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**Working Draft**  
**MEF W110 Draft (R4)**

**Product Offering Availability and Pricing  
Discovery - Business Requirements and Use  
Cases**

**June 2024**

**This draft represents MEF work in progress  
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## 107 1 List of Contributing Members

108 The following members of the MEF participated in the development of this document and have  
109 requested to be included in this list.

- 110 • Amartus
- 111 • Cisco
- 112 • Colt Technology Services
- 113 • PCCW
- 114 • Proximus

## 115 2 Abstract

116 This document contains the Business Requirements and Use-cases for Product Offering Availabil-  
117 ity and Pricing Discovery between a Seller and a Buyer at the Sonata and Cantata Interface Refer-  
118 ence Points. Product Offering Availability Discovery is a way for the Buyer to specify a Product  
119 Specification and Delivery Context to the Seller in order to receive from the Seller a list of zero or  
120 more Product Offering Configurations. Pricing Discovery allows the Buyer to receive from the  
121 Seller a list of one or more Terms and Pricing information for the Product Offering Configuration  
122 and Delivery Context specified by the Buyer.

## 123 3 Release Notes

124 This document is currently in the Letter Ballot process. To allow the contents of this document to  
125 be included in the next LSO release, this document is being distributed as a Draft Standard since  
126 the Letter Ballot process will not be completed before that software release is published.



## 4 Terminology and Abbreviations

This section defines the terms used in this document. In many cases, the normative definitions to terms are found in other documents. In these cases, the third column is used to provide the reference that is controlling, in other MEF or external documents.

In addition, terms defined in MEF 55.1 [3], MEF W55.1.1 [4], MEF W79.1 [6] and MEF W150 [10] are included in this document by reference and are not repeated in the table below.

Term	Definition	Reference
<b>Business Day</b>	Any day agreed upon by the Buyer and the Seller in which business is normally conducted.	This document
<b>Business Hour</b>	Any hour agreed upon by the Buyer and by the Seller during a Business Day in which business is normally conducted.	This document
<b>Delivery Context</b>	A set of related Products and Places that are associated with a Product Specification. These are defined in each of the Product Specification standards (MEF 106, MEF 125, etc.)	This document
<b>Pricing Discovery</b>	A method that allows the Buyer to retrieve a list of Terms and Pricing Options from the Seller using a Product Offering Configuration and Delivery Context.	This document
<b>Product Offering Availability Discovery</b>	A method that allows the Buyer to retrieve a list of Product Offering Configurations from the Seller using a Product Specification and Delivery Context.	This document
<b>Synchronous Communication</b>	Communication pattern where the Buyer sends a request and the Seller sends a response containing the necessary information, without the need for any notifications.	This document

**Table 1 – Terminology and Abbreviations**

## 135 5 Compliance Levels

136 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",  
137 "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY",  
138 and "OPTIONAL" in this document are to be interpreted as described in BCP 14 (RFC 2119 [1],  
139 RFC 8174 [2]) when, and only when, they appear in all capitals, as shown here. All key words  
140 must be in bold text.

141 Items that are **REQUIRED** (contain the words **MUST** or **MUST NOT**) are labeled as [Rx] for  
142 required. Items that are **RECOMMENDED** (contain the words **SHOULD** or **SHOULD NOT**)  
143 are labeled as [Dx] for desirable. Items that are **OPTIONAL** (contain the words **MAY** or **OP-**  
144 **TIONAL**) are labeled as [Ox] for optional.

## 145 6 Numerical Prefix Conventions

146 *Editor Note 1: This section will be deleted if no numerical prefixes are used in the document.*

147 This document uses the prefix notation to indicate multiplier values as shown in Table 2.  
148

Decimal		Binary	
Symbol	Value	Symbol	Value
k	10 <sup>3</sup>	Ki	2 <sup>10</sup>
M	10 <sup>6</sup>	Mi	2 <sup>20</sup>
G	10 <sup>9</sup>	Gi	2 <sup>30</sup>
T	10 <sup>12</sup>	Ti	2 <sup>40</sup>
P	10 <sup>15</sup>	Pi	2 <sup>50</sup>
E	10 <sup>18</sup>	Ei	2 <sup>60</sup>
Z	10 <sup>21</sup>	Zi	2 <sup>70</sup>
Y	10 <sup>24</sup>	Yi	2 <sup>80</sup>

149 **Table 2 – Numerical Prefix Conventions**

150



## 151 7 Introduction

152 The Product Offering Availability Discovery and Pricing Discovery is a method for Buyers and  
153 Sellers to conduct business.

154 Buyers can retrieve a Synchronously Communicated list of available Product Offering Configura-  
155 tions matching their provided criteria, including a Delivery Context, using Product Offering Avail-  
156 ability Discovery.

157 Buyers can retrieve a Synchronously Communicated list of available prices and terms for a given  
158 Product Offering Configuration and Delivery Context using Pricing Discovery.

159 This document describes functionality for both the Cantata and Sonata Interface Reference Points,  
160 and thus the interaction is either an End Customer purchasing from a Service Provider, or a Service  
161 Provider purchasing from a Partner.

162 This specification defines Business Requirements and Use-cases covering the Cantata and Sonata  
163 Interface Reference Points (IRPs).

164 The remaining sections of the document describe and define the following:

- 165 • Availability and Discovery Prerequisites
- 166 • Use-cases for Product Offering Availability and Pricing Discovery
- 167 • Detailed requirements for Product Offering Availability
- 168 • Detailed requirements for Pricing Discovery
- 169 • Common attributes shared by both Product Offering Availability and Pricing Discovery
- 170 • References

### 172 7.1 Product and Pricing Discovery Limitations

173 Product Offering Availability Discovery and Pricing Discovery are intended for use by a Buyer  
174 who has already determined that they will use a particular Seller for services at a particular loca-  
175 tion/UNI and are only wanting to know exactly what products are available there, and what pricing  
176 structures are available for those products. Product Offering Availability Discovery and Pricing  
177 Discovery are not intended to be used to determine whether the Seller can provide services/prod-  
178 ucts meeting the Buyers needs at that location/UNI in the first place (i.e. the assumption is that  
179 they can) - since it is not possible to retrieve complete information about, for example, the total  
180 cost of a set of related products before ordering some of them. The Quote mechanism defined in  
181 MEF 80 [7] is more appropriate for that type of use.

182 If the Delivery Context for a particular Product Specification includes relationships to other Prod-  
183 ucts, those other Products must have already been purchased by the Buyer and exist in the Seller's



184 inventory before Product Offering Availability Discovery can be performed for that Product Spec-  
185 ification.

## 186 8 Availability and Pricing Discovery Prerequisites

187 As with any other interaction between a Buyer and Seller, a number of pre-requisites must be  
188 fulfilled before any of the Use-cases pertaining to Product Offering Availability Discovery and  
189 Pricing Discovery can be initiated. Fulfillment of the pre-requisites is done during on-boarding  
190 and includes, but is not limited to the following:

- 191 • Any elements of the Buyer that are opaque to End Customers, such as ENNIs are in place  
192 and are available for use.
- 193 • The period of time after which auto-renewal occurs and in which the Buyer can disconnect  
194 the Product without penalty is agreed to by the Buyer and Seller.
- 195 • The pricing framework has been agreed to by the Buyer and Seller.
- 196 • If Business Hours and Business Days are used as values for the Units attribute, the Buyer  
197 and Seller must agree to their definition as part of on-boarding prior to the use of these  
198 values.
- 199 • The Seller's right to reuse a Product Offering Configuration Identifier for different Deliv-  
200 ery Contexts is agreed to by the Buyer and Seller.
- 201 • The Product Specific Attributes that are returned in the Seller's response to a Product Of-  
202 fering Availability Discovery request are agreed to as a part of on-boarding for each Prod-  
203 uct Specification supported by the Seller.
- 204 • Any referenced pre-requisite Products are in place and are in the correct Administrative or  
205 Operational state to be referenced.

206 Details of how on-boarding happens, and the agreements and data exchange that happens through  
207 the on-boarding process, are outside the scope of this document.

208 The Product Specific Attributes that are returned by the Seller could be different when the Action  
209 is INSTALL versus CHANGE.

210 Delivery Context is defined as set of related Product and Places that are associated with a Product  
211 Specification. These are defined in each of the Product Specification Standards (MEF 106 [8],  
212 MEF 125 [9], etc.). For example, the Delivery Context of a UNI would be the physical location  
213 at which it is installed, whereas the Delivery Context for an Access E-Line would be the UNI and  
214 ENNI that it connects. A more detailed exploration of the different Delivery Contexts is outside  
215 the scope of this document due to the goal of making the Use-cases and requirements independent  
216 of the Products they are applied to. The MEF Product Specifications standards define this through  
217 their Place and Product Relationship requirements.

218  
219



## 9 Use-cases

This section defines the Use-cases for Product Offering Availability Discovery and Pricing Discovery interfaces between a Buyer and Seller. These interactions are similar to Product Offering Qualification (as specified in MEF W79.1 [6]) and Quoting (as specified in MEF 80 [7]) between a Buyer and a Seller.

The Use-cases are listed with their descriptions in Table 3.

226

Use-case #	Use-case Name	Use-case Description
1	Retrieve Product Offering Availability	The Buyer requests a list of available Product Offering Configurations from the Seller for a specific Product Specification within the specified Delivery Context. The Seller responds to the Buyer with a list of Product Offering Configurations meeting the Buyer's criteria and the Installation Interval for each of these. Each Product Offering Configuration has a unique identifier that is passed to the Buyer by the Seller. This identifier is used for Retrieve Pricing and Terms Use-case .
2	Retrieve Pricing and Terms	The Buyer requests a list of Pricing and Terms from the Seller for a specific Product Offering Configuration Identifier within a specific Delivery Context. The Seller responds to the Buyer with a list of Pricing and Terms for the specified Product Offering Configuration.

227

**Table 3 – Use-Case Table**

Note: Address Validation is outside the scope of this document and may be required to be supported as a part of the Pre-Order process by a separate API.

### 9.1 Use-Case One vs Create POQ with Product Offering (MEF W79.1) Differences

The use-case described in this document is functionally similar to the use-cases defined in MEF W79.1 [6]. MEF W79.1 specifies the process used for Product Offering Qualification. The differences between them are explained in this section.

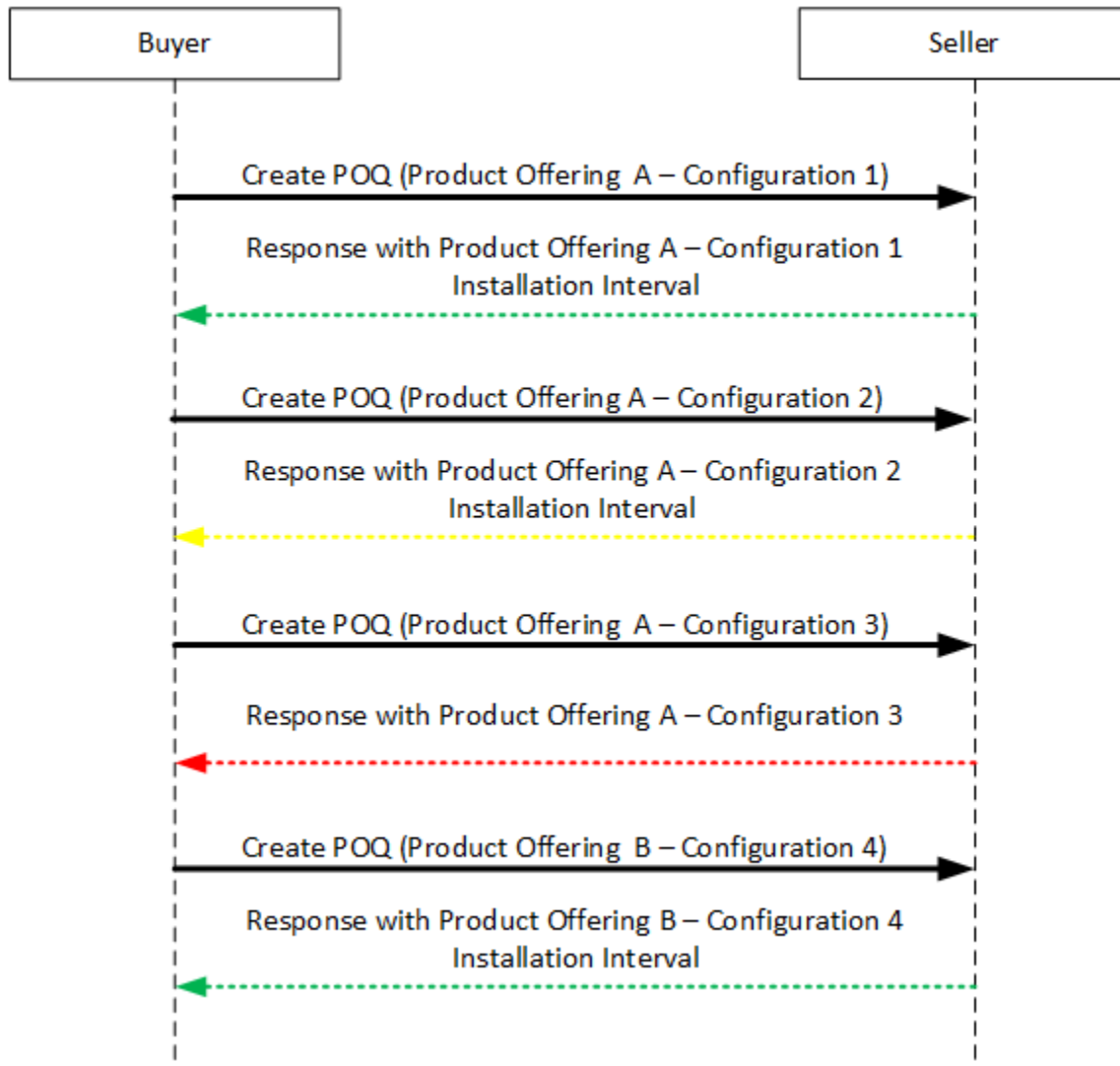
Retrieve Product Offering Availability Use-case differs from the Create POQ with Product Offering Use-case because the Retrieve Product Offering Availability Use-case only supports the Buyer specifying a Product Specification while MEF W79.1 [6] allows the Buyer to specify either the Product Specification or a specific Product Offering. Retrieve Product Offering Availability for an INSTALL differs from the Create POQ with Product Offering Use-case for an INSTALL in



239 MEF 79.1 [6] because MEF 79.1 [6] requires the Buyer to specify a Product Offering with required  
240 Product Specific Attribute values. In a Create POQ, the Seller returns results for only those Prod-  
241 uct Specific Attribute values.

242 In the Product Offering Availability Discovery, the Buyer specifies a Product Specification, and a  
243 Delivery Context. The Seller returns a list of available Product Offering Configurations that meet  
244 the Product Specification and Delivery Context provided by the Buyer. Where this is accom-  
245 plished using a single request/response within this Use-case, this would take multiple MEF 79.1  
246 [6] Create POQ with Product Offering requests (one per desired Product Offering Configuration)  
247 to verify that the requested Product Offering Configuration is available within the Delivery Con-  
248 text and what the installation interval is expected to be.

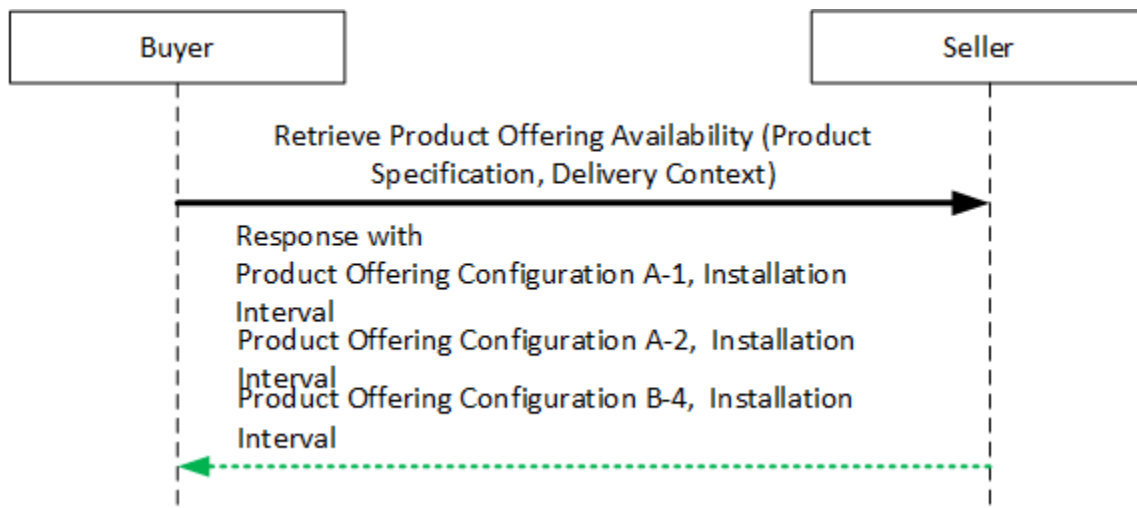
249 These differences are shown in the following figures:



250

251

Figure 1 – POQ Process Example



252

253

Figure 2 – Retrieve Product Offering Availability Example



254 As an example, a Buyer submits a request for Product Offering Availability Discovery for a Prod-  
255 uct Specification of a UNI for a specific Delivery Context. The Seller returns a list of UNI Product  
256 Offering Configurations that are supported at the specific Delivery Context. Note that this list may  
257 be a subset of what is offered in the Product Catalog since it is restricted to the Product Offering  
258 Configurations that are available in the Delivery Context. A Product Catalog lists and describes  
259 all of the Product Offerings made available by a Seller to potential Buyers. If the Seller sells a 100  
260 Gbps UNI Product Offering but the Delivery Context cannot support a UNI with a speed greater  
261 than 10 Gbps, only the Product Offering Configurations up to 10 Gbps UNI speeds are returned.

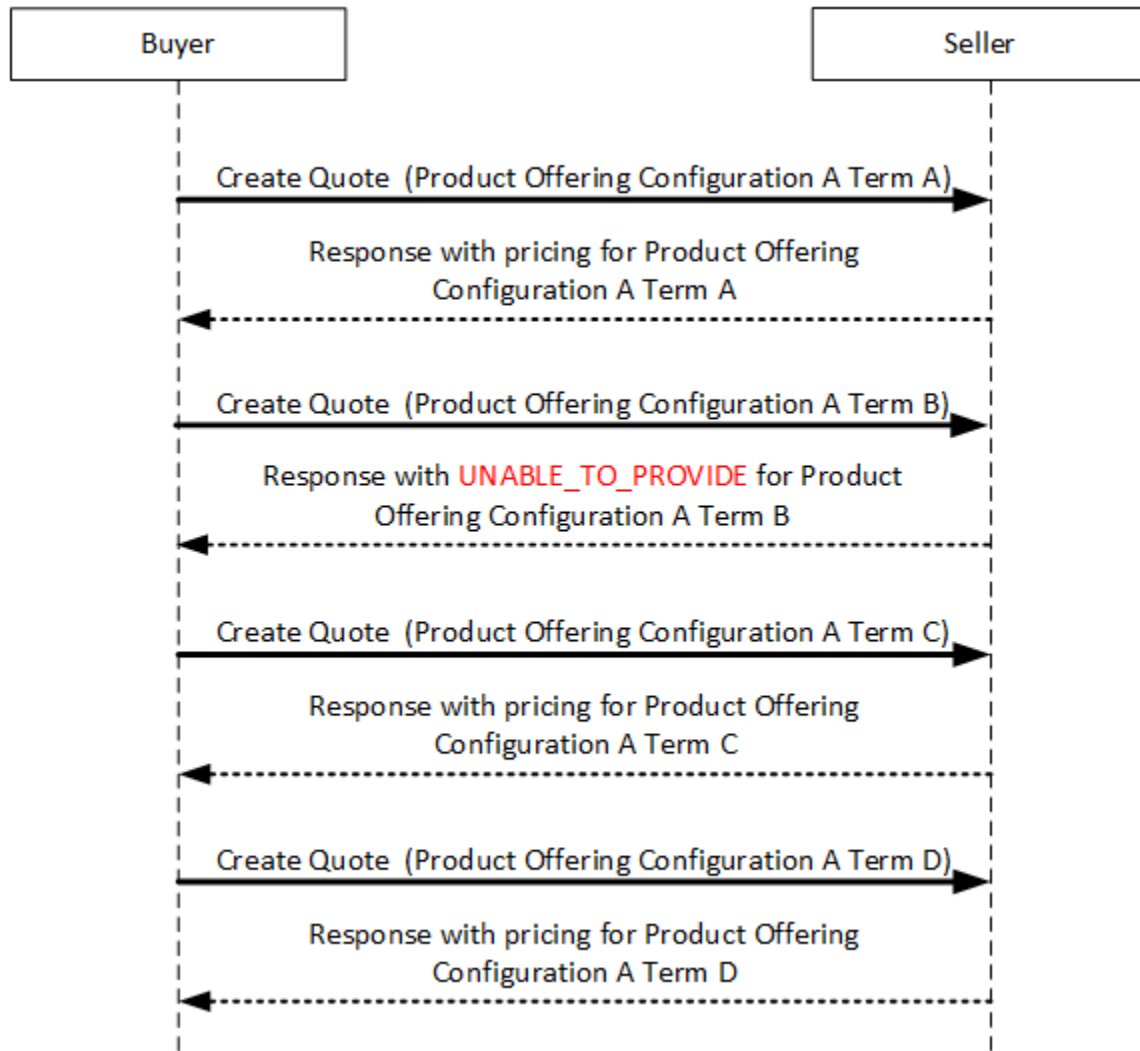
262 If the Action is CHANGE, MEF W79.1 [6] defines that the Product Identifier with required Prod-  
263 uct Specific Attribute values are combined in the request. The Seller responds with a result indi-  
264 cating the confidence and lead time to deliver the change to the configuration specified. When the  
265 CHANGE Action is used for a Product Offering Availability request, only the Product Identifier  
266 of the Installed Product is supplied in the request from the Buyer to the Seller. A list of Product  
267 Offering Configurations that the installed Product can be changed to are provided in the response  
268 from the Seller to the Buyer. Any Product Offering Configurations that the installed Product can-  
269 not be changed to are not returned in the response from the Seller to the Buyer.

## 270 9.2 Use-case Two vs Create Quote (MEF 80) Differences

271 The use-case described in this document are functionally similar to the use-cases defined in MEF  
272 80 [8]. These differences are explained in this section.

273 Retrieve Pricing and Terms Use-case differs from the Create Quote Use-case in MEF 80 [7] be-  
274 cause it returns all possible Terms and Pricing for a Product Offering Configuration with Buyer  
275 specified Delivery Context via a single request and response instead of the term and pricing for  
276 the specific configuration and requested term provided in the Create Quote Use-case in MEF 80  
277 [7]. With the Create Quote Use-case in MEF 80 [7], any Buyer that wanted to understand all of  
278 the term and pricing options would have to send a separate Create Quote request to the Seller for  
279 each term offered by the Seller assuming that the Buyer even knew what terms the Seller offered  
280 to find the pricing for that particular term.

281 Note: Retrieve Pricing and Terms input differs if the Action is INSTALL or CHANGE. Further  
282 details on this are shown in section 10.3.



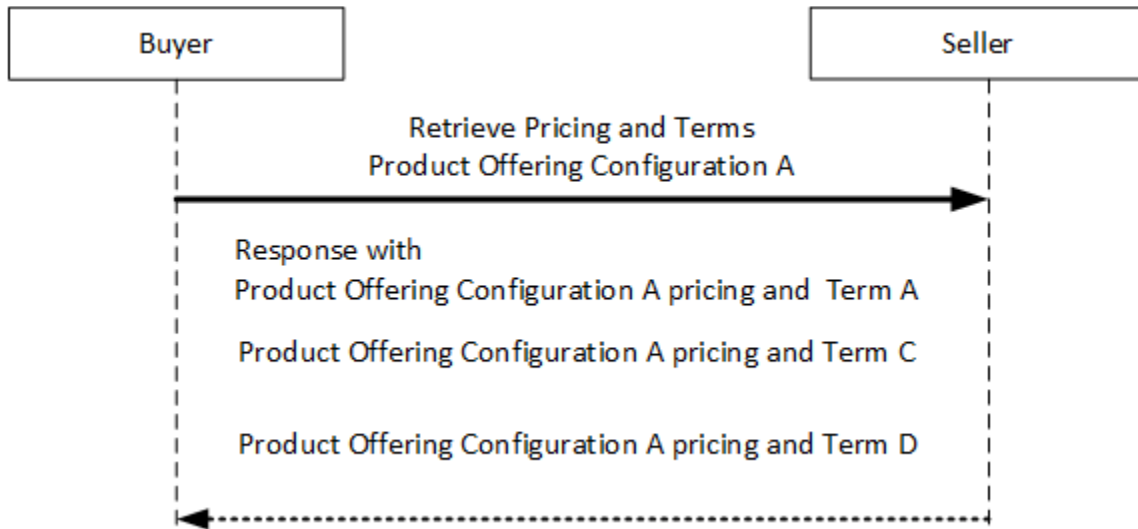
283

284

**Figure 3 – Create Quote Example**

285 As an example, in Figure 4, a Buyer submits a request for Pricing Discovery for a 10 Gbps UNI  
286 Product Offering Configuration in a specific Delivery Context. The Seller returns all terms and  
287 pricing for the UNI that is offered to the Buyer. In this example, there are three possible terms,  
288 each with corresponding pricing that is returned. The Buyer can then select their desired term  
289 when they place the Product Order.





290

291

292

**Figure 4 – Retrieve Pricing and Terms Example**

## 293 10 Retrieve Product Offering Availability (Use-case 1)

294 Retrieve Product Offering Availability Use-case is defined within this section.

295 In this Use-case, the Buyer requests a list of available Product Offering Configurations from the  
296 Seller for a specific Product Specification or Product within a specified Delivery Context. The  
297 Seller Synchronously Communicates to the Buyer a list of zero or more Product Offering Config-  
298 urations meeting the Buyer's criteria (Product Specification Identifier when the Action is IN-  
299 STALL, Product Identifier when the Action is CHANGE) and the Installation Interval for each  
300 Product Offering Configuration.

301 Retrieve Product Offering Availability Use-case covers the Actions, INSTALL and CHANGE.  
302 An INSTALL action is used by the Buyer to express the intention of installing a new Product based  
303 on the given Product Specification and Delivery Context, and to receive the list of possible Product  
304 Offering Configurations.

305 A CHANGE action is used to identify, based on a Product Identifier, if there are Product Specific  
306 Attributes that can be changed and to what values they can be changed.

307 **[R1]** The Buyer **MUST** support Retrieve Product Offering Availability Use-case.

308 **[R2]** The Seller **MUST** support Retrieve Product Offering Availability Use-case.

309 Note: the DISCONNECT Action has not been included in this document for the Retrieve Product  
310 Offering Availability Use-case since there are no Product Specific Attributes that can be set or  
311 changed with a DISCONNECT Action within a Product Order.

### 312 10.1 Actors

313 The Actors of Retrieve Product Offering Availability Use-case are the Buyer and the Seller.

### 314 10.2 Pre-Conditions

315 The Pre-Conditions for Retrieve Product Offering Availability Use-case are defined below:

- 316 1. Any referenced Installation Place or Service Site identifiers exist within the Seller's systems  
317 and are available to the Buyer.

318 Note: Installation Place and Service Site are defined in MEF W150 [10].

### 319 10.3 Retrieve Product Offering Availability Use-case Process Steps

320 The process steps and requirements for Retrieve Product Offering Availability Use-case are de-  
321 fined below:

- 322 1. The Buyer places a Retrieve Product Offering Availability request for an Action of IN-  
323 STALL, or the Buyer places a request to retrieve Product Offering Availability for an Ac-  
324 tion of CHANGE.

325 Note: For the context of this document, CHANGE indicates that the Buyer is requesting a change  
 326 to the Product Specific Attribute values of an existing Product identified by its Product Identifier.  
 327 In case of Action CHANGE, a list of available Product Offering Configurations is returned based  
 328 on the Product Offering of the installed Product. This list may be the same as was returned for  
 329 INSTALL if the Product Offering is the only one defined on the Product Specification or it may  
 330 be a sub-set of what was returned for INSTALL based on business rules when multiple Product  
 331 Offerings exist for the Product Specification. The Delivery context cannot be changed with a  
 332 Retrieve Product Offering Availability with Action of CHANGE.

333

Attribute	Description	Type
Action	The action to be performed by the Seller to fulfil any Product Order that results from this interaction.	Indicator with the following allowed values: <ul style="list-style-type: none"> <li>• INSTALL</li> <li>• CHANGE</li> </ul>
Product Specification Identifier	A reference to a Product Specification that may come from the Seller’s Product Catalog or be exchanged between the Buyer and Seller during on-boarding. This is used when the Action is INSTALL.	Identifier
Product Identifier	A reference to a Product in the Product Inventory that is used when the Action is CHANGE	Identifier
Product Relationships	A list of Products with their relationship types defined by the Product Specification identified by the Product Specification Identifier attribute.	List of Product Relationships (see section 12.1))
Place Relationships	A list of Places and their roles defined by the Product Specification identified by the Product Specification attributes.	List of Places (see section 12.2))

334 **Table 4 – Retrieve Product Offering Availability Use-case Request Attributes**

335

336 **[R3]** When the desire of the Buyer is to install a new product, the Retrieve Product  
 337 Offering Availability request **MUST** contain the following attributes defined  
 338 in Table 4:

- 339                   • Action with its' value set to INSTALL
- 340                   • Product Specification Identifier
- 341           **[R4]**   When the desire of the Buyer is to change an existing product, the Retrieve  
342           Product Offering Availability request **MUST** contain the following attributes  
343           defined in Table 4:
- 344                   • Action with its' value set to CHANGE
- 345                   • Product Identifier
- 346           **[R5]**   If the Product Specification specifies mandatory Places and the Action is IN-  
347           STALL, the Retrieve Product Offering Availability request **MUST** contain the  
348           following attributes defined in Table 4:
- 349                   • Place Relationships
- 350           **[R6]**   If the Product Specification specifies mandatory Product Relationships and the  
351           Action is INSTALL, the Retrieve Product Offering Availability request **MUST**  
352           contain the following attributes defined in Table 4:
- 353                   • Product Relationships
- 354           **[R7]**   If the desire of the Buyer is to install a new product, the Retrieve Product Of-  
355           fering Availability request **MUST NOT** include the Product Identifier attrib-  
356           ute.
- 357           **[R8]**   If Product Relationships are provided, the request submitted by the Buyer to  
358           the Seller for Retrieve Product Offering Availability Use-case **MUST** only  
359           include Product Relationships as defined by and in accordance with the rules  
360           given in the Product Specification referenced in the Product Specification Ident-  
361           ifier attribute.
- 362           **[R9]**   If the desire of the Buyer is to change an existing product, the Retrieve Product  
363           Offering Availability request **MUST NOT** contain the following attributes de-  
364           fined in Table 4:
- 365                   • Product Specification Identifier
- 366                   • Place Relationships
- 367                   • Product Relationship
- 368           **[R10]** The request submitted by the Buyer to the Seller for Retrieve Product Offering  
369           Availability Use-case **MUST NOT** include any attributes that are not defined  
370           in Table 4.

371   2. The Seller validates the request to ensure that:



- 372 a. If the Action attribute is set to INSTALL
- 373 i. The Product Specification Identifier is present and valid.
- 374 ii. The Place Relationships have been provided in accordance with the refer-
- 375 enced Product Specification
- 376 iii. The correct Product Relationships have been provided in accordance with
- 377 the referenced Product Specification
- 378 iv. There is compliance to other additional criteria and constraints that apply
- 379 to the request agreed by the Buyer and Seller during on-boarding
- 380 b. If the Action attribute is set to CHANGE
- 381 i. The Product Identifier is present and valid.
- 382 ii. No Place Relationships have been provided
- 383 iii. No Product Relationships have been provided
- 384 iv. There is compliance to other additional criteria and constraints that apply to
- 385 the request agreed by the Buyer and Seller during on-boarding.
- 386 3. The Seller Synchronously Communicates to the Buyer a list of zero or more Product Offering
- 387 Configurations, including the Installation Interval for each.

388 Note: the use of a Product Offering Configuration Identifier within a Product Order is beyond the  
389 scope of this document.

390 [R11] The Seller **MUST** echo back the attributes of the Retrieve Product Offering  
391 Availability request.

392

Attribute	Description	Type
Available Product Offering Configurations	The list of available Product Offering Configurations	List of Product Offering Configurations as defined in Table 6

393 **Table 5 – Seller Response Attributes**

394

Attribute	Description	Type
Product Offering Configuration Identifier	The identifier for a Product Offering Configuration.	Identifier
Product Offering Identifier	The identifier of the Product Offer for which this Product Offering Configuration is valid.	Identifier
Product Specific Attributes	The set of technical attributes for the Product Offering that make this configuration unique. This essentially specifies the values for attributes defined in the Product Offering.	For the Product Offering identified by the Product Offering Identifier the Product Specific Attributes that are included in the response are agreed to by the Buyer and Seller during onboarding. Included Product Specific Attributes could differ based on the Action in the request of the Buyer.
Installation Interval	The indicative duration $\geq 0$ for the delivery of the Product Offering Configuration in the specified Delivery Context . The shortest possible Installation Interval is specified by the Seller. It is not considered a commitment by the Seller.	Duration (see section 12.3)

**Table 6 – Product Offering Configuration Attributes**

- 395
- 396            **[R12]**    The Seller **MUST NOT** return a response to a Retrieve Product Offering Avail-  
397            ability request that contains two Installation Intervals and where all Product  
398            Specific Attributes are the same.
- 399            **[R13]**    If the request is successful, the response given by the Seller to the Buyer for  
400            Retrieve Product Offering Availability Use-case **MUST** include a list of zero  
401            or more Product Offering Configurations with the attributes shown in Table 6.
- 402            **[R14]**    If the request is unsuccessful or fails validation, the response given by the Seller  
403            to the Buyer for Retrieve Product Offering Availability **MUST NOT** contain  
404            any Product Offering Configurations
- 405            **[R15]**    If the request is unsuccessful or fails validation, the response given by the Seller  
406            to the Buyer for Use-case 1 **MUST** indicate that an error occurred.
- 407            **[R16]**    If the request is successful and contains a non-empty list, every Product Offer-  
408            ing Configuration in the response given by the Seller to the Buyer in Retrieve  
409            Product Offering Availability Use-case **MUST** include a Product Offering  
410            Configuration Identifier attribute that uniquely identifies that Product Offering  
411            Configuration within the Seller.

- 412           **[R17]**    If the request is successful and contains a non-empty list, every Product Offer-  
413            ing Configuration in the response given by the Seller to the Buyer **MUST** in-  
414            clude a Product Offering Identifier for a Product Offering that can be delivered  
415            as shown in Table 6.
- 416           **[R18]**    For any Product Offering in the Available Product Offering Configurations list,  
417            the Seller **MUST** only include the set of Product Specific Attributes agreed to  
418            by the Buyer and by the Seller for the Product Offering during on-boarding.
- 419           **[R19]**    If the request is successful and the response contains a non-empty list, every  
420            Product Offering Configuration in the response given by the Seller to the Buyer  
421            **MUST** include values for the agreed set of Product Specific Attributes as de-  
422            scribed in section 8.
- 423           **[R20]**    If the request is successful and contains a non-empty list, every Product Offer-  
424            ing Configuration in the response given by the Seller to the Buyer **MUST** in-  
425            clude the Installation Interval attribute.
- 426           **[R21]**    If the request is successful and contains a non-empty list, every Product Offer-  
427            ing Configuration in the response given by the Seller to the Buyer **MUST NOT**  
428            include any attributes that are not defined in Table 6.
- 429           **[R22]**    For each Product Offering Configuration, its Product Offering Configuration  
430            Identifier **MUST** be valid for a Retrieve Pricing and Terms request for a period  
431            of at least 15 minutes.

432    Note: the use of a Product Offering Configuration Identifier within other business functions (e.g.  
433    Product Order) is beyond the scope of this document.

#### 434    **10.4 Post Conditions**

435    The Post Conditions of this Use-case are that the Buyer knows the different Product Offering Con-  
436    figurations available within the Delivery Context. In addition, the Buyer has an indication of the  
437    Installation Interval for each of the Product Offering Configurations.

#### 438    **10.5 Alternative Paths**

439    The Alternative Paths for this Use-case are the Seller returns an error message if:

- 440        1. The request is missing mandatory or conditionally mandatory (where applicable) parame-  
441        ters.
- 442        2. Pre-agreed constraints and business rules have not been complied with.

443 **11 Retrieve Pricing and Terms (Use-case 2)**

444 The Buyer can request a list of Pricing and Terms and their relationship from the Seller for a  
445 specific Product Offering Configuration selected from the list of Product Offering Configurations  
446 returned by the Seller. The Seller responds using Synchronous Communication to the Buyer with  
447 a list of one or more Pricing and Terms for the specified Product Offering Configuration.

448 Retrieve Pricing and Terms Use-case covers the two Actions, INSTALL, and CHANGE. They  
449 share the same Actors and Pre-Conditions.

450 **[R23]** The Buyer **MUST** support Retrieve Pricing and Terms Use-case .

451 **[R24]** The Seller **MUST** support Retrieve Pricing and Terms Use-case .

452 **11.1 Actors**

453 The Actors of Retrieve Pricing and Terms Use-case are the Buyer and the Seller.

454 **11.2 Pre-Conditions**

455 The Pre-Conditions for Use-cases 2 are:

- 456 1. Buyer has a reference to a Product Offering Configuration and the linked Product Offering  
457 Configuration Identifier.
- 458 2. Any referenced Place identifiers exist within the Seller's systems and are available to the  
459 Buyer.
- 460 3. The period for which the Product Offering Configuration Retrieve Pricing and Terms re-  
461 sponse is valid as agreed to by the Buyer and Seller.

462 **11.3 Retrieve Pricing and Terms Use-case Process Steps**

- 463 1. The Buyer sends a request to Retrieve Pricing and Terms for a Product Offering Configu-  
464 ration.



Attribute	Description	Type
Action	The action to be performed by the Seller to fulfill any Product Order that results from this interaction.	Indicator with the following allowed values: <ul style="list-style-type: none"> <li>• INSTALL</li> <li>• CHANGE</li> </ul>
Product Offering Configuration Identifier	The identifier for the Product Offering Configuration from a Retrieve Product Offering Availability Use-case response that Pricing and Terms are being requested for.	Identifier
Product Identifier	This is used when the Action = CHANGE	Identifier
Product Relationships	A list of Products with their relationship types defined as mandatory by the Product Specification identified by the Product Offering Configuration Identifier attribute.	List of Product Relationships (see section 12.1))
Place Relationships	A list of Places and their roles defined as mandatory by the Product Specification identified by the Product Offering Configuration Identifier attribute.	List of Places (see section 12.2))

**Table 7 – Retrieve Pricing and Terms Use-case Request Attributes**

465

**[R25]** When the Buyer is interested in a new Product, the Retrieve Pricing and Terms request for a Product Offering Configuration (Retrieve Pricing and Terms Use-case ) **MUST** contain the following attributes defined in Table 7:

466

467

468

469

- Action of INSTALL
- Product Offering Configuration Identifier
- Product Relationships (if defined in the Product Specification)
- Place Relationships (if specified in the Product Specification)

470

471

472

**[R26]** If the desire of the Buyer is to INSTALL a new product, the request submitted by the Buyer to the Seller **MUST NOT** include the Product Identifier attribute.

473

474

**[R27]** When the desire of the Buyer is to change an existing Product, the Retrieve Pricing and Terms request for a Product Offering Configuration **MUST** contain the following attributes defined in Table 7:

475

476

477

478

- Action of CHANGE
- Product Offering Configuration Identifier

479

- 480                           • Product Identifier
- 481           **[R28]**   If the desire of the Buyer is to install a new product and if the Place Relation-  
482                           ships are provided, the list submitted by the Buyer to the Seller for Retrieve  
483                           Pricing and Terms Use-case **MUST** only include a Place and Place Type for  
484                           every Role defined by and in accordance with the rules given in the Product  
485                           Specification.
- 486           **[R29]**   If the desire of the Buyer is to change an existing product, the Retrieve Pricing  
487                           and Terms request **MUST NOT** contain the following attributes defined in Ta-  
488                           ble 7:
- 489                           • Product Relationships
- 490                           • Place Relationships
- 491           **[R30]**   The request submitted by the Buyer to the Seller for Retrieve Pricing and Terms  
492                           Use-case **MUST NOT** include any attributes that are not defined in Table 7.
- 493   2. The Seller validates the request to ensure:
- 494           a. The Product Offering Configuration Identifier is valid.
- 495           b. The Product Identifier is valid in a case where the Buyer is interested in changing  
496                           an existing Product.
- 497           **[R31]**   If the Product Offering Configuration Identifier has expired, the Seller **MUST**  
498                           return an error.
- 499           c. The correct number of Place Relationships are provided, each with an appropriate  
500                           Role meeting the criteria of the Product Specification when the Buyer is interested  
501                           in a new Product.
- 502           d. Where relationships to other Products are required by the Product Specification,  
503                           they refer to valid Products of the correct Product Specification and each with the  
504                           correct Relationship Nature according to the Product Specification definition when  
505                           the Buyer is interested in a new Product.
- 506           e. There is compliance to any additional criteria and constraints that apply to the re-  
507                           quest agreed between the Buyer and Seller during on-boarding.
- 508   3. The Seller responds to the Buyer with a list of zero or more Pricing and Terms for the  
509           specified Product Offering Configuration for the Delivery Context.
- 510           **[R32]**   The Seller **MUST** echo back the attributes of the Retrieve Pricing and Terms  
511                           request.



512 [R33] If the request is unsuccessful or fails validation, the response given by the Seller  
513 to the Buyer for Retrieve Pricing and Terms **MUST NOT** contain any Pricing  
514 and Terms.

515 [R34] If the request is successful, the response given by the Seller to the Buyer for  
516 Retrieve Pricing and Terms Use-case **MUST** include the attribute Product Of-  
517 fering Configuration Pricing and Terms.

518 [R35] If the request is successful, the response given by the Seller to the Buyer for  
519 Retrieve Pricing and Terms Use-case **MUST NOT** include any attributes that  
520 are not defined in Table 8 and Table 9 other than those included in the Buyer’s  
521 Retrieve Pricing and Terms request.

522 [R36] If a Seller has returned multiple Product Offering Configuration IDs to the  
523 Buyer in different Product Offering Availability Discovery responses that refer  
524 to the same set of Product Specific Attribute values, then the Seller **MUST**  
525 return the same Pricing and Terms to a Retrieve Pricing and Terms request for  
526 a given Delivery Context that contains any of those POC IDs that are within  
527 their validity period.

528 The requirement [R36] means that a Retrieve Pricing and Terms request for a given Delivery Con-  
529 text and a given set of Product Specific Attribute values always returns the same result regardless  
530 of which Product Offering Configuration Identifier is used to refer to that Product Offering Con-  
531 figuration. In particular, this is the case even if the POC ID was originally returned to the Buyer  
532 in an Availability Discovery response for a different Delivery Context.

533 As an example, a Buyer who completes three different Retrieve Product Offering Availability Dis-  
534 coversies for a UNI for Delivery Contexts A, B, and C. The Buyer receives three Product Offering  
535 Configurations, UNIs with Identifiers 1 (Delivery Context A), 5 (Delivery Context B), and 9 (De-  
536 livery Context C) that have identical Product Specific Attribute values including Installation In-  
537 terval. If the Buyer performs a Retrieve Pricing and Terms request for Delivery Context B the  
538 Pricing and Terms must be the same regardless of whether the Buyer uses Product Offering Con-  
539 figuration Identifier 1, 5, or 9 since they all refer to the same set of values.

540

Attribute	Description	Type
Product Offering Configu- ration Pricing and Terms	A set of contract terms and cor- responding prices available for a given Product Offering Con- figuration considering the De- livery Context.	A list of Product Offering Configuration Pricing and Terms (Table 9)

541 **Table 8 – Seller Response Attributes**

542 Attributes in Table 9 are included for each Term and Price.

543

Attribute	Description	Type
Product Offering Configuration Pricing and Term Identifier	The identifier for a Product Offering Configuration Pricing and Terms for the given Product Offering Configuration.	Identifier
Installation Interval	The indicative duration $\geq 0$ for the delivery of the Product Offering Configuration in the specified Delivery Context . The shortest possible Installation Interval is specified by the Seller. It is not considered a commitment by the Seller. A value of 0 indicates immediate installation.	Duration (see section 12.3)
Term	The minimum length of the commitment for this Product Offering Pricing and Term for the given Product Offering Configuration Option within the requested Delivery Context.	Term (see Table 10)
Prices	The prices that apply to this Product Offering Configuration Pricing and Terms for the given Product Offering Configuration within the requested Delivery Context.	List of Price (see section 11.4)
Subject to Additional Non-recurring Charges	An indicator to inform the Buyer that additional non-recurring charges may be added during fulfillment.	Boolean

544

**Table 9 – Product Offering Pricing and Terms Details**

545

Attribute	Description	Type
Term Name	Name of the term	String
Term Description	Description of the term	String
Duration	The period of time for the term	Duration (see section 12.3)



Attribute	Description	Type
End of Term Action	The action the Seller will take once the term expires.	Indicator with following allowed values: <ul style="list-style-type: none"> <li>• ROLL</li> <li>• AUTO_DISCONNECT</li> <li>• AUTO_RENEW</li> </ul> These values are defined as shown below.
Roll Interval	The period that the Buyer is required to commit to pay in a recurring fashion at the end of the term.	Duration (see section 12.3)

**Table 10 – Term Details**

546

547 The Seller’s End of Term Action attribute values are defined as follows:

- 548 • “ROLL” if the Product’s contract will continue on a rolling basis once the contract’s cur-  
549 rent term expires,
- 550 • “AUTO\_DISCONNECT” if the Product will automatically be disconnected (and contract  
551 terminated) by the Seller once the contract term expires,
- 552 • “AUTO\_RENEW” if the Product’s contract will be renewed for another term equivalent  
553 to the original contract term.

554 Note: it is normal for the Roll Interval to be a significantly shorter time period than the original  
555 Term.

556 The period for which the Product Offering Configuration Retrieve Pricing and Terms response is  
557 valid is agreed to by the Buyer and Seller.

558 **[R37]** If the request is successful, every Product Offering Configuration Pricing and  
559 Terms in the response given by the Seller to the Buyer in Retrieve Pricing and  
560 Terms Use-case **MUST** include the following:

- 561 • Product Offering Configuration Pricing and Term Identifier
- 562 • Duration
- 563 • End of Term Action
- 564 • Roll Interval (if applicable)
- 565 • Prices
- 566 • Subject to Additional Non-recurring Charges

- 567 • Installation Interval
- 568 [R38] If the request is successful, every Product Offering Configuration Pricing and  
569 Terms in the response given by the Seller to the Buyer **MUST** include the Roll  
570 Interval attribute if the End of Term Action attribute is “ROLL”.
- 571 [R39] If the request is successful, every Product Offering Pricing and Terms in the  
572 response given by the Seller to the Buyer **MUST NOT** include the Roll Interval  
573 attribute if the End of Term Action attribute is “AUTO\_RENEW” or  
574 “AUTO\_DISCONNECT”.
- 575 [R40] The Product Offering Configuration Pricing and Terms Identifier **MUST** be  
576 valid for at least 15 minutes after being returned to the Buyer.

577 Note: The Subject to Additional Non-recurring Charges attribute is used to indicate additional  
578 construction costs or other one-time costs that are not known may be added during fulfillment.  
579 This is managed through the Charge Process in the Product Order Process.

580 Note: If the Subject to Additional Non-recurring Charge attribute value is FALSE then this is  
581 equivalent to the Firm value in MEF 80. If the Subject to Additional Non-recurring Charge attrib-  
582 ute value of the flag is TRUE then this is equivalent to the Subject to Feasibility Check value in  
583 MEF 80.

- 584 [R41] If the request is successful, the Subject to Additional Non-recurring Charges  
585 attribute in each Product Offering Configuration Pricing and Terms in the re-  
586 sponse **MUST** be FALSE if the referenced Product Offering Configuration has  
587 its’ Installation Interval = 0.
- 588 [R42] If the request is successful, every Product Offering Pricing and Terms in the  
589 response given by the Seller to the Buyer **MUST NOT** include any attributes  
590 that are not defined in Table 8.
- 591 [R43] If the request is successful, the Product Offering Pricing and Terms Identifier  
592 **MUST** be unique within the Seller’s system.

#### 593 11.4 Price Attributes

594 The Price attributes and associated requirements are defined in MEF 80 [7] section 8.1.6 and sec-  
595 tion 9.1.2.

#### 596 11.5 Post Conditions

597 The Buyer receives a list of one or more Pricing and Terms meeting the Buyer’s criteria.

#### 598 11.6 Alternative Paths

599 The Seller returns an error message if:

- 600 1. The request is missing mandatory or conditionally mandatory (where applicable) attributes.



- 601        2. The supplied Product Offering Configuration Identifier is invalid.
- 602        3. The Delivery Context has not been fully specified when the Buyer is interested in a new
- 603        Product.
- 604        4. Pre-agreed constraints and business rules have not been complied with.
- 605

606 **12 Common Types**

607 This section describes common types that are used by requests made from the Buyer to the Seller  
 608 in both Retrieve Product Offering Availability Use-case and Retrieve Pricing and Terms Use-case  
 609 .

610 **12.1 Product Relationship Attributes**

611 The Product Relationship attributes and requirements from Table 4Table 4 and Table 7 are defined  
 612 in MEF 80 [7] section 8.1.8.

613 Note: There may be cases, as explicitly allowed or defined in the Product Specification where a  
 614 Buyer cannot precisely state which installed Product a newly installed Product will be related to  
 615 because the Buyer will determine this at the time of submitting the Product Order. The Buyer can  
 616 include a list of candidate installed Products to be validated against. An example is the ENNI for  
 617 an Access E-Line Product where the Buyer may, for example, include a list of ENNIs between the  
 618 Buyer and Seller as related Products. The Products in the list would be expected to comply with a  
 619 business rule agreed to by the Buyer and Seller (e.g. ENNIs that are all live and all in the same  
 620 Geographic Area as defined by the Seller). When this happens, it is at the Seller’s discretion to  
 621 choose the item on the list which is used to fulfil the request.

622 **12.2 Place Relationship Attributes**

623

Attribute	Description	Type	Comments
Role	The role of the place as specified in the Product Specification	String	Set by the Buyer as defined in the Product Specification
Place Type	The attribute used to describe the Place formatting for this Place Relationship.	String that is one of: <ul style="list-style-type: none"> <li>SERVICE_SITE</li> <li>INSTALLATION_PLACE</li> </ul>	The Buyer is encouraged to use the Seller’s SERVICE_SITE as the Place Type if one exists.
Place	The detailed Place identifier for this Place Relationship.	Reference to one of the below: <ul style="list-style-type: none"> <li>Service Site (see MEF W150 [10])</li> <li>Installation Place (see MEF W150 [10])</li> </ul>	
Sub Units	A list of zero or more Sub Units detailing the Place for a non-existing Service Site when Place	List in Table 12	Sub Units provided only with Installation Place





Attribute	Description	Type	Comments
	Type equals IN-STALLATION_PLACE.		

624 **Table 11 – Place Relationship Attributes**

Attribute	Description	Type
Sub Unit Type	The type of the sub unit (e.g., BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, ROOM, LEVEL).	String
Sub Unit Name	The distinctive value for the Sub Unit (e.g., 42 or A)	String

625 **Table 12 – Installation Place Sub-Unit Attributes**

626 **[R44]** A Place Relationship **MUST NOT** include any attributes that are not defined  
627 in Table 11.

628 **[R45]** Every Place Relationship in the request submitted by the Buyer **MUST** specify  
629 the following attributes:

- 630 • Place
- 631 • Place Type
- 632 • Role

633 **[R46]** If the Place(s) are provided, the list submitted by the Buyer to the Seller for  
634 Retrieve Product Offering Availability Use-case **MUST** only include a Place  
635 and Place Type for every Role defined by and in accordance with the rules  
636 given in the Product Specification referenced in the Product Specification Identifier  
637 attribute.

638 For details on Installation Place and Service Site see MEF W150 [10].

639 **12.3 Duration attributes**

640 The attributes of the Duration type are given in Table 13.

641

Attribute	Description	Type
Amount	The number of units specified by Unit	Integer



Attribute	Description	Type
Units	The unit of time	String with the following allowed values: <ul style="list-style-type: none"> <li>• SECONDS</li> <li>• MINUTES</li> <li>• CALENDAR_HOURS</li> <li>• BUSINESS_HOURS</li> <li>• CALENDAR_DAYS</li> <li>• BUSINESS_DAYS</li> <li>• MONTHS</li> <li>• YEARS</li> </ul>

**Table 13 – Duration attributes**

642

643           **[R47]**   Every Duration in the response given by the Seller to the Buyer **MUST** include  
644           an Amount attribute.

645           **[R48]**   The value of the Amount attribute in every Duration in the response given by  
646           the Seller to the Buyer **MUST** have a value that is equal to or greater than 0.

647           **[R49]**   Every Duration in the response by the Seller to the Buyer **MUST** include a  
648           Units attribute.

649           **[R50]**   The value of the Units attribute **MUST** be one of: SECONDS, CALEN-  
650           DAR\_HOURS, BUSINESS\_HOURS, CALENDAR\_DAYS, BUSI-  
651           NESS\_DAYS, MONTHS, or YEARS.

652           Note: some of the Units attributes apply to only terms, some apply to only installation intervals,  
653           and some apply to both of those as agreed to by the Buyer and Seller.

654           Consecutive Business Days might not be consecutive calendar days. Consecutive Business Hours  
655           may have a break between them if they span a period outside of which normal business is con-  
656           ducted.

657

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