

**Oracle® Communications
Billing and Revenue Management**

Content Manager

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Preface

This document provides an overview of Oracle Communications Billing and Revenue Management (BRM) Content Manager.

Audience

This document is intended for you if you plan to use Content Manager to process authentication, authorization, and accounting (AAA) requests from content providers.

Downloading Oracle Communications Documentation

Product documentation is located on Oracle Technology Network:

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Document Revision History

The following table lists the revision history for this book.

Version	Date	Description
E16699-01	November 2011	Initial release.
E16699-02	May 2012	Documentation updates for BRM 7.5 Patch Set 1. <ul style="list-style-type: none">■ Made minor formatting and text changes.

Version	Date	Description
E16699-03	March 2013	Documentation updates for BRM 7.5 Patch Set 4. <ul style="list-style-type: none"> Replaced multidatabase information with multischema information.
E16699-04	August 2013	On HP-UX IA64, BRM 7.5 is certified as of BRM 7.5 Patch Set 5. Documentation added for HP-UX IA64.
E16699-05	February 2014	Documentation updates for BRM 7.5 Patch Set 7. <ul style="list-style-type: none"> Made minor formatting and text changes.
E16699-06	August 2014	Documentation updates for BRM 7.5 Patch Set 9. <ul style="list-style-type: none"> Made minor formatting and text changes.

Understanding Content Manager

This chapter provides an overview of Oracle Communications Billing and Revenue Management (BRM) Content Manager.

Important:

- Content Manager is an optional component, not part of base BRM.
 - Content providers must upgrade to Content SDK Release 2.0 in order to connect to a billing provider's Content Manager Release 2.0. See "[Understanding BRM Content SDK](#)" for information.
-

Before you read this document, you should be familiar with BRM concepts and architecture. See *BRM Concepts*.

What You Can Do with Content Manager

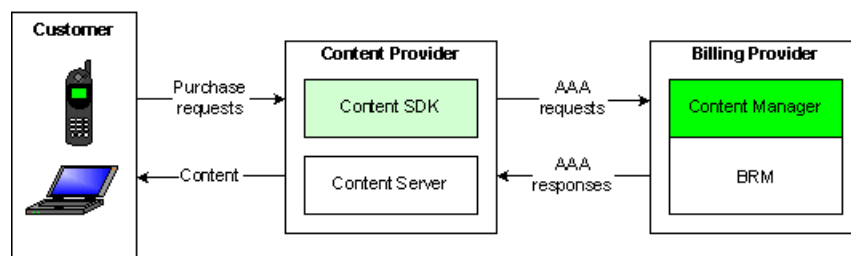
You use Content Manager to process authentication, authorization, and accounting (AAA) requests from content providers. Content providers use Content SDK to send these request to Content Manager over a PCP or HTTP connection.

Note: You provide Content SDK software and documentation to content providers who will use your services. See "[Understanding BRM Content SDK](#)" for information.

CDK is another name for Content SDK. Both names are used in the BRM documentation.

[Figure 1-1](#) shows how Content Manager is used to rate customer content usage:

Figure 1-1 Rating Customer Usage with Content Manager



With Content Manager you can:

- **Rate customer content purchases.**

Content Manager accounting functions record and rate customer content usage. You can also customize the accounting logic to meet your business needs. See ["Accounting for Content Purchases"](#) and ["About the Content Manager Opcodes"](#) for information.

Tip: You can use the Resource Reservation Manager to control revenue leakage in a multi-service prepaid environment. If RRF is not installed on your BRM system, Content Manager uses a *stub* implementation of the framework that is installed with base BRM. See the discussion of reserving resources for concurrent network sessions in *BRM Configuring and Collecting Payments*.

- **Authenticate and authorize customers.**

Content Manager authenticates content customers and authorizes them to access content. You can customize authentication and authorization policies to meet your business needs. See ["Customer Authentication and Authorization"](#) and ["About the Content Manager Opcodes"](#) for information.

- **Track customer usage patterns.**

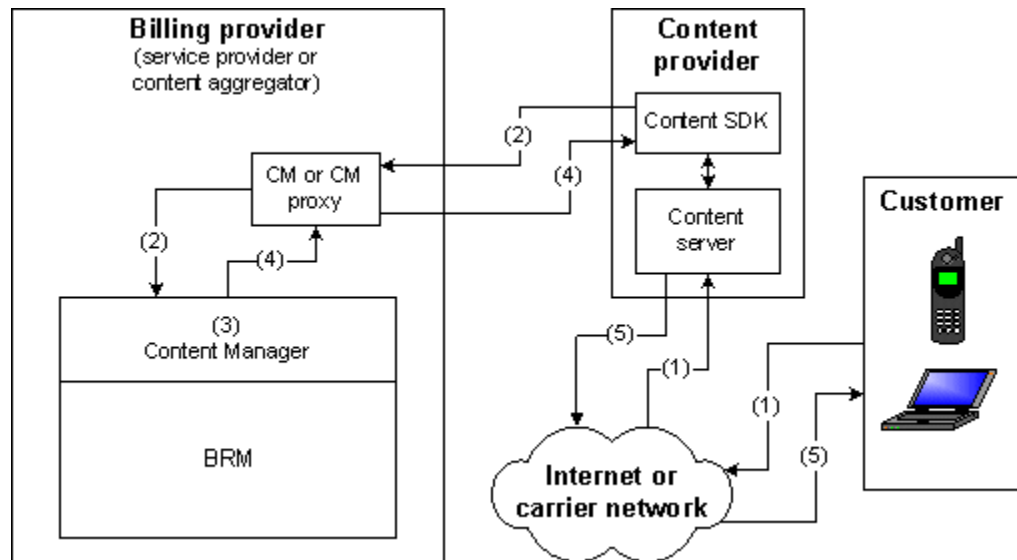
You can use Content Manager reports to track content purchases and remittance activity. See *BRM Reports*.

For example, a content provider might host an interactive golf game that customers access on wireless devices. When customers access the golf game, the game service uses CDK to make authentication and authorization requests to Content Manager. If Content Manager allows the customer access to the game, the game service uses CDK to send subsequent usage information to Content Manager. BRM records usage activity and bills the customer.

Tip: You can configure BRM to remit a portion of the charges to the game provider. See the discussion of remitting funds to third parties in *BRM Configuring and Running Billing*.

Customer Authentication and Authorization

[Figure 1–2](#) shows the Content Manager authentication and authorization (AA) process:

Figure 1–2 Customer Authentication and Authorization Using Content Manager

1. A customer request arrives at the content provider.
2. The content server sends an AA request to Content Manager by using the API in CDK.

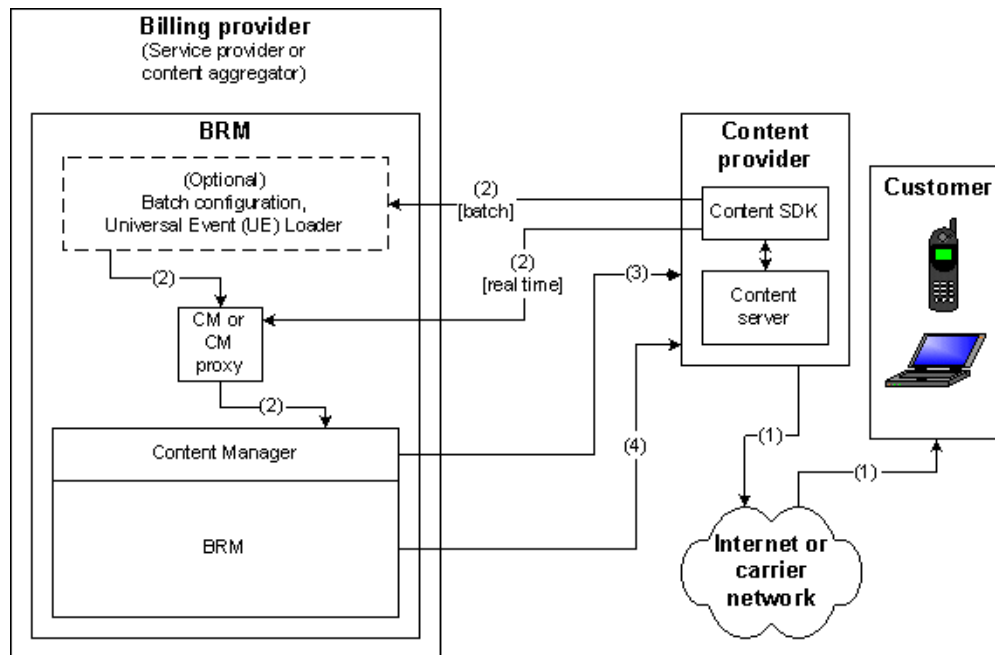
Note: See ["Understanding BRM Content SDK"](#) for more information on CDK.

3. Content Manager receives the request and performs AA checks.
4. Content Manager responds to the AA request with an allow or deny result.
5. The content provider grants or denies access to the customer, depending on the AA result from Content Manager.

See ["About the Content Manager Opcodes"](#) for more information on authentication and authorization functions.

Accounting for Content Purchases

[Figure 1–3](#) shows the Content Manager accounting process:

Figure 1–3 Accounting Process Using Content Manager

1. The content provider sends purchased content to the customer.
2. The content provider sends usage information to Content Manager in real-time or batch mode.
3. If accounting is configured for real time, Content Manager returns any error data to the content provider.
4. BRM remits a portion of the content price to the content provider.

See ["About the Content Manager Opcodes"](#) for more information on accounting functions.

About Content Categories

You set up content categories to define the types of content that Content Manager uses to authorize customers and rate purchased content.

Content Categories and Customer Authorization

When you set up Content Manager, you determine appropriate content categories for your content billing service. For example, your content categories might be alerts, directory information, horoscopes, movie information, traffic, and so forth. You group these categories in access and deny lists called service definitions, and associate each service definition with a content product.

When a customer requests access to content, the content provider includes the content category of the requested content in the authorization request. Content Manager checks whether the content category in the request occurs in any service definition associated with content products the customer has purchased. Content Manager bases its authorization response partly on the result of this check.

See ["Setting Up Access and Deny Lists"](#) for information on how to use content categories to authorize content.

Content Categories and Content Rating

You also use content categories to configure content prices. Each product definition includes a list of content categories associated with rate plans. When the content provider sends content to a customer, it sends accounting requests to Content Manager that include the content category to which that content belongs. Content Manager rates the usage according to the content category.

You can also arrange to have a content provider include the price of the sold content with the accounting request instead of basing the rate only on the content category. This content type is called *prerated*. It is useful when content pricing varies within a category, as with online books. See "[About Prerated Content](#)" for information.

See "[Pricing Content Products](#)" for information on using content categories to rate content.

Installing Content Manager

This chapter explains how to install the Oracle Communications Billing and Revenue Management (BRM) Content Manager software.

Important:

- Content Manager is an optional feature that requires a separate license.
 - If you upgrade from a previous version of Content Manager, you must upgrade to the latest version of Content SDK too.
-

Before you read this document, you should be familiar with BRM concepts and architecture. See *BRM Concepts* and ["Understanding Content Manager"](#).

System Requirements

Content Manager is available for the HP-UX IA64, Linux, Solaris, and AIX operating systems. See *BRM Installation Guide* for information on disk space requirements for these operating systems.

Software Requirements

Before installing Content Manager, you must install:

- Third-Party software, which includes the PERL libraries and JRE required for installing BRM components. See the instructions for installing the Third-Party software in *BRM Installation Guide*.
- BRM. See the discussion of putting together your BRM system in *BRM Installation Guide*.
- A Web server with Self-Care Manager installed if you are offering HTTP connections for your content providers. See the instructions for setting up customer self care with Self-Care Manager in *BRM Managing Customers*.
- Oracle 10g or Oracle 11g.

Installing Content Manager

Note: If you have already installed the product, features that are already installed cannot be reinstalled without uninstalling them first. To reinstall a feature, uninstall it and then install it again.

1. Download the software to a temporary directory (*temp_dir*).

Important:

- If you download to a Windows workstation, use FTP to copy the .bin file to a temporary directory on your UNIX server.
 - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid “Out of Memory” error messages in the log file. See “Increasing Heap Size to Avoid “Out of Memory” Error Messages” in *BRM Installation Guide* for more information.
-

2. Go to the directory where you installed the Third-Party package and source the **source.me** file.

Caution: You must source the **source.me** file to proceed with installation, otherwise “suitable JVM not found” and other error messages appear.

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

3. Go to the *temp_dir* directory and enter this command:

```
7.5.0_ContentMgr_platform_opt.bin
```

where *platform* is the operating system name.

Note: You can use the **-console** parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the **DISPLAY** environment variable before you install the software.

4. Follow the instructions displayed during installation. The default installation directory for Content Manager is **opt/portal/7.5**.

Note: The installation program does not prompt you for the installation directory if BRM or Content Manager is already installed on the machine and automatically installs the package at the *BRM_Home* location, where *BRM_Home* is the directory in which you installed the BRM software.

5. Go to the directory where you installed the Content Manager package and source the **source.me** file:

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

6. Go to the *BRM_Home/setup* directory and run the **pin_setup** script.
7. (Oracle only) If you use Oracle for your BRM database *and* your event tables are partitioned, run the **partition_utils** utility with the **-o update** parameter from the *BRM_Home/apps/partition_utils* directory:

```
perl partition_utils.pl -o update
```

See "Updating Partitions" and the description of **partition_utils** in *BRM System Administrator's Guide* for more information.

Your Content Manager installation is now complete.

What's Next?

See ["Setting Up and Using Content Manager"](#).

Uninstalling Content Manager

To uninstall Content Manager, run the *BRM_Home/uninstaller/ContentMgr/uninstaller.bin*.

Setting Up and Using Content Manager

This chapter explains how to set up Oracle Communications Billing and Revenue Management (BRM) Content Manager.

Before you read this document, you should be familiar with the following topics:

- BRM concepts and architecture. See *BRM Concepts*.
- Content Manager concepts. See ["Understanding Content Manager"](#) for more information.

See ["Installing Content Manager"](#) for instructions on installing Content Manager.

See ["Setting Up Content Manager"](#) for instructions on setting up your initial Content Manager environment.

See ["Using Content Manager"](#) for instructions to add content provider and content customer accounts.

Setting Up Content Manager

To set up Content Manager, follow these procedures.

1. [Setting Up Access and Deny Lists](#)
2. [Customizing the Authorization and Accounting Policies](#)
3. [Pricing Content Products](#)
4. [Creating a Test Customer](#)
5. [Configuring Time-to-Live for Content Service Profile Objects](#)
6. [Configuring the Remittance Fields File and Remittance Plan](#)

Note:

- All procedures except ["Pricing Content Products"](#) and ["Configuring the Remittance Fields File and Remittance Plan"](#) are optional, but you must perform them in the order shown.
 - You generally follow these procedures only once to set up your content billing service.
-

Setting Up Access and Deny Lists

You set up access and deny lists to authorize customers to access content depending on the category. See ["Content Categories and Customer Authorization"](#) for more information.

Note: If you do not set up access and deny lists, content categories will not be used to restrict customer access to content.

1. Define access and deny lists in the service definition.

See ["Setting Up the Service Definition File"](#) for information.

2. Run the **load_content_srvc_profiles** utility to load the service definition file:

```
load_content_srvc_profiles -dv filename
```

The **-d** option sets the debug level to **DEBUG** and the **-v** option prints debug messages to the **sdtout** file. If you do not include the file name as a parameter, the default file name **pin_content_srvc_profiles** is used.

Tip: You can load changes to the service definitions at any time by running the **load_content_srvc_profiles** utility. When the service definition file is loaded, BRM creates one content service profile object (**/service/content**) for each service definition.

3. Enable service profile authorization in the Connection Manager (CM) configuration file (*BRM_Home/sys/cm/pin.conf*):

- a. Open *BRM_Home/sys/cm/pin.conf* with a text editor such as **vi**.
- b. If it is not already present, add this line to the file:

```
# -cm content_use_profiles 1
```

Note: If this line is not included in the CM **pin.conf** file or if the parameter is set to **0**, authorization based on content categories is not implemented.

Tip: If you do not use content categories for authorization and rating, set the **content_use_profiles** value to **0** to improve system performance.

- c. If you enabled service profile authorization in the previous step, change the size of the **fm_utils_content_srvc_profile_cache** from the default of **1024**, to at least **1048576**:

```
- cm_cache fm_utils_content_srvc_profile_cache 100, 1048576, 13
```

Note: If your CM has other service profile caches, **cm.pinlog** might report the need to increase the total allocated cache space beyond the default of 6291456. To increase the default, add this entry to the CM **pin.conf** file with a value that increases the default by a multiple of 1024:

```
- cm cm_cache_space value
```

d. Save the file.

4. Stop and restart the CM. See the discussion of starting and stopping the BRM system in *BRM System Administrator's Guide*.

What's Next?

See ["Customizing the Authorization and Accounting Policies"](#) for more information.

Customizing the Authorization and Accounting Policies

You can customize Content Manager customer authorization and accounting policy opcodes to meet your business requirements.

Example customization:

- Configure Content Manager to authorize and rate customer usage based on data fields not included by default. For example, add fields that allow content providers to rate usage based on customer location. See ["Adding Custom Fields for Authorizing and Rating"](#) for more information.

Note: You must add custom accounting fields before you use them to price content products.

- Configure Content Manager to send additional information as name-value pairs to content providers in authorization replies. Content providers can use this data at their option. See ["Customizing Authorization"](#) for more information.

What's Next?

See ["Pricing Content Products"](#) for more information.

Pricing Content Products

Content is rated based on the content category that the content provider sends with accounting requests to Content Manager. See ["Content Categories and Content Rating"](#) for more information.

To set up content pricing:

1. Use Pricing Center to create content plans, deals, and products.
2. Associate content categories with rate plans from the ["Content Manager Sample Price List"](#) as shown in [Figure 3-1](#):

Figure 3–1 Content Categories and Rate Plans

Row	Alerts	Rate Plan	part Ca...
1	Alerts	PremiumCo...	Premium_C...
2	Directory	PremiumCo...	Premium_C...
3	FodorsHotels	PremiumCo...	Premium_C...
4	FunFacts	BasicContent	Standard ...
5	Horoscopes	BasicContent	Standard ...
6	Icons	PremiumCo...	Premium_C...
7	InstantMes...	PremiumCo...	Premium_C...

- Associate access and deny lists with content products. See ["Associating Access and Deny Lists with Content Products"](#) for more information.

Important: Be sure the spelling of the content category values in the rate plan selector for the product matches the spelling of the content categories defined in the associated service definition. If there is a spelling mismatch, customers could be authorized to access content but not be charged for it or denied access to content that is part of a purchased product.

What's Next?

See ["Creating a Test Customer"](#) for more information.

Creating a Test Customer

Create a test customer by using Customer Center. Give the test customer access to sample content categories. Use a content (not remittance) plan to create the test customer account.

Content providers can use your test customer to test sample code.

What's Next?

See ["Configuring Time-to-Live for Content Service Profile Objects"](#) for more information.

Configuring Time-to-Live for Content Service Profile Objects

The BRM Connection Manager (CM) uses cached service profile objects for authorizing customers based on content categories. Set the `content_profile_cache_ttl` value to specify how frequently you want the cache to be refreshed. This value

normally depends on how frequently you expect to create and load changes in the service definition file.

To adjust the time-to-live parameter:

1. Open *BRM_Home/sys/cm/pin.conf* with a text editor such as vi.
2. Add this line to the file:

```
# -cm content_profile_cache_ttl ttl_in_seconds
```

Note: If this line is not included in the CM *pin.conf* file, the default value of 3600 seconds is used.

3. Save the file.

When the specified time expires, the cached service profile object is refreshed from the BRM database.

What's Next?

See "[Configuring the Remittance Fields File and Remittance Plan](#)" for more information.

Configuring the Remittance Fields File and Remittance Plan

You can remit a portion of the content charges to the content provider.

To set up the remittance environment:

1. Add the following fields to the remittance field file (*BRM_Home/sys/data/pricing/example/pin_remittance_fds*) using an editor such as vi:

```
fields (
  service_type RESERVED
  event_type RESERVED
  product_name RESERVED
  profile_name RESERVED
  field content_provider EVENT PIN_FLD_CONTENT_INFO PIN_FLD_CONTENT_PROVIDER
  field content_category EVENT PIN_FLD_CONTENT_INFO PIN_FLD_CONTENT_CATEGORY_
NAME
)
```

For more information, see the comments in the *pin_remittance_fds* file.

2. Load the remittance fields file. See "Loading the Remittance Fields File" in *BRM Configuring and Running Billing*.
3. Use Pricing Center to create a remittance plan that includes one or more remittance products.

Important: Include a */service/contentprovider* service type with the remittance plan, as in [Figure 3-2](#).

Figure 3–2 Including Service Type with Remittance Plan

Service Type	Deal
/service/contentprovider	<No Deal>

See the discussion of remitting funds to third parties in *BRM Configuring and Running Billing* for more information on remittance plans.

Tip: Use the remittance product, deal, and plan in the sample price list as a guide. See "[Content Manager Sample Price List](#)" for more information.

What's Next?

After you have completed the configuration steps in "[Setting Up Content Manager](#)", you can add content provider and content customer accounts. See "[Using Content Manager](#)" for more information.

Using Content Manager

This section includes "[Setting Up Content Providers](#)" and "[Creating Content Customer Accounts](#)". Follow these procedures to set up new content providers and content customers.

Setting Up Content Providers

To set up a content provider to use your billing service:

1. Send the Content SDK installation file and documentation to the content provider.
2. Work with the content provider to identify a content category for each type of content they provide.

See "[About Content Categories](#)" for more information on content categories.

3. Decide which fields will determine the usage rates for the content provider. These fields might include any extended fields you added in "[Adding Custom Fields for Authorizing and Rating](#)".

4. Give the content provider the following information:

Important: The content provider must specify this information in the **Infranet.properties** configuration file in their Content SDK installation. See "[Understanding BRM Content SDK](#)" for more information.

- The host name and port number for your Content Manager installation.
- The username and password you will assign to the content provider when you create their account.
- Whether the content provider should connect to your service with a PCP or an HTTP connection.

Important: If you are using an HTTP connection:

- Tell the content provider to point to the **[http://hostname/Webkit_home/Content.jsp](#)** (English installation) page.
 - If you use a secure HTTP (HTTPS) connection, the content provider must use a proxy server. See "[HTTPS Connections](#)" for more information.
-

See "[Configuring the Infranet.properties File](#)" for more information on these parameters.

5. If a content provider will use batch accounting:

- a. Assign a directory on a host to which the content provider can send call detail record (CDR) files.
- b. Inform the content provider how to access the directory and how to transfer usage files to it.
- c. Use Batch Controller and Universal Event (UE) Loader to load the CDR files. See the discussion of loading events from external sources in *BRM Setting Up Pricing and Rating*.

Note: Content Manager ships with an event import template (*BRM_Home/apps/content/SampleContentUELTemplate.xml*) that supports the default accounting log field structure.

6. Create a remittance specification file to add information about the content provider. This file defines remittance profiles for each content provider for each content category for which they supply content. See "[Sample Content Provider Remittance Profiles](#)" and the discussion of remitting funds to third parties in *BRM Configuring and Running Billing* for more information.
7. Load the remittance specification file. See "Loading the Remittance Specifications" in *BRM Configuring and Running Billing*.
8. Create a content provider account by using Customer Center. Use a remittance plan to create the remittance account.

See the discussion of remitting funds to third parties in *BRM Configuring and Running Billing* for more information.

Creating Content Customer Accounts

When Content Manager is set up and content provider accounts are created, you can add customer accounts. To create content customer accounts, use Customer Center.

Important: Do not set up content customers with a remittance plan or deal. Remittance plans are only for content provider accounts.

Setting Up the Service Definition File

To set up a service definition file:

1. Create a file that includes access and deny lists in service definitions.

Each service definition in the file consists of records with the fields shown in [Table 3–1](#):

Table 3–1 *Field Names in Service Definition File*

Field Name	Description
Provisioning_Tag	The name of the service definition. You use the value of this field in the provisioning tag field in the Detailed Product Info tab for a product in Pricing Center. This associates the access or deny list in the service definition with the product.
Root_or_Brand_Tag	The root or brand name associated with the provisioning tag.
Filter_Mode	This specifies whether the category list that follows it is an allow list or deny list. Possible filter_mode values: 1 = Allow customers access to content whose category is in the list. 16 = Deny customers access to content whose category is in the list. Important: You can have an access list or a deny list in a service definition, but not both. If a customer purchases more than one product that collectively include more than one access or deny list, "Content Category Authorization Rules" apply.
Content_Category	The list of content categories associated with the service definition. See "About Content Categories" for more information.

Each service definition can include either an access list or a deny list. See ["Sample Service Definition File"](#) and ["Content Category Authorization Rules"](#) for the service definitions.

Note: When you load the file with the **load_content_service_profiles** utility, the provisioning tag name for each access and deny list name becomes available to associate with products. See ["Associating Access and Deny Lists with Content Products"](#) for more information.

You can set up a content category that allows the content provider to specify the price of the content. See ["About Prerated Content"](#) for more information.

2. Save the file using a descriptive name.

Sample Service Definition File

This sample service definition file describes the content categories used in the "[Content Manager Sample Price List](#)":

```
Provisioning_Tag: ContentPackage
Root_or_Brand_Tag: 0.0.0.1 /account 1 1
Filter_Mode: 1
Content_Category: Alerts
Content_Category: Directory
Content_Category: FodorsHotels
Content_Category: FunFacts
Content_Category: Horoscope
Content_Category: Icons
Content_Category: InstantMessaging
Content_Category: Jokes
Content_Category: Lottery
Content_Category: MCommerce
Content_Category: Messaging
Content_Category: Movies
Content_Category: News
Content_Category: RingTons
Content_Category: Sports
Content_Category: Stock
Content_Category: Traffic
Content_Category: Weather
Content_Category: Zagatsrestaurants

Provisioning_Tag: Games
Root_or_Brand_Tag: 0.0.0.1 /account 1 1
Filter_Mode: 1
Content_Category: Hearts
Content_Category: SKT
Content_Category: Solitaire
Content_Category: InteractiveChess
Content_Category: Trivia
Content_Category: VirtualGolf

Provisioning_Tag: RewardGamesPackage
Root_or_Brand_Tag: 0.0.0.1 /account 1 1
Filter_Mode: 1
Content_Category: BlackJack
Content_Category: Poker
Content_Category: Slots

Provisioning_Tag: TeenPackage
Root_or_Brand_Tag: 0.0.0.1 /account 1 1
Filter_Mode: 1
Content_Category: ChatRooms
Content_Category: LocalTeenEvents
Content_Category: Music
Content_Category: Photosharing
Content_Category: TeenEvents
```

Adding Custom Fields for Authorizing and Rating

To authorize and rate customer usage based on data in the default fields, you add custom fields to the Content Manager data structure.

Note:

- For information on the default authorization and accounting fields, see the PCM_OP_CONTENT_AUTHORIZE and PCM_OP_CONTENT_ACCOUNTING opcodes.
 - You can also add custom fields to return additional information with authorization replies. See ["Customizing Authorization"](#) for more information.
-
-

To add custom fields for authorization and rating:

1. Determine appropriate field names.
2. Extend the **/event/activity/content** object to include the new fields. See the discussion of creating custom fields and storable classes in *BRM Developer's Guide*.
3. If you use batch accounting for processing usage files that have custom fields, you must use Universal Event Mapper to modify the event import template (*BRM_Home/apps/content/SampleContentUELTemplate.xml*) to include the new or modified fields.

For more information, start Developer Center and go to UE Mapper Help.

4. Modify the PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS opcode to translate the name-value pairs sent by the content provider into name-value pairs.

Associating Access and Deny Lists with Content Products

To associate an access or deny list with a content product:

1. In the service definition file, note the provisioning tag value of the service definition that contains the access or deny list that you want to associate with the product.
2. In the **Provisioning Tag** field in the **Detailed Product Info** tab for the product in Pricing Center, select the provisioning tag value noted in step 1.

Note: The provisioning tag associates a product with a service profile object created when the service definition file was loaded. The service profile object contains the access or deny list defined in the corresponding service definition in the service definition file. See ["Setting Up Access and Deny Lists"](#) for more information.

[Figure 3–3](#) shows the **Detailed Product Info** tab for the Premium Content Package in the ["Content Manager Sample Price List"](#):

Figure 3–3 Detailed Product Info Tag

The screenshot shows a window titled "Product Attributes [Premium Content Package]". It has two tabs: "General Product Info" and "Detailed Product Info". The "Detailed Product Info" tab is active. Inside this tab, there are two dropdown menus: "Provisioning tag:" with the value "ContentPackage" and "Supplier tax ID:" with the value "<None>". Below these, there are two input fields labeled "Start" and "End".

In this example, when customers purchase the Premium Content Package, they are authorized to use any content in a content category listed in the ContentPackage service definition. These categories include Alerts, Directory, FodorsHotels, and so forth.

Rules for Using Content Provisioning Tags with Products

- Before you can select a provisioning tag value in the **Provisioning Tag** field, you must have loaded the access and deny lists. See ["Setting Up the Service Definition File"](#) for more information.
- If you associate provisioning tags with content products, you must enable service profiles. Enable service profile authorization in the CM configuration file as described in ["Setting Up Access and Deny Lists"](#).
- If you associate provisioning tags with content products, be sure the spelling of the content category values in the rate plan selector for the product matches the spelling of the content categories defined in the associated service definition.

Important: If there is a spelling mismatch between the items in the rate plan selector and the service definition file, customers could be authorized to access content but not be charged for it or denied access to content that is part of a product.

- See ["Content Category Authorization Rules"](#) for information on authorization logic.

Sample Content Provider Remittance Profiles

This is the remittance specification file text for content providers MegaContent and Janes Dreams:

```
Account_Begin
  remittance_account_number      "0.0.0.1-9617"
  remittance_type =              "B"
  remittance_product_name =      "RemittanceProduct"

Criteria_begin
  field  service_type =          "/service/content"
  field  product_name =          "Games Package"
  field  event_type =            "/event/activity/content"
  field  content_category =      "Games"
  field  provider_id =           "MegaContent"
```

```
Criteria_end

Criteria_begin
  field  service_type=      "/service/content"
  field  product_name=      "Premium Content Package"
  field  event_type=        "/event/activity/content"
  field  content_category=   "Stock_Trade"
  field  provider_id =      "MegaContent"
Criteria_end
Account_end

Account_Begin
  remittance_account_number      "0.0.0.1-9675"
  remittance_type =              "B"
  remittance_product_name =      "RemittanceProduct"

Criteria_begin
  field  service_type =       "/service/content"
  field  product_name =       "Games Package"
  field  event_type =         "/event/activity/content"
  field  content_category =    "Games"
  field  provider_id =        "Janes_Dreams"
Criteria_end

Criteria_begin
  field  service_type=        "/service/content"
  field  product_name=        "Premium Content Package"
  field  event_type=          "/event/activity/content"
  field  content_category=     "Horoscope"
  field  provider_id =        "Janes_Dreams"
Criteria_end
Account_end
```

About Prerated Content

You can arrange for a content provider to specify the price for a content item at purchase time rather than by the content category. Content priced at purchase time is called prerated content. Typically you set up one category for prerated content. In the ["Content Manager Sample Price List"](#), this category is called MCommerce.

Important: When sending prerated content usage data, advise content providers to send usage data in the **amount** field, not the **quantity** field.

To support prerated content:

1. In Pricing Center, create a rate plan for a content product with one balance impact entry in the rate structure.
2. Enter 1 as the Scaled Amount value.
3. Select an appropriate Impact Category value.

[Figure 3–4](#) shows the rate plan properties for the MCommerce rate plan in the sample price list:

Figure 3-4 Example Rate Plan Properties

Rate Plan Properties

Currency: US Dollar [840] Add... Delete Change...

Rate Structure:

- MCommerce
 - MCommerce
 - MCommerce Fixed Rate
 - No Minimum - No Maximum

Add... Delete Move Up Move Down

Balance Impacts

Valid Quantities

Minimum ☒ None 0.00 Maximum ☒ None 0.00

Balance Impacts

Legend

P - Proratable D - Discountable S - Sponsorable Add Delete Print...

	Resource...	GLID	Impact Category	S	P	D	Fixed Amount	Scaled Amount	Unit
1	US Dollar [...]	undefined...	M_Comme...	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.00	1.00	None [0]

4. Use the product's rate plan selector to associate the rate plan with a content category for prerated content.

Figure 3-5 shows the rate plan selector entry for MCommerce in the "Content Manager Sample Price List":

Figure 3–5 Rate Plan Selector Entry

Product Attributes [Premium Content Package]

General Product Info | Detailed Product Info

Name: Premium Content Package

Priority: 0.00 A higher number indicates a higher priority

Description:

Row	Name	Rate Plan	Product Category
8	Jokes	BasicContent	Standard ...
9	Lottery	BasicContent	Standard ...
10	MCommerce	MCommerce	M_Commer...
11	Messaging	BasicContent	Standard ...
12	Movies	BasicContent	Standard ...
13	News	BasicContent	Standard ...
14	RingTones	PremiumCo...	Premium C...

Move Up ^

Move Down v

Add Row

Delete Row

Delete Column

OK Cancel Help

Creating Content Manager Reports

To create reports on content usage and remittance, see the discussion of Content Manager reports in *BRM Reports*.

Caution: In a multischema system, the Billing Provider and Content Provider reports are accurate only when each content provider account's associated remittance objects, remittance events, content manager events, and user accounts are in the same database schema. If they are not all in the same schema, some data is not included in the reports.

Content Manager Sample Price List

This chapter describes the components of the Oracle Communications Billing and Revenue Management (BRM) Content Manager sample price list.

Before you look at this sample price list, you should be familiar with creating a price list. See *BRM Setting Up Pricing and Rating* for more information about creating price lists.

See "[Understanding Content Manager](#)" for information about Content Manager.

About the Sample Price List

You can use the sample Content Manager price list as a model for your price list. The sample price list file (*BRM_Home/setup/scripts/ContentSamplePlan.ipl*) is shipped with Content Manager. *BRM_Home/* is the directory in which you installed the BRM software.

Tip: Make a working copy of the sample price list to preserve the original for future use.

The sample price list includes two content plans and one remittance plan. Each includes one deal and one product. There are three additional content deals, each containing one product.

The Content Manager sample price list includes the following plans:

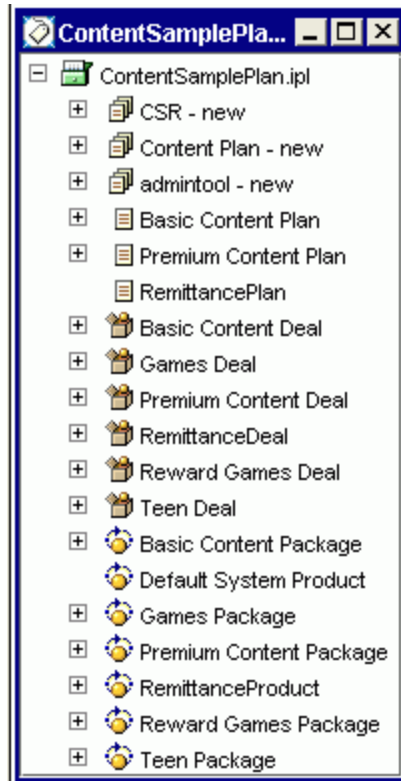
- [Basic Content Plan](#): Provides basic content access.
- [Premium Content Plan](#): Offers the same content as the Basic Content Plan, but charges customers lower premium content per access charges for a higher flat monthly rate.
- [Remittance Plan](#): Defines a remittance schedule for a content provider.

The Content Manager sample price list includes the following deals:

- Basic Content Deal: Defines pricing for the Basic Content plan.
- [Games Deal](#): Defines pricing for a selection of games.
- Premium Content Deal: Defines pricing for the Premium Content plan.
- Remittance Deal: Defines pricing for the Remittance plan.
- [Reward Games Deal](#): Defines pricing for betting-type games.
- [Teen Deal](#): Defines pricing for content of interest to teenagers.

Figure 4–1 shows the main elements of the Content Manager sample price list:

Figure 4–1 Content Sample Plan Elements



Basic Content Plan

This section describes the Basic Content Plan.

Concepts Illustrated

- Default cycle forward events
- Free content downloads each month
- Pricing for premium and basic content based on a monthly and content purchase event
- Pricing determined by content provider (pre-rated)

Key Elements of Plan

- Plan name: Basic Content Plan
- Basic content rating:
 - \$4.95 per month flat fee
 - 300 free downloads per month
 - 0.10 cents for each additional download
- Premium content rating:
 - Five free downloads per month

- 0.50 cents for each additional download
- MCommerce (pre-rated content) rating
 - Rate determined by content provider
 - Unlimited pre-rated downloads per month

Product Definitions

The Basic Content Plan includes this product:

Basic Content Package

- Service: /service/content
- Provisioning tag: ContentPackage
- Default cycle forward event
- Three rate plans for nineteen content categories
- Resources used: US dollars, Basic Content Accessed, Premium Content Accessed
- Rate plan selector attributes: Content category field, content impact categories

Premium Content Plan

This section describes the Premium Content Plan.

Concepts Illustrated

- Default cycle forward events
- Free content downloads each month
- Pricing for premium and basic content based on a monthly and content purchase event
- Pricing determined by content provider (pre-rated)

Key Elements of Plan

- Plan name: Premium Content Plan
- Basic content rating:
 - \$9.95 per month flat fee
 - 300 free downloads per month
 - 0.10 cents for each additional download
- Premium content rating:
 - Ten free downloads per month
 - 0.40 cents for each additional download
- MCommerce (pre-rated content) rating
 - Rate determined by content provider
 - Unlimited pre-rated downloads per month

Product Definitions

The Premium Content Plan includes this product:

Premium Content Package

- Service: **/service/content**
- Provisioning tag: ContentPackage
- Default cycle forward event
- Three rate plans for nineteen content categories
- Resources used: US dollars, Premium Content Accessed, Basic Content Accessed
- Rate plan selector attributes: Content category field, content impact categories

Remittance Plan

This section describes the Remittance Plan.

Concept Illustrated

Single rate plan remittance

Key Elements of Plan

- Plan name: Remittance Plan
- Remit \$0.20 per usage event to content provider

Product Definitions

The Remittance Plan includes this product:

Remittance Product

- Service: none (Account type)
- Single rate plan for content event
- Resources used: US dollars, default content resource

Games Deal

This section describes the Games Deal.

Concepts Illustrated

- Default cycle forward events
- Pricing on a per-game basis

Key Elements of Deal

- Deal name: Games Deal
- \$1.95 per month flat fee
- Game rating: \$0.05, \$0.50, \$0.95, and \$1.95 depending on game content category

Product Definitions

The Games Deal includes this product:

Games Package

- Service: **/service/content**
- Provisioning tag: Games
- Default cycle forward event
- Four rate plans for six content categories
- Resources used: US dollars
- Rate plan selector attributes: Content category field, content impact categories

Reward Games Deal

This section describes the Reward Games Deal.

Concepts Illustrated

- Default cycle forward events
- Pricing on a per-game basis

Key Elements of Deal

- Deal name: Reward Games Deal
- \$1.95 per month flat fee
- Game rating: \$0.01 per game

Product Definitions

The Reward Games Deal includes this product:

Reward Games Package

- Service: **/service/content**
- Provisioning tag: RewardGamesPackage
- Default cycle forward event
- One rate plan for three content categories
- Resources used: US dollars, tokens
- Rate plan selector attributes: Content category field, content impact categories

Teen Deal

This section describes the Teen Deal.

Concepts Illustrated

- Default cycle forward events
- Pricing based on content purchase event

Key Elements of Deal

- Deal name: **Teen Deal**
- \$2.95 per month flat fee
- Game rating: \$0.10, \$0.15, \$0.95, \$1.00, and \$1.95 depending on content category

Product Definitions

The Teen Deal includes this product:

Teen Package

- Service: **/service/content**
- Provisioning tag: TeenPackage
- Default cycle forward event
- Five rate plans for five content categories
- Resources used: US dollars
- Rate plan selector attributes: Content category field, content impact categories
- Rate plan selector attributes: Single remittance event

Understanding BRM Content SDK

This chapter provides an overview of Oracle Communications Billing and Revenue Management (BRM) Content SDK.

To use Content SDK, you should be familiar with Java programming.

Important: Content providers must upgrade to Content SDK Release 2.0 in order to connect to a billing provider's Content Manager Release 2.0.

Content SDK and Content Manager are components of BRM Content Connector.

What You Can Do with Content SDK

Content SDK is a set of Java classes that enables a content provider to access the authentication, authorization, and accounting (AAA) features of a billing provider that uses BRM Content Manager. The billing provider collects payment from the customer and can remit a portion of the charge to the content provider.

The content provider integrates these Java classes with the content server to automate the AAA processes.

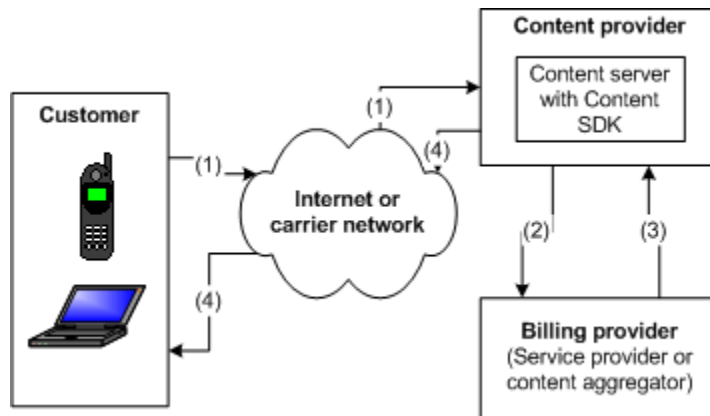
How Content SDK Works

When a content server instantiates the AAA classes in Content SDK, function calls are sent to the billing provider to invoke AAA operations.

Note: See "[Connection Types](#)" for information on methods of connecting Content SDK and Content Manager.

Customer Authentication and Authorization

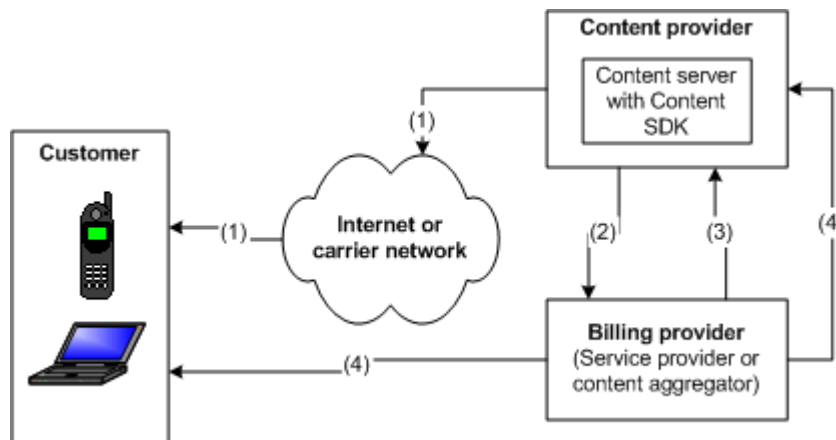
[Figure 5-1](#) shows the authentication and authorization (AA) process that occurs when a customer requests content from a content provider:

Figure 5–1 Authentication and Authorization for Customer Requests

1. The customer request arrives at the content server.
2. The content server sends AA requests to the billing provider by using the API in Content SDK.
3. The billing provider receives the requests, performs AA checks, and responds to the AA request with an allow or deny result.
4. The content server grants or denies the customer access to the requested data, depending on the AA result from the billing provider.

Accounting for Content Purchases

Figure 5–2 shows the accounting process when a customer purchases content:

Figure 5–2 Content Manager's Account Process

1. The content server sends purchased content to the customer.
2. The content server sends usage information to the billing provider in real-time or batch mode.

See ["Running CDKSample"](#) for more information on real-time and batch accounting.

3. The billing provider returns any error data to the content provider.
4. Periodically (normally monthly) the billing provider bills the customer and optionally remits a portion of the fees to the content provider.

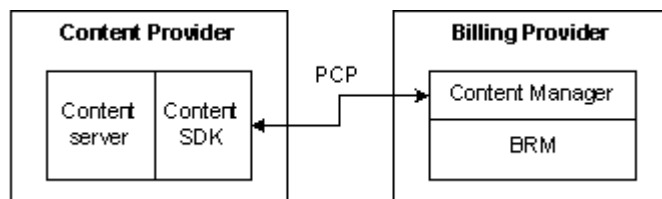
Connection Types

Content providers can connect to billing providers by using a PCP, HTTP, or secure HTTP (HTTPS) connection, depending on what the billing provider makes available.

PCP Connections

If a PCP connection is used, the Content SDK sends requests directly to Content Manager as shown in [Figure 5-3](#):

Figure 5-3 PCP Connection

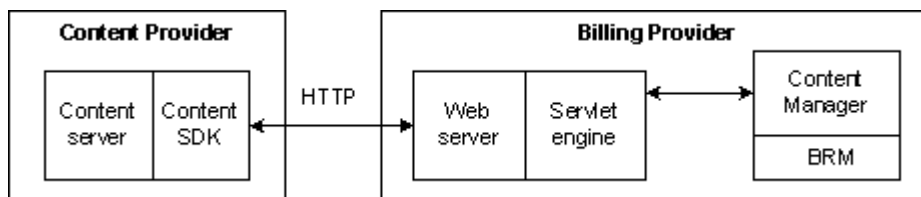


Note: If PCP is used as the connection method, the content provider can use connection pooling to improve performance. See "About Connection Pooling" in *BRM System Administrator's Guide* and ["Configuring the Infranet.properties File"](#) for more information.

HTTP Connections

If an HTTP connection is used, the Content SDK sends requests to a billing provider's Self-Care Manager Web server, as shown in [Figure 5-4](#):

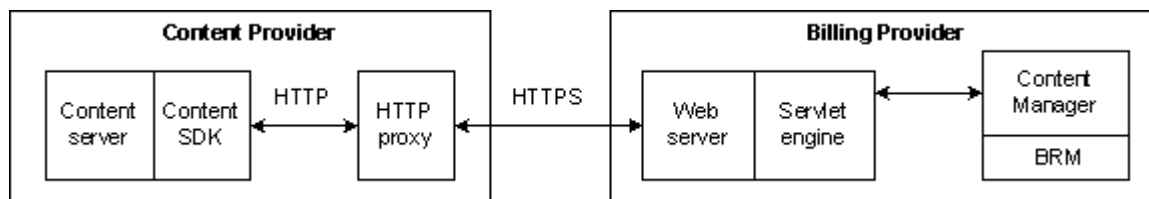
Figure 5-4 HTTP Connection



HTTPS Connections

If an HTTPS connection is used, the Content SDK sends requests to an HTTP proxy server located with the content provider. The proxy server translates HTTP requests into HTTPS requests, as shown in [Figure 5-5](#):

Figure 5-5 HTTPS Connection



Components of Content SDK

Content SDK includes:

- The **cdk.jar** distribution file, which includes Content SDK java classes.
- The **pfc.jar** distribution file, which includes the connection pool classes.
- Java class documentation.
- The Content SDK properties file (**Infranet.properties**).
- A sample Java application.
- A makefile for the sample application.

Installing Content SDK

This chapter explains how to install the Oracle Communications Billing and Revenue Management (BRM) Content SDK software.

Before you read this document, you should be familiar with Content SDK concepts. See "[Understanding BRM Content SDK](#)".

Important: If you upgrade from a previous version of Content SDK, you must upgrade to the latest version of Content Manager too.

System Requirements

Content SDK is available for the HP-UX IA64, Solaris, AIX, and Linux operating systems.

Software Requirements

Before installing Content SDK, you must install:

- Third-Party software, which includes the PERL libraries and JRE required for installing BRM components. See "Installing the Third-Party Software" in *BRM Installation Guide* for more information.
- BRM. See "Putting together your BRM system" in *BRM Installation Guide* for more information.
- Oracle 10g or Oracle 11g.

Information Requirements

Obtain the following information from your billing provider:

- The host name and port number of the billing provider's host.
- Your login name and password on the billing provider's host.
- The billing provider's access method (PCP, HTTP, or HTTPS).
- If you are using an HTTP proxy with your HTTP connection:
 - The proxy server host name
 - The proxy server port number

See "[HTTPS Connections](#)".

Installing Content SDK

Note: If you have already installed the product, features that are already installed cannot be reinstalled without uninstalling them first. To reinstall a feature, uninstall it and then install it again.

To install Content SDK:

1. Download the software to a temporary directory (temp_dir).

Important:

- If you download to a Windows workstation, use FTP to copy the .bin file to a temporary directory on your UNIX server.
 - You must increase the heap size used by the Java Virtual Machine (JVM) before running the installation program to avoid “Out of Memory” error messages in the log file. See “Increasing heap size to avoid “Out of Memory” error messages” in *BRM Installation Guide* for more information.
-

2. Go to the directory where you installed the Third-Party package and source the **source.me** file.

Caution: You must source the **source.me** file to proceed with installation, otherwise “suitable JVM not found” and other error messages appear.

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

3. Go to the temp_dir directory and enter this command:

```
7.5.0_Content_SDK_platform_opt.bin
```

where *platform* is the operating system name.

Note: You can use the **-console** parameter to run the installation in command-line mode. To enable a graphical user interface (GUI) installation, install a GUI application such as X Windows and set the DISPLAY environment variable before you install the software.

4. Follow the instructions displayed during installation. The default installation directory for Content SDK is **opt/portal/7.5**.

Note: The installation program does not prompt you for the installation directory if BRM or Content SDK is already installed on the machine and automatically installs the package at the *BRM_Home* location.

5. Go to the directory where you installed the Content SDK package and source the **source.me** file:

Bash shell:

```
source source.me.sh
```

C shell:

```
source source.me.csh
```

6. Go to the *BRM_Home/setup* directory and run the **pin_setup** script, where *BRM_Home* is the directory in which you installed the BRM software.

Note: The **pin_setup** script starts all required BRM processes.

Your Content SDK installation is now complete.

What's Next?

See "[Using Content SDK](#)" and follow the instructions.

Using Content SDK

This chapter describes how to use Oracle Communications Billing and Revenue Management (BRM) Content SDK.

To use Content SDK to connect to a billing provider, you should be familiar with Java programming. See ["Understanding BRM Content SDK"](#) for more information.

Using Content SDK

To use Content SDK:

1. Register with a billing provider. See ["Registering with a Billing Provider"](#) for more information.
2. Configure the **Infranet.properties** file. See ["Configuring the Infranet.properties File"](#) for more information.
3. Test your connection with your billing provider by using the sample application (**CDKSample**) included with Content SDK. See ["Testing Your Connection"](#) for more information.
4. Set up Content SDK to make authentication, authorization, and accounting (AAA) requests for your content server.

For more information on Content SDK java class methods, see the Content SDK API reference. For information on how to use these classes to perform AAA operations, see the **CDKSample.java** and **CDKSampleUtils.java** files.

Registering with a Billing Provider

To register as a content provider, you and the billing provider must determine the following:

- Appropriate content categories for each type of content you will provide. These categories are used for customer authorization and to calculate billing and remittance.
- Whether you will use real-time or batch accounting.

You can have your billing provider rate usage events in real-time or batch mode. Use real-time rating to rate usage events as they occur. Use batch rating to rate events stored in a usage log.

If you use batch accounting determine:

- The target host and directory at the billing provider where you send usage logs.

- The file transfer method, such as FTP or HTTP.

Note: See the **CDKSample** file for information on how to use real-time and batch rating.

- Whether you will authorize customers or rate usage based on any extended fields supported by your billing provider. See ["Adding Custom Fields to Requests"](#) for more information.

Configuring the Infranet.properties File

You might need to configure parameter value settings in the *BRM_Home/apps/CDK/Infranet.properties* file to support your implementation where *BRM_Home* is the directory in which you installed the BRM software.

This listing shows the default entries in the **Infranet.properties** file after Content SDK installation:

```
infranet.log.file=cdk.log
infranet.log.name=ContentDeveloperKit
infranet.log.level=3
infranet.connection=pcp://<login>:<password>@<hostname>:<port>/service/pcm_client
infranet.login.type=1
infranet.log.logallebuf=true
infranet.program.name=ContentDeveloperKit
infranet.errusagelog.file=cdkerrorusagelog.log
infranet.usagelog.file=cdkusage.log
infranet.usagelog.maxrecords=10000
infranet.errusagelog.maxrecords=10000
infranet.connectionpool.maxsize=8
infranet.connectionpool.minsize=4
infranet.connectionpool.timeout=30000
infranet.connectionpool.maxidletime=40000
```

See "Configuring the Connection Pool" in *BRM System Administrator's Guide* for information on the four connection pool parameters.

[Table 7–1](#) describes Content SDK-specific parameters in the *BRM_Home/apps/CDK/Infranet.properties*, where *BRM_Home* is the directory in which you installed the BRM software.

Table 7–1 Parameters Specific to Content SDK in Infranet.Properties File

Parameter	Description
infranet.errusagelog.file	<p>(Optional) Records failed accounting operations, such as not finding a subscriber account or denying a subscriber access to content of a particular category.</p> <p>The value of this parameter specifies the prefix and suffix of the log file name when it is saved.</p> <p>Default value: cdkerrorusagelog.log</p> <p>When the log file is saved, the date and time (based on a 24-hour clock) are included in the file name using this format:</p> <p>cdkerrorusagelog_yyyy_mm_dd_hh_mm_ss.log</p> <p>Log file name example:</p> <p>cdkerrorusagelog_2002_12_14_18_30_21.log</p>
infranet.usagelog.file	<p>(Optional) Contains usage records for batch accounting.</p> <p>The value of this parameter specifies the prefix and suffix of the log file name when it is saved.</p> <p>Default value: cdkusage.log</p> <p>cdkusage_yyyy_mm_dd_hh_mm_ss.log</p> <p>Log file name example:</p> <p>cdkusage_2002_12_14_18_30_21.log</p>
infranet.usagelog.maxrecords	<p>(Optional) The maximum number of records put in the usage log file before it is before it is saved and closed.</p> <p>Default value: 10000</p>
infranet.errusagelog.maxrecords	<p>(Optional) The maximum number of records put in the error log file before it is before it is saved and closed.</p> <p>Default value: 10000</p>

Error Handling

See "Connection Pool Error Handling" in *BRM System Administrator's Guide* for information on connection pool error handling.

Testing Your Connection

To test your connection to a billing provider, use the sample application, **CDKSample**, that is shipped with Content SDK.

Using the Sample Application

This section describes how to use **CDKSample** to execute these functions:

- [Authentication](#)
- [Authorization](#)
- [Cancel Authorization](#)
- [Batch Accounting](#)
- [Real-Time Accounting](#)
- [Renaming the Log Files](#)

See "[About CDKSample Operation Parameters](#)" for a description of the parameters used with these operations.

To run the sample application:

1. Use a colon (:) as the separator character in the makefile.
2. Copy the **Infranet.properties** file from the *BRM_Home/apps/CDK* directory to the *BRM_Home/source/apps/CDKSamples* directory.

Note: The source files are installed in the *BRM_Home/source/apps/CDKSamples* directory. The **.jar** files are installed in the *BRM_Home/jars* directory.

3. Make sure the **cdk.jar**, **pcm.jar**, **pcmext.jar**, and **pfc.jar** files are in the classpath directory.

Note: Make sure that the recommended version of JDK is installed and the required environment variables are set, before you run the **make** command.

4. Run **make** to build the sample application.

Running CDKSample

This section describes the syntax for running the Content SDK sample application. The parameters are described in "[About CDKSample Operation Parameters](#)".

Authentication

To run an authentication operation, use this syntax:

```
java CDKSample authenticate -u userid [-p password]
```

Authorization

To run an authorization operation, use this syntax:

```
java CDKSample authorize -u userid -c category -d description -p providerId [-q quantity | -a amount] [-s start_time] [-e end_time] [-r Authorization_ID]
```

Important: You must put double quotes around the **start_time** and **end_time** values, for example:

```
"10/OCT/2004:10:08:45 AM PST"
```

Cancel Authorization

To run a cancel authorization operation, use this syntax:

```
java CDKSample cancelauthorization -u userid -r Authorization_ID
```

Batch Accounting

To run a batch accounting operation, use this syntax:

```
java CDKSample batch_acct -u userid -c category -d description -p providerId [-q quantity | -a amount] [-s start_time] [-e end_time] [-r Authorization_ID]
```

Note:

- You must put double quotes around the `start_time` and `end_time` values, for example:

```
"10/OCT/2004:10:08:45 AM PST"
```

- This operation adds the usage information to the file specified in the `infranet.usagelog.file` entry of the `Infranet.properties` configuration file. The specified file is sent periodically to the billing provider for rating.

Real-Time Accounting

To run a real-time accounting operation, use this syntax:

```
java CDKSample realtime_acct -u userid -c category -d description -p providerId
[-q quantity | -a amount] [-s start_time] [-e end_time] [-r Authorization_ID]
```

Important: You must put double quotes around the `start_time` and `end_time` values, for example:

```
"10/OCT/2004:10:08:45 AM PST"
```

Renaming the Log Files

To rename the log file, use this syntax:

```
java CDKSample renamelog -t [usage | error] [-n filename]
```

To send the current CDR file for rating instead of waiting for the maximum record size to be reached, rename the usage log file.

Note: The maximum record size is specified with the `"infranet.usagelog.maxrecords"` parameter in the `Infranet.properties` file.

About CDKSample Operation Parameters

Table 7–2 describes the parameters used with `CDKSample` operations:

Table 7–2 Parameters Used with CDKSample Operations

Parameter	Description
classpath	The path of the .jar files (cdk.jar, pcm.jar, pcmext.jar)
-a amount	The dollar cost of prerated content. Important: Do not use the -a parameter with the -q parameter.
-c category	The category of the requested or served content.
-d description	A description of the requested or served content.

Table 7–2 (Cont.) Parameters Used with CDKSample Operations

Parameter	Description
-e end_time	The time when access to the content was ended. Use this format, with double quotes around the value: "dd/MMM/yyyy:hh:mm:ss a ZZZ" where: MMM = first three letters of month a = AM or PM ZZZ = time zone Example: "10/OCT/2004:10:08:45 AM PST"
-n filename	The new file name of the log or error file.
-p password or provider ID	(Optional) For authentication operations, the password of the content purchaser. For authorization and accounting operations, your content provider ID.
-q quantity	The quantity of content purchased. Note: Do not use the -q parameter with the -a parameter.
-r authorization_id	An identifier used to retrieve authorization details from Content Manager. If this value is specified during an authorization request, it will be used as the identifier of the object that encapsulates authorization details in Content Manager. In the accounting operations, it will be used to retrieve the details of authorization.
-s start_time	The time when access to content was started. Use this format, with double quotes around the value: "dd/MMM/yyyy:hh:mm:ss a ZZZZ" where: MMM = first three letters of month a = AM or PM ZZZZ = time zone Example: "10/OCT/2004:10:08:45 AM PST"
-t usage error	Specifies whether the usage or error log file is being renamed.
-u userid	The user ID of the content purchaser.

Content SDK Classes

Table 7–3 describes the Content SDK Java classes:

Table 7–3 Content SDK Classes

Class	Description
PortalAccountingReq	Encapsulates usage request records.
PortalAccountingResult	Encapsulates accounting results.
PortalAuthenticationReq	Encapsulates authentication requests.

Table 7–3 (Cont.) Content SDK Classes

Class	Description
PortalAuthenticationResult	Encapsulates authentication results.
PortalAuthorizationReq	Encapsulates authorization request records.
PortalAuthorizationResult	Encapsulates authorization results.
PortalCDKConstants	Defines the constants used in Content SDK.
PortalLogFactory	Contains a name-value pair consisting of a logfile name and the corresponding PortalLogObj. The class returns a singleton instance of a named log file.
PortalLogObj	Logs usage records. This log class manages logging to a specific log file.
PortalObj	Encapsulates AAA operations.
PortalOpRequest	Base class for requests.
PortalOpResult	Base class for results.

For more information on Content SDK java class methods, see the API reference.

Adding Custom Fields to Requests

If your billing provider supports authorization and rating based on extended information, ask them for the correct label and value pairs to use in your requests. Use the **setExtendedData** method in the **PortalAccountingReq** and **PortalAuthorization** classes.

Sample Use of the setExtendedData Method

If your billing provider can support rating based on extended information, such as location, ZIP code, and language information, call the **setExtendedData** method as follows:

```
PortalAuthorizationReq
  AuthorizeExt = new PortalAuthorizationReq(...)
  AuthorizeExt.setExtendedData("LOCATION", "USA")
  AuthorizeExt.setExtendedData("ZIP", "95014")
  AuthorizeExt.setExtendedData("LANGUAGE", "ENGLISH")
```

Receiving Additional Custom Information

Your billing provider may include additional information as name-values pairs in authorization responses.

This sample code shows how to access extended data returned to you from your billing provider:

```
PortalObj pObj = new PortalObj (...);
PortalAuthorizationReq aReq = new PortalAuthorizationReq (...);
PortalAuthorizationResult aRes = pObj.AuthorizeUsage (aReq);
Hashtable extended_data = aReq.getExtendedData();
```

This sample code shows how to iterate through the hash table to retrieve extended data values:

```
if (extended_data != null) {
    for (Enumeration e = extended_data.keys();
```

```
        e.hasMoreElements() ;) {  
        String name = (String) e.nextElement();  
        String value = (String)  
            extended_data.get(name);  
    }  
    .....
```

About the Content Manager Opcodes

You use the Content Manager standard opcodes to:

- Create, modify, or retrieve Content Manager access lists. See "[Managing Access Lists](#)" for more information.
- Process AAA requests from content providers. See "[Authenticating, Authorizing, and Rating Content Usage](#)" for more information.

Managing Access Lists

You specify the third-party content that a customer is allowed to use by using an access list. You create access lists by:

1. Defining all of your content service definitions. Each service definition contains a list of allowed or denied content. See "[Setting Up Access and Deny Lists](#)" for more information.
2. Associating products with content service definitions by using Pricing Center or a custom client application. See "[Pricing Content Products](#)" for more information.

When a customer purchases a product from a third-party content provider, the customer is granted all access privileges associated with that product.

BRM stores content provider access lists in **/service/content** objects in the BRM database. Each object stores the following:

- The customer profile associated with the access list.
- Access list mode (allow or deny).
- List of content categories. See "[About Content Categories](#)" for more information.

You create, modify, and retrieve **/service/content** objects by using the Content Manager SET and GET opcodes.

Creating or Modifying an Access List

Use PCM_OP_CONTENT_SET_SRVC_FEATURES to create or modify **/service/content** objects.

Important: This opcode overwrites any existing data in the **/service/content** object.

PCM_OP_CONTENT_SET_SRVC_FEATURES performs the following:

1. Validates data in the input list. The opcode verifies that only one access list mode is specified and that there are no duplicate content category entries.
2. Deletes any existing data in the specified **/service/content** object.
3. Calls the PCM_OP_CUST_MODIFY_SERVICE opcode to create or modify the specified **/service/content** object.

4. Returns the POID of the **/service/content** object and PIN_FLD_STATUS set to the status of the transaction.

Retrieving an Access List

Use PCM_OP_CONTENT_GET_SRVC_FEATURES to retrieve an access list from the BRM database. For example, a client application might call this opcode to display all third-party content that a customer is allowed to access.

This opcode takes as input the POID of the **/service/content** object and returns:

- The access list mode (allow or deny)
- The list of content categories

Authenticating, Authorizing, and Rating Content Usage

Use the following opcodes to process AAA requests from third-party content providers:

- PCM_OP_CONTENT_AUTHENTICATE. See ["Authenticating Customers"](#) for more information.
- PCM_OP_CONTENT_AUTHORIZE. See ["Authorizing Customers to Access Third-Party Content"](#) for more information.
- PCM_OP_CONTENT_ACCOUNTING. See ["Charging Customers for Content Usage"](#) for more information.
- PCM_OP_CONTENT_CANCEL_AUTHORIZATION. See ["Canceling Existing Authorizations"](#) for more information.
- PCM_OP_CONTENT_FIND. See ["Finding Customer Accounts"](#) for more information.

Authenticating Customers

Use PCM_OP_CONTENT_AUTHENTICATE to verify a customer's identity. This opcode operates in two modes:

- **Password Authentication Protocol (PAP) mode.** In PAP mode, the opcode verifies the customer's login and password.
- **Challenge Handshake Authentication Protocol (CHAP) mode.** In CHAP mode, the opcode verifies the customer's login only and assumes that the calling application will verify the customer's password. The opcode returns the unencrypted clear-text password to the calling application.

PCM_OP_CONTENT_AUTHENTICATE performs the following:

1. Calls PCM_OP_CONTENT_POL_RESOLVE_USER to find the customer login for any request IDs it receives.

Note: PCM_OP_CONTENT_AUTHENTICATE cannot determine whether it received a request ID or a customer login.

2. Calls PCM_OP_ACT_FIND_VERIFY to verify the customer's login.
3. Determines whether to operate in PAP or CHAP mode by checking the password field in the input flist:

- If the password field is supplied, PCM_OP_CONTENT_AUTHENTICATE operates in PAP mode. The opcode verifies the validity of the password.
 - If the password field is not present, PCM_OP_CONTENT_AUTHENTICATE operates in CHAP mode. The opcode looks up the password, calls PCM_OP_CUST_POL_DECRYPT_PASSWD to decrypt the password, and adds the clear-text password to the output flist.
4. Returns the following, depending on the status of the transaction.
 - When authentication succeeds, PCM_OP_CONTENT_AUTHENTICATE returns the POID of the **/service/content** object, the POID of the customer's **/account** object, and PIN_FLD_RESULT set to **PIN_ACT_VERIFY_PASSED**. When operating in CHAP mode, PCM_OP_CONTENT_AUTHENTICATE also returns the unencrypted clear-text password.
 - When authentication fails, PCM_OP_CONTENT_AUTHENTICATE returns PIN_FLD_RESULT set to **PIN_ACT_VERIFY_FAILED**.

Authorizing Customers to Access Third-Party Content

Use PCM_OP_CONTENT_AUTHORIZE to authorize customers for specific third-party content, such as video games or ring tones.

This opcode performs the following:

1. Calls the PCM_OP_CONTENT_POL_RESOLVE_USER policy opcode to resolve the given request ID to a customer login.

Note: PCM_OP_CONTENT_AUTHORIZE cannot determine whether it received a request ID or a customer login.

2. Locates the **/service/content** object with the given login.
3. If the input flist contains extensions used to calculate the cost of the event, calls the PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS policy opcode to get extended fields to rate the event.
4. Calls the PCM_OP_CONTENT_POL_AUTHORIZE policy opcode to perform authorization checks.
5. Calls PCM_OP_RESERVE_CREATE to determine the cost of access and to create a resource reservation based on the cost.

If PCM_OP_RESERVE_CREATE returns a failure, PCM_OP_CONTENT_AUTHORIZE calls PCM_OP_CONTENT_POL_POST_AUTHORIZE to determine whether the failure was due to insufficient resources or denied access.

6. Returns the following, depending on the status of the transaction:
 - When successful, PCM_OP_CONTENT_AUTHORIZE returns the POID of the **/service/content** object and the PIN_FLD_STATUS field set to **PIN_CONTENT_STATUS_OK**.
 - When the transaction fails, PCM_OP_CONTENT_AUTHORIZE returns the PIN_FLD_STATUS field set to **PIN_CONTENT_STATUS_NOK** and the PIN_FLD_REASON field set to the following:
 - **PIN_CONTENT_DENIED_ACCESS_TO_CONTENT_CATEGORY** when the requested content is in a denied category.
 - **PIN_CONTENT_USER_UNKNOWN** when the customer is unknown.

- **PIN_CONTENT_CANNOT_PURCHASE_CONTENT_CATEGORY** when the customer lacks sufficient resources.

Charging Customers for Content Usage

Use **PCM_OP_CONTENT_ACCOUNTING** to charge customers for third-party content usage.

PCM_OP_CONTENT_ACCOUNTING performs the following:

1. Calls **PCM_OP_CONTENT_POL_RESOLVE_USER** to resolve the given request ID to a customer login.

Note: **PCM_OP_CONTENT_ACCOUNTING** cannot determine whether it received a request ID or a customer login.

2. Checks if the **PIN_FLD_AUTHORIZATION_ID** or **PIN_FLD_AUTHORIZATION_OBJ** fields are passed in. If they are, **PCM_OP_CONTENT_ACCOUNTING** performs the following actions:
 - Calls **PCM_OP_RESERVE_FIND_OBJ** to find the reservation object corresponding to this reservation number.
 - Passes the reservation object to **PCM_OP_ACT_USAGE**, which releases the reservation object before processing the request.
3. Locates the **/service/content** object with the given login. If the object is not found, **PCM_OP_CONTENT_ACCOUNTING** sets **PIN_FLD_STATUS** to **PIN_CONTENT_STATUS_NOK** (a failure) and **PIN_FLD_REASON** to **PIN_CONTENT_USER_UNKNOWN**. Processing stops.
4. If the input flist contains extensions used to calculate the cost of the event, calls **PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS** to get extended fields to rate the event.
5. Calls **PCM_OP_CONTENT_POL_ACCOUNTING** to perform validation checks.
6. Checks whether the customer is allowed access to the requested content category and that the request is not a duplicate:
 - a. Checks if **PCM_OP_CONTENT_POL_ACCOUNTING** altered the input values for content category name, content provider ID, description, amount, quantity, and extended fields. **PCM_OP_CONTENT_ACCOUNTING** uses any altered values.
 - b. Rates and records content usage.
7. Returns the following, depending on the status of the transaction:
 - When successful, it returns the **PIN_FLD_STATUS** field set to **PIN_CONTENT_STATUS_OK**.
 - When the transaction fails, it returns the **PIN_FLD_STATUS** field set to **PIN_CONTENT_STATUS_NOK** and **PIN_FLD_REASON** set to the following:
 - **PIN_CONTENT_DENIED_ACCESS_TO_CONTENT_CATEGORY** when the requested content is in a denied category.
 - **PIN_CONTENT_USER_UNKNOWN** when the customer is unknown.
 - **PIN_FLD_DUPLICATE_RECORD** when a duplicate record is found.

Canceling Existing Authorizations

Use PCM_OP_CONTENT_CANCEL_AUTHORIZATION to cancel a previous authorization, disabling a customer's access to content.

This opcode takes as input the user ID and either the authorization ID or reservation object POID.

To cancel a previous authorization, this opcode does the following:

- If the authorization ID is supplied, calls PCM_OP_RESERVE_FIND_OBJ to resolve the user ID and locate the user's service object and account object.
- Looks for the reservation object that corresponds to the authorization id, service object, and account object.
- If the reservation object is found with a released status, PCM_OP_CONTENT_CANCEL_AUTHORIZATION returns a status **PIN_CONTENT_STATUS_OK**.
- If the reservation object is not found, PCM_OP_CONTENT_CANCEL_AUTHORIZATION returns a status of **PIN_CONTENT_STATUS_NOK** and a reason of **PIN_CONTENT_INVALID_AUTHORIZATION_ID**.
- If the reservation object is found with a reserved status, PCM_OP_CONTENT_CANCEL_AUTHORIZATION calls PCM_OP_RESERVE_RELEASE. If the operation is successful, it returns with a status **PIN_CONTENT_STATUS_OK**. If not, returns a status of **PIN_CONTENT_STATUS_NOK** and reason returned by PCM_OP_RESERVE_RELEASE.

Finding Customer Accounts

Use PCM_OP_CONTENT_FIND to find the access list and account for a specified customer ID. This opcode uses the extended data to resolve the request ID supplied in the login field.

Customizing Content Manager

You can customize how Content Manager processes AAA requests from third-party content providers by using the Customer Manager policy opcodes:

- PCM_OP_CONTENT_POL_ACCOUNTING. See ["Customizing Accounting"](#) for more information.
- PCM_OP_CONTENT_POL_AUTHORIZE. See ["Customizing Authorization"](#) for more information.
- PCM_OP_CONTENT_POL_POST_ACCOUNTING. See ["Returning Extended Accounting Data"](#) for more information.
- PCM_OP_CONTENT_POL_POST_AUTHORIZE. See ["Returning Extended Authorization Data"](#) for more information.
- PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS. See ["Translating Extended Events"](#) for more information.
- PCM_OP_CONTENT_POL_RESOLVE_USER. See ["Resolving Customer Logins"](#) for more information.

Customizing Accounting

Use the PCM_OP_CONTENT_POL_ACCOUNTING policy opcode to validate accounting requests. By default, this opcode detects duplicate request events and checks if the customer is allowed access to the requested content. However, you can

customize the opcode to turn off duplicate event detection or to modify the content provider ID, category description, category name, amount, and quantity.

This policy opcode is called by PCM_OP_CONTENT_ACCOUNTING.

By default, PCM_OP_CONTENT_POL_ACCOUNTING performs the following:

- Checks whether the request is a duplicate by searching the event table for an entry that matches the event type, service POID, content provider ID, start time, end time, content category, and quantity or amount depending on whether it is a prepaid event or not.

If the request is a duplicate, PCM_OP_CONTENT_POL_ACCOUNTING sets PIN_FLD_STATUS to **PIN_CONTENT_STATUS_NOK** and PIN_FLD_REASON to **PIN_CONTENT_DUPLICATE_RECORD**. Processing stops.

- Reads the value for the **content_use_profiles** entry in the Connection Manager (CM) configuration file (*BRM_Home/sys/cm/pin.conf*).

See ["Setting Up Content Manager"](#) for information on content settings for the CM **pin.conf** file.

- Validates the requested content category against the service profiles for all products the customer purchased. If no service profiles are associated with the service object or if CONTENT_USE_PROFILES is set to **0** in the Connection Manager configuration file (*BRM_Home/sys/cm/pin.conf*), access to all content categories is allowed.

See ["Setting Up the Service Definition File"](#) for more information on validation logic.

Customizing Authorization

Use the PCM_OP_CONTENT_POL_AUTHORIZE policy opcode to validate authorization requests. You can customize this opcode in the following ways:

- Change how the opcode calculates the expiration time (PIN_FLD_EXPIRATION_T) for resource reservation.
- Change the minimum acceptable authorization amount (PIN_FLD_MINIMUM) for resource reservation.

Note: Return the changed value in the PIN_FLD_MIN_QUANTITY field.

- Return the currency to use when performing amount-based authorization.

By default, PCM_OP_CONTENT_POL_AUTHORIZE performs the following:

- Reads the **content_use_profiles** entry from the Connection Manager configuration file (*BRM_Home/sys/cm/pin.conf*).

See ["Setting Up Content Manager"](#) for information on content settings for the CM **pin.conf** file.

- Validates the requested content category against the service object for all products the customer purchased. If no service profiles are associated with the service object or if CONTENT_USE_PROFILES is set to **0** in the CM **pin.conf** file, access to all content categories is allowed.

See ["Content Category Authorization Rules"](#) for information on authorization logic.

- Calculates the expiration time for resource reservation:
 - If PIN_FLD_INTERVAL is supplied in the input flist, PCM_OP_CONTENT_POL_AUTHORIZE calculates PIN_FLD_EXPIRATION_T as the present time plus the PIN_FLD_INTERVAL value in seconds.
 - If PIN_FLD_INTERVAL is not supplied, the opcode calculates PIN_FLD_EXPIRATION_T as the present time plus one day in seconds.
- If PIN_FLD_MINIMUM is supplied in the input flist, the value is passed to the Resource Reservation Manager (RRF). This is the minimum acceptable authorization amount.
- Authorizes requests and reserves resources based on the customer's balance.

Content Category Authorization Rules

Content Manager uses the following logic when processing authorization requests.

If a customer purchased products where:

- Only allow lists are present, requests whose categories are in any list are allowed. All other requests are denied.
- Only deny lists are present, requests whose categories are in any list are denied. All other requests are allowed.
- Allow lists and deny lists are present, requests whose categories are in an allow list and not in a deny list are allowed. All other requests are denied.

If no service definitions are specified for any of the products a customer has purchased, all requests are allowed.

Returning Extended Accounting Data

Use the PCM_OP_CONTENT_POL_POST_ACCOUNTING policy opcode to return extended data to the content provider. You can customize this policy opcode to return extended data in the EXTENDED_DATA array to PCM_OP_CONTENT_ACCOUNTING using name-value pairs.

This policy opcode is passed the input flist to PCM_OP_CONTENT_ACCOUNTING and the output flist from PCM_OP_ACT_USAGE and returns any extended data to PCM_OP_CONTENT_ACCOUNTING.

Returning Extended Authorization Data

Use the PCM_OP_CONTENT_POL_POST_AUTHORIZE policy opcode to return extended data to the caller. You can customize this policy opcode to return extended data in the EXTENDED_DATA array to PCM_OP_CONTENT_AUTHORIZE using name-value pairs.

This policy opcode is passed the input flist to PCM_OP_CONTENT_AUTHORIZE and the output flist from PCM_OP_RESERVE_CREATE and returns extended data to PCM_OP_CONTENT_AUTHORIZE.

This example returns cost and ZIP code information for the authorization response to the content provider:

```
0 PIN_FLD_EXTENDED_DATA ARRAY [0]
```

```

1 PIN_FLD_NAME STR [0] "cost"
1 PIN_FLD_VALUE STR [0] "0.50"

0 PIN_FLD_EXTENDED_DATA ARRAY [1]
1 PIN_FLD_NAME STR [0] "zipcode"
1 PIN_FLD_VALUE STR [0] "95014"

```

Translating Extended Events

Use the PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS policy opcode to translate name-value pairs in the input flist to field name-value pairs. By default, this opcode returns the POID in the input flist.

For example, the extended events in the input flist could include these fields:

```

0 PIN_FLD_EXTENDED_DATA ARRAY[0]
1 PIN_FLD_NAME STR[0] "LOCATION"
1 PIN_FLD_VALUE STR[0] "USA"

0 PIN_FLD_EXTENDED_DATA ARRAY[0]
1 PIN_FLD_NAME STR[0] "ZIP"
1 PIN_FLD_VALUE ST [0] "95014"

0 PIN_FLD_EXTENDED_DATA ARRAY[0]
1 PIN_FLD_NAME STR[0] "LANGUAGE"
1 PIN_FLD_VALUE STR[0] "ENGLISH"

```

Use PCM_OP_CONTENT_POL_RESOLVE_EVENT_EXTENSIONS to translate these fields in the input flist to the following fields in the output flist:

```

0 PIN_FLD_EXTENDED_INFO SUBSTRUCT [0]
1 PIN_FLD_LOCATION_INFO SUBSTRUCT [0]
2 PIN_FLD_LOCATION STR[0] "USA"
2 PIN_FLD_ZIP INT[0] "95129"
2 PIN_FLD_LANGUAGE STR[0] "ENGLISH"
0 PIN_FLD_OBJECT_TYPE STR[0] "/extended"

```

Resolving Customer Logins

Use the PCM_OP_CONTENT_POL_RESOLVE_USER policy opcode to resolve a given request ID to the customer login of the **/service/content** object.

For example, a service gateway could send a content provider a customer's request ID instead of the customer's login to keep the customer anonymous to the content provider. The content provider forwards the request ID to Content Manager. Since the customer's login is required to locate the customer's account, this opcode can be used to query the gateway to resolve the service login.

