Oracle® Communications Offline Mediation Controller

AMA CDK Cartridge Pack User Guide

Release 6.0

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Oracle Communications Offline Mediation Controller AMA CDK Cartridge Pack User Guide, Release 6.0

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Contents

Preface

This document contains guidelines for installing and setting up Oracle Communications Offline Mediation Controller AMA CDK cartridge pack.

Audience

This document is intended for solution designers who configure Offline Mediation Controller cartridges.

Downloading Oracle Communications Documentation

Product documentation is located on Oracle Help Center:

http://docs.oracle.com

Additional Oracle Communications documentation is available from the Oracle software delivery Web site:

https://edelivery.oracle.com

Related Documents

For more information, see the following documents:

- *Offline Mediation Controller Cartridge Development Kit Developer's Guide*: For information about how to develop a cartridge.
- *Offline Mediation Controller Cartridge Development Kit NPL Reference Guide*: For information about how to use the Node Programming Language for developing or extending a cartridge.
- *Offline Mediation Controller System Administrator's Guide*: For administrating Oracle Communications Offline Mediation Controller.

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About this Guide

This chapter contains an overview about Oracle Communications Offline Mediation Controller cartridges

The scope of this guide includes Offline Mediation Controller as it pertains to the use of this cartridge pack. It is not intended to be a complete Offline Mediation Controller reference guide.

About the Cartridges

Offline Mediation Controller cartridge packs are discrete software components that are developed for the Offline Mediation Controller product. An Offline Mediation Controller cartridge pack offers specific domain behavior on top of the core Offline Mediation Controller software.

An Offline Mediation Controller cartridge pack is not a standalone component; it operates in conjunction with the Offline Mediation Controller core product. Offline Mediation Controller cartridge packs offer the following benefits:

- **Reduced time to market**: Time to market of new services is reduced through simplified development, implementation, and extension of cartridges on customer sites.
- **Extendable**: Cartridges can be extended to include additional services and components that deliver business value, without requiring changes to the original cartridge.
- **Simplified effort**: The effort and technical knowledge that is required to perform customizations is reduced.
- **Ease of installation**: Cartridges can be installed into an Offline Mediation Controller environment without interfering with the existing install base.

> **Note:** Cartridges are designed for a specific technology, software load, and service.

For more information on creating and extending a cartridge, refer to the following documents:

- *Offline Mediation Controller Cartridge Development Kit Developer's Guide*: For information on how to develop a cartridge.
- *Offline Mediation Controller Cartridge Development Kit NPL Reference Guide*: For information on how to use the Node Programming Language for developing or extending a cartridge.

Cartridge Pack Content

An Offline Mediation Controller cartridge contains the following:

- **JAR file**: Contains the cartridge software.
- **Cartridge Pack User Guide**: Contains a description of cartridge pack functionality and installation and configuration instructions.

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Cartridge Pack Overview

This chapter contains an overview of Oracle Communications Offline Mediation Controller AMA CDK cartridge pack.

New Features

This section lists the new features.

AMA CDK 6.0.0

This cartridge pack now works with Oracle Communications Offline Mediation Controller 6.0.

AMA CDK 2.1.3

The following feature was added in this version of the AMA cartridge pack:

- The AMA cartridge pack now supports incrementing Block Count across output files and Distribution Cartridge (DC) node restarts, for CDMA services.

AMA CDK 2.1.2

The following feature was added in this version of the AMA cartridge pack:

- The AMA cartridge pack now supports CDMA services. The AMA DNS XML schema allows you to configure the type of supported service as either GSM or CDMA.

The following field definition should be added in the XML file:

```
<xsd:attribute name="hexStructCode" type="xsd:boolean"/>
<definition name="dms_mtx_15_ama"
xmlns:xsd="http://www.w3.org/2001/XMLSchema-instance"
xsd:noNamespaceSchemaLocation="AMADNSSchema.xsd">
```

To specify CDMA or GSM set the hexadecimal structure code to true or false respectively.

Sample **amaBlock** in XML file:

```
<?xml version="1.0" standalone="yes"?>
    <amaStructure>
        <amaBlock BDW="false" RDW="false" blockSize="2048" hexStructCode="true">
            <blockHeaderRec>
                <structureCode>193</structureCode>
            </blockHeaderRec>
```

```
        </amaBlock>
```

AMA CDK 2.1.1

The following feature was added in this version of the AMA cartridge pack:

- The AMA DNS XML schema was updated to allow you to customize the block filler character used to maintain the fixed block size if the block size is not variable. Using the defined block filler character, the block will be filled. You can specify the block filler character as a regular hexadecimal value or by default the block filler is zero.

Sample **amaBlock** in XML file:

```
<amaBlock BDW="false" RDW="true" blockSize="2048" blockFiller="E">
<xsd:sequence>
```

</amaBlock>

XML Schema

The following is the XML schema for the AMA DNS DC. The schema is packaged inside the cartridge jar file. To access the schema, you must un-jar the file by executing the command:

```
jar xvf amadns_r2_1_3.jar
```

and navigating to:

```
com/metasolv/nm/amadns/AMADNSSchema.xsd
<?xml version="1.0" encoding="ISO-8859-1" ?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
 <xsd:annotation>
  <xsd:documentation xml:lang="en">
    AMA DNS Schema. Copyright 2004 MetaSolv Software Inc. All rights reserved.
   </xsd:documentation>
</xsd:annotation>
<xsd:element name="definition" type="amaDefType"/>
```

The XML definition file you create must conform to this schema.

```
<xsd:complexType name="amaDefType">
        <xsd:element name="amaStructure" type="amaStructureType"/>
        <xsd:sequence>
            <xsd:element name="structure" minOccurs="1" maxOccurs="unbounded"
type="structure_module_Type"/>
        </xsd:sequence>
        <xsd:sequence>
            <xsd:element name="module" minOccurs="0" maxOccurs="unbounded"
type="structure_module_Type"/>
        </xsd:sequence>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string"/>
</xsd:complexType>
<xsd:complexType name="amaStructureType">

<xsd:sequence>
<xsd:element name="fileHeader" type="fileHeaderType" minOccurs="0" maxOccurs="1"/>
        <!-- File header block, headerBlock should be the first block in the AMA
file and contains no data block -->
```

```
        <xsd:element name="headerBlock" type="amaBlockType" minOccurs="0"
maxOccurs="1"/>
        <!-- AMA data block -->
        <xsd:element name="amaBlock" type="amaBlockType"/>
        <!-- File footer block, footerBlock should be the last block in the AMA
file and contains no data block -->
        <xsd:element name="footerBlock" type="amaBlockType" minOccurs="0"
maxOccurs="1"/>
        <xsd:element name="operationsInFooterRecordOnly" type="operationsType"/>
        <xsd:sequence>
            <xsd:element name="counterInfo" type = "counterInfoType" minOccurs="0"
maxOccurs="2"/>
        </xsd:sequence>
        <xsd:element name="structureCodeField" type="xsd:string"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="fileHeaderType">

<xsd:sequence>
<xsd:element name="field" type="fieldType" minOccurs="1" maxOccurs="unbounded"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:complexType name="counterInfoType">

<xsd:sequence>
<xsd:element name="max" type="counter"/>
        <xsd:element name="min" type="counter"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="counterNameType"/>
</xsd:complexType>
<xsd:simpleType name="counterNameType">

<xsd:restriction base="xsd:string">
<xsd:enumeration value="FileCounter"/>
        <xsd:enumeration value="BlockCounter"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="counter">

<xsd:restriction base="xsd:int">
<xsd:minInclusive value="0"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="operationsType">

<xsd:restriction base="xsd:string">
<xsd:enumeration
value="getTotalRecordsInFile,getTotalDataRecordsInFile,getTotalBlocksInFile,getTot
alRecordsInBlock,getTotalDataRecordsInBlock,getTimeStampFromBlockHeader,getTimeFro
mBlockHeader,getDateFromBlockHeader,getTimeStampFromFileHeader,getTimeFromFileHead
er,getDateFromFileHeader"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="amaBlockType">

<xsd:sequence>
<!-- Block Header Record -->
        <xsd:element name="blockHeaderRec" type="recordType" minOccurs="0"
maxOccurs="1"/>
        <!--    Special header record in this block    -->
```

```
        <xsd:element name="headerRec" type="recordType" minOccurs="0"
maxOccurs="1"/>
        <!--    Special footer record in this block    -->
        <xsd:element name="footerRec" type="recordType" minOccurs="0"
maxOccurs="1"/>
    </xsd:sequence>
    <!--  Block Descriptor Word is presented or not  -->
    <xsd:attribute name="BDW" type="xsd:boolean"/>
    <!--  Record Descriptor Word is presented or not  -->
    <xsd:attribute name="RDW" type="xsd:boolean"/>
    <!--  The size of a block  -->
    <xsd:attribute name="blockSize" type="blockSizeType"/>
    <xsd:attribute name="blockFiller" type="blockFillerType"/>
</xsd:complexType>
<xsd:complexType name="recordType">

<xsd:sequence>
<!-- The structure code of a record, should match the "id" in "structure_module_
Type". -->
        <xsd:element name="structureCode" type="xsd:string"/>
    </xsd:sequence>
</xsd:complexType>
<xsd:simpleType name="blockSizeType">

<xsd:restriction base="xsd:string">
<xsd:enumeration value="2048"/>
        <xsd:enumeration value="variable"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="blockFillerType">

<xsd:restriction base="xsd:string">
<xsd:pattern value="[0-9a-fA-F]{1}"/>
  </xsd:restriction>
</xsd:simpleType>
<xsd:complexType name="structure_module_Type">

<xsd:sequence>
<!-- Structure code or module code -->
        <xsd:element name="id" type="xsd:string"/>
        <xsd:sequence>
            <!--      This element is for Module only.      -->
            <xsd:element name="allowedstruct" type="xsd:string" minOccurs="0"
maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:sequence>
            <xsd:element name="field" type="fieldType" minOccurs="1"
maxOccurs="unbounded"/>
        </xsd:sequence>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string"/>
    <xsd:attribute name="multivalued" type="xsd:boolean"/>
</xsd:complexType>
<xsd:complexType name="fieldType">

<xsd:sequence>
<xsd:element name="length" type="xsd:int"/>
        <xsd:element name="narid" type="xsd:string"/>
        <xsd:element name="pattern" type="xsd:string" minOccurs="0"
maxOccurs="1"/>
```

```
        <xsd:element name="default" type="xsd:string" minOccurs="0"
maxOccurs="1"/>
        <xsd:element name="const" type="xsd:string" minOccurs="0" maxOccurs="1"/>
    </xsd:sequence>
    <xsd:attribute name="name" type="xsd:string"/>
    <xsd:attribute name="signdelimited" type="xsd:boolean"/>
    <xsd:attribute name="signCharacterInRegularValue" type="signCharType"/>
    <xsd:attribute name="signCharacterInNullValue" type="signCharType"/>
    <xsd:attribute name="max" type="xsd:int"/>
    <xsd:attribute name="min" type="xsd:int"/>
    <xsd:attribute name="operation" type="operationType"/>
    <xsd:attribute name="spacePrefix" type="xsd:boolean"/>
    <xsd:attribute name="encoding" type="encodingType"/>
</xsd:complexType>
<!--  Define field encoding type.   -->

<!--  By default (if not defined in XML), encoding type is BCD.  -->
<xsd:simpleType name="encodingType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="BCD"/>
        <xsd:enumeration value="EBCDIC"/>
    </xsd:restriction>
</xsd:simpleType>
<!--  Define sign character if a field is sign delimited.   -->

<!--  By default (if not defined in XML), sign character is "c" in regular value,
for example, "03dc".    -->
<!-- By default (if not defined in XML), sign character is "f" in null value, for
example, "ffff". -->
<xsd:simpleType name="signCharType">
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="f"/>
        <xsd:enumeration value="c"/>
    </xsd:restriction>
</xsd:simpleType>
<xsd:simpleType name="operationType">

<xsd:restriction base="xsd:string">
<!-- Get total number of records in the file, only available in File Footer -->
        <xsd:enumeration value="getTotalRecordsInFile"/>
        <!--  Get total number of data records (excluding header/footer records)
in the file, only available in File Footer  -->
        <xsd:enumeration value="getTotalDataRecordsInFile"/>
        <!--  Get file name      -->
        <xsd:enumeration value="getFileName"/>
        <!--  Get DMS MSC AMA (GSM 13, 15, and 16) time stamp      -->
        <xsd:enumeration value="getDmsMscTimeStamp"/>
        <!--  Get DMS MSC AMA GSM 17 time stamp      -->
        <xsd:enumeration value="getDmsMscGsm17TimeStamp"/>
        <!--  Get AMA DNS time stamp (includes date and time)      -->
        <xsd:enumeration value="getAmaDnsTimeStamp"/>
        <!--  Get AMA DNS time of day      -->
        <xsd:enumeration value="getAmaDnsTime"/>
        <!--  Get AMA DNS date      -->
        <xsd:enumeration value="getAmaDnsDate"/>
        <!--  Get file sequence number      -->
        <xsd:enumeration value="getFileSequenceNumber"/>
       <!--  Get total number of blocks in a file, only available in File Footer
-->
        <xsd:enumeration value="getTotalBlocksInFile"/>
```

```
        <!--  Get block identifier, for multiple switch system      -->
        <xsd:enumeration value="getBlockIdentifier"/>
        <!--  Get block sequence number      -->
        <xsd:enumeration value="getBlockSequenceNumber"/>
        <!--  Get total number of records in a block, only available in Block
Footer      -->
        <xsd:enumeration value="getTotalRecordsInBlock"/>
        <!--  Get total number of data records (excluding header/footer records)
in a block, only available in Block Footer  -->
        <xsd:enumeration value="getTotalDataRecordsInBlock"/>
       <!--  Use this operation if the field value is presented in the input NAR
-->
        <xsd:enumeration value="getValueFromFieldContainer:Key"/>
        <!--  These are for block footer only, use them if you want the timestamp
in the block footer is the same as the one in the block header.   -->
        <xsd:enumeration value="getTimeStampFromBlockHeader"/>
        <xsd:enumeration value="getTimeFromBlockHeader"/>
        <xsd:enumeration value="getDateFromBlockHeader"/>
        <!--  These are for footer only, use them if you want the timestamp in the
footer is the same as the one in the file header.  -->
        <xsd:enumeration value="getTimeStampFromFileHeader"/>
        <xsd:enumeration value="getTimeFromFileHeader"/>
        <xsd:enumeration value="getDateFromFileHeader"/>
        <!--   Ignore this field  -->
        <xsd:enumeration value="ignore"/>
    </xsd:restriction>
</xsd:simpleType>
</xsd:schema>
```

AMA CDK 2.1.0

The following feature was added to this version of the AMA cartridge pack:

- **AMAViewer**-converts AMA files to human-readable XML files.

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Installing the Cartridge Pack

This chapter contains information on the requirements for installing and setting up Oracle Communications Offline Mediation Controller AMA CDK cartridge pack.

Installing the Cartridge Pack

Complete the following pre-installation tasks before installing the cartridge pack:

1. Ensure Offline Mediation Controller 6.0 is installed.
2. Stop Node Manager, Administration Server, and Administration Client.
3. Delete any existing *ama_cdk* cartridge .jar files from the *OMC_Home*/**cartridges** directory, where *OMC_Home* is the directory in which Offline Mediation Controller is installed.

Installation Instructions

In a Solaris or Linux environment, you must install the cartridge pack on every UNIX server running Node Manager and Administration Server.

Installing on a Solaris or Linux Workstation

To install the cartridge pack on a Solaris or Linux workstation:

1. Download the **ama_cdk_r6_0_0.jar** to the *OMC_Home*/**cartridges** directory.
2. Restart Node Manager, Administration Server, and Administration Client.

Post Installation Instructions

After the Cartridge Pack has been installed, restart Node Manager, Administration Server, and Administration Client.

Testing the Cartridge Pack Installation

Verify that the Cartridge Pack has been properly installed by viewing Version Info from the Help menu in Administration Client. The Cartridge Pack name and version information should appear, along with the information about Node Manager, Administration Server, and Administration Client.

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Uninstalling the Cartridge Pack

This chapter contains information on the requirements for uninstalling the Oracle Communications Offline Mediation Controller AMA CDK cartridge pack.

Uninstalling the Cartridge Pack

You can uninstall the cartridge pack by performing the following procedure.

Uninstalling the Cartridge Pack from a Solaris or Linux Workstation

To uninstall the AMA CDK cartridge pack from a Solaris or Linux Workstation:

1. Go to the *OMC_Home*/**cartridges** directory, where *OMC_Home* is the directory in which Offline Mediation Controller is installed.
2. Run the following command, which removes the cartridge pack:

   ```
   rm ama_cdk_r6_0_0.jar
   ```