



**Draft Standard**  
**MEF 110 Draft (R1)**

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

**June 2023**

**This draft represents MEF work in progress and is  
subject to change.**

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## **1 List of Contributing Members**

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

## **2 Abstract**

This document contains the Business Requirements and Use Cases for Product Offering Availability and Pricing Discovery between a Seller and a Buyer at the Sonata/Cantata Interface Reference Point. Product Offering Availability Discovery is a way for the Buyer to specify a Product Specification to the Seller and to receive from the Seller a list of zero or more Product Offering Configurations. Pricing Discovery allows the Buyer to receive from the Seller a list of one or more terms and pricing information for the Product Offering Configuration specified by the Buyer.

### 3 Release Notes

This document represents the results of Call for Comments Ballot #2 and includes unresolved comments. The contents may change subject to comment resolution. Table 1 identifies the areas that are still under discussion and that are subject to change.

<b>Release Note Topic</b>	<b>Section(s) Impacted</b>	<b>Comments</b>
Structure of the document	Section 8	Section 8 to be broken into multiple sections.
Changing Location to Place to align with MEF 57.2	Section 8	Align text in Section 8 with MEF 57.2 wherever Location is used today.
Use Case for Retrieve Product Offering Configurations	Section 8	Still requires discussion to see if Use Case will be added to the document.
Ability to specify a relationship to a list of ENNIs	Section 8	This will align with MEF 79.0.1
ENNI Product Offering Configurations are not returned since ENNIs are not able to be ordered via a Product Order	Section 8	Add text to specify this.
Determine if Commercial and Contractual Identifier is required	Section 8.2.2.3	Currently required. Comment has been raised on if this should be included.
Whether the Term will be reused from MEF 80 to align with Quote.	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
Should the definitions of End of Term Actions from MEF 80 be included in this document or just reference MEF 80?	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
Is the Valid Until attribute useful for the Use Cases in this document?	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
Is the Auto-Renewal grace period applicable to this document?	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
How the Subject to Additional Charges attribute should be specified within this document.	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.

What is included in the Commercial and Contractual response.	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
The specific attributes to be included in the Commercial and Contractual request and response.	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
Whether the pricing from MEF 80 should be referred to here or if there are new requirements in addition to what has been included in MEF 80.	Section 8	Discussion to be held as a part of the review of CfCB comments.
Where the Unit of Measure for pricing should be derived from, this document or the Product Schema?	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
Representation of the Price Tax Rate. Should it be a string or some other fixed value.	Section 8.2.2.3	Discussion to be held as a part of the review of CfCB comments.
Changes to requirements around Price.	Section 8.2.3	Several comments around these requirements.
Changes to requirements around Product Relationships	Section 8.3.1	Several comments around these requirements.
Determine whether to use Place or Location throughout the document.	All	The terms are currently used interchangeably, and we need to settle on one or the other.
Adding seconds to Duration to meet use cases reflected in this document.	Section 8.4.1	Should this be aligned with MEF 80, or should we add seconds to the Duration Units?
Various clarifications in informative appendix A.	Appendix A	Discussion on these clarifications to be held as part of CfCB comment resolution process.

**Table 1 – Release Notes**



## 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] and MEF W79.1 [6] are included in this document by reference and are not repeated in the table below.

Term	Definition	Reference
<b>Business Day</b>	Any day during which normal business is conducted in a geographical location or specific division/organization. Weekends and public holidays are usually not considered to be Business Days. Consecutive Business Days may have a break between them.	This document
<b>Business Hour</b>	Any hour during a Business Day in which normal business is conducted in a geographical location or specific division/organization. Evening, night-time, and early morning time are usually not considered Business Hours. Consecutive Business Hours may have a break between them if they span a period outside of which normal business is conducted.	This document
<b>Commercial and Contractual Options</b>	The options for price and term available to a Buyer for a Product Configuration.	This document
<b>Delivery Context</b>	A set of related Products and Locations that are associated with a Product Specification. These are defined in the Product Specification standards (MEF 106, MEF 125, etc.)	This document
<b>Location</b>	A fixed place at which a Product can be installed. Its place can be described either with Geographic Point or by association with an Address.	This document
<b>Pricing Discovery</b>	A method that allows the Buyer to receive from the Seller a list of one or more terms and pricing information for the Product Offering Configuration specified by the Buyer.	This document
<b>Product Offering Availability Discovery</b>	A way for the Buyer to specify a Product Specification to the Seller and to receive from the Seller a list of zero or more Product Offering Configurations	This document
<b>Product Offering Configuration</b>	An instance of the Product Specification with certain Product-Specific attributes fixed to particular values	This document

Term	Definition	Reference
<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 2 – Terminology and Abbreviations**

## 5 Compliance Levels

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

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

## 6 Numerical Prefix Conventions

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

This document uses the prefix notation to indicate multiplier values as shown in Table 3.

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>

**Table 3 – Numerical Prefix Conventions**

## 7 Introduction

The Product Offering Availability Discovery and Pricing Discovery model is a way for Sellers to conduct business with Buyers. Buyers receive Synchronously Communicated responses to Product Offering Availability Discovery (a list of available Product Offering Configurations matching Buyer provided criteria). Pricing Discovery (a list of terms and prices for a selected Product Offering Configuration) requests based on interfaces which offer the Buyer a list of available Product Offering Configurations and attribute values to choose from. The Pricing Discovery process is performed using a Delivery Context that matches one of the available Product Offering Configurations. Since the document covers both the Cantata and Sonata Interface Reference Points, Buyers can be end customers purchasing Products from Service Providers or Service Providers purchasing Products from Partners.

This specification defines Business Requirements and Use Cases covering the Cantata and Sonata Interface Reference Points (IRPs).

### 7.1 Pre-requisites for interaction between a Buyer and a Seller for Product Offering Availability Discovery and Pricing Discovery

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

- Any elements of the Buyer that are opaque to Customers, such as ENNIs are in place and are available for use.
- The period of time after auto-renewal occurs and in which the Buyer can disconnect the Product without penalty is agreed to by the Buyer and Seller.
- If Business Hours and Seller Business Days are used as values for the Units attribute, the Buyer and Seller must agree to their definition as part of on-boarding prior to the use of these values.
- The Seller has a set of named possible Product Offering Configuration and has chosen not to go into fully granular way in exposing them as separate Product Offerings.
- Whether the Product Offering Configuration Identifier is reusable for multiple Pricing Discovery is agreed to as a part of on-boarding.
- The Product Specific Attributes that are returned in the Seller's response to a Product Offering Availability Discovery request are agreed to as a part of on-boarding.

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

## 8 Use Cases

This section defines the Use Cases for the pre-ordering interactions equivalent to Product Offering Qualification (as specified in MEF POQ Doc [6]) and Quoting (as specified in MEF 80 [7]) between a Buyer and a Seller for Product Offering Availability Discovery and Pricing Discovery Interfaces.

The Use Cases are listed with their descriptions in Table 4.

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 for the specified Delivery Context of these. Each Product Offering Configuration has a unique identifier that is passed to the Buyer by the Seller. This identifier is used for Use Case 2.
2	Retrieve Pricing for a Product Offering Configuration	The Buyer requests a list of Commercial and Contractual Options from the Seller for a specific Product Offering Configuration Identifier. The Seller synchronously responds to the Buyer with a list of Commercial and Contractual Options meeting the Buyer's Product Offering Configuration.

**Table 4 – Use Case Table**

Note: The response to the Retrieve Pricing for a Product Offering Configuration request differs from a Quote response in that it returns all possible terms and pricing for the Product Offering Configuration where the Quote only returns a single term and price.

Delivery Context is defined as set of related Product and Locations that are associated with a Product Specification. These are defined in the Product Specification standards (MEF 106, MEF 125, etc.). The Delivery Context will vary between Product Specifications. For example, the Delivery Context of a UNI would be its physical Location, whereas the Delivery Context for an Access E-Line would be the UNI and ENNI that it connects. A more detailed exploration of the different Delivery Contexts that may apply is outside the scope of this document due to the goal of making the Use Cases and requirements independent of the Products they are applied to. The

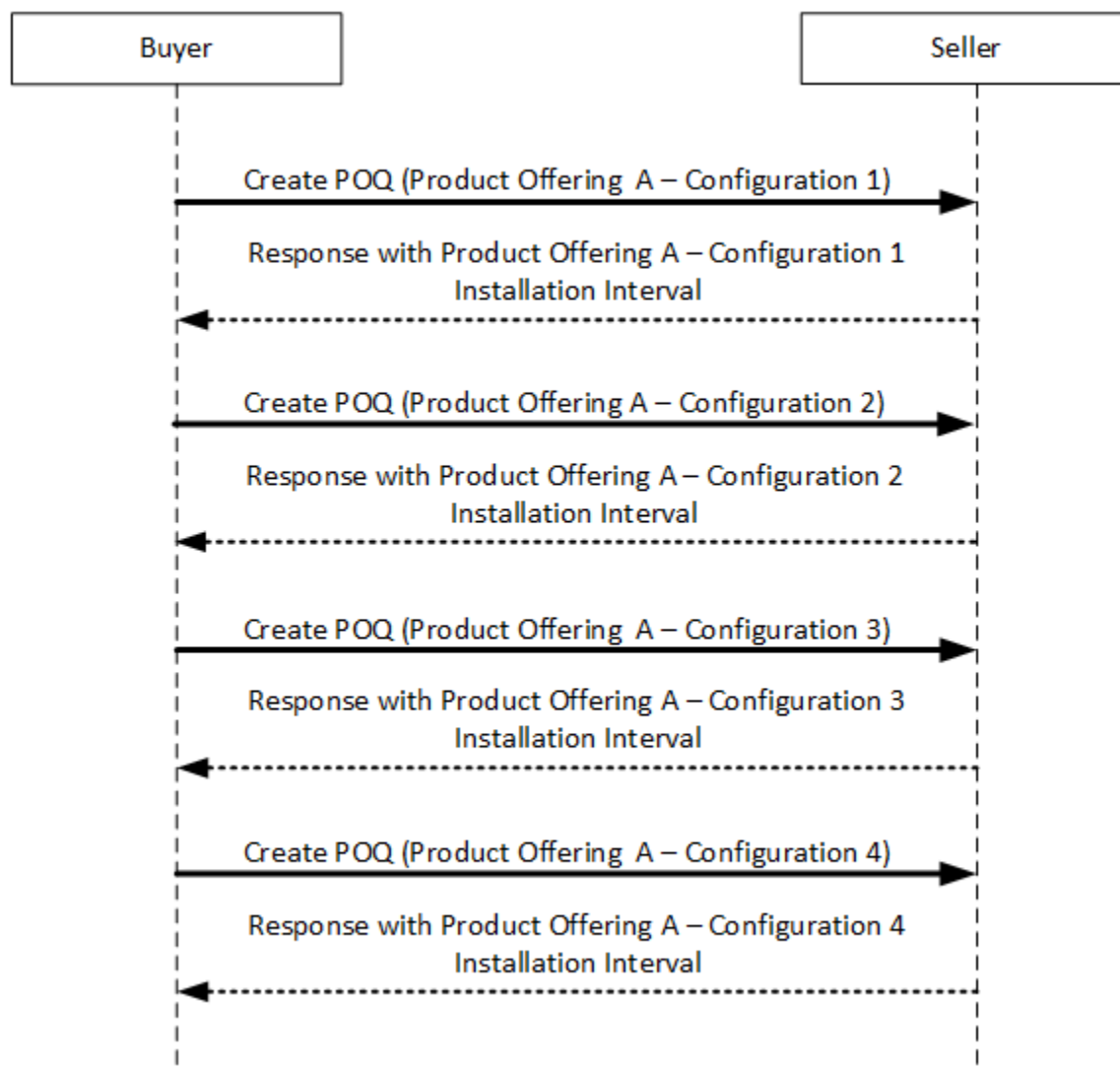
MEF Product Model Specifications define this through their Place and Product Relationship requirements.

## **8.1 Use Case Differences**

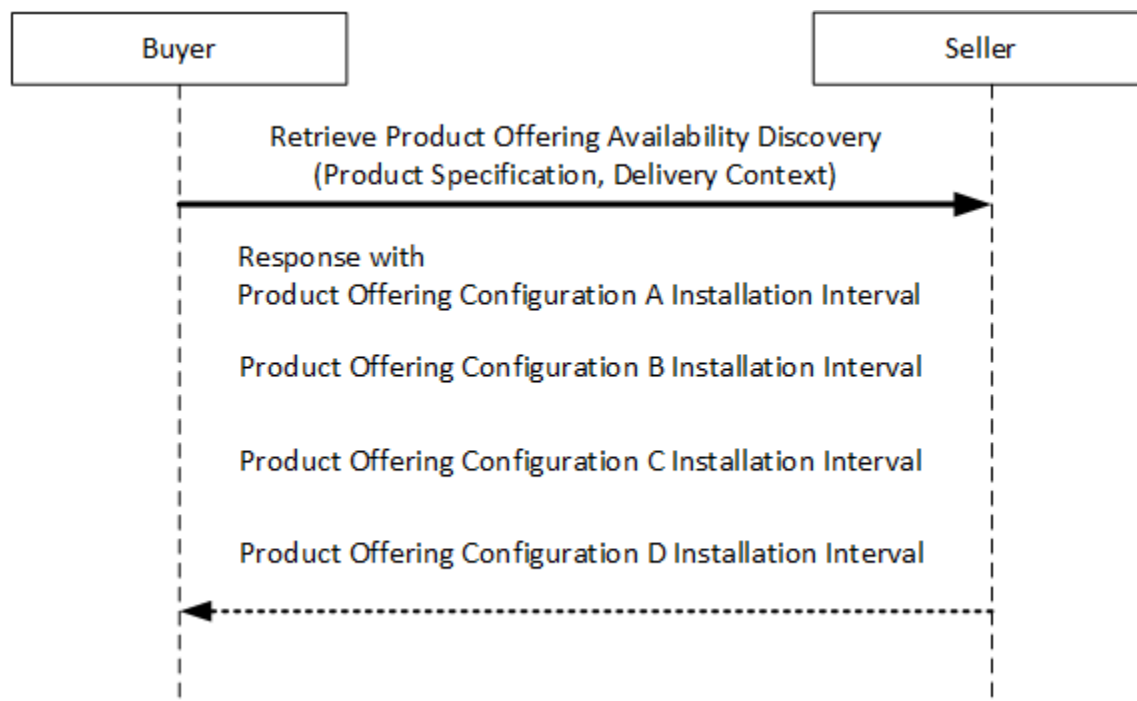
There are key differences between the Use Cases defined in this document and the Use Cases defined in MEF W79.1 and MEF 80. These differences are explained in this section.

Use Case 1 differs from the Create POQ Use Case because MEF W110 only supports the Buyer specifying a Product Specification while POQ Doc allows the Buyer to specify both the Product Specification and a specific Product Offering. Use Case 1 for an INSTALL differs from the Create POQ Use Case for an INSTALL in MEF 79.1 [6] because MEF 79.1 [6] requires the Buyer to specify a Product Offering with required Product Offering Attribute values. In a POQ, the Seller returns results for only that Product Offering Configuration. In the Product Offering Availability Discovery, the Buyer specifies a Product Specification, and a Delivery Context. The Seller returns a list of Product Offering Configurations that meet the Delivery Context provided by the Buyer. Where this is accomplished using a single request/response within this Use Case, this would take multiple MEF 79.1 [6] Create POQ requests (one per desired Product Offering Configuration) to verify that the requested offering configuration is available at the specified location and what the installation interval is expected to be.

These differences are shown in the following figures:



**Figure 1 – Current POQ Process Example**



**Figure 2 – Product Offering Availability Discovery Example**

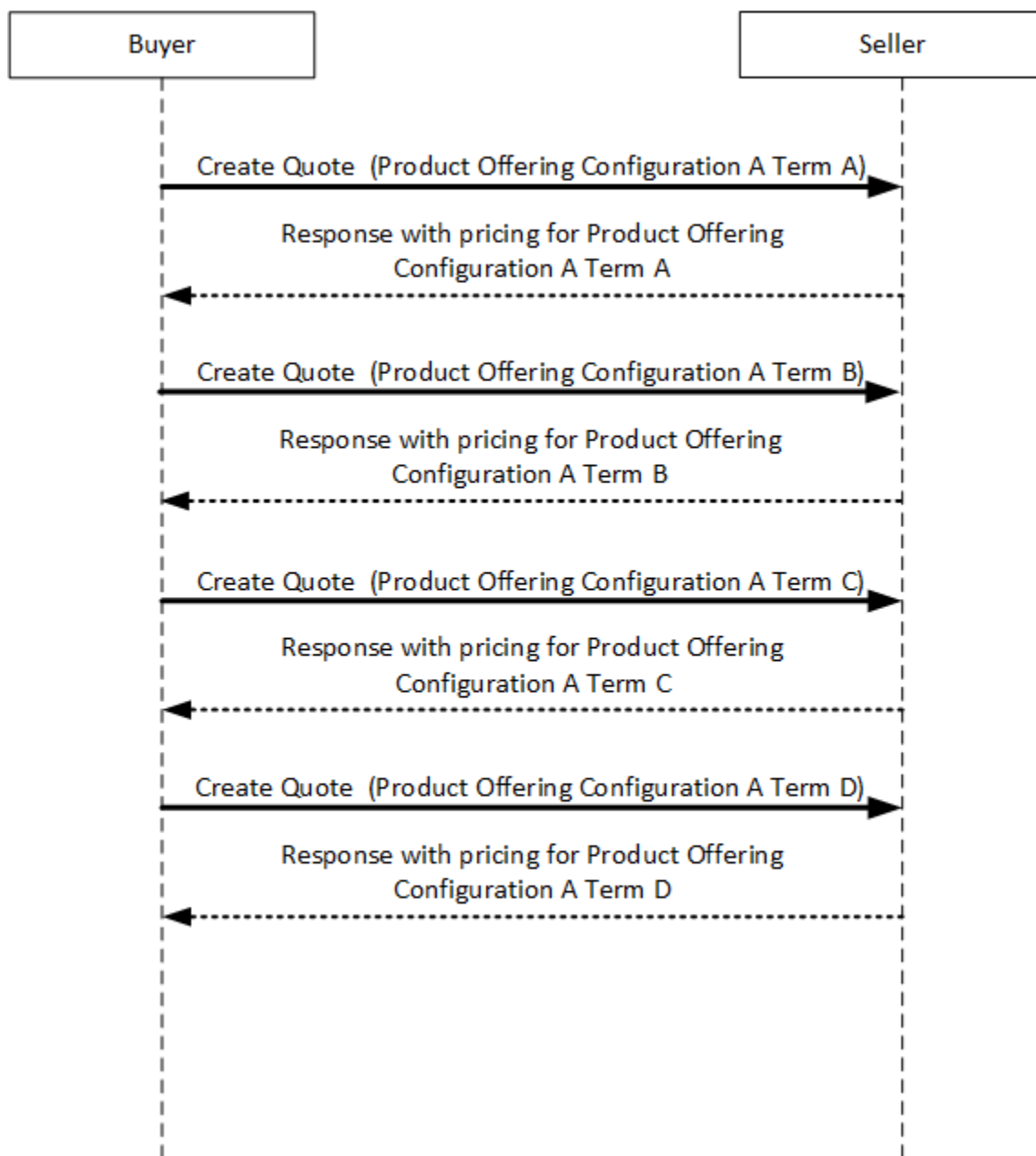
As an example, a Buyer submits a request for Product Offering Availability Discovery for a Product Specification of a UNI for a specified location. The Seller returns a list of UNI Product Offering Configurations that are supported at the specified location. Note that this list may be a subset of what is offered in the Product Catalog since it is restricted to the Product Offering Configurations that are available at that location. A Product Catalog lists and describes the Product Offerings made available by a Seller to potential Buyers. If the Seller has a 100 Gbps UNI Product Offering but the location cannot support anything with a UNI speed greater than 10 Gbps, only the Product Offering Configurations up to 10 Gbps UNI speeds are returned.

If the Action is CHANGE, the POQ DOC defines that the Product Identifier and Product Specification with required Product Offering Attribute values are combined in the request. The Seller responds with a response for just the matching Product Offering Configuration. When the CHANGE Action is used for a Product Offering Availability Discovery request, the Product Identifier is used but covers the Delivery Context instead of specific Product Offering Attributes. All available Product Offering Configurations, derived from a single Product Specification and Product Offering, available for that Delivery Context are provided in the response.

The Action of DISCONNECT is not supported for Product Offering Availability Discovery.

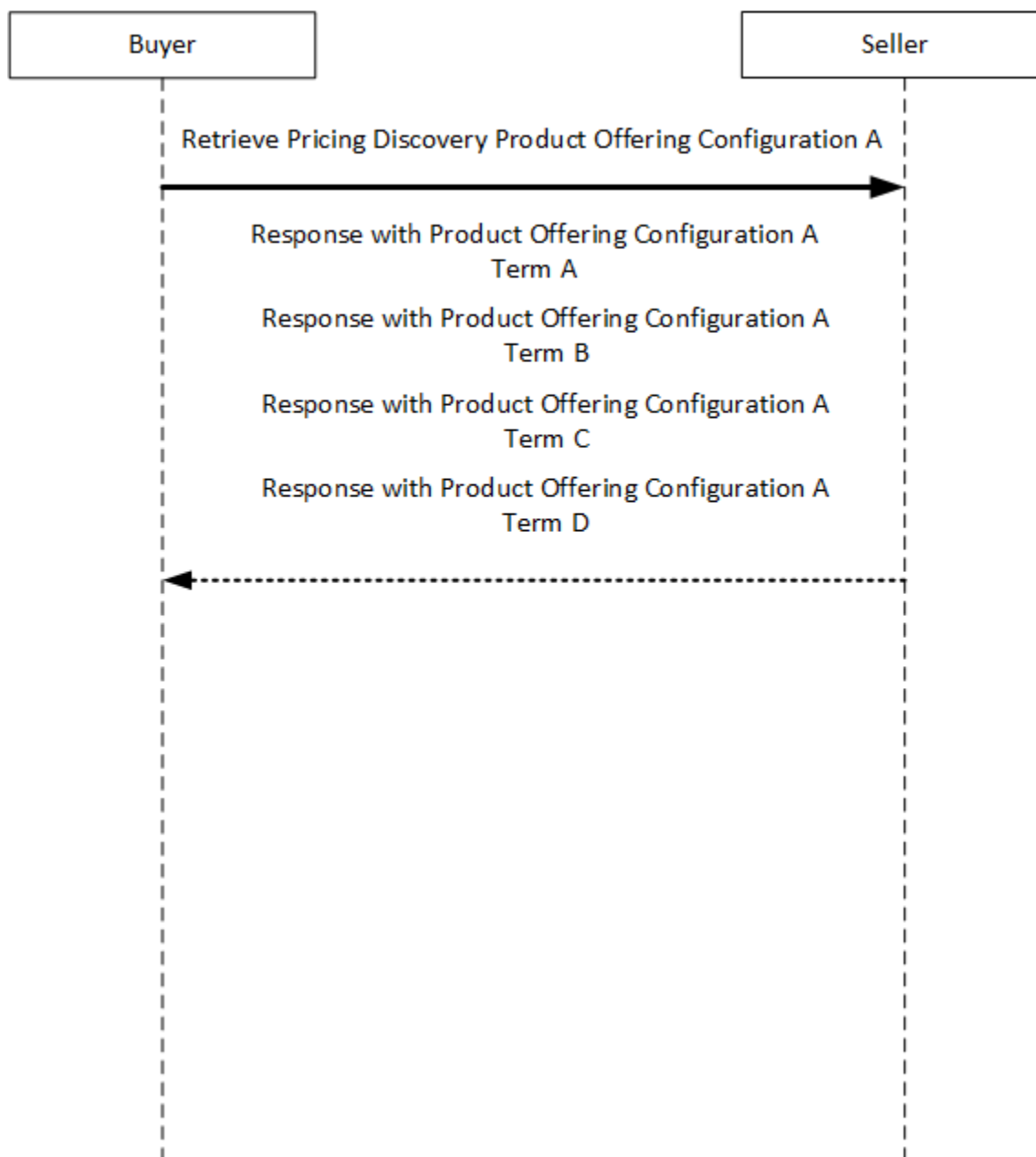
Use Case 2 differs from the Create Quote Use Case in MEF 80 because it returns all possible terms and pricing for a Product Offering Configuration with Buyer specified Delivery Context via a single request/response. The Buyer would have to send separate Create Quote request to the Seller for each term offered by the Seller assuming that the Buyer even knew what terms the Seller offered.





**Figure 3 – Create Quote Sequence Diagram**

As an example, in Figure 3, a Buyer submits a request for Pricing Discovery for a 10 Gbps UNI Product Offering Configuration. The Seller returns all terms and pricing for the UNI that is offered to the Buyer. In this example, there are four possible terms, each with corresponding pricing that is returned. The Buyer can then select their desired term when they place the Product Order.



**Figure 4 – Pricing Discovery Sequence Diagram**

## 8.2 Use Case Details

The following sections describe the Use Cases in detail.

### 8.2.1 Use Case 1: Retrieve Product Offering Availability

In this Use Case, the Buyer requests a list of available Product Offering Configurations from the Seller for a specific Product Specification within a specified Delivery Context. The Seller Synchronously Communicates to the Buyer a list of zero or more Product Offering Configurations meeting the Buyer's criteria (Product Specification Identifier for Action = INSTALL, Product

Identifier for Action = CHANGE) and the Installation Interval for each Product Offering Configuration.

Use Case 1 covers the Actions, INSTALL and CHANGE. An INSTALL action is used by the Buyer to express the intention of installing a new Product based on the given Product Specifications and Delivery Context, and to receive the list of possible Product Offering Configurations.

A CHANGE action is used to identify, based on a Product Identifier, if there are Product Specific Attributes that can be changed.

**[R1]** The Buyer **MUST** support Use Case 1.

**[R2]** The Seller **MUST** support Use Case 1.

Note: the DISCONNECT activity has not been included as a sub-Use Case for Use Case 1 since there are no Product Specific Attributes that can be changed with a DISCONNECT Action within a Product Order.

#### **8.2.1.1 Actors**

The Actors of Use Case 1 are the Buyer and the Seller.

#### **8.2.1.2 Pre-Conditions**

The Pre-Conditions for Use Case 1 are defined below:

1. Any referenced pre-requisite Products are in place and are in the correct Administrative or Operational state to be referenced.
2. Any referenced location identifiers exist within the Seller's systems and are available to the Buyer.

Note: Location is defined in MEF 150.

#### **8.2.1.3 Use Case 1 Process Steps**

The process steps and requirements for Use Case 1 are defined below:

1. The Buyer places a request to retrieve Product Offering Configuration availability for an Action of INSTALL or the Buyer places a request to retrieve Product Offering Availability Discovery for an Action of CHANGE. For the context of this document, CHANGE indicates that the Buyer is requesting a change to the attributes of an existing Product identified by its Product Identifier. Change case returns a list of POCs that are available based on the Product Offering that was selected for the installed Product. This list may be similar to what was returned for INSTALL or it may be a sub-set of what was returned based on business rules.

<b>Attribute</b>	<b>Description</b>	<b>Type</b>
Buyer ID	The unique identifier of the organization that is acting as the customer in this transaction. See MEF 79.1 for requirements around the use of this attribute.	Identifier
Seller ID	The unique identifier of the organization that is acting as the supplier in this transaction. See MEF 79.1 for requirements around the use of this attribute.	Identifier
Action	The action to be performed by the Seller to fulfil any 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 = INSTALL.	Identifier
Product Identifier	A reference to a Product in the Product Inventory that is used when the Action = 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 Table 7)
Locations	A list of Locations and their roles defined by the Product Specification identified by the Product Specification attributes.	List of Locations (see Table 6)

**Table 5 – Use Case 1 Request Attributes**

Attribute	Description	Type
Location Type	The method used to describe the location at which this Product Offering Configuration is installed or is to be installed if this Product Offering Configuration is to be installed at a particular location.	String that is one of: <ul style="list-style-type: none"> <li>SERVICE_SITE_IDENTIFIER</li> <li>FIELDDED_ADDRESS</li> <li>FORMATTED_ADDRESS</li> <li>GEOGRAPHIC_POINT</li> <li>GEOGRAPHIC_ADDRESS_LABEL</li> </ul>
Location Role	The role of a location	A string that is one of:
Location	The detailed location at which this Product Offering Configuration is installed or is to be installed if this Product Offering Configuration is to be installed at a particular location.	A Service Site Identifier, a Fielded Address as defined in MEF 79.1 [8], a Formatted Address as defined in MEF 79.1 [8], a Geographic Address Label as described in MEF 79.1, or a Geographic Point as defined in MEF 79.1 [8] by reference only.

Table 6 – Locations Attributes

[R3] When the Action = INSTALL, the Retrieve Product Offering Availability request **MUST** contain the following attributes defined in Table 5:

- Action with its' value set to INSTALL
- Product Specification Identifier

[R4] When the Action = CHANGE, the Retrieve Product Offering Availability request **MUST** contain the following attributes defined in Table 5:

- Action with its' value set to CHANGE
- Product Identifier

[R5] If the Product Specification specifies mandatory Locations, the Retrieve Product Offering Availability request **MUST** contain the following attributes defined in Table 5:

- Locations

[R6] If the Product Specification specifies mandatory Product Relationships, the Retrieve Product Offering Availability request **MUST** contain the following attributes defined in Table 5:

- Product Relationships

- [R7] If the Action = INSTALL, the Retrieve Product Offering Availability request submitted by the Buyer to the Seller for Use Case 1 **MUST NOT** include the Product Identifier attribute.
- [R8] If the Action = CHANGE, the Retrieve Product Offering Availability Request submitted by the Buyer to the Seller for Use Case 1 **MUST NOT** include the Product Specification Identifier.
- [R9] If the Action = INSTALL and if Product Relationships are provided, the request submitted by the Buyer to the Seller for Use Case 1 **MUST** only include Product Relationships as defined by and in accordance with the rules given in the Product Specification referenced in the Product Specification Identifier attribute.
- [R10] If the Action = CHANGE, the Retrieve Product Offering Availability request **MUST NOT** contain the following attributes defined in Table 5:
- Product Relationships
  - Locations
- [R11] If the Action = INSTALL and if the Locations are provided, the list submitted by the Buyer to the Seller for Use Case 1 **MUST** only include a Location and Location Type for every Location Role defined by and in accordance with the rules given in the Product Specification referenced in the Product Specification Identifier attribute.
- [R12] The request submitted by the Buyer to the Seller for Use Case 1 **MUST NOT** include any attributes that are not defined in Table 5.

Attribute	Description	Type
Related Product Identifier	A list of one or more Identifiers of existing Products (unique within this Seller). When the Buyer provides multiple Related Product Identifiers the Seller processes the list as defined in the Product Specification.	List of Identifier
Relationship Nature	Specifies the nature of relationship to the related Product. The nature of required relationships vary for Products of different types. For example, a UNI or ENNI Product may not have any relationships, but an Access E-Line may have two mandatory relationships (related to the UNI on one end and the ENNI on the other). More complex Products such as multipoint IP or Firewall Products may have more complex relationships. As a result, the allowed and mandatory Relationship Nature values are defined in the Product Specification.	String that is one of the relationship types specified in the Product Specification.

**Table 7 – Product Relationship Attributes**

- [R13] When specifying a Product Relationship, both the Related Product Identifier and Relationship Nature, and no other attributes, **MUST** be specified.
- [R14] Every Location in the request submitted by the Buyer to the Seller **MUST** include a Place attribute.
- [R15] Every Location in the request submitted by the Buyer to the Seller **MUST** include a Role attribute.
- [R16] A Location **MUST NOT** include any attributes that are not defined in Table 5 or Table 6.

3. The Seller validates the request to ensure that:

- a. The Product Specification Identifier is valid if Action = INSTALL and the Product Identifier is valid if Action = CHANGE.

- b. If the Action = INSTALL, the correct number of locations are provided, each with an appropriate role meeting the criteria defined in the Product Specification.
  - c. If the Action = INSTALL and where relationships to other Products are required by the Product Specification, they refer to valid Products of the correct Product Specification and each with the correct relationship type according to the Product Specification definition.
  - d. There is compliance to any additional criteria and constraints that apply to the request agreed between the Buyer and Seller during on-boarding.
4. The Seller Synchronously Communicates to the Buyer a list of zero or more Product Offering Configurations, including the Installation Interval for each, for the Product Specification Identifier in the request in the specified Delivery Context when the Action = INSTALL. When the Action = CHANGE the Seller responds with a list of zero or more Product Specific Attributes that can be modified by the Buyer for the given Product Identifier.

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

**[R17]** The Seller **MUST** echo back the attributes of the Product Offering Availability Discovery request.

Attribute	Description	Type
Product Offering Configuration Identifier	The identifier for a Product Offering Configuration within the requested Delivery Context.	Identifier
Product Offering Identifier	The identifier for the Product Offering that this configuration must be ordered as.	Identifier
Product Specific Attributes	The technical attributes for the Product that make this configuration unique within the Delivery Context. This essentially specifies the values for attributes defined in the Product Offering.	For each Product Specification the Product Attributes are included in the response are agreed to by the Buyer and Seller. This includes different Product Attributes returned based on the Action
Installation Interval	The indicative duration >0 for the delivery of the configuration in the specified Delivery Context when manual work is required. The shortest interval is specified by the Seller. It is not considered a commitment by the Seller.	Duration (see section 8.4.1)

**Table 8 – Product Offering Configuration Attributes**



- [R18] The Seller **MUST NOT** return a response to a Product Offering Availability Discovery request that contains two Installation Intervals and in which all other attributes are the same.
- [R19] If the Action = INSTALL and the request is successful, the response given by the Seller to the Buyer for Use Case 1 **MUST** include a list of zero or more Product Offering Configurations as shown in Table 8.
- [R20] If the request is unsuccessful or fails validation, the response given by the Seller to the Buyer for Use Case 1 **MUST** contain no Product Offering Configuration and indicate that an error occurred.
- [R21] If the request is successful and contains a non-empty list, every Product Offering Configuration in the response given by the Seller to the Buyer in Use Case 1 **MUST** include a Product Offering Configuration Identifier attribute that uniquely identifies that Product Offering Configuration within the Seller.
- [R22] If the request is successful and contains a non-empty list, every Product Offering Configuration in the response given by the Seller to the Buyer **MUST** include a Product Offering Identifier for a Product Offering that can be delivered in the specified context as shown in Table 8.
- [R23] For any Product Specification used in a Product Offering Availability request, the Buyer and Seller **MUST** agree on the set of Product Specific Attributes to be returned in the response.

This could be specified in the Product Offering.

- [R24] If the request is successful and contains a non-empty list, every Product Offering Configuration in the response given by the Seller to the Buyer **MUST** include values for the agreed set of Product Specific Attributes according to the Product Specification as shown in Table 8.
- [R25] If the request is successful, and contains a non-empty list, every Product Specific Attribute in the response given by the Seller to the Buyer **MUST NOT** include any Product Specific Attributes that are not defined in the Product Specification.
- [R26] If the request is successful and contains a non-empty list, every Product Offering Configuration in the response given by the Seller to the Buyer **MUST** include the Installation Interval attribute.
- [R27] If the request is successful and contains a non-empty list, every Product Offering Configuration in the response given by the Seller to the Buyer **MUST NOT** include any attributes that are not defined in Table 8.
- [R28] For each Product Offering Configuration, its Product Offering Configuration Identifier **MUST** be valid for a Pricing Discovery request for a period of at least 15 minutes.

For a unique combination of Product Specification Identifier (from the Buyer's request), Activity (from the Buyer's request), Product Offering Configuration Identifier (from the Seller's response), Product Specific Attributes (from the Seller's response), and Installation Interval (from the Seller's response), the Seller may return the same Product Offering Configuration Identifier for different requests or may return a different Product Offering Configuration Identifier for each request.

The Seller is expected to ensure that if a Product Offering Configuration Identifier is not valid that it is not returned from the Seller's systems. The use of a Product Offering Configuration Identifier within a Product Order is beyond the scope of this document.

#### **8.2.1.4 Post Conditions**

The Post Conditions of these Use Cases are that the Buyer receives a list of zero or more Product Offering Configurations reflecting the different available Product Offerings and the Installation Interval for each.

#### **8.2.1.5 Alternative Paths**

The Alternative Paths for these Use Cases are the Seller returns an error message if:

1. The request is missing mandatory or conditionally mandatory (where applicable) parameters for the Envelope.
2. The request is missing mandatory or conditionally mandatory (where applicable) parameters for the Payload.
3. Pre-agreed constraints and business rules have not been complied with.

### **8.2.2 Use Case 2: Retrieval of Commercial and Contractual Options for a Product Offering Configuration**

Following the execution of Use Case 1, the Buyer can request a list of Commercial Options and Contractual Options and their relationship from the Seller for a specific Product Offering Configuration selected from the list of Product Offering Configurations returned by the Seller. The Seller responds using Synchronous Communication to the Buyer with a list of one or more Commercial and Contractual Options meeting the Buyer's Product Offering Configuration.

Use Case 2 covers the two Activity types, INSTALL, and CHANGE. They share the same Actors and Pre-Conditions.

**[R29]** The Buyer **MUST** support Use Case 2.

**[R30]** The Seller **MUST** support Use Case 2.

#### **8.2.2.1 Actors**

The Actors of Use Case 2 are the Buyer and the Seller.

#### **8.2.2.2 Pre-Conditions**

The Pre-Conditions for Use Cases 2 are:

1. Buyer has the Product Offering Configurations.

2. Any referenced pre-requisite Products are in place and are in the correct Administrative or Operational state to be referenced.
3. Any referenced location identifiers exist within the Seller's systems and are available to the Buyer.

#### **8.2.2.3 Use Case 2 Process Steps**

1. The Buyer places a request to retrieve Commercial and Contractual Options for a Product Offering Configuration.

**[R31]** When the Action is INSTALL, the Retrieve Commercial and Contractual Options for a Product Offering Configuration request **MUST** contain the following attributes defined in Table 9:

- Product Offering Configuration Identifier
- Product Relationships
- Locations

**[R32]** The request submitted by the Buyer to the Seller when the Action = INSTALL **MUST NOT** include the Product Identifier attribute.

**[R33]** When the Action is CHANGE, the Retrieve Commercial and Contractual Options for a Product Offering Configuration request **MUST** contain the following attributes defined in Table 9:

- Product Offering Configuration Identifier
- Product Identifier

**[R34]** The request submitted by the Buyer to the Seller when the Action = CHANGE **MUST NOT** include the Product Specification Identifier attribute.

**[R35]** When provided, the list given in the attribute Product Relationships in the request submitted by the Buyer to the Seller for Use Case 2 **MUST** include all Product Relationships and relationship types as defined by and in accordance with the rules given in the Product Specification for the Product Offering for the Product Offering Configuration referenced in the Product Offering Configuration Identifier attribute.

**[R36]** When provided, the list given in the attribute Product Relationships in the request submitted by the Buyer to the Seller for Use Case 2 **MUST NOT** include any Product Relationship having a Product Relationship Nature that are not defined by the Product Specification referenced in the Product Offering Configuration Identifier attribute.

- [R37] When provided, the list given in the attribute Locations in the request submitted by the Buyer to the Seller for Use Case 2 **MUST** include all Locations and roles as defined by and in accordance with the rules given in the Product Specification referenced in the Product Offering Configuration Identifier attribute.
- [R38] When provided, the list given in the attribute Locations in the request submitted by the Buyer to the Seller for Use Case 2 **MUST NOT** include any Locations and roles that are not defined by the Product Specification referenced in the Product Offering Configuration Identifier attribute.
- [R39] The request submitted by the Buyer to the Seller for Use Case 2 **MUST NOT** include any attributes that are not defined in Table 9.

Attribute	Description	Type
Action	The action to be performed by the Seller to fulfill any 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 Use Case 1 response that Commercial and Contractual Options are being requested for.	Identifier
Product Identifier	A reference to a Product in the Product Inventory	Identifier
Product Relationships	A list of Products with their relationship types defined as mandatory by the Product Offering identified by the Product Specification Identifier attribute.	List of Product Relationships
Locations	A list of Locations and their roles defined as mandatory by the Product Specification identified by the Product Offering Configuration Identifier attribute.	List of Locations

**Table 9 – Use Case 2 Request Attributes**

- [R40] When provided, the list given in the attribute Product Relationships in the request submitted by the Buyer to the Seller for Use Case 2 **MUST** only include all Product Relationships and relationship types as defined by and in accordance with the rules given in the Product Specification referenced by the Product Offering Configuration, which is itself referenced by the Product Offering Configuration Identifier attribute.

- [R41] The request submitted by the Buyer to the Seller for Use Case 2 when the Action is INSTALL **MUST** include a Locations attribute, if the Product Specification includes a Location role.
- [R42] When provided, the list given in the attribute Locations in the request submitted by the Buyer to the Seller for Use Case 2 **MUST** only include all Locations and roles as defined by and in accordance with the rules given in the Product Specification referenced by the Product Offering Configuration, which is itself referenced by the Product Offering Configuration Identifier attribute.
- [R43] The request submitted by the Buyer to the Seller for Use Case 2 **MUST NOT** include any attributes that are not defined in Table 9.

2. The Seller validates the request to ensure:

- a. The Product Offering Configuration Identifier or Product Identifier is valid.
- b. The correct number of locations are provided, each with an appropriate role meeting the criteria of the Product Specification.
- c. Where relationships to other Products are required by the Product Specification, they refer to valid Products of the correct Product Specification and each with the correct Relationship Nature according to the Product Specification definition.
- d. There is compliance to any additional criteria and constraints that apply to the request agreed between the Buyer and Seller during on-boarding.

3. The Seller responds to the Buyer with a list of one or more Commercial and Contractual Options for the specified Product Offering Configuration.

- [R44] If the request is successful, the response given by the Seller to the Buyer for Use Case 2 INSTALL Action **MUST** include the attribute Product Offering Configuration Commercial and Contractual Options.
- [R45] The Seller responds with the Product Offering Configuration Commercial and Contractual Options for a CHANGE Action of the current configuration to the configuration specified in the referenced Product Identifier.
- [R46] If the request is successful, the response given by the Seller to the Buyer for Use Case 2 **MUST NOT** include any attributes that are not defined in Table 10 and Table 11.
- [R47] If a Seller has returned multiple POC IDs to the Buyer in different Availability Discovery responses that refer to the same set of Product Offering Configuration values, then the Seller **MUST** return the same response to a Pricing Discovery request for a given delivery context that contains any of those POC IDs that are within their validity period.

[R47] means that a Pricing Discovery request for a given delivery context and a given Product Offering Configuration always has to return the same result regardless of which POC ID is used to refer to that Product Offering Configuration. In particular, this is the case even if the POC ID was originally returned to the Buyer in an Availability Discovery response for a different delivery context.

**[R48]** All attributes included in the Buyer's request **MUST** be echoed back to the Buyer in the Seller's response.

Attribute	Description	Type
Product Offering Configuration Commercial and Contractual Options	Product Offering Configurations that meet the criteria specified in the Buyer's request.	A list of Product Offering Configuration Commercial and Contractual Options (see section 8.2.3)

**Table 10 – Product Offering Configuration Commercial and Contractual Option Attribute**

Attributes in Table 11 are included for each Term and Price.

Attribute	Description	Type
Product Offering Configuration Commercial and Contractual Option Identifier	The identifier for a Product Offering Configuration Commercial and Contractual Option for the given Product Offering Configuration.	Identifier
Installation Interval	The indicative duration >0 for the delivery of the configuration in the specified Delivery Context when manual work is required. The shortest interval is specified by the Seller. It is not considered a commitment by the Seller.	Duration (see section 8.4.1)
Term	The minimum term for this Product Offering Configuration Commercial and Contractual Option for the given Product Offering Configuration Option within the requested Delivery Context.	Duration (see section 8.4.1)
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>

Attribute	Description	Type
Roll Interval	The recurring period that the Buyer is required to pay at the end of the term to extend the term after the original term has expired.	Duration (see section 8.4.1)
Valid Until Date	The date that the Product Offering Configuration Commercial and Contractual Option is valid until.	DateTime
Prices	The prices that apply to this Product Offering Configuration Commercial and Contractual Option for the given Product Offering Configuration within the requested Delivery Context.	List of Price for a single Commercial and Contractual Option (see section 8.2.3)
Subject to Additional Non-recurring Charges	An indicator to inform the Buyer that additional non-recurring charges may be added during fulfillment.	Boolean

**Table 11 – Product Offering Configuration Commercial and Contractual Option Details**

The Seller End of Term attributes are defined as follows:

- “ROLL” if the Product’s contract will continue on a rolling basis once the contract’s initial term expires,
- “AUTO-DISCONNECT” if the Product will automatically be disconnected (and contract terminated) by the Seller once the contract term expires,
- “AUTO-RENEW” if the Product’s contract will be renewed for another term equivalent to the original contract term.

**[R49]** If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer in Use Case 2 **MUST** include a Product Offering Configuration Commercial and Contractual Option Identifier attribute.

**[R50]** If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include a Term attribute representing the minimum commitment term that the Buyer would be committing to if this option is ordered.

**[R51]** If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include the Seller End of Term Action attribute.



- [R52] If the request is successful, the value of the Seller End of Term Action attribute in each Product Offering Configuration Commercial and Contractual Option in the response **MUST** be one of ROLL, AUTO-DISCONNECT, or AUTO-RENEW.
- [D1] If the request is successful, the period of time after auto-renewal occurs and in which the Buyer can disconnect the Product without penalty **SHOULD** be agreed to by the Buyer and Seller.
- [R53] If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include the Roll Interval attribute if the value of the Seller End of Term Action attribute is “ROLL”.
- [R54] If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST NOT** include the Roll Interval attribute if the value of the Seller End of Term Action attribute is “AUTO-RENEW” or “AUTO-DISCONNECT”.
- [R55] If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include the Valid Until Date attribute.
- [R56] If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include a Prices attribute.
- [R57] If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include a Subject to Additional Non-recurring Charges attribute.
- [R58] If the request is successful, the Subject to Additional Non-recurring Charges attribute in each Product Offering Configuration Commercial and Contractual Option in the response **MUST** be FALSE if the referenced Product Offering Configuration Option has its’ Automated Delivery indicator set.
- [R59] If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST NOT** include any attributes that are not defined in Table 11.
- [D2] If the request is successful, for every unique combination of Product Offering Configuration Identifier (from the Buyer’s request), Activity (from the Buyer’s request), Delivery Context (from the Buyer’s request), Term (from the Seller’s response), End of Term Action (from the Seller’s response), Roll Interval (from the Seller’s response), and Prices (from the Seller’s response), the Seller **SHOULD** give the Product Offering Configuration Commercial and Contractual Option a consistent Product Offering Configuration Commercial



and Contractual Option Identifier no matter how many times the Buyer initiates Use Case 2.

**[R60]** If the request is successful, every Product Offering Configuration Commercial and Contractual Option in the response given by the Seller to the Buyer **MUST** include a Subject to Additional Non-recurring Charges attribute.

Note: This is similar but not exactly like the Firm and Firm Subject to Feasibility Study in MEF 80.

#### **8.2.2.4 Post Conditions**

The Buyer receives a list of one or more Commercial and Contractual Options meeting the Buyer's criteria.

#### **8.2.2.5 Alternative Paths**

The Seller returns an error message if:

1. The request is missing mandatory or conditionally mandatory (where applicable) parameters.
2. The supplied Product Offering Configuration identifier is invalid.
3. The Delivery Context has not been fully specified.
4. Pre-agreed constraints and business rules have not been complied with.

### **8.2.3 Price Attributes**

The attributes of the Price type are given in Table 12. The specific wording here is not the wording defined in MEF 74 [5]. The wording is aligned with MEF 74 [5] in that they represent Fixed (Non-recurring, Recurring) or Variable (Usage Based) pricing.

<b>Attribute</b>	<b>Description</b>	<b>Type</b>
Name	Name of the Price.	String
Description	A textual description of the Price	String
Price Type	Indicates if the price is for recurring, non-recurring, or usage-based charges.	Indicator with the following allowed values: <ul style="list-style-type: none"> <li>• NON-RECURRING</li> <li>• RECURRING</li> <li>• USAGE BASED</li> </ul>

Recurring Charge Period	The recurring duration for which this charge will be applied.	One of <ul style="list-style-type: none"> <li>• HOUR</li> <li>• DAY</li> <li>• WEEK</li> <li>• MONTH</li> <li>• YEAR</li> </ul>
Unit of Measure	Unit of Measure (Gb, SMS volume, etc.) if Price Type = Usage Based	String – for further study
Firm	An indicator specifying whether or not this charge may change during fulfilment.	Boolean
Price Tax Rate	The tax rate applied.	String
Price Tax Included Amount	All taxes included amount (expressed in the given currency).	Money <ul style="list-style-type: none"> <li>• Currency</li> <li>• Value</li> </ul>
Price Duty Free Amount	All taxes excluded amount (expressed in the given currency).	Money <ul style="list-style-type: none"> <li>• Currency</li> <li>• Value</li> </ul>

**Table 12 – Price Attributes**

- [R61] Every Price in the response given by the Seller to the Buyer **MUST** include the Name, Description and Price Type attributes.
- [R62] The Price Type attribute **MUST** have one of the following values: NON-RECURRING, RECURRING, or USAGE\_BASED.
- [R63] Every Price in the response given by the Seller to the Buyer **MUST** include the Recurring Charge Period attribute if the Price Type attribute has the value RECURRING.
- [R64] Every Price in the response given by the Seller to the Buyer **MUST NOT** include the Recurring Charge Period attribute if the Price Type attribute has the values NON-RECURRING or USAGE\_BASED.
- [R65] Every Price in the response given by the Seller to the Buyer **MUST** include the attribute Unit of Measure if the Price Type attribute has the value USAGE\_BASED.
- [R66] Every Price in the response given by the Seller to the Buyer **MUST NOT** include the attribute Unit of Measure if the Price Type attribute has the value NON-RECURRING, or RECURRING.
- [R67] Every Price in the response given by the Seller to the Buyer **MUST** include the attribute Firm if the Price Type attribute has the value NON-RECURRING.

- [R68]** Every Price in the response given by the Seller to the Buyer **MUST** have the attribute Firm set to the value TRUE if the Price Type attribute has the value RECURRING, or USAGE\_BASED.
- [R69]** Every Price in the response given by the Seller to the Buyer **MUST** have the attribute Firm set to FALSE if the Price Type attribute has the value Non-Recurring if the Price is not firm.
- [R70]** Every Price in the response given by the Seller to the Buyer **MUST** have the attribute Firm set to TRUE if the Price Type attribute has the value Non-Recurring if the Price is firm.
- [R71]** Every Price in the response given by the Seller to the Buyer **MUST** include the attribute Price Duty Free Amount.
- [O1]** Every Price in the response given by the Seller to the Buyer **MAY** include the Price Tax Rate and Price Tax Included Amount.
- [R72]** Money **MUST** include the currency type and the value or amount of currency.
- [R73]** Every Price in the response **MUST NOT** include any attributes not defined in Table 12.

### 8.3 Common Types Used in Requests

This subsection describes common types that are used by requests made from the Buyer to the Seller in both Use Case 1 and Use Case 2.

#### 8.3.1 Product Relationship attributes

The attributes of the Product Relationship type are given in Table 13.

Attribute	Description	Type
Related Product Identifier	A list of one or more Identifiers of the related Products in the Product Inventory.	Product Identifier
Product Relationship Nature	Specifies the nature of relationship to the related Product. The nature of required relationships vary for Products of different types.	String that is one of the relationship types specified in the Product Specification.

**Table 13 – Product Relationship Attributes**

- [R74]** Every Product Relationship in the request submitted by the Buyer to the Seller **MUST** include a Related Product Identifier attribute.

- [R75] Each Product Identifier in the Related Product Identifier attribute in a Product Relationship **MUST** reference a Product in the Product Inventory, which is in an ACTIVE, ACTIVE\_PENDING\_CHANGE, or PENDING status.

Note: it is possible that Product Identifiers for Products which are currently pending installation can be used. Product Identifiers for Products that have been decommissioned cannot be used.

- [R76] Every Product Relationship in the request submitted by the Buyer to the Seller **MUST** include a Relationship Nature attribute.
- [R77] The Product Relationship Nature attribute in a Product Relationship **MUST** be one of those defined by the Product Specification referenced by the request in the case of Use Case 1, or the Product Offering Configuration in the request in Use Case 2.
- [R78] A Product Relationship **MUST NOT** include any attributes be that are not defined in Table 13.

### 8.3.2 Place attributes

- [R79] Every Location in the request submitted by the Buyer to the Seller **MUST** include a Role attribute.
- [R80] A Location **MUST NOT** include any attributes be that are not defined in Table 13.

For details on Place and Locations see MEF W79.1 [6].

## 8.4 Common Types Used in Responses

This subsection describes common types that are used by responses given by the Seller to the Buyer in both Use Case 1 and Use Case 2.

### 8.4.1 Duration attributes

The attributes of the Duration type are given in Table 14.

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

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>• SELLER BUSINESS DAYS</li> <li>• CALENDAR MONTHS</li> <li>• CALENDAR YEARS</li> </ul>
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**Table 14 – Duration attributes**

- [R81] Every Duration in the response given by the Seller to the Buyer **MUST** include an Amount attribute.
- [R82] The value of the Amount attribute in every Duration in the response given by the Seller to the Buyer **MUST** have a value that is equal to or greater than 0.
- [R83] Every Duration in the response by the Seller to the Buyer **MUST** include a Units attribute.
- [R84] The value of the Units attribute **MUST** be one of: SECONDS, MINUTES, HOURS, BUSINESS HOURS, DAYS, SELLER BUSINESS DAYS, CALENDAR MONTHS, or YEARS.
- [R85] Every Duration in the response given by the Seller to the Buyer **MUST NOT** include any attributes that are not defined in Table 14.

## 9 References

- [1] IETF RFC 2119, *Key words for use in RFCs to Indicate Requirement Levels*, by S. Bradner, March 1997
- [2] IETF RFC 8174, *Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words*, by B. Leiba, May 2017, Copyright (c) 2017 IETF Trust and the persons identified as the document authors. All rights reserved.
- [3] MEF 55.1, *Lifecycle Service Orchestration (LSO): Reference Architecture and Framework*, January 2021
- [4] MEF 57.2, *Product Order Management Business Requirements and Use Cases*, June 2022
- [5] MEF 74, *Commercial Affecting Attributes*, December 2018
- [6] MEF W79.1, *Product Offer Qualification Business Requirements and Use Cases*, January 2023
- [7] MEF 80, *Quote Management Requirements and Use Cases*, May 2021
- [8] MEF W150, *Address and Service Site Management, Business Requirements and Use Cases*

## Appendix A

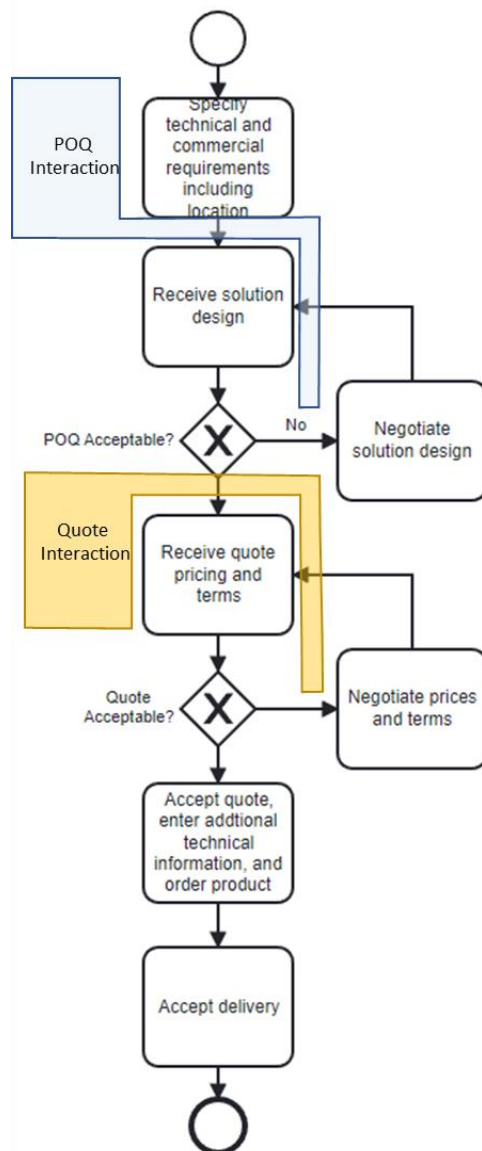
This Appendix contains examples, and it should not be considered normative text. The examples shown in this Appendix describe an experience that is born out of changing conditions in the telecoms market, including growth of Datacenter and cloud-centric connectivity where capacity can be pre-provisioned, the pervasive implementation of SDN and NFV technologies, and automation.

### A.1 Comparison of pre-ordering experience between Traditional and Availability and Discovery process products

To provide context, the examples within this appendix use E-Line services as an example. It should be noted, however, that the Use Cases and requirements in this document have been written such that they are independent of the Product being procured. These examples include the End Customer, a Service Provider, and an Operator. The End Customer may use the Cantata IRP (acting as the Buyer) or other methods to communicate their needs to the Service Provider. The Service Provider acts as the Buyer when using the Sonata IRP to communicate with the Operator (Seller).

#### Figure 5 – Traditional Telecoms sales process with Sonata interactions overlaid

shows an example of the traditional steps that a Buyer takes through receiving a Product from a Seller.



**Figure 5 – Traditional Telecoms sales process with Sonata interactions overlaid**

**This process contains several steps that are defined in detail below. An important aspect to note in Figure 5 – Traditional Telecoms sales process with Sonata interactions overlaid**

is the option to loop through a technical and commercial negotiation process between the Buyer and the Seller, which allows multiple closed queries to be made over Sonata interfaces while options to meet the End Customer’s needs are explored.

The traditional telecoms sales process for a Product like E-line or similar is made up of the following steps, often accomplished through human-to-human interaction. This process has evolved based on the following aspects of the operating environment:

1. The Buyer specifies technical and commercial requirements and communicates these to the Seller. Technical requirements include any physical requirements, e.g., locations, as well



service specific attributes such as bandwidth. The Buyer doesn't have a deep understanding of what the Seller can offer nor the geographic reach of the Seller but does understand what is needed and where.

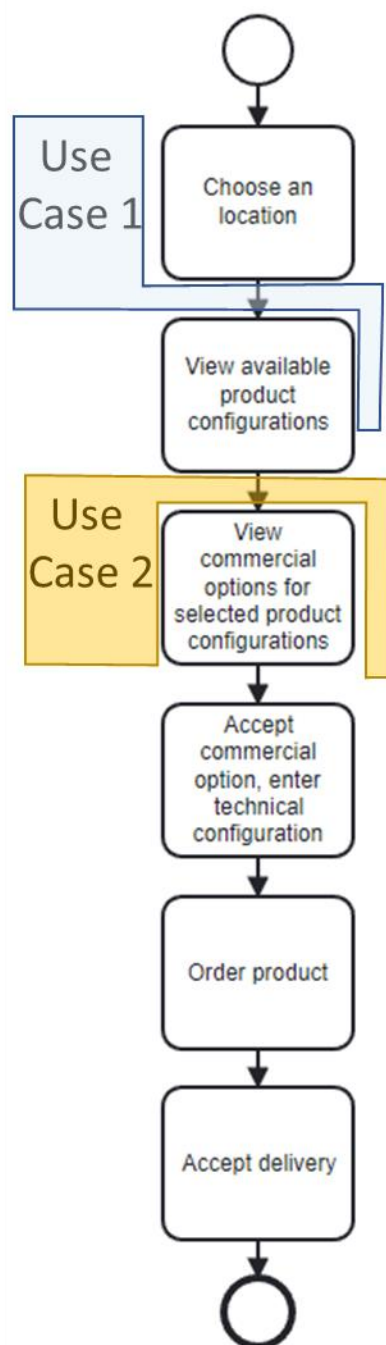
2. The Seller qualifies that a solution can be provided to meet the Buyer requirements. If such a solution can be provided, the Seller produces a solution design, specifying the appropriate attributes. The Seller returns the result of the qualification request, and if applicable, the solution design, and attributes to the Buyer. This is described in MEF W79.1 [5]. Despite the automation of some steps, usually the overall process is largely made up of human-to-human interaction which is a manually intensive process that may lead to offline negotiations and some level of compromise.
3. The Seller provides a commercial framework for the specified solution. The Seller returns the result of the commercial framework to the Buyer. This is described MEF 80 [6]. Despite the automation of some steps, usually the overall process is largely made up of human-to-human interaction which is a manually intensive process that may lead to offline negotiations and some level of compromise.
4. The Buyer reviews the solution design, commercial framework, and Quote in order to make a decision as to whether it is fit-for-purpose (technically), and the commercial framework is acceptable. This is described in MEF 80 [7]. The details of the solution design and commercial framework are negotiated between the Buyer and Seller, with revised quotes and solution designs being proposed, reviewed, and potentially negotiated further. This is described in MEF W79.1 [8] and MEF 80 [7].
5. A solution design and the commercial framework are ultimately agreed, and the Buyer places one or more Product Orders as specified in MEF 57.2 [4].
6. The Seller delivers the solution to the Buyer, including any access capacity and devices.
7. The Buyer accepts the delivered solution.

The duration of the process, from the point that the prospective Buyer specifies technical and commercial requirements to the point that the Buyer accepts a solution design and commercial framework and places an order, can be a number of days, weeks, and in some cases months. There is often flexibility to define a bespoke commercial framework on a per solution basis. The possibility of change in solution design must be minimized before orders are placed because the delivery of most solutions requires significant manual work, which is error-prone, time-consuming, and costly to undo and redo if changes are made to the solution design during fulfillment. Delivery of physical access, such as fiber or copper access, must be carefully planned because it is often new and thus requires significant investment. Inventory data is unreliable due to the high level of manual data entry and maintenance over a prolonged period of time resulting in data quality issues.

Products supported by the methods described in this document are generally finer grained in nature, with the Buyer procuring an end-to-end Product one component at a time. For example, an E-Line Product is procured in 3 separate transactions.

The process a Buyer goes through to procure a UNI using an Availability and Discovery process is shown in Figure 6 – Product Offering Availability Discovery and Pricing Discovery process for procurement of a UNI

This process is repeated twice to each to procure one of the two UNIs required for the E-Line Product.



**Figure 6 – Product Offering Availability Discovery and Pricing Discovery process for procurement of a UNI**

The Availability and Discovery process is often presented to the Buyer as a self-service portal/API experience, and is made up of the following steps:

1. The Buyer chooses a location (Geographic Address or Site ID) from a list of available locations provided by Seller/Partner (typically Buildings or Campuses) at which a UNI can be procured.

Step 1 aligns with work done via traditional methods.

2. The Buyer chooses a UNI configuration from a list of all of the UNI configurations currently available at the selected physical location (attributes such as Port type, speed, optics type, are included in the selection). Each option is presented with a lead-time which may be immediately.

Note: Step 2 differs from traditional methods where the Buyer provides the desired configuration. In Step 2, the Seller provides a list of UNI configurations that are available at that location rather than requiring the Buyer to select an offering.

3. The Buyer chooses a commercial framework, including term and price, from a list of all available commercial options of the selected configuration at the selected location. This commercial framework is valid for a very limited time, usually in terms of minutes, before it expires.

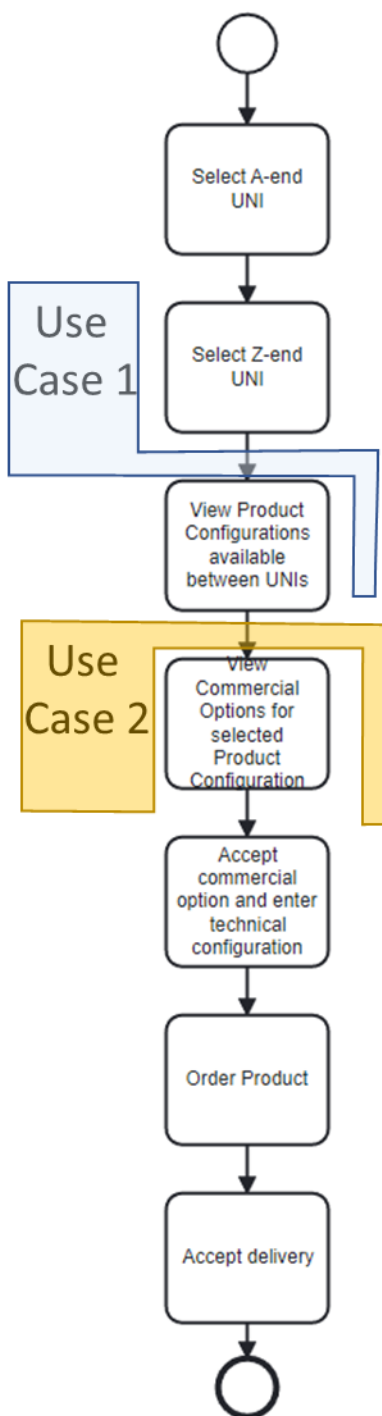
Note: Step 3 provides details of terms and pricing that would traditionally require multiple Quote requests/responses.

4. The Buyer accepts one of the available commercial offerings and enters any additional technical configuration according to machine-readable templates defined by a Seller, and Buyer should choose the values from the list provided in this template.
5. The Buyer submits the order as in the traditional method.
6. The selected configuration is delivered and handed over to the Buyer.

Should Step 2 present an Installation Interval against a configuration that is not immediate (i.e., in the order of hours or days) it usually means that some physical work is required, and thus Step 6 is not fully automated. The Buyer can also break out of this process at any step. However, if this is done, the Buyer, may not be able to resume from where the process was stopped but must instead start again from the first step.

Once the Buyer has the required UNIs, they can order connections between them. Although the examples show point to point connectivity, multi-point Products or Products that only impact a single location can be supported by the same capabilities. Figure 7 – Product Offering Availability Discovery and Pricing Discovery process for procurement of an E-Line

shows an example of the process a Buyer goes through to procure an E-Line product. This process is similar to the process to procure a UNI in its broad structure.



**Figure 7 – Product Offering Availability Discovery and Pricing Discovery process for procurement of an E-Line**

This process has the following steps:

1. The Buyer chooses a UNI to be used for the A-End of the E-Line service.
2. The Buyer chooses a UNI to be used for the Z-End of the E-Line service.

3. The Buyer chooses an E-Line from a list of all E-Line configurations that can be provisioned between the selected A-End and Z-End UNIs.
4. The Buyer chooses a commercial framework, including terms and price, from a list of all available commercial options of the selected configuration.
5. The Buyer enters any additional technical configuration.
6. The Buyer submits the order.
7. The selected configuration is delivered, usually via a fully automated process performing remote configuration and handed over to the Buyer when the Product is activated.
- 8.