

# Oracle® Communications Billing and Revenue Management

## PDC REST Services Manager Integration Guide



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# Contents

## Preface

---

|                             |   |
|-----------------------------|---|
| Audience                    | v |
| Documentation Accessibility | v |
| Diversity and Inclusion     | v |

## 1 PDC REST Services Manager Overview

---

|                                            |     |
|--------------------------------------------|-----|
| About PDC REST Services Manager            | 1-1 |
| About Setting Up PDC REST Services Manager | 1-3 |
| About Monitoring PDC REST Services Manager | 1-3 |

## 2 Securing PDC REST Services Manager Communications

---

|                                                                     |     |
|---------------------------------------------------------------------|-----|
| About Securing PDC REST Services Manager Communications             | 2-1 |
| Requesting an OAuth Access Token from Oracle Identity Cloud Service | 2-1 |
| Requesting an OAuth Access Token from Oracle Access Management      | 2-2 |

## 3 Mapping Product Offerings

---

|                                                |      |
|------------------------------------------------|------|
| About Mapping Product Offerings                | 3-1  |
| Mapping Setup Components                       | 3-2  |
| Mapping Lifecycle Status for Product Offerings | 3-4  |
| Mapping Custom Attributes from TMF 620 to PDC  | 3-5  |
| Mapping Charge Offers from TMF 620 to PDC      | 3-6  |
| PDC Charge Offer Default Values                | 3-38 |
| Mapping Discount Offers from TMF 620 to PDC    | 3-40 |
| PDC Discount Offer Default Values              | 3-47 |
| Mapping Subscription Terms from TMF 620 to PDC | 3-48 |
| PDC Subscription Terms Default Values          | 3-50 |
| Mapping Bundles from TMF 620 to PDC            | 3-50 |
| PDC Bundle Default Values                      | 3-51 |
| Mapping Packages from TMF 620 to PDC           | 3-51 |

## 4 Monitoring PDC REST Services Manager

---

|                                               |      |
|-----------------------------------------------|------|
| About Logging                                 | 4-1  |
| Accessing the Logs                            | 4-2  |
| Changing the Log Levels                       | 4-3  |
| Configuring the Log Format                    | 4-4  |
| Changing the Default Log Manager              | 4-5  |
| About Tracing                                 | 4-5  |
| Enabling Tracing in PDC REST Services Manager | 4-7  |
| Using Trace Tags to Troubleshoot Issues       | 4-7  |
| About Metrics                                 | 4-13 |
| Checking Access to Metrics                    | 4-14 |
| About Monitoring System Health                | 4-15 |

## A Inbound Communications Reference

---

|                                               |      |
|-----------------------------------------------|------|
| ProductOfferingCreateEvent                    | A-1  |
| ProductOfferingAttributeValueChangeEvent      | A-2  |
| ProductOfferingStateChangeEvent               | A-4  |
| ProductOfferingPriceCreateEvent               | A-4  |
| ProductOfferingPriceAttributeValueChangeEvent | A-6  |
| ProductOfferingPriceStateChangeEvent          | A-7  |
| ProjectPublish                                | A-8  |
| ProductOffering/{Name}                        | A-9  |
| ProductOfferingPrice/{Name}                   | A-10 |

## B Outbound Communications Reference

---

|                         |     |
|-------------------------|-----|
| retrieveProductOffering | B-1 |
|-------------------------|-----|

# Preface

This guide describes how to use Pricing Design Center (PDC) REST Services Manager to integrate PDC with product catalog software.

## Audience

This guide is intended for system administrators and those involved in system integration.

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# 1

## PDC REST Services Manager Overview

You integrate Oracle Communications Pricing Design Center (PDC) with an enterprise product catalog by using PDC REST Services Manager.

Topics in this document:

- [About PDC REST Services Manager](#)
- [About Setting Up PDC REST Services Manager](#)
- [About Monitoring PDC REST Services Manager](#)

### About PDC REST Services Manager

PDC REST Services Manager integrates an enterprise product catalog, such as Oracle Digital Experience for Communications Launch Experience, with PDC. This enables you to create a variety of product offerings in your enterprise product catalog and then have all the rating and billing performed by PDC and Oracle Communications Billing and Revenue Management (BRM).

You can synchronize the following elements from an enterprise product catalog to PDC:

- One-time, recurring, and usage charges, with or without discounts
- Charge and discount offers with one-time, recurring, usage, and rollovers charges and discounts (without selectors and product specifications)
- Quantity and tier-based pricing and discounting
- Quantity ranges (without common properties)
- Pricing tags
- Effective dates for charges and discounts
- Noncurrency balance credits, with or without one-time or recurring fees and overages
- Discounts used as counters for noncurrency balance credits to charge overage fees
- Validity periods for discounts and noncurrency balance credits
- Shared discounts
- Charges based on event and service attributes
- Generic selectors and charge selectors
- Charge selectors with value maps
- Packages and bundles containing multiple charge offers and discounts
- Subscription terms for packages and bundles
- Custom attributes (also called product specification characteristics or product specification attributes)

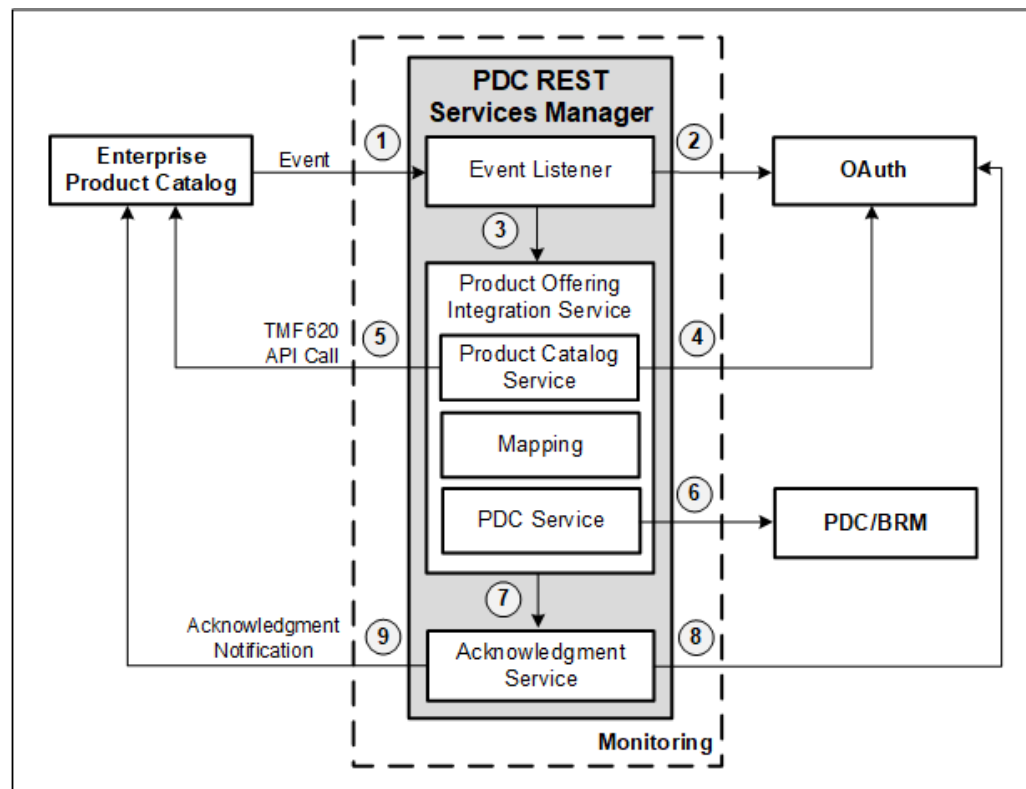
 **Note:**

To include custom attributes in product offerings synchronized from your enterprise product catalog, you must first create the attributes in a configuration template file and import the file into PDC. See "Configuring Product Specification Attributes for Pricing Components" in *PDC Creating Product Offerings*.

The enterprise product catalog publishes the product offering objects to registered billing-spoke systems using TMF 620 APIs. PDC REST Services Manager synchronizes this data and transforms it into charge offers, discount offers, bundles, and packages in the PDC-BRM system.

Figure 1-1 shows the PDC REST Services Manager architecture and its integration points with the enterprise product catalog and PDC.

**Figure 1-1 PDC REST Services Manager Architecture**



In this figure, PDC REST Services Manager, the enterprise product catalog, and PDC interact as follows:

1. The enterprise product catalog sends a notification to PDC REST Services Manager about new or updated product offerings. This communication can be encrypted using TLS.  
This event notification can optionally include a TMF 620-compliant payload with product and discount definitions, pricing information, and lifecycle status updates.

See "[Inbound Communications Reference](#)" for information about these events and their payloads.

2. PDC REST Services Manager uses OAuth 2.0 to authenticate the notification from the enterprise product catalog.
3. The PDC REST Services Manager event listener sends the authenticated message to the PDC REST Services Manager product offering integration service.
4. PDC REST Services Manager requests an OAuth token to use with a call to the enterprise product catalog.
5. PDC REST Services Manager calls the enterprise product catalog TMF 620 API to query for data about the new or updated product offerings.  
If the TMF 620 event notification payload already includes the full details, this step is skipped.
6. PDC REST Services Manager transforms the product offering data and submits it to PDC and BRM. This communication can be encrypted using T3S.  
If the TMF 620 event notification payload includes the full details, the flow ends here.
7. If PDC REST Services Manager queried the product offering data from the enterprise product catalog, the product offering integration service sends a message to the PDC REST Services Manager acknowledgment service.
8. PDC REST Services Manager requests an OAuth token to use with a call to the enterprise product catalog.
9. PDC REST Services Manager publishes an acknowledgment notification to the enterprise product catalog.

Throughout all interactions, you can log, trace, and collect metrics for messages passing through the system. You can use this data to troubleshoot errors and monitor the system's overall health. See "[Monitoring PDC REST Services Manager](#)".

## About Setting Up PDC REST Services Manager

You set up PDC REST Services Manager by performing the following high-level tasks:

1. Install PDC REST Services Manager. See "Installing Only PDC REST Services Manager" in *PDC Installation Guide*.
2. Set up PDC REST Services Manager security. This includes setting up authentication for requests from your enterprise product catalog with OAuth and securing communication between PDC REST Services Manager and other applications with TLS and T3S protocols. See "PDC REST Services Manager Security" in *BRM Security Guide*.
3. Create setup components in all applications, then map the product offerings from the TMF 620 API fields in your enterprise product catalog to equivalent fields in PDC and BRM. See "[Mapping Product Offerings](#)".

## About Monitoring PDC REST Services Manager

You can monitor PDC REST Services Manager to confirm successful integration, track overall system health, and troubleshoot issues.

Monitoring PDC REST Services Manager involves the following tasks:

- Monitoring system logs. See "[About Logging](#)".
- Tracing events with tools like Zipkin. See "[About Tracing](#)".

- Monitoring metrics with tools like Prometheus. See "[About Metrics](#)".
- Monitoring system status. See "[About Monitoring System Health](#)".

## 2

# Securing PDC REST Services Manager Communications

You can secure inbound and outbound communications with Oracle Communications Pricing Design Center (PDC) REST Services Manager.

Topics in this document:

- [About Securing PDC REST Services Manager Communications](#)
- [Requesting an OAuth Access Token from Oracle Identity Cloud Service](#)
- [Requesting an OAuth Access Token from Oracle Access Management](#)

## About Securing PDC REST Services Manager Communications

PDC REST Services Manager uses the following security protocols to secure inbound and outbound requests:

- **OAuth 2.0:** Authenticates your enterprise product catalog's identity and authorizes it to access the PDC REST Services Manager API by validating an OAuth access token passed in the header of every HTTP/HTTPS request to the PDC REST Services Manager API.  
You can enable OAuth for PDC REST Services Manager using Oracle Identity Cloud Service or Oracle Access Management.  
See either "[Requesting an OAuth Access Token from Oracle Identity Cloud Service](#)" or "[Requesting an OAuth Access Token from Oracle Access Management](#)" for information about requesting an access token.
- **TLS:** Secures communication from your enterprise product catalog to PDC REST Services Manager.
- **T3S:** Secures communication from PDC REST Services Manager to PDC.

See "PDC REST Services Manager Security" in *BRM Security Guide* for information about configuring PDC REST Services Manager security.

## Requesting an OAuth Access Token from Oracle Identity Cloud Service

Request an OAuth access token from Oracle Identity Cloud Service to include in requests to the PDC REST Services Manager APIs. For more information, see "[Generate Access Token and Other OAuth Runtime Tokens to Access the Resource](#)" in *REST API for Oracle Identity Cloud Service*.

To request an OAuth access token using cURL, use the following format for your HTTP/HTTPS request to the Oracle Identity Cloud Service URL:

```
curl -i \
  -H "Authorization: Basic encoded_credentials" \
  -H "Content-Type: application/x-www-form-urlencoded; charset=UTF-8" \
  --request POST https://idcs_hostname/oauth2/v1/token \
  -d 'grant_type=client_credentials&scope=https://primaryAudience/scope'
```

where:

- *encoded\_credentials* is either the client ID and client secret (*clientID:clientSecret*) or user name and password (*username:password*) in Base64-encoded format.
- *idcs\_hostname* is the host name of your Oracle Identity Cloud Service instance.
- *primaryAudience* is the host name and port of your confidential application.
- *scope* is one of the following:
  - **pubevent**: Authorizes access to the Publish Event endpoint.
  - **metrics**: Authorizes access to the Metrics endpoint.

After you submit the request, Oracle Identity Cloud Service returns an OAuth access token. Your client must pass this OAuth access token in the header of every HTTP/HTTPS request sent to the PDC REST Services Manager.

## Requesting an OAuth Access Token from Oracle Access Management

You create an access token for OAuth authentication by submitting a request to the **Create Access Token Flow** endpoint of the Oracle Access Management OAuth REST API. For more information, see "[Create Access Token Flow](#)" in *REST API for OAuth in Oracle Access Manager*.

To request an OAuth access token, use cURL to send an HTTP/HTTPS request to the Oracle Access Management URL:

```
curl -i --header 'Authorization: Basic encoded_admin' \
  --header "Content-Type: application/x-www-form-urlencoded; charset=UTF-8" \
  --header "X-OAUTH-IDENTITY-DOMAIN-NAME: identity_domain" \
  --request POST http://oam_host:oam_port/oauth2/rest/token \
  --data-urlencode "grant_type=CLIENT_CREDENTIALS&scope=resource_server.scope"
```

where:

- *encoded\_admin* is the base64-encoded format of the Oracle Access Management administrator user name and password.
- *identity\_domain* is the name of the OAuth identity domain created in Oracle Access Management for PDC REST Services Manager.

- *oam\_host:oam\_port* is the host name and port for the Oracle Access Management server.
- *resource\_server* is the name of the Oracle Access Management resource server created for PDC REST Services Manager.
- *scope* is the name of a scope.

The following shows an example cURL request for creating an OAuth access token for the **PDC\_RSM\_domain** identity domain, **PDCRSMResourceServer** resource server, and **all** scope:

```
curl --location --header 'Authorization: Basic encoded_admin' \  
      --header "Content-Type: application/x-www-form-  
urlencoded; charset=UTF-8" \  
      --header "X-OAUTH-IDENTITY-DOMAIN-NAME: PDC_RSM_Domain" \  
      --request POST http://oam_host:oam_port/oauth2/rest/token \  
      --data-urlencode  
"grant_type=CLIENT_CREDENTIALS&scope=PDCRSMResourceServer.all"
```

If the request is successful, Oracle Access Management returns something similar to this:

```
{  
  "access_token": "access_token",  
  "token_type": "Bearer", "expires_in": 3600  
}
```

Your client must pass this OAuth access token in the header of every HTTP/HTTPS request sent to PDC REST Services Manager.

# 3

## Mapping Product Offerings

Learn how to map product offering data in Oracle Communications Pricing Design Center (PDC) REST Services Manager, so it can transform the TMF 620 data to PDC and Oracle Communications Billing and Revenue Management (BRM) data.

Topics in this document:

- [About Mapping Product Offerings](#)
- [Mapping Setup Components](#)
- [Mapping Lifecycle Status for Product Offerings](#)
- [Mapping Custom Attributes from TMF 620 to PDC](#)
- [Mapping Charge Offers from TMF 620 to PDC](#)
- [PDC Charge Offer Default Values](#)
- [Mapping Discount Offers from TMF 620 to PDC](#)
- [PDC Discount Offer Default Values](#)
- [Mapping Subscription Terms from TMF 620 to PDC](#)
- [PDC Subscription Terms Default Values](#)
- [Mapping Bundles from TMF 620 to PDC](#)
- [PDC Bundle Default Values](#)
- [Mapping Packages from TMF 620 to PDC](#)
- [PDC Package Default Values](#)

### About Mapping Product Offerings

To enable PDC REST Services Manager to transform your product offering data, you must first create setup components in BRM, PDC, and the enterprise product catalog, then map the TMF 620 data from your enterprise product catalog to PDC.



#### Note:

PDC REST Services Manager supports only the base TMF 620 specifications, along with select vendors' extensions based on business drivers. Your enterprise product catalog vendor is responsible for defining and publishing any TMF 620 vendor-specific API extensions. Your vendor's published TMF 620 API will include the TMF 620 ProductOffering payload, ProductOfferingPrice payload, and other payloads as well as the notification event payloads that PDC REST Services Manager or any other consumer of the enterprise product catalog must support.

The following sections show the mappings between TMF 620 data and the PDC and BRM data schema. They also list the default values for PDC and BRM data fields when TMF 620 has no corresponding field.

## Mapping Setup Components

In BRM, setup components are the prerequisite data you configure before creating product offerings. You create some setup components in BRM and then synchronize them with PDC, and you create other setup components in PDC. There is no synchronization flow between PDC or BRM and the enterprise product catalog for setup components. You must create them independently in PDC and the enterprise product catalog, and configure your enterprise product catalog to send data in the TMF 620 payload that matches what you have created in PDC.

[Table 3-1](#) lists the setup components you configure in BRM and PDC before creating your product offerings. It details how PDC REST Services Manager maps data in the TMF 620 payload to the setup components.

**Table 3-1 Setup Component Mapping**

| Setup Component              | Mapping Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Services                     | <p>BRM includes preconfigured services, and you can create custom services. You synchronize services from BRM to PDC with the <b>syncPDC</b> utility. See "Setting Up Service and Event Definitions" in <i>PDC Creating Product Offerings</i> for more information.</p> <p>In the TMF 620 payload, your enterprise product catalog must send case-sensitive values in the <b>name</b> property of the <b>ServiceSpecification</b> object that are identical to the BRM services names.</p>                                                                                                                                                                                                                        |
| Ratable Usage Metrics (RUMs) | <p>In BRM, a RUM specifies the units for measuring events and how to calculate the measurement. You can base a measurement on any data captured in an event, such as how long a session lasted or the number of bytes downloaded during a session.</p> <p>You create RUMs in PDC. See "Configuring Ratable Usage Metrics (RUMs)" in <i>PDC Creating Product Offerings</i>.</p> <p>In the TMF 620 payload, for usage charges, your enterprise product catalog must send case-sensitive values in the <b>units</b> property of the <b>Quantity</b> object that are identical to RUM names.</p> <p>For one-time or recurring charges, PDC REST Services Manager automatically selects the <b>Occurrence</b> RUM.</p> |

Table 3-1 (Cont.) Setup Component Mapping

| Setup Component   | Mapping Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service-event map | <p>In BRM, the service-event map lets you configure which charge events can be used for a service and which RUMs can be used for each service-event combination. The service-event map links each supported service to the events that can have charges configured for that service.</p> <p>You create the service-event map in PDC. See "Setting Up the Service-Event Map" in <i>PDC Creating Product Offerings</i>.</p> <p>PDC REST Services Manager uses the <b>application-eventConfig.yaml</b> configuration file to map TMF 620 notifications from your enterprise product catalog to BRM event names. See "Configuring Mapping of TMF 620 priceType to BRM Event Names" in <i>PDC Installation Guide</i> for details about configuring the mappings in this file.</p>                                                                                                                                                                                                                          |
| Balance elements  | <p>In BRM, a balance element represents one of the following:</p> <ul style="list-style-type: none"> <li>• A currency or noncurrency asset of economic value, such as US dollars or included minutes</li> <li>• A counter that tracks items such as dollars spent or minutes talked</li> </ul> <p>You configure balance elements in PDC. See "Configuring Balance Elements" in <i>PDC Creating Product Offerings</i>.</p> <p>In the TMF 620 payload:</p> <ul style="list-style-type: none"> <li>• For currency balance elements, your enterprise product catalog must send case-sensitive ISO 4217 standard 3-character currency codes in the <b>unit</b> property of the <b>Money</b> object that are identical to the PDC balance element IDs.</li> <li>• For noncurrency balance elements, your enterprise product catalog must send case-sensitive values in the <b>units</b> property of the <b>unitOfMeasure</b> object that are identical to PDC noncurrency balance element names.</li> </ul> |
| Tax codes         | <p>In BRM, a tax code indicates which tax to apply on the price of the product offering.</p> <p>You create and modify tax codes in PDC then publish them to rating engines with the <b>ImportExportPricing</b> utility. See "Creating Tax Codes" in <i>BRM Calculating Taxes</i>.</p> <p>In the TMF 620 payload, your enterprise product catalog must send case-sensitive values in the <b>taxCode</b> property of the <b>Tax</b> object in the extended <b>ProductOfferingPriceOracle</b> object that are identical to the BRM tax code names.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Table 3-1 (Cont.) Setup Component Mapping

| Setup Component          | Mapping Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General ledger (G/L) IDs | <p>In BRM, G/L IDs ensure that charges are reported to the correct account in your company's general ledger. You create G/L IDs in BRM and synchronize them to PDC with the <b>SyncPDC</b> utility. See "About G/L IDs" in <i>BRM Collecting General Ledger Data</i>.</p> <p>In the TMF 620 payload, your enterprise product catalog must send case-sensitive values in the <b>glid</b> property of the extended <b>ProductOfferingPriceOracle</b> object that are identical to the BRM G/L ID description.</p> |

For more information about these setup components, and others, see "About Setup Components" in *PDC Creating Product Offerings*.

## Mapping Lifecycle Status for Product Offerings

When your enterprise product catalog sends a `ProductOfferingPriceStateChangeEvent` or `ProductOfferingStateChangeEvent` TMF 620 notification event, PDC REST Services Manager maps the lifecycle status from TMF to PDC.

Table 3-2 shows how the statuses are mapped.

Table 3-2 TMF 620 Lifecycle Statuses to PDC

| TFM 620 Status | PDC Status                                                                                                         |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| Launched       | Promoted                                                                                                           |
| Retired        | Promoted, but the offer purchase end date is set to the current date so that the offer can no longer be purchased. |
| Obsolete       | Obsolete                                                                                                           |

### Note:

- For status change events, PDC REST Services Manager supports only Launched, Retired, or Obsolete. Providing any other string in a status change event will fail with a 405 Method Not Allowed response.
- For create and attribute change events, PDC REST Services Manager does not validate the `lifecycleStatus` parameter. You can use any status with these events.

After the status change event has been sent to PDC, PDC checks whether the status changes are valid for charge offers and charges. For example, a charge offer can't be promoted if its associated charges are still in draft, and only pricing objects that have no references can be obsoleted. Invalid status change requests result in PDC errors.

The state change notification event does not need to contain the entire `ProductOfferingPrice` or `ProductOffering` definition. PDC REST Services Manager uses

the **@type**, **id**, **name**, **href**, and **lifecycleStatus** attributes to identify the correct charge or charge offer and update the status.

For example, the following shows a notification event payload to obsolete a charge:

```
{
  "eventId": "Event_1234",
  "eventTime": "2023-05-16T05:50:06",
  "eventType": "ProductOfferingPriceStateChangeEvent",
  "event": {
    "productOfferingPrice": {
      "@type": "ProductOfferingPrice",
      "@baseType": "ProductOfferingPrice",
      "id": "pop000_12345",
      "name": "ProductOfferingPrice12345",
      "href": "/mobile/custom/catalogManagement/productOfferingPrice/
pop000_12345",
      "lifecycleStatus": "Obsolete"
    }
  }
}
```

## Mapping Custom Attributes from TMF 620 to PDC

Table 3-3 shows how to map custom attributes (also called product specification attributes or product specification characteristics) data from TMF 620 fields to PDC fields.

**Table 3-3 TMF 620 Custom Attribute Mappings for PDC REST Services Manager**

| TMF Base Object           | TMF Extended Object | Vendor Extended Object | TMF 620 Field                                                                                             | PDC Field                                               | PDC Field Description                                                                                                      |
|---------------------------|---------------------|------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| ProductSpecCharacteristic | name                | NA                     | productOffering.productSpecification.productSpecCharacteristic[i].name                                    | chargeOffering.productSpecCharacteristic[i].name        | Custom Attribute Name                                                                                                      |
| ProductSpecCharacteristic | maxCardinality      | NA                     | productOffering.productSpecification.productSpecCharacteristic[i].maxCardinality                          | chargeOffering.productSpecCharacteristic[i].cardinality | Custom Attribute Values<br>Possible values are: <ul style="list-style-type: none"> <li>SINGLE</li> <li>MULTIPLE</li> </ul> |
| ProductSpecCharacteristic | value               | NA                     | productOffering.productSpecification.productSpecCharacteristic[i].productSpecCharacteristicValue[j].value | chargeOffering.productSpecCharacteristic[i].value       | Custom Attribute Values                                                                                                    |

**Table 3-3 (Cont.) TMF 620 Custom Attribute Mappings for PDC REST Services Manager**

| TMF Base Object           | TMF Extended Object | Vendor Extended Object | TMF 620 Field                                                                 | PDC Field                                               | PDC Field Description        |
|---------------------------|---------------------|------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------|
| ProductSpecCharacteristic | description         | NA                     | productOffering.productSpecification.productSpecCharacteristic[i].description | chargeOffering.productSpecCharacteristic[i].description | Custom Attribute Description |

## Mapping Charge Offers from TMF 620 to PDC

Table 3-4 shows how to map charge offer data from TMF 620 fields to PDC fields.

**Table 3-4 TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field                         | PDC Field                                                                                                            | PDC Field Description           |
|-----------------|---------------------|------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------|
| ProductOffering | NA                  | NA                     | ProductOffering                       | chargeOffering.productOffering                                                                                       | Charge Offer                    |
| ProductOffering | NA                  | NA                     | ProductOffering.name                  | chargeOffering.name                                                                                                  | Charge Offer Name               |
| ProductOffering | NA                  | NA                     | ProductOffering.name                  | chargeOffering.name                                                                                                  | Charge Offer Name               |
| ProductOffering | NA                  | NA                     | ProductOffering.name                  | PricingObjects.ChargeOffering.name                                                                                   | Charge Offer Name               |
| ProductOffering | NA                  | NA                     | ProductOffering.validFor              | chargeOffering.timeRange.startDate/endDateTime<br><b>Note:</b> Split startDate and endDate with a forward slash (/). | Charge Offer Validity           |
| ProductOffering | NA                  | NA                     | ProductOffering.description           | chargeOffering.description                                                                                           | Charge Offer Description        |
| ProductOffering | NA                  | NA                     | ProductOffering.id                    | chargeOffering.externalID                                                                                            | Charge Offer External ID        |
| ProductOffering | NA                  | NA                     | ProductOffering.id                    | chargeOffering.internalID                                                                                            | Charge Offer Internal ID        |
| ProductOffering | NA                  | NA                     | ProductOffering.id                    | chargeRatePlan.externalID                                                                                            | Charge Rate Plan External ID    |
| ProductOffering | NA                  | NA                     | ProductOffering.serviceCandidate.name | chargeOffering.productSpecName                                                                                       | Charge Offer Product Spec Name  |
| ProductOffering | NA                  | NA                     | ProductOffering.serviceCandidate.name | chargeRatePlan.permittedName                                                                                         | Charge Rate Plan Permitted Name |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object    | Vendor Extended Object | TMF 620 Field                                                                             | PDC Field                                                                                                                    | PDC Field Description           |
|-----------------------|------------------------|------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| ProductSpecification  | NA                     | NA                     | ProductSpecification.id                                                                   | <b>Note:</b> The product specification ID is not persisted in PDC.                                                           | NA                              |
| ProductSpecification  | NA                     | NA                     | ProductSpecification.name                                                                 | <b>Note:</b> The product specification name is not persisted in PDC.                                                         | NA                              |
| ProductSpecification  | NA                     | NA                     | ProductSpecification.ValidFor                                                             | chargeOffering.timeRange.startDate/endDateTime<br><b>Note:</b> Split startDate and endDateTime with a forward slash (/).     | Product Specification Validity  |
| ProductSpecification  | NA                     | NA                     | ProductSpecification.productSpecCharacteristic[0].name                                    | chargeOffering.productSpecCharacteristic.name                                                                                | Product Specification Name      |
| ProductSpecification  | NA                     | NA                     | ProductSpecification.productSpecCharacteristic[0].productSpecCharacteristicValue[0].value | chargeOffering.productSpecCharacteristic.value                                                                               | Product Specification Value     |
| ServiceSpecification  | NA                     | NA                     | ServiceSpecification.id                                                                   | chargeOffering.productSpecName                                                                                               | Charge Offer Specification ID   |
| ServiceSpecification  | NA                     | NA                     | ServiceSpecification.name                                                                 | chargeOffering.productSpecName                                                                                               | Charge Offer Specification Name |
| ProductOffering Price | NA                     | NA                     | ProductOfferingPrice.validFor.startDate/endDateTime                                       | chargeRatePlan.subscriberCurrency/absoluteDateRange.startDate<br>chargeRatePlan.subscriberCurrency/absoluteDateRange.endDate | Charge Rate Plan Validity       |
| ProductOffering       | ProductOffering Oracle | NA                     | ProductOfferingPrice[n].id<br>ProductOfferingPrice[n].name                                | chargeOfferingJB.getChargeEventMap().get(0).getRolloverRatePlanName()                                                        | Get Rollover Rate Plan Name     |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                  | PDC Field                                                                                                       | PDC Field Description           |
|-----------------------|-----------------------------|------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.RolloverCount        | rolloverRatePlanJXB.getDateRange().getRolloverPompModel().getRolloverCharge().get(0).getRolloverCount()         | Get Rollover Count              |
| ProductOffering Price | ProductOffering PriceOracle | NA                     | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.RolloverMaximumUnits | rolloverRatePlanJXB.getDateRange().getRolloverPompModel().getRolloverCharge().get(0).getRolloverMaximumUnits()  | Get Rollover Maximum Units      |
| ProductOffering Price | ProductOffering PriceOracle | NA                     | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.RolloverUnits        | rolloverRatePlanJXB.getDateRange().getRolloverPompModel().getRolloverCharge().get(0).getRolloverUnits()         | Get Rollover Units              |
| ProductOffering Price | ProductOffering PriceOracle | NA                     | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.Units                | rolloverRatePlanJXB.getDateRange().getRolloverPompModel().getRolloverCharge().get(0).getBalanceElementNumCode() | Get Balance Element Number Code |
| ProductOffering Price | ProductOffering PriceOracle | NA                     | ProductOfferingPrice.POPAlterationOracle[n].UnitOfMeasure                      | rolloverRatePlanJXB.getDateRange().getRolloverPompModel().getRolloverCharge().get(0).getUnitOfMeasure()         | Get Unit of Measure             |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object    | Vendor Extended Object | TMF 620 Field                                                                                      | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PDC Field Description    |
|-----------------------|------------------------|------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| ProductOffering Price | ProductOffering Oracle | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges[n].minQuantity | <ul style="list-style-type: none"> <li>For one-time charges:<br/>PricingObject.sJXB.chargeRatePlan[n].subscriberCurrency.crpRelDateRange.crpCompositePopModel.oneTimePopModel.oneTimePriceTier.lowerBound</li> <li>For recurring charges:<br/>PricingObject.sJXB.chargeRatePlan[n].subscriberCurrency.crpRelDateRange.crpCompositePopModel.recurringPopModel.priceTier.lowerBound</li> <li>For usage charges:<br/>PricingObject.sJXB.chargeRatePlan[n].subscriberCurrency.crpRelDateRange.crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.lowerBound</li> </ul> | Pricing Tier Lower Bound |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object    | Vendor Extended Object | TMF 620 Field                                                                                      | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PDC Field Description    |
|-----------------------|------------------------|------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| ProductOffering Price | ProductOffering Oracle | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges[n].maxQuantity | <ul style="list-style-type: none"> <li>For one-time charges:<br/>PricingObject.sJXB.chargeRatePlan[n].subscriberCurrency.crpRelDateRange.crpCompositePopModel.oneTimePopModel.oneTimePriceTier.tierRange[n].upperBound</li> <li>For recurring charges:<br/>PricingObject.sJXB.chargeRatePlan[n].subscriberCurrency.crpRelDateRange.crpCompositePopModel.recurringPopModel.priceTier.tierRange[n].upperBound</li> <li>For usage charges:<br/>PricingObject.sJXB.chargeRatePlan[n].subscriberCurrency.crpRelDateRange.crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.tierRange[n].upperBound</li> </ul> | Pricing Tier Upper Bound |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                  | PDC Field                                                                                                               | PDC Field Description                       |
|-----------------------|-----------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| ProductOffering Price | ProductOffering Oracle      | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges.priceAlteration.price.dutyFreeAmount.value | crpCompositePopModel.oneTimePopModel.priceTier.tierRange[n].oneTimeCharge.price                                         | One-Time Charge Price                       |
| ProductOffering Price | ProductOffering Oracle      | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges.priceAlteration.price.dutyFreeAmount.unit  | crpCompositePopModel.oneTimePopModel.priceTier.tierRange[n].oneTimeCharge.balanceElementNumCode                         | One-Time Charge Balance Element Number Code |
| ProductOffering Price | ProductOffering Oracle      | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.distributionMethod                                                                  | crpCompositePopModel.oneTimePopModel.priceTier.tierRange.usageChargePopModel.priceTier.distributionMethod               | Distribution Method                         |
| ProductOffering Price | ProductOffering Oracle      | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges.priceAlteration.price.unitOfMeasure.units  | crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange[n].scaledCharge.unitOfMeasure | Scaled Charge Unit of Measure               |
| ProductOffering Price | ProductOffering Oracle      | ProductOfferingPrice   | ProductOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges.priceAlteration.price.unitOfMeasure.amount | crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange[n].scaledCharge.incrementStep | Scaled Charge Increment                     |
| ProductOffering Price | ProductOffering PriceOracle | ProductOfferingPrice   | ProductOfferingPrice[n].name                                                                                                   | chargeOffering.chargeEventMap.chargeRatePlanName                                                                        | Charge Rate Plan Name                       |
| ProductOffering Price | ProductOffering PriceOracle | ProductOfferingPrice   | ProductOfferingPrice[n].name                                                                                                   | chargeRatePlan.name                                                                                                     | Charge Rate Plan Name                       |
| ProductOffering Price | NA                          | ProductOfferingPrice   | ProductOfferingPrice[n].name                                                                                                   | PricingObjectsJXB.alterationOffering.AlterationEventMap[n].getAlterationRatePlanName                                    | Charge Rate Plan Name                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object                       | Vendor Extended Object | TMF 620 Field                                                                                                                                                                                                                                                                                                                               | PDC Field                                                                 | PDC Field Description                                                                                                                                                                                   |
|-----------------------|-------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ProductOffering Price | ProductOffering PriceOracle               | ProductOfferingPrice   | ProductOffering.ProductOfferingPrice[n].name                                                                                                                                                                                                                                                                                                | PricingObjectsJXB.chargeOffering.ChargeEventManager.getChargeRatePlanName | Charge Rate Plan Name                                                                                                                                                                                   |
| ProductOffering Price | ProductOffering PriceOracle               | NA                     | ProductOffering.ProductOfferingPrice[n].description                                                                                                                                                                                                                                                                                         | chargeRatePlan.description                                                | Charge Rate Plan Description                                                                                                                                                                            |
| ProductOffering Price | ProductOffering PriceOracle.TaxItemOracle | NA                     | ProductOffering.ProductOfferingPrice[n].tax[n].taxTime                                                                                                                                                                                                                                                                                      | chargeRatePlan.taxTime                                                    | Tax Time<br>If a value is provided for <b>taxCode</b> , PDC REST Services Manager automatically sets the value for <b>taxTime</b> to <b>BILLING</b> . Otherwise, <b>taxTime</b> is set to <b>NONE</b> . |
| ProductOffering Price | ProductOffering PriceOracle.TaxItemOracle | NA                     | ProductOffering.ProductOfferingPrice[n].tax[n].taxCode                                                                                                                                                                                                                                                                                      | chargeRatePlan.taxCode                                                    | Tax Code                                                                                                                                                                                                |
| ProductOffering Price | ProductOffering Price                     | NA                     | <ul style="list-style-type: none"> <li>For one-time and recurring charges:<br/>ProductOfferingPrice.tax[n].id</li> <li>For usage charges:<br/>ChargeRatePlanJXB.subscriberCurrency.applicableRule.crpRelDateRange.crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange.scaledCharge.taxCode</li> </ul> | chargeRatePlanJXB.taxCode                                                 | Tax Code                                                                                                                                                                                                |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object               | Vendor Extended Object     | TMF 620 Field                                                                       | PDC Field                                             | PDC Field Description                                                                                                                                                                                                                                                                                                  |
|-----------------------|-----------------------------------|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ProductOffering Price | ProductOffering Price             | NA                         | For one-time, recurring, and usage charges: ProductOfferingPrice.tax[n].taxCategory | taxCodeJXB.taxPackageType                             | Tax Package Type                                                                                                                                                                                                                                                                                                       |
| ProductOffering Price | ProductOffering Price             | NA                         | For one-time, recurring, and usage charges: ProductOfferingPrice.tax[n].taxRate     | taxCodeJXB.taxCodeValidityPeriods.taxCodeMaps.percent | Tax Code Map Percentage                                                                                                                                                                                                                                                                                                |
| ProductOffering Price | ProductOffering PriceOracle       | NA                         | ProductOfferingPriceOracle.POPAltération[n].ProductPriceValueOracle.taxCategory     | taxCodeJXB.taxPackageType                             | Tax Package Type                                                                                                                                                                                                                                                                                                       |
| ProductOffering Price | ProductOffering PriceOracle       | NA                         | ProductOfferingPriceOracle.POPAltération[n].ProductPriceValueOracle.taxRate         | taxCodeJXB.taxCodeValidityPeriods.taxCodeMaps.percent | Tax Code Map Percentage                                                                                                                                                                                                                                                                                                |
| ProductOffering Price | ProductOffering PriceOracle       | NA                         | ProductOfferingPriceOracle.isTaxInclusive                                           | NA                                                    | NA<br><b>Note:</b> The <b>isTaxInclusive</b> field does not map to a specific PDC field, but if it is set to <b>true</b> , PDC REST Services Manager appends <b>_INC</b> to the value of <b>taxCode</b> . This assumes you have configured corresponding tax-inclusive tax codes using <b>_INC</b> in the name in PDC. |
| ProductOffering Price | ProductOffering PriceOracle.Money | ProductOfferingPrice.Money | ProductOfferingPriceOracle[n].price.unit                                            | chargeRatePlan.subscriberCurrency.currencyCode        | Currency Code                                                                                                                                                                                                                                                                                                          |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object                          | Vendor Extended Object          | TMF 620 Field                                                                                                                                                                                                                                                      | PDC Field                                                                                                                                                                    | PDC Field Description |
|-----------------------|----------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle.TimePeriodOracle | ProductOfferingPrice.TimePeriod | <ul style="list-style-type: none"> <li>For non-tiered rates: ProductOffering.productOfferingPrice[n].validFor</li> <li>For tiered rates: ProductOffering.productOfferingPrice[n].pricingLogicAlgorithmOracle.TierRange.productOfferingPrice[x].validFor</li> </ul> | chargeRatePlan.subscriberCurrency.crpRelDateRange.absoluteDateRange.startDate                                                                                                | Start Date            |
| ProductOffering Price | ProductOffering PriceOracle.TimePeriodOracle | ProductOfferingPrice.TimePeriod | <ul style="list-style-type: none"> <li>For non-tiered rates: ProductOffering.productOfferingPrice[n].validFor</li> <li>For tiered rates: ProductOffering.productOfferingPrice[n].pricingLogicAlgorithmOracle.TierRange.productOfferingPrice[x].validFor</li> </ul> | chargeRatePlan.subscriberCurrency.crpRelDateRange.absoluteDateRange.endDate                                                                                                  | End Date              |
| ProductOffering Price | ProductOffering PriceOracle                  | NA                              | productOfferingPrice.productOfferingPriceOracle.POPAlteration.attributeName<br>productOfferingPrice.ProductPriceValueOracle.ProductPriceValueOraclePriceTag.attributeName                                                                                          | chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.attributeName<br>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringcharge.priceTag.attributeName | Attribute Name        |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                           | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PDC Field Description |
|-----------------------|-----------------------------|------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.priceType | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.oneTimeCharge</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeCharge.oneTimeCharge</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.oneTimeCharge</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.oneTimeCharge</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.oneTimeCharge</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.oneTimeCharge</li> <li>chargeRatePlan.priceTierValidityPeriod.oneTimeCharge</li> <li>chargeRatePlan.priceTierRange.FixedC</li> </ul> | One Time Charge       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                      | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <p>harge.oneTimeCharge</p> <p><b>Usage Scaled Charge:</b></p> <ul style="list-style-type: none"> <li>• chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.oneTimeCharge</li> <li>• chargeRatePlan.crpCompositePopModel.usageChargePopModel.oneTimeCharge</li> <li>• chargeRatePlan.priceTier.priceTierValidityPeriod.oneTimeCharge</li> <li>• chargeRatePlan.priceTierRange.ScaledCharge.oneTimeCharge</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                              | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PDC Field Description |
|-----------------------|-----------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.Value productOfferingPrice.ProductOfferingPriceOracle.ProductPriceValue.DutyFreeAmount.Value | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.price</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeChange.price</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.price</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.price</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.price</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.price</li> <li>chargeRatePlan.priceTierValidityPeriod.price</li> <li>chargeRatePlan.priceTierRange.FixedCharge.price</li> </ul> <b>Usage Scaled Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crp</li> </ul> | Product Offer Price   |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                  | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <p>pRelDateRange.price</p> <ul style="list-style-type: none"> <li>• chargeRatePlan.crpCompositePopModel.usageChargePopModel.price</li> <li>• chargeRatePlan.priceTier.priceTierValidityPeriod.price</li> <li>• chargeRatePlan.priceTierRange.ScaledCharge.price</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                               | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PDC Field Description        |
|-----------------------|-----------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.unit<br>productOfferingPrice.ProductOfferingPriceOracle.ProductPriceValue.DutyFreeAmount.unit | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.balanceElementNumCode</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeChange.balanceElementNumCode</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.balanceElementNumCode</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.balanceElementNumCode</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.balanceElementNumCode</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.balanceElementNumCode</li> <li>chargeRatePlan.priceTierValidityPeriod.</li> </ul> | Balance Element Numeric Code |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <ul style="list-style-type: none"> <li>balanceElementNumCode</li> <li>chargeRatePlan.priceTierRange.FixedCharge.balanceElementNumCode</li> </ul> <p><b>Usage Scaled Charge:</b></p> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.balanceElementNumCode</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.balanceElementNumCode</li> <li>chargeRatePlan.priceTier.priceTierValidityPeriod.balanceElementNumCode</li> <li>chargeRatePlan.priceTierRange.ScaledCharge.balanceElementNumCode</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                                                                                       | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PDC Field Description |
|-----------------------|-----------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.ProductOfferingPriceOracle.POPAlteration.POPAlteration.attributeName<br>productOfferingPrice.ProductPriceValueOracle.ProductPriceValueOracle.PriceTag.attributeName | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.attributeName</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeChange.priceTag.attributeName</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.attributeName</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.priceTag.attributeName</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.attributeName</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.attributeName</li> <li>chargeRatePlan.priceTierValidityPeriod.priceTag.attributeName</li> </ul> | Attribute Name        |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <ul style="list-style-type: none"> <li>chargeRatePlan.priceTierRange.FixedCharge.priceTag.attributeName</li> </ul> <p><b>Usage Scaled Charge:</b></p> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.attributeName</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.attributeName</li> <li>chargeRatePlan.priceTier.priceTierValidityPeriod.priceTag.attributeName</li> <li>chargeRatePlan.priceTierRange.ScaledCharge.priceTag.attributeName</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                                                  | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PDC Field Description |
|-----------------------|-----------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.POPAlteration.tagName<br>productOfferingPrice.ProductOfferingPriceOracle.ProductPriceValueOraclePriceTag.tagName | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.tagName</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeChange.priceTag.tagName</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.tagName</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.priceTag.tagName</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.tagName</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.tagName</li> <li>chargeRatePlan.priceTierValidityPeriod.priceTag.tagName</li> <li>chargeRatePlan.priceTierRange.FixedC</li> </ul> | Tag Name              |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                             | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <p>harge.priceTag.tagName</p> <p><b>Usage Scaled Charge:</b></p> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.tagName</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.tagName</li> <li>chargeRatePlan.priceTier.priceTierValidityPeriod.priceTag.tagName</li> <li>chargeRatePlan.priceTierRange.ScaledCharge.priceTag.tagName</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                                                  | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PDC Field Description |
|-----------------------|-----------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.POPAlteration.tagScope<br>productOfferingPrice.ProductPriceValueOracle.ProductPriceValueOracle.PriceTag.tagScope | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.tagScope</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeChange.priceTag.tagScope</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.tagScope</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.priceTag.tagScope</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.tagScope</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.tagScope</li> <li>chargeRatePlan.priceTierValidityPeriod.priceTag.tagScope</li> <li>chargeRatePlan.priceTierR</li> </ul> | Tag Scope             |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <p>ange.FixedCharge.priceTag.tagScope</p> <p><b>Usage Scaled Charge:</b></p> <ul style="list-style-type: none"> <li>• chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.tagScope</li> <li>• chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.tagScope</li> <li>• chargeRatePlan.priceTier.priceTierValidityPeriod.priceTag.tagScope</li> <li>• chargeRatePlan.priceTierRange.ScaledCharge.priceTag.tagScope</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                                         | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PDC Field Description |
|-----------------------|-----------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOraclePOPAlteration.description<br>productOfferingPrice.ProductPriceValueOracle.ProductPriceValueOracle.PriceTag.description | <b>One Time:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.description</li> <li>chargeRatePlan.oneTimePopModel.priceTier.tierRange.oneTimeChange.priceTag.description</li> </ul> <b>Recurring:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.crpCompositePopModel.priceTag.description</li> <li>chargeRatePlan.recurringPopModel.priceTier.tierRange.recurringCharge.priceTag.description</li> </ul> <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.priceTag.description</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.priceTag.description</li> <li>chargeRatePlan.priceTierValidityPeriod.priceTag.description</li> <li>chargeRatePlan.priceTierR</li> </ul> | Price Tag Description |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PDC Field Description |
|-----------------|---------------------|------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                 |                     |                        |               | <p>ange.FixedC<br/>harge.priceTa<br/>g.description</p> <p><b>Usage Scaled Charge:</b></p> <ul style="list-style-type: none"> <li>• chargeRatePl<br/>an.subscriber<br/>Currency.app<br/>licableRum.cr<br/>pRelDateRan<br/>ge.priceTag.d<br/>escription</li> <li>• chargeRatePl<br/>an.crpCompo<br/>sitePopModel<br/>.usageCharg<br/>ePopModel.p<br/>riceTag.descr<br/>iption</li> <li>• chargeRatePl<br/>an.priceTier.<br/>priceTierValid<br/>ityPeriod.pric<br/>eTag.descript<br/>ion</li> <li>• chargeRatePl<br/>an.priceTierR<br/>ange.Scaled<br/>Charge.price<br/>Tag.descripti<br/>on</li> </ul> |                       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object         | Vendor Extended Object | TMF 620 Field                                                                                                                                       | PDC Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PDC Field Description |
|-----------------------|-----------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle | NA                     | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.UnitOfMeasure.units<br>productOfferingPrice.ProductOfferingPriceOracle.Quantity.units | <b>Usage Fixed Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.unitOfMeasure</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.unitOfMeasure</li> <li>chargeRatePlan.priceTierValidityPeriod.unitOfMeasure</li> <li>chargeRatePlan.priceTierRange.FixedCharge.unitOfMeasure</li> </ul> <b>Usage Scaled Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.unitOfMeasure</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.unitOfMeasure</li> <li>chargeRatePlan.priceTier.priceTierValidityPeriod.unitOfMeasure</li> <li>chargeRatePlan.priceTierRange.ScaledCharge.unitOfMeasure</li> </ul> | Unit of Measure       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object                                                     | Vendor Extended Object                               | TMF 620 Field                                                                                                                                         | PDC Field                                                                                                                                                                                                                                                                                                                                                                            | PDC Field Description |
|-----------------------|-------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering Price | ProductOffering PriceOracle                                             | NA                                                   | productOfferingPrice.ProductOfferingPriceOracle.POPAlteration.UnitOfMeasure.amount<br>productOfferingPrice.ProductOfferingPriceOracle.Quantity.amount | <b>Usage Scaled Charge:</b> <ul style="list-style-type: none"> <li>chargeRatePlan.subscriberCurrency.applicableRum.crpRelDateRange.incrementStep</li> <li>chargeRatePlan.crpCompositePopModel.usageChargePopModel.incrementStep</li> <li>chargeRatePlan.priceTier.priceTierValidityPeriod.incrementStep</li> <li>chargeRatePlan.priceTierRange.ScaledCharge.incrementStep</li> </ul> | Increment Step        |
| ProductOffering Price | ProductOffering PriceOracle.PricingLogicAlgorithmOracle.TierRangeOracle | ProductOfferingPrice.PricingLogicAlgorithm.TierRange | ProductOfferingPrice.ProductOfferingPrice[n].pricingLogicAlgorithmOracle.TierRange.minQuantity                                                        | chargeRatePlan.subscriberCurrency.crpRelDateRange...lowerBound                                                                                                                                                                                                                                                                                                                       | Lower Bound           |
| ProductOffering Price | ProductOffering PriceOracle.PricingLogicAlgorithmOracle.TierRangeOracle | ProductOfferingPrice.PricingLogicAlgorithm.TierRange | ProductOfferingPrice.ProductOfferingPrice[n].pricingLogicAlgorithmOracle.TierRange.maxQuantity                                                        | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange.upperBound                                                                                                                                                                                                                                                                                                             | Upper Bound           |
| ProductOffering Price | ProductOffering PriceOracle.Money                                       | ProductOfferingPrice.Money                           | ProductOfferingPrice.ProductOfferingPrice[n].price.value                                                                                              | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...price                                                                                                                                                                                                                                                                                                                | Price                 |
| ProductOffering Price | ProductOffering PriceOracle.Quantity                                    | ProductOfferingPrice.Quantity                        | ProductOfferingPrice.ProductOfferingPrice[n].unitOfMeasure                                                                                            | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...unitOfMeasure                                                                                                                                                                                                                                                                                                        | Unit Of Measure       |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object                                | Vendor Extended Object                      | TMF 620 Field                                                                                                                                                                      | PDC Field                                                                             | PDC Field Description        |
|-----------------------|----------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------|
| ProductOffering Price | ProductOffering PriceOracle.Money                  | ProductOfferingPrice.Money                  | ProductOffering.price[n].price.unit                                                                                                                                                | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...balanceElementNumCode | Balance Element Numeric Code |
| ProductOffering Price | ProductOffering PriceOracle.Quantity               | ProductOfferingPrice.Quantity               | ProductOffering.price[n].unitOfMeasure.amount                                                                                                                                      | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...incrementStep         | Increment Step               |
| ProductOffering Price | ProductOffering PriceOracle                        | NA                                          | ProductOffering.price[n].glid                                                                                                                                                      | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...glid                  | GLID                         |
| ProductOffering Price | ProductOffering PriceAllowanceOracle.UnitOfMeasure | ProductOfferingPriceAllowance.UnitOfMeasure | ProductOffering.price[n].unitOfMeasure.units                                                                                                                                       | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...balanceElementNumCode | Balance Element Numeric Code |
| ProductOffering Price | ProductOffering PriceAllowanceOracle.UnitOfMeasure | ProductOfferingPriceAllowance.UnitOfMeasure | The negative value of ProductOffering.price[n].unitOfMeasure.amount<br>The negative value is used because in BRM, noncurrency balance elements are treated as credits, not debits. | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...price                 | Price                        |
| ProductOffering Price | ProductOffering PriceAllowanceOracle.UnitOfMeasure | ProductOfferingPriceAllowance.UnitOfMeasure | ProductOffering.price[n].unitOfMeasure.amount<br>Applicable when <b>ProductOffering Price[n].priceType</b> is set to <b>usage</b> .                                                | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...incrementStep         | Increment Step               |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object                                                      | Vendor Extended Object                          | TMF 620 Field                                                                                                                                                                           | PDC Field                                                                                                                                                                                                     | PDC Field Description                                                                                                                             |
|-----------------------|--------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| ProductOffering Price | ProductOffering PriceAllowance Oracle.UnitOfMeasure                      | ProductOfferingPriceAllowance.UnitOfMeasure     | ProductOffering.productOfferingPrice[n].unitOfMeasure<br>If this is specified, the <b>ImpactType</b> value is set to <b>SCALED</b> . If not, <b>ImpactType</b> is set to <b>FIXED</b> . | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...ImpactType                                                                                                                                    | Impact Type                                                                                                                                       |
| ProductOffering Price | ProductOffering PriceOracle                                              | ProductOfferingPrice                            | ProductOffering.productOfferingPrice[n].glid                                                                                                                                            | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...glid                                                                                                                                          | GLID<br>The GLID value is based on the charge offer's ProductOfferingPrice object associated with the ProductOfferingPriceAllowanceOracle object. |
| ProductOffering Price | ProductOffering PriceAllowance Oracle.AllowanceValidity                  | ProductOfferingPriceAllowance.AllowanceValidity | ProductOffering.productOfferingPrice[n].allowanceValidity                                                                                                                               | chargeRatePlan.subscriberCurrency.crpRelDateRange...tierRange...PriceValidity                                                                                                                                 | Price Validity                                                                                                                                    |
| ProductOffering Price | ProductOffering PriceAllowance Oracle.ShareAllowance                     | ProductOfferingPriceAllowance.ShareAllowance    | ProductOffering.productOfferingPrice[n].shareAllowance                                                                                                                                  | alterationRatePlan.arpRelDateRange.alterationConfiguration...tierRange...fixedAlteration.alterationAppliesTo                                                                                                  | Alteration Applies To                                                                                                                             |
| ProductOffering Price | PricingConstraintVariantOracle.ConstraintRuleOracle.ProductOfferingPrice | NA                                              | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.price.value                                                                                   | chargeRatePlan[n].subscriberCurrency.applicableRule.m.crpRelDateRange.genericSelector.results[n].crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange.scaledCharge.price | Price                                                                                                                                             |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object                                    | Vendor Extended Object | TMF 620 Field                                                                                                | PDC Field                                                                                                                                                                                                             | PDC Field Description                       |
|-----------------------|--------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| ProductOffering Price | PricingConstraintVariantOracle.ProductOfferingPrice    | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.price.unit         | chargeRatePlan[n].subscriberCurrency.applicableRule.m.crpRelDateRange.genericSelector.results[n].crpCompositePopModel.usageChargePopModel.priceTier.tierBasis.balanceTierExpression.balanceElementNum Code            | Balance Element Num Code                    |
| ProductOffering Price | PricingConstraintVariantOracle.ProductOfferingPrice    | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.unitOfMeasure.unit | chargeRatePlan[n].subscriberCurrency.applicableRule.m.crpRelDateRange.genericSelector.results[n].crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange.scaledCharge.unitOfMeasure | Unit of Measure                             |
| ProductOffering Price | PricingConstraintVariantOracle                         | NA                     | ProductOffering.productOfferingPrice[n].constraint.name                                                      | genericSelector[n].name                                                                                                                                                                                               | Generic Selector Name                       |
| ProductOffering Price | PricingConstraintVariantOracle.ServiceSpecificationRef | NA                     | ProductOffering.productOfferingPrice[n].constraint.serviceSpecification.name                                 | genericSelector[n].productSpecName                                                                                                                                                                                    | Generic Selector Product Specification Name |
| ProductOffering       | ProductOffering.ServiceCandidateRef                    | NA                     | ProductOffering.serviceCandidate.name concatenated to the string "EventSession"                              | genericSelector[n].eventSpecName                                                                                                                                                                                      | Generic Selector Event Specification Name   |
| ProductOffering Price | ProductOffering Price                                  | NA                     | ProductOffering.productOfferingPrice[n].validFor.startDateTime or ProductOffering.validFor.startDateTime     | genericSelector[n].validityPeriod.validFrom                                                                                                                                                                           | Generic Selector Valid From                 |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object                                                                                                                                | Vendor Extended Object | TMF 620 Field                                                                                                                   | PDC Field                                                                                                                                                                                                   | PDC Field Description             |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| ProductOffering Price | PricingConstraintVariantOracle.ConstraintRuleOracle.ProductOfferingPrice                                                                           | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.name                                  | genericSelector[n].validityPeriod.rule[n].result.resultName                                                                                                                                                 | Generic Selector Rule Result Name |
| ProductOffering Price | PricingConstraintVariantOracle.SpecCharUseOracle                                                                                                   | NA                     | ProductOffering.productOfferingPrice[n].constraint.specCharUse[n].name                                                          | genericSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].fieldName                                                                                                                               | Generic Selector Rule Field Name  |
| ProductOffering Price | PricingConstraintVariantOracle.ConstraintRuleOracle                                                                                                | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].valueRelationship.value[n]                                 | genericSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].fieldValue                                                                                                                              | Generic Selector Rule Field Value |
| ProductOffering Price | PricingConstraintVariantOracle.SpecCharUseOracle.ServiceSpecificationRef or PricingConstraintVariantOracle.SpecCharUseOracle.UsageSpecificationRef | NA                     | For ServiceSpecificationRef:<br>FieldKindJXB.PRODUCT_SPEC_FIELD.<br>For UsageSpecificationRef:<br>FieldKindJXB.EVENT_SPEC_FIELD | genericSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].fieldKind                                                                                                                               | Generic Selector Rule Field Kind  |
| ProductOffering Price | PricingConstraintVariantOracle.ConstraintRuleOracle.ProductOfferingPrice                                                                           | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.price.value                           | chargeRatePlan[n].subscriberCurrency.applicableRule.crpRelDateRange.genericSelector.results[n].crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange.scaledCharge.price | Price                             |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object                                    | Vendor Extended Object | TMF 620 Field                                                                                                | PDC Field                                                                                                                                                                                                             | PDC Field Description                      |
|-----------------------|--------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| ProductOffering Price | PricingConstraintVariantOracle.ProductOfferingPrice    | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.price.unit         | chargeRatePlan[n].subscriberCurrency.applicableRule.m.crpRelDateRange.genericSelector.results[n].crpCompositePopModel.usageChargePopModel.priceTier.tierBasis.balanceTierExpression.balanceElementNumeric Code        | Balance Element Numeric Code               |
| ProductOffering Price | PricingConstraintVariantOracle.ProductOfferingPrice    | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.unitOfMeasure.unit | chargeRatePlan[n].subscriberCurrency.applicableRule.m.crpRelDateRange.genericSelector.results[n].crpCompositePopModel.usageChargePopModel.priceTier.priceTierValidityPeriod.priceTierRange.scaledCharge.unitOfMeasure | Unit of Measure                            |
| ProductOffering Price | PricingConstraintVariantOracle                         | NA                     | ProductOffering.productOfferingPrice[n].constraint.name                                                      | chargeRateplanSelector[n].name                                                                                                                                                                                        | Charge Selector Name                       |
| ProductOffering Price | PricingConstraintVariantOracle.ServiceSpecificationRef | NA                     | ProductOffering.productOfferingPrice[n].constraint.serviceSpecification.name                                 | chargeRateplanSelector[n].productSpecName                                                                                                                                                                             | Charge Selector Product Specification Name |
| ProductOffering Price | NA                                                     | NA                     | ProductOfferingPrice.unitOfMeasure                                                                           | chargeRatePlan.eventName                                                                                                                                                                                              | Charge Rate Plan Event Name                |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object   | Vendor Extended Object | TMF 620 Field                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PDC Field                              | PDC Field Description                    |
|-----------------|-----------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------|
| ProductOffering | ProductOffering Price | NA                     | <p>For one-time events:<br/>ProductOffering.p<br/>roductOfferingPric<br/>e[n].priceType.Ev<br/>entBillingProduct<br/>FeePurchase<br/>For recurring events:</p> <ul style="list-style-type: none"> <li>ProductOffering.productOfferingPrice[n].priceType.EventBillingProductFeeCycle_eCycle_forward_monthly</li> <li>ProductOffering.productOfferingPrice[n].priceType.EventBillingProductFeeCycle_eCycle_forward_bimonthly</li> <li>ProductOffering.productOfferingPrice[n].priceType.EventBillingProductFeeCycle_eCycle_forward_quarterly</li> <li>ProductOffering.productOfferingPrice[n].priceType.EventBillingProductFeeCycle_eCycle_forward_semiannual</li> <li>ProductOffering.productOfferingPrice[n].priceType.EventBillingProductFeeCycle_eCycle_forward_yearly</li> </ul> | chargeRateplanSelector[n]eventSpecName | Charge Selector Event Specification Name |

**Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager**

| TMF Base Object       | TMF Extended Object                                                                                                                                                                   | Vendor Extended Object | TMF 620 Field                                                                                                                                                | PDC Field                                                                                               | PDC Field Description                  |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------|
| ProductOffering Price | ProductOffering Price                                                                                                                                                                 | NA                     | ProductOffering.p<br>roductOfferingPric<br>e[n].validFor.start<br>DateTime or<br>ProductOffering.v<br>alidFor.startDateT<br>ime                              | chargeRateplanS<br>elector[n].validity<br>Period.validFrom                                              | Charge Selector<br>Valid From          |
| ProductOffering Price | PricingConstrain<br>tVariantOracle.C<br>onstraintRuleOra<br>cle.ProductOfferi<br>ngPrice                                                                                              | NA                     | ProductOffering.p<br>roductOfferingPric<br>e[n].constraint.co<br>nstraintRule[n].pr<br>oductOfferingPric<br>e.name                                           | chargeRateplanS<br>elector[n].validity<br>Period.rule[n].res<br>ult.resultName                          | Charge Selector<br>Rule Result<br>Name |
| ProductOffering Price | PricingConstrain<br>tVariantOracle.S<br>pecCharUseOra<br>cle                                                                                                                          | NA                     | ProductOffering.p<br>roductOfferingPric<br>e[n].constraint.sp<br>ecCharUse[n].na<br>me                                                                       | chargeRateplanS<br>elector[n].validity<br>Period.rule[n].field<br>ToValueExpressio<br>n[n].fieldName    | Charge Selector<br>Rule Field Name     |
| ProductOffering Price | PricingConstrain<br>tVariantOracle.C<br>onstraintRuleOra<br>cle                                                                                                                       | NA                     | ProductOffering.p<br>roductOfferingPric<br>e[n].constraint.co<br>nstraintRule[n].val<br>ueRelationship.va<br>lue[n]                                          | chargeRateplanS<br>elector[n].validity<br>Period.rule[n].field<br>ToValueExpressio<br>n[n].fieldValue   | Charge Selector<br>Rule Field Value    |
| ProductOffering Price | PricingConstrain<br>tVariantOracle.S<br>pecCharUseOra<br>cle.ServiceSpeci<br>ficationRef or<br>PricingConstrain<br>tVariantOracle.S<br>pecCharUseOra<br>cle.UsageSpeci<br>ficationRef | NA                     | For<br>ServiceSpecificati<br>onRef:<br>FieldKindJXB.PR<br>ODUCT_SPEC_F<br>IELD<br>For<br>UsageSpecificatio<br>nRef:<br>FieldKindJXB.EV<br>ENT_SPEC_FIEL<br>D | chargeRateplanS<br>elector[n].validity<br>Period.rule[n].field<br>ToValueExpressio<br>n[n].fieldKind    | Charge Selector<br>Rule Field Kind     |
| ProductOffering Price | ValueMapConstr<br>aintOracle.Const<br>raintRuleOracle                                                                                                                                 | NA                     | ProductOffering.p<br>roductOfferingPric<br>e[n].constraint.co<br>nstraintRule[n].pr<br>oductOfferingPric<br>e.valueRelationsh<br>ip                          | chargeRateplanS<br>elector[n].validity<br>Period.rule[n].valu<br>eMapExpression                         | Charge Selector<br>Rule Expression     |
| ProductOffering Price | ValueMapConstr<br>aintOracle.Const<br>raintRuleOracle                                                                                                                                 | NA                     | ProductOffering.p<br>roductOfferingPric<br>e[n].constraint.co<br>nstraintRule[n].pr<br>oductOfferingPric<br>e.valueRelationsh<br>ip.mappedValueN<br>ame      | chargeRateplanS<br>elector[n].validity<br>Period.rule[n].valu<br>eMapExpression[<br>n].valueMapNam<br>e | Charge Selector<br>Rule Mapped<br>Name |

Table 3-4 (Cont.) TMF 620 Charge Offer Mappings for PDC REST Services Manager

| TMF Base Object       | TMF Extended Object                                                | Vendor Extended Object | TMF 620 Field                                                                                                               | PDC Field                                                                          | PDC Field Description             |
|-----------------------|--------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------|
| ProductOffering Price | ValueMapConstraintOracle.ConstraintRuleOracle                      | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.valueRelationship.mappedValue     | chargeRateplanSelector[n].validityPeriod.rule[n].valueMapExpression[n].mappedValue | Charge Selector Rule Mapped Value |
| ProductOffering Price | ValueMapConstraintOracle.SpecCharUseOracle                         | NA                     | ProductOffering.productOfferingPrice[n].constraint.specCharUse[n].name                                                      | chargeRateplanSelector[n].validityPeriod.rule[n].valueMapExpression[n].fieldName   | Charge Selector Rule Field Name   |
| ProductOffering Price | ValueMapConstraintOracle.SpecCharUseOracle.ServiceSpecificationRef | NA                     | For ServiceSpecificationRef: FieldKindJXB.PRODUCT_SPEC_FIELD                                                                | chargeRateplanSelector[n].validityPeriod.rule[n].valueMapExpression[n].fieldKind   | Charge Selector Rule Field Kind   |
| ProductOffering Price | ValueMapConstraintOracle.ConstraintRuleOracle                      | NA                     | ProductOffering.productOfferingPrice[n].constraint.constraintRule[n].productOfferingPrice.valueRelationship.mappedValueName | chargeRatePlanSelector[n].modelData[n].key[ZONE_MAP].value                         | Charge Selector Zone Map Value    |

## PDC Charge Offer Default Values

Table 3-5 lists the default values for PDC charge offer fields when TMF 620 has no corresponding field.

Table 3-5 PDC Charge Offer Default Values

| PDC Field                                           | Default Value                             |
|-----------------------------------------------------|-------------------------------------------|
| chargeOffering.applicableQtyTreatment               | ApplicableQuantityTreatmentJXB.CONTINUOUS |
| chargeOffering.applicableQuantity                   | ApplicableQuantityJXB.REMAINING           |
| chargeOffering.expiryNotification                   | true                                      |
| chargeOffering.subscriptionDueNotification          | true                                      |
| chargeOffering.chargeEventMap.incrementQuantity     | BigDecimal.valueOf(1)                     |
| chargeOffering.chargeEventMap.incrementQuantityUnit | NONE                                      |
| chargeOffering.chargeEventMap.minQuantity           | BigDecimal.valueOf(0)                     |
| chargeOffering.chargeEventMap.minQuantityUnit       | NONE                                      |
| chargeOffering.chargeEventMap.prorateFirst          | ProrationValueJXB.PRORATE_CHARGE          |
| chargeOffering.chargeEventMap.prorateLast           | ProrationValueJXB.PRORATE_CHARGE          |
| chargeOffering.chargeEventMap.prorateCycle          | RateTypeJXB.PRORATIONFLAG                 |
| chargeOffering.chargeEventMap.roundingMode          | RoundingModeJXB.NEAREST                   |

**Table 3-5 (Cont.) PDC Charge Offer Default Values**

| PDC Field                                                                                                                                    | Default Value                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| chargeOffering.chargeEventMap.timezoneMode                                                                                                   | TimeZoneModeJXB.EVENT                                                                                                |
| chargeOffering.chargeEventMap.validIfCancelled                                                                                               | false                                                                                                                |
| chargeOffering.chargeEventMap.validIfInactive                                                                                                | false                                                                                                                |
| chargeOffering.chargeEventMap.validIfSuspendedActive                                                                                         | false                                                                                                                |
| chargeOffering.pricingProfileName                                                                                                            | Product Offering                                                                                                     |
| chargeOffering.TimeRange                                                                                                                     | 0/inf                                                                                                                |
| chargeRatePlan.applicableQtyTreatment                                                                                                        | ApplicableQuantityTreatmentJXB.CONTINUOUS                                                                            |
| chargeRatePlan.applicableQuantity                                                                                                            | ApplicableQuantityJXB.ORIGINAL                                                                                       |
| chargeRatePlan.billOffset                                                                                                                    | BigInteger.valueOf(0)                                                                                                |
| chargeRatePlan.cycleFeeFlag                                                                                                                  | BigInteger.valueOf(0)                                                                                                |
| chargeRatePlan.permittedType                                                                                                                 | PermittedTypeJXB.PRODUCT                                                                                             |
| chargeRatePlan.pricingProfileName                                                                                                            | ONE TIME/ RECURRING - Subscription<br>USAGE - Convergent Usage                                                       |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.priceTier.distributionMethod                                                         | pricingType - TIERED -<br>DistributionMethodJXB.FROM_BAL_IMPACT<br>pricingType - SIMPLE - DistributionMethodJXB.NONE |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...discountable                                                             | ONE TIME/ RECURRING - true                                                                                           |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...impactType                                                               | ONE TIME/ RECURRING - SCALED                                                                                         |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...incrementRounding                                                        | USAGE - IncrementRoundingJXB.NONE                                                                                    |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...priceType                                                                | PriceTypeJXB.CONSUMPTION                                                                                             |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...proratable                                                               | RECURRING - true                                                                                                     |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange.enforceCreditLimit                                                         | ONE TIME/ RECURRING - true<br>USAGE - false                                                                          |
| chargeRatePlan.todMode                                                                                                                       | TODModeJXB.START_TIME                                                                                                |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...unitOfMeasure                                                            | UnitOfMeasureJXB.NONE                                                                                                |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...isDiscountable                                                           | false                                                                                                                |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...priceType                                                                | PriceTypeJXB.GRANT                                                                                                   |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...relativeStartOffset                                                      | -1                                                                                                                   |
| chargeOffering.chargeEventMap.validIfCancelled                                                                                               | false                                                                                                                |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...proratable<br>Used when <b>priceType</b> is set to <b>recurring</b> .    | true                                                                                                                 |
| chargeRatePlan.subscriberCurrency.crpRelDateRange..<br>.tierRange...incrementRounding<br>Used when <b>priceType</b> is set to <b>usage</b> . | IncrementRoundingJXB.NONE                                                                                            |
| GenericSelector[n].pricingProfileName                                                                                                        | Convergent Usage                                                                                                     |

**Table 3-5 (Cont.) PDC Charge Offer Default Values**

| PDC Field                                                                            | Default Value                             |
|--------------------------------------------------------------------------------------|-------------------------------------------|
| GenericSelector[n].priceListName                                                     | Default                                   |
| GenericSelector[n].stereoType                                                        | AAStereoTypeJXB.GENERIC_SELECTOR          |
| GenericSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].operation        | OperatorJXB.EQUAL_TO                      |
| GenericSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].seperator        | constant ','                              |
| ChargeRatePlanSelector[n].pricingProfileName                                         | Subscription                              |
| ChargeRatePlanSelector[n].priceListName                                              | Default                                   |
| ChargeRatePlanSelector[n].stereoType                                                 | AAStereoTypeJXB.CHARGE_RATE_PLAN_SELECTOR |
| ChargeRatePlanSelector[n].customerSpecName                                           | Account                                   |
| ChargeRatePlanSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].operation | OperatorJXB.EQUAL_TO                      |
| ChargeRatePlanSelector[n].validityPeriod.rule[n].fieldToValueExpression[n].seperator | constant ','                              |
| ChargeRatePlanSelector[n].modelData[n].key[ZONING_OPTION].value                      | ZONING_USE_ZONE_MAP                       |
| ChargeRatePlanSelector[n].modelData[n].key[field_0.valueType].value                  | VALUE_FROM_ZONE_MAP                       |

## Mapping Discount Offers from TMF 620 to PDC

Table 3-6 shows how to map discount offer data from TMF 620 fields to PDC fields.

**Table 3-6 TMF 620 Discount Offer Mappings for PDC REST Services Manager**

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field               | PDC Field                                                                                                                                                                                                                              | PDC Field Description           |
|-----------------|---------------------|------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| ProductOffering | NA                  | NA                     | ProductOffering.name        | alterationOffering.name<br><b>Note:</b> To distinguish between an alterationOffering and a chargeOffering in a ProductOffering, the alterationOffering.name consists of the ProductOffering.name with the string "_DISCOUNT" appended. | Alteration Offering Name        |
| ProductOffering | NA                  | NA                     | ProductOffering.description | alterationOffering.description                                                                                                                                                                                                         | Alteration Offering Description |
| ProductOffering | NA                  | NA                     | ProductOffering.id          | alterationOffering.externalId                                                                                                                                                                                                          | Alteration Offering External ID |
| ProductOffering | NA                  | NA                     | ProductOffering.id          | alterationOffering.internalId                                                                                                                                                                                                          | Alteration Offering Internal ID |

**Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager**

| TMF Base Object      | TMF Extended Object | Vendor Extended Object | TMF 620 Field                                                                              | PDC Field                                                                                  | PDC Field Description                           |
|----------------------|---------------------|------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------|
| ProductOffering      | NA                  | NA                     | ProductOffering.id                                                                         | alterationRatePlan[n].externalId                                                           | Alteration Rate External ID                     |
| ProductOffering      | NA                  | NA                     | ProductOffering.ServiceCandidate.name                                                      | alterationOffering.productSpecName                                                         | Alteration Offering Product Spec Name           |
| Product Offering     | NA                  | NA                     | ProductOffering.ValidFor.startDate/endDateTime                                             | alterationOffering.timeRange                                                               | Alteration Offering Validity                    |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.id                                                                    | alterationRatePlan.internalId                                                              | Alteration Rate Plan Internal ID                |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.name                                                                  | alterationRatePlan.name                                                                    | Alteration Rate Plan Name                       |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.PriceType                                                             | NA                                                                                         | Price Type                                      |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.ValidFor.startDate                                                    | alterationRatePlan.subscriberCurrency/absoluteDateRange.startDate                          | Start Date                                      |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.ValidFor.endDate                                                      | alterationRatePlan.subscriberCurrency/absoluteDateRange.endDate                            | End Date                                        |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.POPAlteration[*]/Price/DutyFreeAmount.unit                            | alterationRatePlan.arpDateRange/alterationPopModel/fixedAlteration.balanceElementNumCode   | Fixed Alteration Balance Element Numeric Code   |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.POPAlteration[*]/Price/DutyFreeAmount.value                           | alterationRatePlan.arpDateRange/alterationPopModel/fixedAlteration.price                   | Fixed Alteration Price                          |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.POPAlteration[*]/Price/DutyFreeAmount.unit                            | alterationRatePlan.arpDateRange/alterationPopModel/percentAlteration.balanceElementNumCode | Percent Alteration Balance Element Numeric Code |
| ProductOfferingPrice | NA                  | NA                     | ProductOfferingPrice.POPAlteration[*]/Price/DutyFreeAmount.value                           | alterationRatePlan.arpDateRange/alterationPopModel/percentAlteration.price                 | Percent Alteration Price                        |
| ProductOfferingPrice | NA                  | NA                     | ProductOffering.ProductOfferingPrice[n].id<br>ProductOffering.ProductOfferingPrice[n].name | ChargeOffering.getChargeEventMap().get(0).getRolloverRatePlanName()                        | Rollover Name                                   |

Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager

| TMF Base Object      | TMF Extended Object                         | Vendor Extended Object          | TMF 620 Field                                                                                                                                                                                                                                                                    | PDC Field                                                                                                                                                                                                                      | PDC Field Description            |
|----------------------|---------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| ProductOfferingPrice | NA                                          | NA                              | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.RolloverCount                                                                                                                                                                                                          | RolloverRatePlan.getDateRange().getRolloverPopModel().getRolloverCharge().get(0).getRolloverCount()                                                                                                                            | Rollover Count                   |
| ProductOfferingPrice | NA                                          | NA                              | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.RolloverMaxUnits                                                                                                                                                                                                       | RolloverRatePlan.getDateRange().getRolloverPopModel().getRolloverCharge().get(0).getRolloverMaxUnits()                                                                                                                         | Rollover Maximum                 |
| ProductOfferingPrice | NA                                          | NA                              | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.RolloverUnits                                                                                                                                                                                                          | RolloverRatePlan.getDateRange().getRolloverPopModel().getRolloverCharge().get(0).getRolloverUnits()                                                                                                                            | Rollover Units                   |
| ProductOfferingPrice | NA                                          | NA                              | ProductOfferingPrice.POPAlterationOracle[n].RollOverPrice.Units                                                                                                                                                                                                                  | RolloverRatePlan.getDateRange().getRolloverPopModel().getRolloverCharge().get(0).getBalanceElementNumericCode()                                                                                                                | Balance Element Numeric Code     |
| ProductOfferingPrice | NA                                          | NA                              | ProductOfferingPrice.POPAlterationOracle[n].UnitOfMeasure                                                                                                                                                                                                                        | RolloverRatePlan.getDateRange().getRolloverPopModel().getRolloverCharge().get(0).getUnitOfMeasure()                                                                                                                            | Unit of Measure                  |
| ProductOfferingPrice | ProductOfferingPriceOracle                  | ProductOfferingPrice            | ProductOffering.productOfferingPrice[n].name                                                                                                                                                                                                                                     | alterationRatePlan[n].name                                                                                                                                                                                                     | Alteration Rate Plan Name        |
| ProductOfferingPrice | ProductOfferingPriceOracle                  | ProductOfferingPrice            | ProductOffering.productOfferingPrice[n].name                                                                                                                                                                                                                                     | alterationOffering.alterationEventMap.alterationRatePlanName                                                                                                                                                                   | Alteration Rate Plan Name        |
| ProductOfferingPrice | ProductOfferingPriceOracle                  | ProductOfferingPrice            | ProductOffering.productOfferingPrice[n].description                                                                                                                                                                                                                              | alterationRatePlan[n].description                                                                                                                                                                                              | Alteration Rate Plan Description |
| ProductOfferingPrice | ProductOfferingPriceOracle                  | ProductOfferingPrice            | ProductOffering.ProductOfferingPrice[n].name                                                                                                                                                                                                                                     | alterationOffering.AlterationEventMap[n].getAlterationRatePlanName                                                                                                                                                             | Alteration Offering              |
| ProductOfferingPrice | ProductOfferingPriceOracle.TimePeriodOracle | ProductOfferingPrice.TimePeriod | <ul style="list-style-type: none"> <li>For non-tiered rates: ProductOffering.productOfferingPrice[n].validFor.startDateTime</li> <li>For tiered rates: ProductOffering.productOfferingPrice[n].pricingLogicAlgorithmOracle.TierRange.productOfferingPrice[x].validFor</li> </ul> | alterationRatePlan[n].arpDateRange.startDate<br><b>Note:</b> All tiered ProductOfferingPrice objects contained in the same TierRange must have the same start date. If the dates don't match, the ProductOffering is rejected. | Start Date                       |

**Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager**

| TMF Base Object      | TMF Extended Object                                   | Vendor Extended Object                          | TMF 620 Field                                                                                                                                                                                                                                                                  | PDC Field                                                                                                                                                                                                                  | PDC Field Description                 |
|----------------------|-------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| ProductOfferingPrice | ProductOfferingPriceOracle.TimePeriodOracle           | ProductOfferingPrice.TimePeriod                 | <ul style="list-style-type: none"> <li>For non-tiered rates: ProductOffering.productOfferingPrice[n].validFor.endDateTime</li> <li>For tiered rates: ProductOffering.productOfferingPrice[n].pricingLogicAlgorithmOracle.TierRange.productOfferingPrice[x].validFor</li> </ul> | alterationRatePlan[n].arpDateRange.endDate<br><b>Note:</b> All tiered ProductOfferingPrice objects contained in the same TierRange must have the same end date. If the dates don't match, the ProductOffering is rejected. | End Date                              |
| ProductOfferingPrice | ProductOfferingPriceOracle.Money                      | ProductOfferingPrice.Money                      | ProductOffering.productOfferingPrice[n].price.unit                                                                                                                                                                                                                             | alterationRatePlan[n].arpDateRange...balanceElementNumCode                                                                                                                                                                 | Balance Element Num Code              |
| ProductOfferingPrice | ProductOfferingPriceOracle.Money                      | ProductOfferingPrice.Money                      | ProductOffering.productOfferingPrice[n].price.unit                                                                                                                                                                                                                             | alterationRatePlan[n].arpDateRange...currencyCode                                                                                                                                                                          | Currency Code                         |
| ProductOfferingPrice | ProductOfferingPriceOracle                            | ProductOfferingPrice.glid                       | ProductOffering.productOfferingPrice[n].glid                                                                                                                                                                                                                                   | alterationRatePlan[n].arpDateRange...glid                                                                                                                                                                                  | Alteration Rate Plan Name             |
| ProductOfferingPrice | ProductOfferingPriceOracle.Money                      | ProductOfferingPrice.Money                      | ProductOffering.productOfferingPrice[n].price.value                                                                                                                                                                                                                            | alterationRatePlan[n].arpDateRange...fixedAlteration.price                                                                                                                                                                 | Price                                 |
| ProductOfferingPrice | ProductOfferingPriceOracle                            | ProductOfferingPrice.Money                      | ProductOffering.productOfferingPrice[n].price.value                                                                                                                                                                                                                            | alterationRatePlan[n].arpDateRange...percentAlteration.price                                                                                                                                                               | Percentage                            |
| ProductSpecification | ProductSpecificationOracle.ServiceSpecification       | NA                                              | ProductOffering.ProductSpecification.ServiceSpecification.name                                                                                                                                                                                                                 | alterationOffering.productSpecName                                                                                                                                                                                         | Alteration Offering Product Spec Name |
| ProductSpecification | NA                                                    | NA                                              | ProductSpecification.id                                                                                                                                                                                                                                                        | NA                                                                                                                                                                                                                         | Product Specification ID              |
| ProductSpecification | NA                                                    | NA                                              | ServiceSpecification.validFor.startDateTime/endDateTime                                                                                                                                                                                                                        | alterationOffering.ProductSpecification                                                                                                                                                                                    | Product Specification Name            |
| ServiceSpecification | NA                                                    | NA                                              | ServiceSpecification.id                                                                                                                                                                                                                                                        | alterationOffering.productSpecName                                                                                                                                                                                         | Service Specification ID              |
| ServiceSpecification | NA                                                    | NA                                              | ServiceSpecification.name                                                                                                                                                                                                                                                      | alterationOffering.productSpecName                                                                                                                                                                                         | Service Specification Name            |
| ProductOffering      | ProductOfferingPriceOverageOracle.unitOfMeasure.units | ProductOfferingPriceOverage.unitOfMeasure.units | ProductOffering.productOfferingPrice[n].unitOfMeasure.units                                                                                                                                                                                                                    | alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange.upperBound.balanceTBExpression.balanceElementNumCode                                                                                     | Balance Element Numeric Code          |

Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object                                   | Vendor Extended Object                          | TMF 620 Field                                                                                                                  | PDC Field                                                                                                                                                                                                                                                                                                           | PDC Field Description                                                                                                                                          |
|-----------------|-------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ProductOffering | ProductOfferingPriceOverageOracle.unitOfMeasure.units | ProductOfferingPriceOverage.unitOfMeasure.units | ProductOffering.productOfferingPrice[n].unitOfMeasure.units                                                                    | alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.balanceElementNumCode                                                                                                                                                        | Balance Element Numeric Code                                                                                                                                   |
| ProductOffering | ProductOfferingPriceOracle                            | ProductOfferingPrice                            | ProductOffering.productOfferingPrice[n].glid                                                                                   | alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.glid2                                                                                                                                                                        | GLID<br><b>Note:</b> The GLID value is based on the discount offer's ProductOfferingPrice object associated with the ProductOfferingPriceOverageOracle object. |
| ProductOffering | ProductOfferingPriceOracle                            | ProductOfferingPrice                            | productOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges[n].minQuantity                             | alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange[n].percentAlteration.balanceElementNumCode                                                                                                                                                                                        | Balance Element Numeric Code                                                                                                                                   |
| ProductOffering | ProductOfferingPriceOracle                            | ProductOfferingPrice                            | productOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges[n].maxQuantity                             | alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange[n].upperBound.numberTBExpression.value                                                                                                                                                                                            | Upper Bound Value                                                                                                                                              |
| ProductOffering | ProductOfferingPriceOracle                            | ProductOfferingPrice                            | productOfferingPrice.pricingLogicAlgorithm.tierRange.productOfferingPriceTierRanges.priceAlteration.price.dutyFreeAmount.value | <ul style="list-style-type: none"> <li>For percentage: alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange[n].percentAlteration.price</li> <li>For fixed rates: alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange[n].fixedAlteration.price</li> </ul> | Alteration Amount                                                                                                                                              |

**Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager**

| TMF Base Object | TMF Extended Object        | Vendor Extended Object | TMF 620 Field                                                                                                                         | PDC Field                                                                                                                                                                                                                                                                                                                                                   | PDC Field Description        |
|-----------------|----------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| ProductOffering | ProductOfferingPriceOracle | ProductOfferingPrice   | productOfferingPrice.pricingLogicAlgorithm.tierRange.<br>productOfferingPriceTierRanges.priceAlteration.price.<br>dutyFreeAmount.unit | <ul style="list-style-type: none"> <li>For percentage:<br/>alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange[n].percentAlteration.balanceElementNumCode</li> <li>For fixed rates:<br/>alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.tierRange[n].fixedAlteration.balanceElementNumCode</li> </ul> | Balance Element Numeric Code |
| ProductOffering | ProductOfferingPriceOracle | ProductOfferingPrice   | productOfferingPrice.pricingLogicAlgorithm.distributionMethod                                                                         | alterationRatePlan[n].arpCompositePopModel.alterationPopModel.priceTier.distributionMethod                                                                                                                                                                                                                                                                  | Quantity Range Selection     |

Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object        | Vendor Extended Object | TMF 620 Field                                        | PDC Field | PDC Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------|----------------------------|------------------------|------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ProductOffering | ProductOfferingPriceOracle | NA                     | ProductOffering.productOfferingPriceOracle.appliesTo | NA        | <p>NA</p> <p><b>Note:</b> The <b>appliesTo</b> field does not map to a specific PDC field, but you can use it instead of the <b>ProductOffering.productOfferingPrice.popRelationship</b> field when a discount is included in a bundle. The <b>appliesTo</b> field specifies that the discount applies to all offers currently in the bundle and all that are added in the future. You can also apply it to current and future bundles by usage type. Valid values are ALL, ONE_TIME, RECURRING and USAGE.</p> <p>If you specify this field, the <b>popRelationship</b> array must be empty. You can specify <b>popRelationship</b> in subsequent discount offers to create a</p> |

Table 3-6 (Cont.) TMF 620 Discount Offer Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | Vendor Extended Object | TMF 620 Field | PDC Field | PDC Field Description                                                        |
|-----------------|---------------------|------------------------|---------------|-----------|------------------------------------------------------------------------------|
|                 |                     |                        |               |           | dependency between the new discount and the discount with <b>appliesTo</b> . |

## PDC Discount Offer Default Values

Table 3-7 lists the default values for PDC discount offer fields when TMF 620 has no corresponding field.

Table 3-7 PDC Discount Offer Default Values for PDC REST Services Manager

| PDC Field                                                                                                                                            | Default Value                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| alterationOffering.pricingProfileName                                                                                                                | Product Offering                                |
| alterationOffering.TimeRange                                                                                                                         | 0/inf                                           |
| alterationOffering.OfferType                                                                                                                         | OfferTypeJXB.SUBSCRIPTION                       |
| alterationOffering.applicableQuantity                                                                                                                | ApplicableChargeAndQuantityJXB.REMAINING_CHARGE |
| alterationOffering.Priority                                                                                                                          | 0                                               |
| alterationOffering.OwnMin                                                                                                                            | -1                                              |
| alterationOffering.OwnMax                                                                                                                            | -1                                              |
| alterationOffering.PurchaseMin                                                                                                                       | -1                                              |
| alterationOffering.PurchaseMax                                                                                                                       | -1                                              |
| alterationOffering.alterationEventMap.ValidIfCancelled                                                                                               | false                                           |
| alterationOffering.alterationEventMap.ValidIfInactive                                                                                                | false                                           |
| alterationOffering.alterationEventMap.Snowball                                                                                                       | false                                           |
| alterationOffering.alterationEventMap.ValidAtStartNotValidAtEnd                                                                                      | AlterationProrationValueJXB.PRORATE_DISCOUNT    |
| alterationOffering.alterationEventMap.NotValidAtStartValidAtEnd                                                                                      | AlterationProrationValueJXB.PRORATE_DISCOUNT    |
| alterationOffering.alterationEventMap.NotValidAtStartNotValidAtEnd                                                                                   | AlterationProrationValueJXB.PRORATE_DISCOUNT    |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.price         | 1.0                                             |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.unitOfMeasure | UnitOfMeasureJXB.NONE                           |

**Table 3-7 (Cont.) PDC Discount Offer Default Values for PDC REST Services Manager**

| PDC Field                                                                                                                                                                 | Default Value                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.alterationAppliesTo                | AlterationRecipientTypeJXB.USER |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.alterationBasedOn.useTierComponent | true                            |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.priceType                          | PriceTypeJXB.CONSUMPTION        |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.incrementStep                      | 1                               |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.prorateLastIncrementStep           | true                            |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.priceValidity.startValidityMode    | StartValidityModeJXB.IMMEDIATE  |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.priceValidity.endValidityMode      | EndValidityModeJXB.NEVER        |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.priceValidity.validityRange        | "0/inf"                         |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.priceValidity.relativeStartOffset  | -1                              |
| alterationRatePlan[n].arpDateRange.alterationConfiguration.arpCompositePopModel.alterationPopModel.priceTier.tierRange.fixedAlteration.priceValidity.relativeEndOffset    | -1                              |

## Mapping Subscription Terms from TMF 620 to PDC

Table 3-8 shows how to map subscription terms data from TMF 620 fields to PDC fields.

**Table 3-8 TMF 620 Subscription Terms Mappings for PDC REST Services Manager**

| TMF Base Object      | TMF Extended Object                       | Vendor Extended Object | TMF 620 Field                                                         | PDC Field                                                                                                                                                                                                                                                                                                                                                       | PDC Field Description            |
|----------------------|-------------------------------------------|------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| ProductOffering      | CommitmentTermOracle                      | NA                     | productOffering.productOfferingTerm.name                              | subscriptionTerms.name                                                                                                                                                                                                                                                                                                                                          | Subscription Term Name           |
| ProductOffering      | CommitmentTermOracle                      | NA                     | productOffering.productOfferingTerm.duration.amount                   | subscriptionTerms.termLength                                                                                                                                                                                                                                                                                                                                    | Term Length                      |
| ProductOffering      | CommitmentTermOracle                      | NA                     | productOffering.productOfferingTerm.duration.units                    | subscriptionTerms.termUnit<br>Only <b>MONTH</b> is supported.                                                                                                                                                                                                                                                                                                   | Term Unit                        |
| ProductOffering      | CommitmentTermOracle                      | NA                     | productOffering.productOfferingTerm.earlyTerminationPenalty           | subscriptionTerms.earlyTerminationOption<br>When earlyTerminationPenalty is: <ul style="list-style-type: none"> <li><b>true</b>: This will be set to <b>ALLOWED_WITH_PENALTY</b>.</li> <li><b>true</b> and penaltyType is <b>none</b>: This will be set to <b>ALLOWED_NO_PENALTY</b>.</li> <li><b>false</b>: This will be set to <b>NOT_ALLOWED</b>.</li> </ul> | Early Termination Option         |
| ProductOffering      | CommitmentTermOracle                      | NA                     | productOffering.productOfferingTerm.gracePeriodDuration               | subscriptionTerms.terminationGraceLength                                                                                                                                                                                                                                                                                                                        | Termination Grace Length         |
| ProductOffering      | CommitmentTermOracle                      | NA                     | productOffering.productOfferingTerm.gracePeriodUnits                  | subscriptionTerms.terminationGraceUnit                                                                                                                                                                                                                                                                                                                          | Termination Grace Unit           |
| ProductOfferingPrice | CommitmentTermOracle.ProductOfferingPrice | NA                     | productOffering.productOfferingTerm.productOfferingPrice.price.amount | subscriptionTerms.penaltyAmount                                                                                                                                                                                                                                                                                                                                 | Penalty Amount                   |
| ProductOfferingPrice | CommitmentTermOracle.ProductOfferingPrice | NA                     | productOffering.productOfferingTerm.productOfferingPrice.price.unit   | subscriptionTerms.penaltyBalanceElementNumCode                                                                                                                                                                                                                                                                                                                  | Penalty Balance Element Num Code |

Table 3-8 (Cont.) TMF 620 Subscription Terms Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object  | Vendor Extended Object | TMF 620 Field                                   | PDC Field                                                                                                                                                                                                                                                                                                                | PDC Field Description |
|-----------------|----------------------|------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| ProductOffering | CommitmentTermOracle | NA                     | productOffering.productOfferingTerm.penaltyType | subscriptionTerms.penaltyOptions<br>When penaltyType is: <ul style="list-style-type: none"> <li><b>flat:</b> This will be set to <b>FULL_CHARGE</b>.</li> <li><b>Balance of Contract:</b> This will be set to <b>CONTRACT_BALANCE</b>.</li> <li><b>Equal:</b> This will be set to <b>USED_CONTRACT_UNITS</b>.</li> </ul> | Penalty Options       |

## PDC Subscription Terms Default Values

Table 3-9 lists the default values for PDC subscription terms fields when TMF 620 has no corresponding field.

Table 3-9 PDC Subscription Terms Default Values

| PDC Field                   | Default Value |
|-----------------------------|---------------|
| subscriptionTerms.autoRenew | false         |

## Mapping Bundles from TMF 620 to PDC

Table 3-10 shows how to map bundle data from TMF 620 fields to PDC fields.

Table 3-10 TMF 620 Bundle Mappings for PDC REST Services Manager

| TMF Base Object | TMF Extended Object | TMF 620 Field               | PDC Field                                         | PDC Field Description                               |
|-----------------|---------------------|-----------------------------|---------------------------------------------------|-----------------------------------------------------|
| ProductOffering | NA                  | ProductOffering.name        | BundledProductOffering.name                       | BundledProductOffering Name                         |
| ProductOffering | NA                  | ProductOffering.description | BundledProductOffering.description                | BundledProductOffering Description                  |
| ProductOffering | NA                  | ProductOffering.name        | BundledProductOfferingItem.alterationOfferingName | BundledProductOfferingItem Alteration Offering Name |

**Table 3-10 (Cont.) TMF 620 Bundle Mappings for PDC REST Services Manager**

| TMF Base Object      | TMF Extended Object                  | TMF 620 Field                                                | PDC Field                                     | PDC Field Description                           |
|----------------------|--------------------------------------|--------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------|
| ProductOffering      | NA                                   | ProductOffering.name                                         | BundledProductOfferingItem.chargeOfferingName | BundledProductOfferingItem Charge Offering Name |
| ProductOfferingPrice | ProductOfferingPrice Oracle.Quantity | ProductOffering.productOfferingPrice[n].unitOfMeasure.amount | BundledProductOfferingItem.quantity           | BundledProductOfferingItem Quantity             |

## PDC Bundle Default Values

Table 3-11 lists the default values for PDC bundle fields when TMF 620 has no corresponding field.

**Table 3-11 PDC Bundle Default Values**

| PDC Field                                           | Default Value                |
|-----------------------------------------------------|------------------------------|
| BundledProductOffering.pricingProfileName           | Product Offering             |
| BundledProductOffering.TimeRange                    | 0/inf                        |
| BundledProductOffering.priceListName                | Default                      |
| BundledProductOffering.obsolete                     | false                        |
| BundledProductOffering.billOnPurchase               | true                         |
| BundledProductOffering.customize                    | CustomizeTypeJXB.OPTIONAL    |
| BundledProductOffering.groupBalanceElements         | true                         |
| BundledProductOffering.statusCode                   | 0L                           |
| BundledProductOffering.status                       | 1L                           |
| Validity.mode                                       | ValidityModeJXB.NOW_TO_NEVER |
| Validity.offset                                     | 0L                           |
| BundledProductOfferingItem.cycleStart               | Validity                     |
| BundledProductOfferingItem.cycleEnd                 | Validity                     |
| BundledProductOfferingItem.purchaseStart            | Validity                     |
| BundledProductOfferingItem.purchaseEnd              | Validity                     |
| BundledProductOfferingItem.usageStart               | Validity                     |
| BundledProductOfferingItem.usageEnd                 | Validity                     |
| BundledProductOfferingItem.purchaseChargeAdjustment | 0.0                          |
| BundledProductOfferingItem.cycleChargeAdjustment    | 0.0                          |
| BundledProductOfferingItem.usageChargeAdjustment    | 0.0                          |
| BundledProductOfferingItem.renewalMode              | false                        |

## Mapping Packages from TMF 620 to PDC

Table 3-12 shows how to map package data from TMF 620 fields to PDC fields.

**Table 3-12 TMF 620 Package Mappings for PDC REST Services Manager**

| TMF Base Object      | TMF Extended Object                              | TMF 620 Field                                  | PDC Field                                                                                                   | PDC Field Description                               |
|----------------------|--------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| ProductOffering      | NA                                               | ProductOffering.name                           | Package.name                                                                                                | Package Name                                        |
| ProductOffering      | NA                                               | ProductOffering.description                    | Package.description                                                                                         | Package Description                                 |
| ProductOffering      | NA                                               | ProductOffering.name                           | Package.productSpecPackageItem.productSpecName.bundledProductOfferingAssociation.bundledProductOfferingName | Bundle Name                                         |
| ProductSpecification | ProductSpecification Oracle.ServiceSpecification | ProductSpecification.ServiceSpecification.name | Package.productSpecPackageItem.name                                                                         | BundledProductOfferingItem Alteration Offering Name |
| ProductSpecification | ProductSpecification Oracle.ServiceSpecification | ProductSpecification.ServiceSpecification.name | Package.productSpecPackageItem.productSpecName                                                              | Package Product Spec Name                           |

## PDC Package Default Values

[Table 3-13](#) lists the default values for PDC package fields when TMF 620 has no corresponding field.

**Table 3-13 PDC Package Default Values**

| PDC Field                                                                          | Default Value         |
|------------------------------------------------------------------------------------|-----------------------|
| Package.pricingProfileName                                                         | subscription          |
| Package.priceListName                                                              | Default               |
| Package.obselete                                                                   | false                 |
| Package.billOnPurchase                                                             | false                 |
| Package.productSpecPackageItem.balanceSpecificationName                            | Account Balance Group |
| Package.productSpecPackageItem.bundledProductOfferingAssociation.optional          | false                 |
| Package.productSpecPackageItem.bundledProductOfferingAssociation.cancelWithService | false                 |
| Package.balanceSpecification.name                                                  | Account Balance Group |

# 4

## Monitoring PDC REST Services Manager

You can use logs, tracing, metrics, and system health data to monitor Oracle Communications Pricing Design Center (PDC) REST Services Manager.

Topics in this document:

- [About Logging](#)
- [About Tracing](#)
- [About Metrics](#)
- [About Monitoring System Health](#)

### About Logging

You can review the PDC REST Services Manager logs to troubleshoot errors and monitor system activity.

PDC REST Services Manager uses the Apache Log4j Java logging utility to log information and errors about the following:

- Start up and shut down activity
- Interaction with other applications at integration points while processing publication events. This includes interactions with PDC, Oracle Identity Cloud Service, and your enterprise product catalog.
- Authorization requests
- Authentication requests
- Tracing (see "[About Tracing](#)")

You access the logs as the user who installed PDC REST Services Manager. See "[Accessing the Logs](#)".

The logs support the standard Log4j logging levels. By default, the framework log levels are set to **INFO**, and the application log levels are set to **DEBUG**. You can change the levels after installation. For example, setting the log levels to **ALL** allows you to log detailed authentication or authorization errors for Helidon security providers. See "[Changing the Log Levels](#)".

You can configure the format of the logs. See "[Configuring the Log Format](#)".

By default, PDC REST Services Manager routes Java logging to the Log4j log manager. After setting up PDC REST Services Manager, you can change the log manager. See "[Changing the Default Log Manager](#)".

For information about Java logging, see "Java Logging Overview" in *Java Platform, Standard Edition Core Libraries*. For information about Log4j, see <https://logging.apache.org/log4j/2.x/manual/index.html>.

Oracle recommends using automated log file rotation for PDC REST Services Manager logs. For information about configuring log file rotation, see My Oracle Support article 2087525.1 at

[https://support.oracle.com/knowledge/Oracle%20Linux%20and%20Virtualization/2087525\\_1.html](https://support.oracle.com/knowledge/Oracle%20Linux%20and%20Virtualization/2087525_1.html).

## Accessing the Logs

You access the logs to monitor and troubleshoot your system.

To access the logs:

1. Log in to the system where PDC REST Services Manager was installed as the installation user.
2. Run the following command:

```
tail -f PDC_RSM_home/log/rsm.log
```

where *PDC\_RSM\_home* is the directory in which you installed PDC REST Services Manager.

### 500FreeMinutes

```
2020-09-05T20:19:28.399-0700 START RestServicesManager.sh
pdcrsm-6f88869785-vtbw2 pdcrsm 2020-11-13T15:58:06.702Z | INFO |
9fcdb109-8682-4368-b4d5-b5b720a1af77 | 548aee87-5ef0-4c1a-b8c8-
d2b8a8c6fb40 | 500FreeMinutes | 4ca071fde65d2a61 | pool-3-
thread-1 | ctPublishEventServiceImpl | Processing Publish Event
548aee87-5ef0-4c1a-b8c8-d2b8a8c6fb40->500FreeMinutes
pdcrsm-6f88869785-vtbw2 pdcrsm 2020-11-13T15:58:07.303Z | INFO |
9fcdb109-8682-4368-b4d5-b5b720a1af77 | 548aee87-5ef0-4c1a-b8c8-
d2b8a8c6fb40 | 500FreeMinutes | 4ca071fde65d2a61 | pool-3-
thread-1 | ductOfferingServiceLaunch | Retrieving ProductOffering
for ID 000_DayTech201_000
pdcrsm-6f88869785-vtbw2 pdcrsm 2020-11-13T15:58:09.088Z | INFO |
9fcdb109-8682-4368-b4d5-b5b720a1af77 | 548aee87-5ef0-4c1a-b8c8-
d2b8a8c6fb40 | 500FreeMinutes | 4ca071fde65d2a61 | pool-3-
thread-1 | .c.b.i.d.PdcRmiConnection | Attempting to connect to
PDC using t3s://pdc-service:8002 ...
pdcrsm-6f88869785-vtbw2 pdcrsm Handshake failed: TLSv1.3, error = No
appropriate protocol (protocol is disabled or cipher suites are
inappropriate)
pdcrsm-6f88869785-vtbw2 pdcrsm Handshake succeeded: TLSv1.2
pdcrsm-6f88869785-vtbw2 pdcrsm 2020-11-13T15:58:12.437Z | INFO |
9fcdb109-8682-4368-b4d5-b5b720a1af77 | 548aee87-5ef0-4c1a-b8c8-
d2b8a8c6fb40 | 500FreeMinutes | 4ca071fde65d2a61 | pool-3-
thread-1 | c.b.i.d.PdcDatasourceImpl | Checking if PDC object
with the name "500FreeMinutes" exists
pdcrsm-6f88869785-vtbw2 pdcrsm 2020-11-13T15:58:12.479Z | INFO |
9fcdb109-8682-4368-b4d5-b5b720a1af77 | 548aee87-5ef0-4c1a-b8c8-
d2b8a8c6fb40 | 500FreeMinutes | 4ca071fde65d2a61 | pool-3-
thread-1 | o.c.b.i.s.PdcServiceImpl | Updating the PDC object
"500FreeMinutes"
pdcrsm-6f88869785-vtbw2 pdcrsm 2020-11-13T15:58:16.134Z | INFO |
9fcdb109-8682-4368-b4d5-b5b720a1af77 | 548aee87-5ef0-4c1a-b8c8-
d2b8a8c6fb40 | 500FreeMinutes | 4ca071fde65d2a61 | pool-3-
```

```
thread-1      | o.c.b.i.s.PdcServiceImpl | PDC object successfully updated
for "500FreeMinutes"
```

See ["Configuring the Log Format"](#) for information about the format of the logs.

## Changing the Log Levels

You can change the global log level and the level for PDC REST Services Manager application-specific log entries.

To change the log levels:

1. Open the *PDC\_RSM\_home/apps/conf/logging-config.yaml* file in a text editor, where *PDC\_RSM\_home* is the directory in which you installed PDC REST Services Manager.
2. To change the global log level:
  - a. Search for the following property: `-name: ROOT_LOG_LEVEL`.
  - b. Set the value to `"${env:ROOT_LOG_LEVEL:-LEVEL}"`, where *LEVEL* is the new log level.
3. To change the PDC REST Services Manager application log level:
  - a. Search for the following property: `-name: PDC_RSM_LOG_LEVEL`.
  - b. Set the value to `"${env:PDC_RSM_LOG_LEVEL:-LEVEL}"`, where *LEVEL* is the new log level.
4. Save and close the file.
5. Restart PDC REST Services Manager using the control script located in the **bin** directory:

```
PDC_RSM_home/apps/bin/RestServicesManager.sh restart
```

The following shows sample entries in the **logging-config.yaml** file, with the relevant lines and default values in bold:

```
Configuration:
  name: Default

Properties:
  Property:
    - name: ROOT_LOG_LEVEL
      value: "${env:ROOT_LOG_LEVEL:-INFO}"
    - name: PDC_RSM_LOG_LEVEL
      value: "${env:PDC_RSM_LOG_LEVEL:-INFO}"

Appenders:
  Console:
    name: LogToConsole
    target: SYSTEM_OUT
    PatternLayout:
      Pattern: "%d{ISO8601_OFFSET_DATE_TIME_HHCMM} | %5p | %X{eventId} |
%X{projectId} | %X{productOfferId} | %X{traceId} | %-20.20thread |
%-25.25logger{25} | %m%n"

loggers:
```

```

Root:
  level: "${ROOT_LOG_LEVEL}"
  AppenderRef:
    - ref: LogToConsole

Logger:
  - name: io.jaegertracing.internal.JaegerSpan
    level: error
    AppenderRef:
      - ref: LogToConsole
  - name: io.jaegertracing.internal.reporters
    level: warn
    AppenderRef:
      - ref: LogToConsole
  - name: oracle.communications
    level: "${PDC_RSM_LOG_LEVEL}"
    additivity: false
    AppenderRef:
      - ref: LogToConsole

```

**Note:**

The Zipkin tracing logs that appear under **Logger** are filtered from the logs, so you do not need to adjust their levels.

## Configuring the Log Format

Configure the log format to change the order and number of elements that appear in the logs.

The default log format is:

```

%d{ISO8601_OFFSET_DATE_TIME_HHMM} | %5p | %X{eventId} | %X{projectId}
| %X{productOfferId} | %X{traceId} | %-20.20thread | %-25.25logger{25}
| %m%n

```

where:

- **%d** is the date and time of the log, in ISO 8601 format.
- **%5p** is the log level. See "[Changing the Log Levels](#)".
- **eventId**, **projectId**, **productOfferId**, and **traceId** are tags added for tracing events and objects through the system. See "[Using Trace Tags to Troubleshoot Issues](#)".
- **%-20.20thread** is the thread pool for the logged event.
- **%-25.25logger** is the service logging the event.
- **%m%n** is the message associated with the event.

To configure the log format:

1. Open the `PDC_RSM_home/apps/conf/logging-config.yaml` file in a text editor, where `PDC_RSM_home` is the directory in which you installed PDC REST Services Manager.
2. Under **Appenders**, locate the **PatternLayout** property.
3. In the value for **Pattern**, change the order of the elements or remove any unwanted elements.

 **Note:**

Removing elements from the logs might reduce your ability to troubleshoot issues and trace messages.

4. Save and close the file.
5. Restart PDC REST Services Manager using the control script located in the **bin** directory:

```
PDC_RSM_home/apps/bin/RestServicesManager.sh restart
```

## Changing the Default Log Manager

By default, PDC REST Services Manager uses the Log4J Log Manager. You can change this after configuring PDC REST Services Manager.

To change the log manager, run the following command:

```
Java_home/bin/java -Djava.util.logging.manager=logManager
```

where:

- `Java_home` is the directory where you installed the latest compatible version of Java.
- `logManager` is the log manager you want to use. By default, this is set to **org.apache.logging.log4j.jul.LogManager** when you install PDC REST Services Manager. To use your system default, leave this empty.

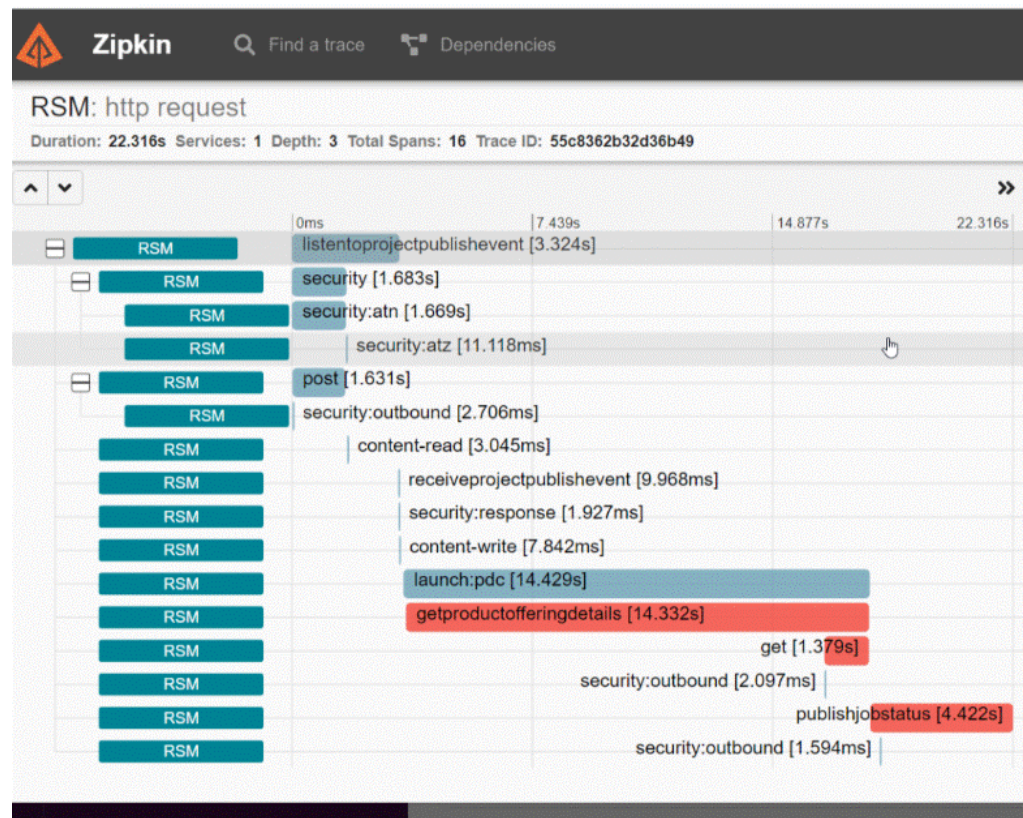
## About Tracing

You can trace the flow of messages through PDC REST Services Manager by using the Zipkin tracer integrated with the Helidon framework, or another transaction tracing tool of your choice.

Helidon is a collection of Java libraries used by PDC REST Services Manager. Zipkin is an open-source tracing system integrated with Helidon. You can use the Zipkin interface to monitor the PDC REST Services Manager traces.

[Figure 4-1](#) shows an example of tracing an event through the system in the Zipkin tracer.

Figure 4-1 Example Event Tracing



For more information about Helidon and Zipkin, see:

- The Helidon project website: <https://helidon.io/>
- The discussion of Zipkin tracing in the Helidon documentation: [https://helidon.io/docs/v2/#/se/tracing/02\\_zipkin](https://helidon.io/docs/v2/#/se/tracing/02_zipkin)
- The Zipkin website: <https://zipkin.io/>

To set up tracing in PDC REST Services Manager:

1. Do one of the following:
  - Install Zipkin. See the Zipkin Quickstart documentation: <https://zipkin.io/pages/quickstart.html>.
  - Integrate Zipkin tracing with Helidon SE. See the Helidon SE Tracing Guide documentation: [https://helidon.io/docs/v2/#/se/guides/06\\_tracing](https://helidon.io/docs/v2/#/se/guides/06_tracing).
2. Enable Zipkin tracing in PDC REST Services Manager. See "Enabling Tracing in PDC REST Services Manager".
3. Optionally, add trace tags to help troubleshoot and trace messages and objects through the system. See "Using Trace Tags to Troubleshoot Issues".

Afterward, you can start tracing the flow of messages by using the Zipkin UI or Zipkin API.

## Enabling Tracing in PDC REST Services Manager

To enable tracing:

1. Configure tracing in your Helidon project, as described in the Helidon documentation: [https://helidon.io/docs/latest/#/mp/tracing/01\\_tracing](https://helidon.io/docs/latest/#/mp/tracing/01_tracing).
2. Open the `PDC_RSM_home/apps/conf/application.yaml` file in a text editor, where `PDC_RSM_home` is the directory in which you installed PDC REST Services Manager.
3. Under **tracing**, set **enabled** to **true**.

The following is a sample of the **tracing** section in the **application.yaml** file:

```
tracing:
  enabled: true
  service: "rsm"
  host: "localhost"
  paths:
    - path: "/metrics"
      enabled: false
  propagation: "zipkin"
  log-spans: true
  max-queue-size: 42
  flush-interval-ms: 10001
```

4. Save and close the **application.yaml** file.
5. Restart PDC REST Services Manager by running the following command from the `PDC_RSM_home/apps/bin` directory:  
**./RestServicesManager.sh restart**

## Using Trace Tags to Troubleshoot Issues

Instead of reading through logs to identify and troubleshoot issues, you can use trace tags in PDC REST Services Manager to correlate logs and traces.

PDC REST Services Manager tags events with the following trace tags:

- **publishId**: A general tag for the event. In the example below, this is the first **id**.
- **eventId**: A tag for the event that is specific to PDC REST Services Manager. In the example below, this is the **eventId**.
- **projectId**: A tag for the project in the enterprise product catalog. In the example below, this is the ID under **project**.
- **productOfferId**: A tag for a product offering. In the example below, this is the ID under each entry in the **projectItems** array.
- **productSpecificationId**: A tag for product specifications. This does not appear in the example below, but would appear in log messages. You use the **productOfferId** tag to filter logs and locate related **productSpecificationId** tags as needed.

The following shows an example event for publishing updates to two product offerings from an enterprise product catalog to PDC. To illustrate an error scenario, a URL in the payload for

the **testInit4Offer** product offering has become corrupt. The IDs corresponding to trace tags are shown in bold.

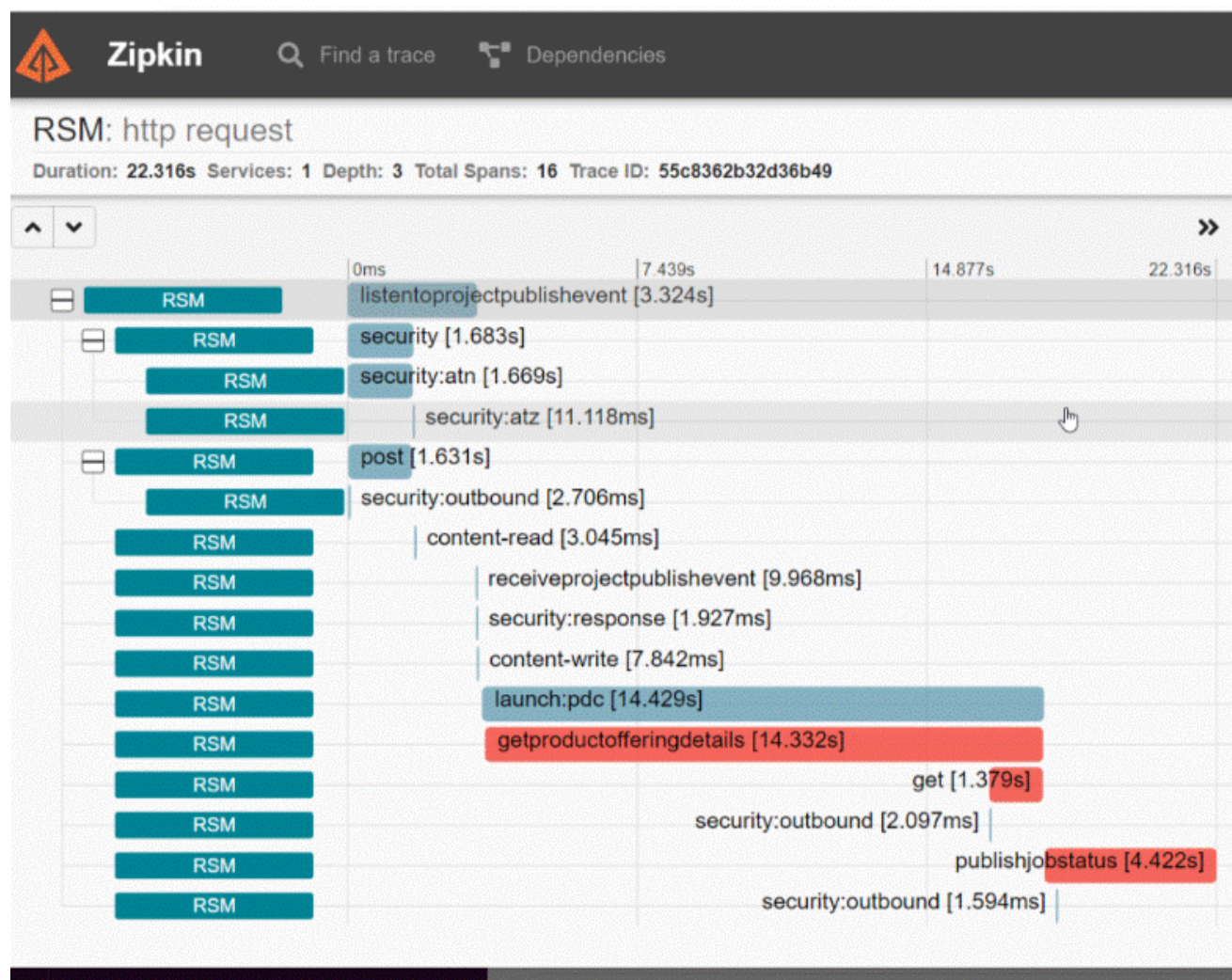
```
{
  "id": "d64066bd-2954-4f43-b8f2-69603c88c683",
  "eventId": "ea09ae5a-8098-4fb2-b634-ee8048b9cc1d",
  "eventTime": "2030-11-18T09:31:50.001Z",
  "eventType": "projectPublishEvent",
  "correlationId": "UC4Fcfc6a70f-60f5-456c-93d5-d8e038215201",
  "domain": "productCatalogManagement",
  "timeOccurred": "2030-11-18T09:31:50.001Z",
  "event": {
    "project": {
      "id": "demopackage11",
      "lifecycleStatus": "IN_DESIGN",
      "name": "Project01",
      "acknowledgementUrl": "http://host:port/mobile/custom/
PublishingAPI",
      "projectItems": [
        {
          "id": "55c8362b32d36b49",
          "href": "http://host:port/mobile/custom/catalogManagement/
productOffering/testSuccess",
          "name": "testSuccess",
          "version": "1.0",
          "@referredType": "ProductOfferingOracle"
        },
        {
          "id": "55c8362b32d36b55",
          "href": "http://host:port/mobile/custom/CORRUPTDATA/
productOffering/testInit4Offer",
          "name": "100Minutes",
          "version": "1.0",
          "@referredType": "ProductOfferingOracle"
        }
      ]
    }
  }
}
```

### Trace Tags in Tracer Tools

After submitting the event, you can follow its progress and look for the trace tags in a tracer tool like Zipkin.

Figure 4-2 shows excerpts from a tracer. You can immediately see that the error occurred in the GET request of the `getProductOfferingDetails` operation. You can expand the trace spans to get the IDs for the event and the object in question, then search in the logs for those tags, as well as the span and trace IDs, to troubleshoot the issue.

Figure 4-2 Sample Tracer Excerpts



The following is the same data for `listenToProjectPublishEvent` and `getProductOfferingDetails` in JSON format, with the relevant IDs in the tags arrays in bold:

```
{
  "traceID": "55c8362b32d36b49",
  "spanID": "bad2ef5f3ff26084",
  "flags": 1,
  "operationName": "listenToProjectPublishEvent",
  "references": [
    {
      "refType": "CHILD_OF",
      "traceID": "f2f902949ee8e661",
      "spanID": "8ce5e8f8cda38d3b"
    }
  ],
  "startTime": 1605709909244000,
  "duration": 18160,
  "tags": [
```

```
{
  "key": "eventId",
  "type": "string",
  "value": "ea09ae5a-8098-4fb2-b634-ee8048b9cc1d"
},
{
  "key": "http.status_code",
  "type": "int64",
  "value": 201
},
{
  "key": "component",
  "type": "string",
  "value": "jaxrs"
},
{
  "key": "span.kind",
  "type": "string",
  "value": "server"
},
{
  "key": "http.url",
  "type": "string",
  "value": "http://host:port/productCatalogManagement/v1/
projectPublishEvent"
},
{
  "key": "http.method",
  "type": "string",
  "value": "POST"
},
{
  "key": "projectId",
  "type": "string",
  "value": "demopackage11"
},
{
  "key": "publishId",
  "type": "string",
  "value": "d64066bd-2954-4f43-b8f2-69603c88c683"
},
{
  "key": "internal.span.format",
  "type": "string",
  "value": "Zipkin"
}
],
"logs": [],
"processID": "p1",
"warnings": null
},
...
{
  "traceID": "f2f902949ee8e661",
  "spans": [
```

```
{
  "traceID": "f2f902949ee8e661",
  "spanID": "03031b1c18e679f2",
  "flags": 1,
  "operationName": "getProductOfferingDetails",
  "references": [
    {
      "refType": "CHILD_OF",
      "traceID": "f2f902949ee8e661",
      "spanID": "528a32ac350706e2"
    }
  ],
  "startTime": 1605709909256000,
  "duration": 688729,
  "tags": [
    {
      "key": "productOfferId",
      "type": "string",
      "value": "testInit4Offer"
    },
    {
      "key": "internal.span.format",
      "type": "string",
      "value": "Zipkin"
    }
  ],
  "logs": [],
  "processID": "p1",
  "warnings": null
},
{
  "traceID": "f2f902949ee8e661",
  "spanID": "303707dcd9c9d1ef",
  "flags": 1,
  "operationName": "getProductOfferingDetails",
  "references": [
    {
      "refType": "CHILD_OF",
      "traceID": "f2f902949ee8e661",
      "spanID": "d1d2c068248a5542"
    }
  ],
  "startTime": 1605709909277000,
  "duration": 529234,
  "tags": [
    {
      "key": "error",
      "type": "bool",
      "value": true
    },
    {
      "key": "productOfferId",
      "type": "string",
      "value": "testInit4Offer"
    }
  ],
}
```

```

        {
          "key": "internal.span.format",
          "type": "string",
          "value": "Zipkin"
        }
      ],
      "logs": [
        {
          "timestamp": 1605709909807000,
          "fields": [
            {
              "key": "event",
              "type": "string",
              "value": "error"
            },
            {
              "key": "error.object",
              "type": "string",
              "value": "oracle.communications.brm.integration.exceptions.EccServiceException"
            }
          ]
        }
      ],
      "processID": "p1",
      "warnings": null
    }
  ]
}

```

### Trace Tags in Logs

After finding the trace tags in the tracer tool, you can search the logs for them. You can do simple searches in the raw log data, or you can search and filter by the tags using a logging tool, such as Grafana Loki.

The trace tags appear in the following format in PDC REST Service Manager logs:

```

yyyy-MM-dd'T'HH:mm:ss.SSSXXX, UTC | level | eventId | projectId |
productOfferId | traceId | thread | logging service | message

```

The following shows the success message in the logs for updating the **testInit4Offer** product, with the relevant trace tags from the event in bold:

```

2030-10-11T11:34:36,231+05:30 | INFO | ea09ae5a-8098-4fb2-b634-ee8048b9cc1d | demopackage11 | testInit4Offer | 55c8362b32d36b49 |
pool-4-thread-1 | ctPublishEventServiceImpl | Processing Publish Event
ea09ae5a-8098-4fb2-b634-ee8048b9cc1d->testInit4Offer

```

For the **testInit4Offer** product, the following error log appears:

```

2020-11-18T14:31:49.814Z | ERROR | ea09ae5a-8098-4fb2-b634-ee8048b9cc1d | demopackage11 | testInit4Offer | f2f902949ee8e661 |
pool-3-thread-4 | .s.LaunchPdcItemPublisher | Error calling API

```

```
service 'Product Offering Service' for 'testInit4Offer'. Status Code: 404
Error: '
```

Based on this message and what you saw in the tracer, you would know that PDC REST Services Manager wasn't able to make the call to the enterprise product catalog to request information about the **testInit4Offer** product offering. Expanding and inspecting the GET span in the tracer would reveal the corrupt URL. You could then review the message that came from your enterprise product catalog to confirm, and make appropriate changes to resolve the issue.

## About Metrics

You can monitor the PDC REST Services Manager metrics by using the Metrics REST endpoint. The metrics count successful and failed messages passing through the PDC REST Services Manager integration points.

Use a monitoring tool that scrapes metrics data, such as Prometheus, to monitor the metrics available from the PDC REST Services Manager Metrics endpoint. You can get the metrics in plain text format, which is compatible with Prometheus, or JSON format. See "[Checking Access to Metrics](#)" for information about accessing the metrics endpoint and requesting different formats. For more information about Prometheus, see: <https://prometheus.io/>.

[Table 4-1](#) shows the available metrics.

**Table 4-1 PDC REST Services Manager Metrics**

| Integration Point                                     | Metric                                   | Description                                                                                                                                 |
|-------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| PDC interface                                         | pdccreateobjectsuccess-total             | The number of create events that returned a success from PDC.                                                                               |
| PDC interface                                         | pdccreateobjecterror-total               | The number of create events that returned an error from PDC.                                                                                |
| PDC interface                                         | pdccupdateobjectsuccess-total            | The number of update events that returned a success from PDC.                                                                               |
| PDC interface                                         | pdccupdateobjecterror-total              | The number of update events that returned an error from PDC.                                                                                |
| Product Offer Price Project life cycle event listener | notificationlistenerchange-success-total | The number of well-formed publish events received by PDC REST Services Manager.                                                             |
| Product Offer Price Project life cycle event listener | notificationlistenerchange-error-total   | The number of publish events accepted by PDC REST Services Manager that could not be processed due to invalid or incomplete event payloads. |
| Product Offering interface                            | productofferingget-success-total         | The number of Product Offering GET API requests that returned a success from the enterprise product catalog.                                |
| Product Offering interface                            | productofferingget-error-total           | The number of Product Offering GET API requests that returned an error from the enterprise product catalog.                                 |

Table 4-1 (Cont.) PDC REST Services Manager Metrics

| Integration Point                | Metric                                  | Description                                                                                                         |
|----------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Product Specification interface  | product-specification-get-success-total | The number of Product Specification GET API requests that returned a success from the enterprise product catalog.   |
| Product Specification interface  | product-specification-get-error-total   | The number of Product Specification GET API requests that returned an error from the enterprise product catalog.    |
| Publish Notification interface   | publish-job-status-success-total        | The number of Publish Notification Acknowledgments that returned a success from the enterprise product catalog.     |
| Publish Notification interface   | publish-job-status-fail-total           | The number of Publish Notification POST Acknowledgments that returned an error from the enterprise product catalog. |
| Publish Product Offering service | publish-product-offering-success-total  | The number of successful Product Offering Publish actions.                                                          |
| Publish Product Offering service | publish-product-offering-fail-total     | The number of Failed Product Offering Publish actions.                                                              |

You can also use built-in Helidon metrics. See the Helidon documentation for more information: [https://helidon.io/docs/latest/#/mp/metrics/01\\_introduction](https://helidon.io/docs/latest/#/mp/metrics/01_introduction).

## Checking Access to Metrics

You can access the PDC REST Services Manager metrics from any tool that can access REST API endpoints using an OAuth token generated by Oracle Identity Cloud Service for PDC REST Services Manager. You can check whether you have access by using cURL commands.

To check whether you have access to the PDC REST Services Manager metrics:

1. In the command line on the system where cURL and your scraping tool are installed, export your OAuth access token with the following command:

```
export TOKEN=OAuth_metrics_token
```

where *OAuth\_metrics\_token* is the token you requested for the Metrics endpoint in "Requesting an OAuth Access Token from Oracle Identity Cloud Service".

2. Enter one of the following commands:
  - To get the metrics in plain text format:

```
curl --insecure -H "Authorization: Bearer $TOKEN" https://  
hostname:port/metrics
```

where:

- *hostname* is the URL for the PDC REST Services Manager server.
- *port* is the TLS port for the PDC REST Services Manager server.
- To get the metrics in JSON format:

```
curl --insecure -H "Authorization: Bearer $TOKEN" -H "Accept: application/json" https://hostname:port/metrics
```

## About Monitoring System Health

You can assess the health of the PDC REST Services Manager system by monitoring the process status and overall rates of failure in logs, traces, and metrics.

To monitor process status, use the control script in *PDC\_RSM\_home/apps/bin* directory, where *PDC\_RSM\_home* is the directory in which you installed PDC REST Services Manager:

```
RestServicesManager.sh status
```

To maintain an active system, Oracle recommends using a service from your operating system, such as **systemd** on Linux, to automatically start, monitor, and restart the PDC REST Services Manager system.

# A

## Inbound Communications Reference

Learn about the inbound requests that PDC REST Services Manager accepts from your enterprise product catalog. These requests are notification events that contain the complete definition of the product offering or product offering price objects.

PDC REST Services Manager accepts the following inbound event notifications:

- [ProductOfferingCreateEvent](#)
- [ProductOfferingAttributeValueChangeEvent](#)
- [ProductOfferingStateChangeEvent](#)
- [ProductOfferingPriceCreateEvent](#)
- [ProductOfferingPriceAttributeValueChangeEvent](#)
- [ProductOfferingPriceStateChangeEvent](#)
- [ProjectPublish](#)
- [ProductOffering/{Name}](#)
- [ProductOfferingPrice/{Name}](#)

### ProductOfferingCreateEvent

The TMF 620 ProductOfferingCreateEvent event is sent by an enterprise product catalog to PDC REST Services Manager to create charge offers in PDC.

#### Endpoint

/productCatalogManagement/v1/listener/ProductOfferingCreateEvent

#### Method

POST

#### Sample ProductOfferingCreateEvent JSON Payload

```
{
  "eventId": "00004",
  "eventTime": "2025-11-16T16:42:25-04:00",
  "eventType": "ProductOfferingCreateEvent",
  "event": {
    "productOffering": {
      "@type": "ProductOffering",
      "@schemaLocation": "/catalogManagement/Oracle/Schema/
Oracle.ProductOffering.yml",
      "id": "productOffering_4321",
      "name": "Product Offering 4321",
      "description": "A product with a one-time charge and a discount",
      "href": "/mobile/custom/catalogManagement/productOffering/
```

```

productOffering_4321",
  "isSellable": true,
  "validFor": {
    "startDateTime": "2025-11-15T16:42:25-04:00",
    "endDateTime": "2025-12-16T16:42:25-04:00"
  },
  "lastUpdate": "2025-11-16T16:42:25-04:00",
  "lifecycleStatus": "Launch",
  "isBundle": false,
  "version": "1.0",
  "serviceCandidate": {
    "@type": "ServiceCandidateRef",
    "id": "98765",
    "href": "/mobile/custom/catalogManagement/
serviceSpecification/98765",
    "name": "Mobile Service"
  },
  "productOfferingPrice": [
    {
      "@type": "ProductOfferingPrice",
      "id": "pop000_1234",
      "name": "ProductOfferingPrice1234",
      "href": "/mobile/custom/catalogManagement/
productOfferingPrice/pop000_1234"
    },
    {
      "@type": "ProductOfferPriceAlteration",
      "id": "popRBMdp_6543_Discount",
      "name": "Discount6543",
      "href": "/mobile/custom/catalogManagement/
productOfferingPrice/popRBMdp_6543_Discount"
    }
  ]
}
}
}
}
}

```

## ProductOfferingAttributeValueChangeEvent

The TMF 620 ProductOfferingAttributeValueChangeEvent event is sent by an enterprise product catalog to PDC REST Services Manager to update attributes on charge offers in PDC.

### Endpoint

/productCatalogManagement/v1/listener/ProductOfferingAttributeValueChangeEvent

### Method

POST

### Sample ProductOfferingAttributeValueChangeEvent JSON Payload

The ProductOfferingAttributeValueChangeEvent payload must contain the full definition of the object being updated, not just the changed attributes.

This sample shows the same definitions as for the ProductOfferingCreateEvent, but the values for the **name**, **description**, and **version** attributes are changed.

```

{
  "eventId": "00005",
  "eventTime": "2025-11-16T16:42:25-04:00",
  "eventType": "ProductOfferingAttributeValueChangeEvent",
  "event": {
    "productOffering": {
      "@type": "ProductOffering",
      "@schemaLocation": "/catalogManagement/Oracle/Schema/
Oracle.ProductOffering.yml",
      "id": "productOffering_4321",
      "name": "A Nice Product Offering",
      "description": "A nice product with a one-time charge and a
discount",
      "href": "/mobile/custom/catalogManagement/productOffering/
productOffering_4321",
      "isSellable": true,
      "validFor": {
        "startDateTime": "2025-11-15T16:42:25-04:00",
        "endDateTime": "2025-12-16T16:42:25-04:00"
      },
      "lastUpdate": "2025-11-16T16:42:25-04:00",
      "lifecycleStatus": "Launch",
      "isBundle": false,
      "version": "2.0",
      "serviceCandidate": {
        "@type": "ServiceCandidateRef",
        "id": "98765",
        "href": "/mobile/custom/catalogManagement/
serviceSpecification/98765",
        "name": "Mobile Service"
      },
      "productOfferingPrice": [
        {
          "@type": "ProductOfferingPrice",
          "id": "pop000_1234",
          "name": "ProductOfferingPrice1234",
          "href": "/mobile/custom/catalogManagement/
productOfferingPrice/pop000_1234"
        },
        {
          "@type": "ProductOfferPriceAlteration",
          "id": "popRBMdp_6543_Discount",
          "name": "Discount6543",
          "href": "/mobile/custom/catalogManagement/
productOfferingPrice/popRBMdp_6543_Discount"
        }
      ]
    }
  }
}

```

```
    }
  }
}
```

## ProductOfferingStateChangeEvent

The TMF 620 ProductOfferingCreateEvent event is sent by an enterprise product catalog to PDC REST Services Manager to change the lifecycle state of charge offers in PDC.

### Endpoint

/productCatalogManagement/v1/listener/ProductOfferingStateChangeEvent

### Method

POST

### Sample ProductOfferingStateChangeEvent JSON Payload

The ProductOfferingStateChangeEvent payload does not need to contain the entire ProductOffering definition. PDC REST Services Manager uses the **@type**, **id**, **name**, **href**, and **lifecycleStatus** attributes to identify the correct charge offer and update the status.

```
{
  "eventId": "000006",
  "eventTime": "2025-11-16T16:42:25-04:00",
  "eventType": "ProductOfferingStateChangeEvent",
  "event": {
    "productOffering": {
      "@type": "ProductOffering",
      "id": "productOffering_4321",
      "name": "Product Offering 4321",
      "href": "/mobile/custom/catalogManagement/productOffering/
productOffering_4321",
      "lifecycleStatus": "Retired",
    }
  }
}
```

## ProductOfferingPriceCreateEvent

The TMF 620 ProductOfferingPriceCreateEvent event is sent by an enterprise product catalog to PDC REST Services Manager to create charges in PDC.

### Endpoint

/productCatalogManagement/v1/listener/ProductOfferingPriceCreateEvent

**Method**

POST

**Sample ProductOfferingPriceCreateEvent JSON Payload**

```
{
  "eventId": "00001",
  "eventTime": "2025-11-16T16:42:25-04:00",
  "eventType": "ProductOfferingPriceCreateEvent",
  "event": {
    "productOfferingPrice": {
      "@type": "ProductOfferingPrice",
      "@baseType": "ProductOfferingPrice",
      "id": "pop000_1234",
      "name": "ProductOfferingPrice1234",
      "href": "/mobile/custom/catalogManagement/productOfferingPrice/
pop000_1234",
      "@schemaLocation": "/catalogManagement/Oracle/
Oracle.ProductOfferingPrice.yml",
      "description": "A one-time fee",
      "version": "1.0",
      "isBundle": false,
      "discountable": false,
      "billOnPurchase": false,
      "priceType": "ONE_TIME_PRICE_PLAN",
      "price": {
        "unit": "USD",
        "value": 100.00
      },
      "popRelationship": [
        {
          "@type": "PopRelationship",
          "id": "pop000_1234",
          "href": "/mobile/custom/catalogManagement/
productOfferingPrice/pop000_1234",
          "name": "ProductOfferingPrice1234",
          "relationshipType": "DISCOUNT"
        }
      ],
      "tax": [
        {
          "@type": "TaxItemOracle",
          "taxCategory": "US",
          "taxTime": "BILLING_TIME",
          "taxCode": "cycle",
          "taxAmount": {
            "unit": "USD",
            "value": 0
          },
          "taxRate": 0,
          "taxProvider": "Provider1"
        }
      ]
    }
  }
}
```

```

        "validFor": {
            "startDateTime": "2025-11-16T16:42:25-04:00",
            "endDateTime": "2025-12-16T16:42:25-04:00"
        },
        "lifecycleStatus": "Launch"
    }
}

```

## ProductOfferingPriceAttributeValueChangeEvent

The TMF 620 ProductOfferingPriceAttributeValueChangeEvent event is sent by an enterprise product catalog to PDC REST Services Manager to update attributes on charges in PDC.

### Endpoint

```

/productCatalogManagement/v1/listener/
ProductOfferingPriceAttributeValueChangeEvent

```

### Method

POST

### Sample ProductOfferingPriceAttributeValueChangeEvent JSON Payload

The ProductOfferingPriceAttributeValueChangeEvent payload must contain the full definition of the object being updated, not just the changed attributes.

This sample shows the same definitions as for the ProductOfferingPriceCreateEvent, but the values for the **version** and **discountable** attributes are changed.

```

{
    "eventId": "00002",
    "eventTime": "2025-11-16T16:42:25-04:00",
    "eventType": "ProductOfferingPriceAttributeValueChangeEvent",
    "event": {
        "productOfferingPrice": {
            "@type": "ProductOfferingPrice",
            "@baseType": "ProductOfferingPrice",
            "id": "pop000_1234",
            "name": "ProductOfferingPrice1234",
            "href": "/mobile/custom/catalogManagement/
productOfferingPrice/pop000_1234",
            "@schemaLocation": "/catalogManagement/Oracle/
Oracle.ProductOfferingPrice.yml",
            "description": "A one-time fee",
            "version": "2.0",
            "isBundle": false,
            "discountable": false,
            "billOnPurchase": false,
            "priceType": "ONE_TIME_PRICE_PLAN",
            "price": {
                "unit": "USD",
                "value": 75.00
            }
        }
    }
}

```

```

    },
    "popRelationship": [
      {
        "@type": "PopRelationship",
        "id": "pop000_1234",
        "href": "/mobile/custom/catalogManagement/
productOfferingPrice/pop000_1234",
        "name": "ProductOfferingPrice1234",
        "relationshipType": "DISCOUNT"
      }
    ],
    "tax": [
      {
        "@type": "TaxItemOracle",
        "taxCategory": "US",
        "taxTime": "BILLING_TIME",
        "taxCode": "cycle",
        "taxAmount": {
          "unit": "USD",
          "value": 0
        },
        "taxRate": 0,
        "taxProvider": "Provider1"
      }
    ],
    "validFor": {
      "startDateTime": "2025-11-16T16:42:25-04:00",
      "endDateTime": "2025-12-16T16:42:25-04:00"
    },
    "lifecycleStatus": "Launch"
  }
}

```

## ProductOfferingPriceStateChangeEvent

The TMF 620 ProductOfferingPriceStateChangeEvent event is sent by an enterprise product catalog to PDC REST Services Manager to change the lifecycle state of charges in PDC.

### Endpoint

/productCatalogManagement/v1/listener/ProductOfferingPriceStateChangeEvent

### Method

POST

### Sample ProductOfferingPriceStateChangeEvent JSON Payload

The ProductOfferingPriceStateChangeEvent payload does not need to contain the entire ProductOfferingPrice definition. PDC REST Services Manager uses the **@type**, **id**, **name**, **href**, and **lifecycleStatus** attributes to identify the correct charge and update the status.

```

{
  "eventId": "00003",

```

```

    "eventTime": "2025-11-16T16:42:25-04:00",
    "eventType": "ProductOfferingPriceStateChangeEvent",
    "event": {
      "productOfferingPrice": {
        "@type": "ProductOfferingPrice",
        "@baseType": "ProductOfferingPrice",
        "id": "pop000_1234",
        "name": "ProductOfferingPrice1234",
        "href": "/mobile/custom/catalogManagement/
productOfferingPrice/pop000_1234",
        "lifecycleStatus": "Retired"
      }
    }
  }
}

```

## ProjectPublish

The ProjectPublish event is sent by an enterprise product catalog to PDC REST Services Manager to notify PDC that a project has been published, and product offerings are available to be queried.

### Endpoint

/productCatalogManagement/v1/projectPublishEvent

### Method

POST

### Sample ProductOfferingCreateEvent JSON Request Body

```

{
  "id": "{{ $guid }}",
  "eventId": "{{ $guid }}",
  "eventTime": "{{ EVENT_TIME }}",
  "eventType": "projectPublishEvent",
  "correlationId": "{{ $guid }}",
  "domain": "productCatalogManagement",
  "timeOccurred": "{{ TIME_OCURRED }}",
  "event": {
    "project": {
      "id": "{{ PROJECT_ID }}",
      "lifecycleStatus": "{{ LIFECYCLE_STATUS }}",
      "name": "{{ PROJECT_ID }}",
      "acknowledgementUrl": "{{ ACKNOWLEDGEMENT_URL }}",
      "projectItems": [
        {
          "id": "OOO_{{ INSTANCE_ID }}_OOO",
          "href": "{{ ECC MOCK }}/OOO_{{ INSTANCE_ID }}_OOO",
          "name": "OOO_{{ INSTANCE_ID }}_OOO",
          "version": "1.0",
          "@referredType": "ProductOfferingOracle"
        }
      ]
    }
  }
}

```

```
    }  
  }  
}
```

### Sample Response

Status: 201

description: received for the processing

## ProductOffering/{Name}

The TMF 620 ProductOffering request is sent by an enterprise product catalog to PDC REST Services Manager to retrieve a charge offer.

### Endpoint

/productCatalogManagement/v4/productOffering/{name}

### Method

GET

### Sample JSON Payload Returned by PDC REST Services Manager

```
{  
  "atBaseType": "ProductOffering",  
  "atType": "ProductOffering",  
  "description": "ChargeOffer2",  
  "href": "/productCatalogManagement/v1/productOffering/ChargeOffer2",  
  "id": "ChargeOffer2",  
  "isBundle": false,  
  "isSellable": false,  
  "lifecycleStatus": "In design",  
  "name": "ChargeOffer2",  
  "productOfferingPrice": [  
    {  
      "atType": "ProductOfferingPriceRef",  
      "href": "/productCatalogManagement/v1/productOfferingPrice/  
ChargeOffer2pp",  
      "id": "ChargeOffer2pp",  
      "name": "ChargeOffer2pp"  
    }  
  ],  
  "serviceCandidate": {  
    "atReferredType": "ServiceCandidate",  
    "atType": "ServiceCandidateRef",  
    "id": "TelcoGsm",  
    "name": "TelcoGsm"  
  },  
  "validFor": {  
    "startDateTime": "2022-07-14T00:00:00Z"  
  },  
  "version": "1.0"  
}
```

## ProductOfferingPrice/{Name}

The TMF 620 ProductOfferingPrice request is sent by an enterprise product catalog to PDC REST Services Manager to retrieve a charge offer price entity by name.

### Endpoint

/productCatalogManagement/v4/productOfferingPrice/{name}

### Method

GET

### Sample Returned JSON Payload

This shows a sample JSON payload returned for a one-time charge offer with a price tag.

```
{
  "atBaseType": "ProductOfferingPrice",
  "atType": "ProductOfferingPriceOracle",
  "href": "productCatalogManagement/v4/productOfferingPrice/priceTagOneTimePOP",
  "id": "priceTagOneTimePOP",
  "isBundle": false,
  "name": "priceTagOneTimePOP",
  "priceType": "ONE_TIME",
  "validFor": {},
  "version": "1.0",
  "priceAlteration": [
    {
      "atType": "POPAlterationOracle",
      "id": "priceTagOneTimePOP_BI_1",
      "name": "priceTagOneTimePOP_BI_1",
      "price": {
        "dutyFreeAmount": {
          "unit": "USD",
          "value": 1000.0
        },
        "priceTag": {
          "attributeName": "price",
          "description": "PT_Set_1000",
          "tagName": "PT_Set_1000",
          "tagScope": "EVENT_PROFILE"
        }
      },
      "priceType": "ONE_TIME"
    }
  ]
}
```

### Sample Returned JSON Payload

This shows a sample JSON payload returned for a recurring charge offer pricing entity with a tax code.

```
{
  "atBaseType": "ProductOfferingPrice",
  "atType": "ProductOfferingPriceOracle",
  "href": "productCatalogManagement/v4/productOfferingPrice/charge-2",
  "id": "charge-2",
  "isBundle": false,
  "name": "charge-2",
  "priceType": "RECURRING",
  "recurringChargePeriodLength": 1,
  "recurringChargePeriodType": "BI_MONTHLY",
  "tax": [
    {
      "id": "VAT",
      "taxCategory": "CUSTOM",
      "taxRate": 5.0
    }
  ],
  "validFor": {
    "endDateTime": "2038-01-01T00:00:00Z",
    "startDateTime": "1970-01-01T00:00:00Z"
  },
  "version": "1.0",
  "priceAlteration": [
    {
      "atType": "POPAlterationOracle",
      "price": {
        "dutyFreeAmount": {
          "unit": "USD",
          "value": 200.0
        }
      }
    }
  ]
}
```

# B

## Outbound Communications Reference

Learn about the outbound TMF 620 request sent by PDC REST Services Manager to your enterprise product catalog to retrieve product and pricing information. The response payloads from the enterprise product catalog contain the complete definition of the product offering and product offering price objects.

PDC REST Services Manager sends the following outbound request:

- [retrieveProductOffering](#)

### retrieveProductOffering

The retrieveProductOffering request is sent by PDC REST Services Manager to retrieve offers from your enterprise product catalog.

#### TMF 620 Endpoint

productOffering/{id}?depth=10&expand=productOffering.productOfferingPrice

#### Path Parameters

By default, PDC REST Services Manager includes the following path parameters:

- **expand=productOffering.productOfferingPrice:** Includes the pricing details defined in the ProductOfferingPrice resource in the response.
- **{id}:** Replaced by the ProductOffering ID from the initial event notification payload. Specifies which ProductOffering resource to return.
- **depth=10:** Includes details for up to ten levels of referenced resources in the response.

#### Method

GET

#### Sample Response

Supported Media Type: application/json

200 Response "OK"

Title: Product Offering

```
{
  "@type": "ProductOfferingOracle",
  "@schemaLocation": "/catalogManagement/Oracle/Schema/
Oracle.ProductOffering.yml",
  "@baseType": "ProductOffering",
  "id": "ProductOffering_000",
  "name": "ProductOffering_000",
  "productOfferingInfo": {
    "productType": "SERVICE"
```

```

    },
    "description": "A product offering",
    "href": "/mobile/custom/catalogManagement/productOffering/
ProductOffering_000",
    "isSellable": false,
    "validFor": {
        "startDateTime": "2021-07-08T10:42:49.049Z",
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