Key Performance Indicator for OMA Enablers

Architecture

Candidate Version 1.0 – 08 Jun 2010

Open Mobile Alliance
OMA-AD-KPlinOMA-V1_0-20100608-C
Use of this document is subject to all of the terms and conditions of the Use Agreement located at http://www.openmobilealliance.org/UseAgreement.html.

Unless this document is clearly designated as an approved specification, this document is a work in process, is not an approved Open Mobile Alliance™ specification, and is subject to revision or removal without notice.

You may use this document or any part of the document for internal or educational purposes only, provided you do not modify, edit or take out of context the information in this document in any manner. Information contained in this document may be used, at your sole risk, for any purposes. You may not use this document in any other manner without the prior written permission of the Open Mobile Alliance. The Open Mobile Alliance authorizes you to copy this document, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials and that you comply strictly with these terms. This copyright permission does not constitute an endorsement of the products or services. The Open Mobile Alliance assumes no responsibility for errors or omissions in this document.

Each Open Mobile Alliance member has agreed to use reasonable endeavors to inform the Open Mobile Alliance in a timely manner of Essential IPR as it becomes aware that the Essential IPR is related to the prepared or published specification. However, the members do not have an obligation to conduct IPR searches. The declared Essential IPR is publicly available to members and non-members of the Open Mobile Alliance and may be found on the “OMA IPR Declarations” list at http://www.openmobilealliance.org/ipr.html. The Open Mobile Alliance has not conducted an independent IPR review of this document and the information contained herein, and makes no representations or warranties regarding third party IPR, including without limitation patents, copyrights or trade secret rights. This document may contain inventions for which you must obtain licenses from third parties before making, using or selling the inventions. Defined terms above are set forth in the schedule to the Open Mobile Alliance Application Form.

NO REPRESENTATIONS OR WARRANTIES (WHETHER EXPRESS OR IMPLIED) ARE MADE BY THE OPEN MOBILE ALLIANCE OR ANY OPEN MOBILE ALLIANCE MEMBER OR ITS AFFILIATES REGARDING ANY OF THE IPR’S REPRESENTED ON THE “OMA IPR DECLARATIONS” LIST, INCLUDING, BUT NOT LIMITED TO THE ACCURACY, COMPLETENESS, VALIDITY OR RELEVANCE OF THE INFORMATION OR WHETHER OR NOT SUCH RIGHTS ARE ESSENTIAL OR NON-ESSENTIAL.

THE OPEN MOBILE ALLIANCE IS NOT LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF DOCUMENTS AND THE INFORMATION CONTAINED IN THE DOCUMENTS.

© 2010 Open Mobile Alliance Ltd. All Rights Reserved.
Used with the permission of the Open Mobile Alliance Ltd. under the terms set forth above.
Contents

1. SCOPE (INFORMATIVE) .............................................................................................................................................. 4
2. REFERENCES ............................................................................................................................................................. 5
   2.1 NORMATIVE REFERENCES .............................................................................................................................. 5
   2.2 INFORMATIVE REFERENCES .......................................................................................................................... 5
3. TERMINOLOGY AND CONVENTIONS ..................................................................................................................... 6
   3.1 CONVENTIONS .................................................................................................................................................. 6
   3.2 DEFINITIONS .................................................................................................................................................... 6
   3.3 ABBREVIATIONS .............................................................................................................................................. 6
4. INTRODUCTION (INFORMATIVE) ............................................................................................................................ 7
   4.1 VERSION 1.0 ....................................................................................................................................................... 7
5. ARCHITECTURAL MODEL ....................................................................................................................................... 8
   5.1 DEPENDENCIES .............................................................................................................................................. 8
   5.2 ARCHITECTURAL DIAGRAM ............................................................................................................................ 8
   5.3 FUNCTIONAL COMPONENTS AND INTERFACES ............................................................................................ 8
      5.3.1 Functional Component within KPIinOMA enabler .................................................................................... 8
      5.3.2 Functional Component external to KPIinOMA enabler (Informative) ................................................. 9
      5.3.3 Interfaces ................................................................................................................................................ 9
   5.4 SECURITY CONSIDERATIONS .......................................................................................................................... 9

APPENDIX A. CHANGE HISTORY (INFORMATIVE) ...................................................................................................... 10
   A.1 APPROVED VERSION HISTORY ..................................................................................................................... 10
   A.2 DRAFT/CANDIDATE VERSION 1.0 HISTORY .................................................................................................. 10

APPENDIX B. FLOWS (INFORMATIVE) ...................................................................................................................... 11
   B.1 PERFORMANCE MEASUREMENT REPORT CALL FLOW ............................................................................. 11
   B.2 PERFORMANCE MEASUREMENT QUERY CALL FLOW .............................................................................. 11
   B.3 CONFIGURATION CALL FLOW ....................................................................................................................... 12
   B.4 PERFORMANCE MEASUREMENT COLLECTION CALL FLOW ................................................................. 12
   B.5 CONFIGURATION QUERY CALL FLOW .......................................................................................................... 13

Figures

Figure 1 - KPIinOMA Architectural Diagram ........................................................................................................... 8

Figure 2 – Performance Measurement Report Call Flow .......................................................................................... 11

Figure 3 – Performance Measurement Query Call Flow .......................................................................................... 11

Figure 4 – Configuration Call Flow .......................................................................................................................... 12

Figure 5 – Performance Measurement Collection Call Flow ................................................................................... 12

Figure 6 – Configuration Query Call Flow .............................................................................................................. 13
1. Scope

The Key Performance Indicators in OMA (KPIinOMA) enabler provides the functionality to request and report Performance Measurement and/or KPI data from OMA service enablers to requestors (Operational Environment), and the definition of the Key Performance Indicators for the OMA service enablers.

This Architecture Document is defined to support the requirements described in the Key Performance Indicator in OMA Requirements Document [OMA-KPIinOMA-RD].
2. References

2.1 Normative References

[OMA-KPIinOMA-RD] “Key Performance Indicators for OMA Enablers Requirements”, Open Mobile Alliance™, OMA-RD-KPIinOMA-V1_0, URL: http://www.openmobilealliance.org/


2.2 Informative References

3. Terminology and Conventions

3.1 Conventions

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

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

3.2 Definitions

<table>
<thead>
<tr>
<th>Key Performance Indicator</th>
<th>See [OMA-KPlinOMA-RD]</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPlinOMA-enabled Instance</td>
<td>See [OMA-KPlinOMA-RD]</td>
</tr>
<tr>
<td>Operational Environment</td>
<td>See [OMA-KPlinOMA-RD]</td>
</tr>
<tr>
<td>Performance Measurement</td>
<td>See [OMA-KPlinOMA-RD]</td>
</tr>
</tbody>
</table>

3.3 Abbreviations

<table>
<thead>
<tr>
<th>KPI</th>
<th>Key Performance Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPlinOMA</td>
<td>Key Performance Indicators in OMA</td>
</tr>
<tr>
<td>OE</td>
<td>Operational Environment</td>
</tr>
<tr>
<td>OMA</td>
<td>Open Mobile Alliance</td>
</tr>
</tbody>
</table>
4. Introduction (Informative)

This architecture document defines the functional component and the interface of the KPIinOMA enabler, fulfilling the requirements that have been captured in the Key Performance Indicators in OMA Requirements Document [OMA-KPIinOMA-RD].

Any OMA enabler may act as a KPIinOMA enabled instance and hence make use of the functions exposed by the KPIinOMA enabler.

4.1 Version 1.0

This architecture document covers all requirements [OMA-KPIinOMA-RD] of KPIinOMA V 1.0.
5. Architectural Model

5.1 Dependencies

The interface KPI-1 of the KPlinOMA enabler is dependent on at least one of the following technologies as the mandatory protocol for Performance Measurement reporting, query and configuration:

- SNMPv2 [RFC3416]
- HTTP 1.1 [RFC2616]
- FTP [RFC 959]

5.2 Architectural Diagram

The following figure represents the KPlinOMA architecture, showing the KPlinOMA enabler.

![Figure 1 - KPlinOMA Architectural Diagram](image)

5.3 Functional Components and Interfaces

5.3.1 Functional Component within KPlinOMA enabler

5.3.1.1 KPlinOMA-enabled Instance

The KPlinOMA-enabled Instance MUST provide the following functions:

- Collection function:
  - Collecting the Performance Measurement, e.g. based on configuration
  - Receiving and responding to the Performance Measurement Collection request from Operational Environment
Command interpreter function
  - Interpreting the query command and configure command from Operational Environment
Reporting function:
  - Reporting the Performance Measurement to Operational Environment, as provisioned
  - Responding the Performance Measurement, as a response to a query request from Operational Environment
Configuration management function:
  - Receiving and applying the configuration from Operational Environment
  - Responding the configuration data, as a response to a query request from Operational Environment

The KPlinOMA-enabled Instance MAY provide the following function:

KPI calculation function:
  - Calculating the KPI based on the collected Performance Measurement according to the KPI definition and configuration

5.3.2 Functional Component external to KPlinOMA enabler (Informative)

5.3.2.1 Operational Environment

The Operational Environment is a KPlinOMA requestor (not defined by the KPlinOMA enabler). By invoking the KPI-1 interface, the requestor:

  - Receives Performance Measurements from KPlinOMA-enabled Instance either in response to a Performance Management query or a Performance Management report based on pre-configuration of the KPlinOMA-enabled instance.
  - Requests the KPlinOMA-enabled Instance to collect Performance Measurements
  - Initiates the configuration of the KPlinOMA-enabled Instance via a configuration command request
  - Queries the Performance Measurement, KPI data or configuration data from KPlinOMA-enabled Instance

5.3.3 Interfaces

5.3.3.1 KPI-1 Interface

This interface is exposed by KPlinOMA-enabled Instance, and it is used by the requestor (Operational Environment) to:

  - query Performance Measurement, KPI data or configuration data,
  - receive Performance Measurement and/or KPI data reported from KPlinOMA-enabled Instance,
  - request the Performance Measurement collection, and
  - accomplish configuration to KPlinOMA-enabled Instance.

5.4 Security Considerations

The KPI-1 interface is expected to be provided over secured connections, e.g. as secured by TLS, to ensure that the secure interface operations between KPlinOMA-enabled Instance and requestor (Operational Environment).

KPlinOMA enabler SHOULD allow Service Provider’s deployment to perform the specific security features below:

  - mutual authentication between KPlinOMA-enabled Instance and requestor (Operational Environment)
  - integrity protection between KPlinOMA-enabled Instance and requestor (Operational Environment)
# Appendix A. Change History

## A.1 Approved Version History

<table>
<thead>
<tr>
<th>Reference</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>n/a</td>
<td>No prior version –or- No previous version within OMA</td>
</tr>
</tbody>
</table>

## A.2 Draft/Candidate Version 1.0 History

<table>
<thead>
<tr>
<th>Document Identifier</th>
<th>Date</th>
<th>Sections</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft Versions</td>
<td>04 Mar, 2010</td>
<td>all</td>
<td>Incorporates input to committee: OMA-ARC-KPIinOMA-2010-0001-INP_AD_Baseline</td>
</tr>
<tr>
<td></td>
<td>08 May, 2010</td>
<td>all</td>
<td>Incorporates agreed CRs: OMA-ARC-KPIinOMA-2010-0025R01-CR_Editorial_Comments_Resolution.doc</td>
</tr>
<tr>
<td></td>
<td>19 May 2010</td>
<td>All</td>
<td>Editorial Cleaning up</td>
</tr>
<tr>
<td>Candidate Version:</td>
<td>08 Jun 2010</td>
<td>All</td>
<td>Status changed to Candidate by TP: OMA-TP-2010-0226-INP_KPIinOMA_V1_0_AD_for_Candidate_approval</td>
</tr>
</tbody>
</table>
Appendix B. Flows (informative)

For the figures representing call flows:

- Components within the scope of KPIinOMA enabler are depicted with a solid border line;
- Entities external to the KPIinOMA enabler are depicted with a dashed border line;
- Mandatory steps for the KPIinOMA enabler are depicted with a solid arrow line,
- Optional steps for the KPIinOMA enabler are depicted with a dashed arrow line.

B.1 Performance Measurement Report Call Flow

```
Figure 2 – Performance Measurement Report Call Flow
```

This call flow is triggered by KPIinOMA-enabled Instance’s internal execution logic according to configuration by Operational Environment.

1. KPIinOMA-enabled Instance reports the collected Performance Measurement to the Operational Environment.
2. Operational Environment may respond the acknowledgement to the KPIinOMA-enabled Instance.

B.2 Performance Measurement Query Call Flow

```
Figure 3 – Performance Measurement Query Call Flow
```

This call flow is triggered by Operational Environment.

1. Operational Environment queries the KPIinOMA-enabled Instance for the Performance Measurement.
2. KPIinOMA-enabled Instance responds the Performance Measurement to the Operational Environment.
B.3 Configuration Call Flow

Figure 4 – Configuration Call Flow

This call flow is triggered by Operational Environment.

1. Operational Environment sends the configuration command to KPlinOMA-enabled Instance for collecting and reporting Performance Measurement.
2. KPlinOMA-enabled Instance generates the configuration profile according to the received configuration information.
3. KPlinOMA-enabled Instance acknowledges successful configuration to the Operational Environment.

B.4 Performance Measurement Collection Call Flow

Figure 5 – Performance Measurement Collection Call Flow

This call flow is triggered by Operational Environment’s internal execution logic or by Operational Administrator to request the KPlinOMA-enabled Instance start collecting specific KPI related Performance Measurement.

1. Operational Environment sends the request to KPlinOMA-enabled Instance for collecting specific KPI related Performance Measurement
2. KPlinOMA-enabled Instance may respond the acknowledgement to the Operational Environment for the request.
3. Receiving the Performance Measurement Collection Request from Operational Environment, KPIinOMA-enabled Instance start collecting the Performance Measurement according to the request or the pre-defined logic. How and according to which criteria the Performance Measurement is collected is out of scope.

**B.5 Configuration Query Call Flow**

![Figure 6 – Configuration Query Call Flow](image.png)

This call flow is triggered by Operational Environment.

1. Operational Environment queries the KPIinOMA-enabled Instance for the configuration information.
2. KPIinOMA-enabled Instance responds the configuration information to the Operational Environment.