovered, this section will be updated accordingly.

ETR Requirement Id	ETR Status	Notes
MCC-OT-1	Optional; applicable only when DM is used to configure the MCC.	See ETR document for details; ETS test case is not specified.
CMP-OT-1	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.

ETR Requirement Id	ETR Status	Notes
CMP-OT-2	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-3	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-4	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-5	Optional; applicable only when Code Transfer feature is implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-6	Optional; applicable only when Code Transfer feature is implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-7	Optional; applicable only when Code Transfer feature is implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-8	Optional; applicable only when Code Transfer feature is implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-9	Optional; applicable only when Code Transfer feature is implemented.	See ETR document for details; ETS test case is not specified.
CMP-OT-10	Optional; applicable only when Code Transfer feature is implemented.	See ETR document for details; ETS test case is not specified.
MCR-OT-1	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
MCR-OT-2	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
MCR-OT-3	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
MCR-OT-4	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.
MCR-OT-5	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.

ETR Requirement Id	ETR Status	Notes
MCR-OT-6	Optional; applicable only when Code Transfer feature and MCR are both implemented.	See ETR document for details; ETS test case is not specified.

Table 4: Non-Covered ETR Requirements

Appendix A.   Change History   (Informative)

A.1   Approved Version History

Editor's Note: Numbering below is for example; it will be updated based actual document available.

Reference	Date	Description
n/a	n/a	No prior version –or- No previous version within OMA

A.2   Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-EVP-MC-V1_0	19 Jan 2012	All	Baseline document created.
	22 Feb 2012	All	Major update to include added text throughout this document.
Candidate Version OMA-EVP-MC-V1_0	13 Mar 2012	All	Status change to candidate by TP TP ref# OMA-TP-2012-0107-INP_MC_V1_0_EVP_for_Candidate_approval