



## **MEF 79.1 Draft (R1)**

# **Product Offering Qualification Management Business Requirements and Use Cases**

**January 2025**

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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 identifies the common attributes and processes needed to support Product Offering Qualification (POQ) operations across the Cantata and Sonata Management Interface Reference Points (IRPs). These processes allow the Service Provider, or “Buyer” to:

- Determine whether it is feasible for the Seller to deliver a particular Product Offering with a given configuration to a particular Installation Place or Service Site if applicable.

This document supports the requirements defined in MEF 55.1[4], Section 8.11 Partner Management for LSO for partner interactions over the Cantata and Sonata interface. Both Buyer and Seller will utilize information contained within this document.

## 3 Release Notes

This document is undergoing final review and is subject to technical changes until that review is complete.

## 4 Terminology and Acronyms

This section defines the terms used in this document. In some 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 the following documents are included in this document by reference and are not repeated in the table below.

- MEF 50.1 [3]
- MEF 55.1 [4]
- MEF 55.1.1 [5]

Term	Definition	Reference
Build	<p>Build is when a Seller or Seller’s 3rd Party needs to perform additional physical work to connect to the Installation Place or Service Site. Build work can require approvals from local government, landlords or legal teams. When Build is needed during fulfillment, this may result in an extended cycle time.</p> <ul style="list-style-type: none"> <li>• The following requirements are associated with a POQ being classed as Build:               <ul style="list-style-type: none"> <li>○ Wayleave is needed (legal agreements)</li> <li>○ Installation of fiber into the Installation Place</li> <li>○ Installation of radio antenna into the Installation Place</li> <li>○ Installation of inside wiring from common equipment area to customer Installation Place</li> <li>○ New network entry point required</li> <li>○ Digging and additional approvals from concerned authorities are needed</li> </ul> </li> </ul>	

Term	Definition	Reference
Deferred Response	A Seller’s response to a Buyer’s request whereby the Seller immediately acknowledges that the request was received, and, over time, sends notifications to update the Buyer on the status and results of the request (assuming the Buyer has subscribed to receive the notifications). The Buyer can also poll the Seller for the results and status associated with the request.	This document
End Customer	The actual user of the Product that contracts for the Product with the Buyer or the Buyer’s representative.	This document
Immediate Response	A Seller’s response to the Buyer whereby the Seller responds immediately with the results of the request or indicates that the request cannot be processed. The maximum time to provide an Immediate Response is expected to be less than 30 seconds.	This document
Installation Interval	The estimated minimum interval that the Seller requires in their standard process to complete the delivery of a Product from the time the order is placed, and any precedents have been completed.	This document
OFF-NET with Build	A Service Site is said to be OFF-NET with Build when it does not have an existing connection to the Seller’s network, but the Seller can connect via a partner who is willing to build out their network to connect to the Installation Place (refer to definition of Build). Some providers may refer to this as Near-Net.	This document
OFF-NET without Build	A Service Site that does not have an existing connection to the Seller’s network, but the Seller can connect via a 3rd party’s existing connection. This may require augmentation of additional equipment, but no Build is needed for the connection.	This document
ON-NET with Build	A Service Site that does not have an existing connection to the Seller’s network, but to which the Seller is willing to build out their network to connect to the Installation Place (refer to definition of Build). Some providers may refer to this as Near-Net.	This document



Term	Definition	Reference
ON-NET without Build	A Service Sute that has an existing connection to the Seller’s network. This may require augmentation of additional equipment.	This document
Operation	An interaction between the Buyer and Seller, potentially involving multiple back and forth transactions.	This document
Product Offering Qualification	One or more POQ Items formulated into a request made by a Buyer to a Seller.	This document
Product Offering Qualification Item	An individual Item included in a POQ that describes a Product in accordance with the specified Product Offering or optionally the Product Specification. The objective is to determine if it is feasible for the Seller to deliver the Product as described and for the Seller to inform the Buyer of the estimated time interval to complete this delivery.	This document
Requesting Entity	The business organization that is acting on behalf of one or more Buyers. In the most common case, the Requesting Entity represents only one Buyer, and these terms are then synonymous.	MEF W150 [6]
Responding Entity	The business organization that is acting on behalf of one or more Sellers. In the most common case, the Responding Entity represents only one Seller, and these terms are then synonymous.	MEF W150 [6]
Use Case	A Use Case is a means to capture the requirements of a system(s). A system may have several Use Cases that define different aspects of its behavior	OMG UML v2.5

**Table 1 – Terminology**

Abbreviation	Definition	Reference
POQ	Product Offering Qualification	This document
POQ Item	Product Offering Qualification Item	This document

**Table 2 – Abbreviations**

## 5 Scope

This specification defines the Business Requirements and Use Cases to allow a Buyer to perform the following functions across the Cantata and Sonata IRP:

- Determine whether it is feasible for the Seller to deliver a particular Product based on a Product Offering with a given configuration to a particular Installation Place if applicable.
- Find out alternative Product Offerings if any are available
- Retrieve an overview of existing POQs
- Retrieve details of a specified POQ
- Register for and receive notifications

There must be an authentication mechanism whereby a Seller can be assured who a Buyer is and vice-versa. There must also be authorization mechanisms in place to control what a particular Buyer or Seller is allowed to do and what information may be obtained. Further, audit trails likely need to be maintained specifying who initiated each relevant transaction. Defining a standard for these security related matters is beyond the scope of this document. Security requirements are defined in MEF 128 [7].

This specification will be the basis of requirements for the resulting APIs enabling automated operations across the Cantata and Sonata IRP.

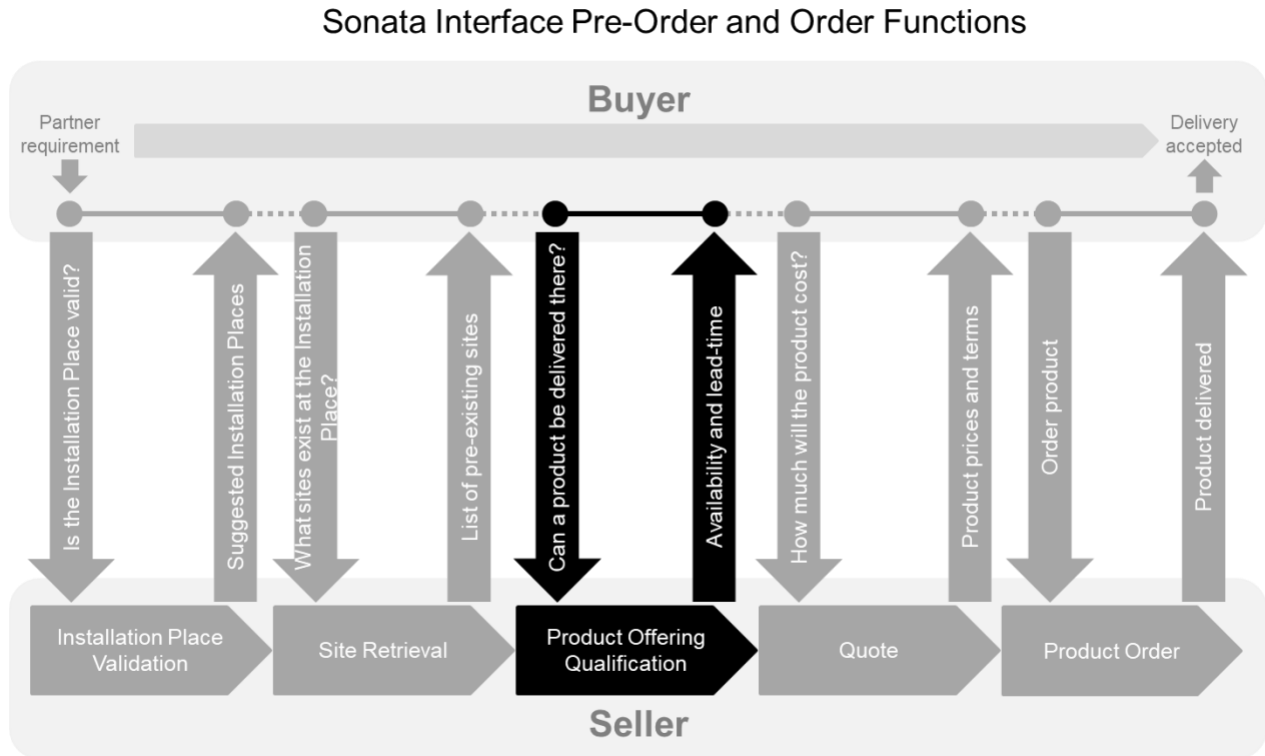
## 6 Compliance Levels

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.

## 7 Introduction

Product Offering Qualification (POQ) at the Cantata and Sonata Interface Reference Points (IRPs) is addressed within this document. POQ is a part of the pre-sale process that occurs between Buyer and Seller.



**Figure 1 – Cantata/Sonata Pre-Order and Order Functions**

Figure 1 reflects five functions from Address Validation to Product Order. This document focuses on the function shown in black. The Buyer asks if a specific configuration of a Product Offering can be provided at an Installation Place or Service Site by the Seller. The Seller responds with the technical feasibility of fulfilling a Product with the lead-time required to complete the fulfilment. This function is not required to be performed by the Buyer unless it is mandated by the Seller.

### 7.1 Product Offering Qualification

The purpose of this section is to provide an explanation of how Product Offering Qualification is used by a Buyer to determine if a Seller can support one or more Product Offerings at a specific Installation Place or Service Site.

It is important to understand that performing a POQ is not mandated. The Seller may require it be performed prior to a Quote or Product Order. The Buyer may submit a Quote or Product Order request to the Seller for a Product Offering that they believe the Seller offers without performing a POQ.

A Buyer may need to determine if the Seller can provide the desired Product Offering or Product Offerings at an Installation Place. Figure 1 shows a high-level view of the Product Offering Qualification process.

When the POQ Item Activity is INSTALL, the Product Offering Qualification verifies that the specified Product Offering can be supported with the requested Product-Specific Attributes at the specified customer address. The Buyer submits a POQ Request that includes the desired Product Offering, Product-Specific Attributes, and the Installation Place(s) or Service Site as required by the Product Specification for the Product Offering. The Seller's response indicates to the Buyer if they can deliver the specified Product Offering with the specified configuration at the specified Installation Place(s) and provides a best-case interval for delivering the Product Offering. The Seller may include alternative Product Offerings to the Buyer in their response.

When the POQ Item Activity is CHANGE, the Product Offering Qualification verifies that the specific Product can be changed, or the Product configuration can be modified at the customer address. The Buyer submits a POQ Request that includes the Product Identifier, Product-Specific Attributes, and the Installation Place(es) for the Product Identifier. The Seller's response indicates to the Buyer if they can modify the specified Product Offering configuration at the specified Installation Place(es) and provides a best-case interval for delivering the changes to the Product.

## **7.2 Pre-Requisites to POQ Operations**

Pre-requisites for POQ functions are described in this section. The following bullets indicate the areas that are agreed to by the Buyer and Seller as a part of the on-boarding process:

- Commercial contract and terms
- Authentication method
- Supported Installation Place Representations (only if Unknown method is used)
- Response type supported (Immediate, Deferred, both)
- If the Alternate Product Proposal is of the same Product Specification as the Buyer's request
- Notification support

The Buyer and Seller have established a commercial relationship. Typically, this involves the Buyer gaining a full understanding of the Seller's Product Offerings as well as establishing a contract under which business is to be conducted.

The Buyer and Seller have established mechanisms to authenticate any Operations initiated by the other party and ensure that they are authorized for the request. For requests of all types, there is a business entity that is initiating an Operation (called a Requesting Entity) and a business entity that is responding to this request (called the Responding Entity). In the simplest case, the Requesting Entity is the Buyer, and the Responding Entity is the Seller. However, in some cases, the Requesting Entity may represent more than one Buyer and similarly, the Responding Entity

may represent more than one Seller. These security mechanisms are outside the scope of this document, but they must be established prior to initiating any Operations between the parties.

As there is no mandatory common method for referencing a place on Earth, the Buyer and Seller need to negotiate, agree upon, and implement the Installation Place Identifier described in MEF W150 [6].

Note: If the Installation Place Validation API is not implemented, this can use an Installation Place Representation.

- [R1]** The Seller and Buyer **MUST** agree on the method used to identify a place, either Installation Place Representation, Installation Place Identifier, or Service Site Identifier.

The Seller has communicated to the Buyer whether they support the Immediate Response method, the Deferred Response method, or both when handling POQ requests.

Seller has communicated to Buyer if they support POQ notifications.

### **7.3 POQ Operation Example**

The Buyer needs to determine if a Seller is able to provide a Product or Products at a given place.

The Buyer initiates one or more Product Offering Qualification Operations to determine if the Seller can deliver a Product Offering with the requested Product Specific Attributes. A Product Offering Qualification is defined as a grouping of POQ Items formulated into a request made by a Buyer to a Seller. A POQ Item is defined as an individual article included in a POQ that describes a Product Offering of a particular type (Product Offering). The objective is to determine if the Seller can feasibly deliver this item as described and for the Seller to inform the Buyer of the estimated time interval to complete this delivery. In this case, the POQ would determine if the Seller can feasibly deliver a Product Offering to the place.

## 8 Use Cases and Business Process Definitions

The Use Cases within this document support Product Offering Qualification. Product Offering Qualification allows the Buyer to determine whether the Seller can deliver a Product Offering, to a specific Installation Place / Service Site (if applicable). The Seller also provides estimated time intervals to complete these deliveries.

### 8.1 Types of Responses

The Buyer initiates every Operation with a request to the Seller. There are two distinct methods in how the Seller responds:

- The Seller responds immediately with the results of the request, or they indicate they are unable to process the request. This is referred to as an Immediate Response. The maximum time to provide an Immediate Response is expected to be less than 30 seconds.
- The Seller immediately acknowledges that the request was received, and, over time, sends notifications to update the Buyer of changes and updates the progress of the request (assuming the Buyer has subscribed to receive the notifications). The time required to provide the acknowledgement is expected to be less than 30 seconds. The Buyer can also poll the Seller for the results and status associated with the request. This is referred to as a Deferred Response.

### 8.2 POQ Use Cases Overview

This section provides a set of business-related Use Cases needed to support Product Offering Qualification Management. It expands on the serviceability process defined in MEF 50.1 [3] (Determine Party Pre-Order Feasibility process element in the Lead Response-to-Contract process flow). It is assumed that all pre-requisites described in section 7.2, have been agreed to.

The Buyer initiates all Use Cases except for “Notify of POQ State Change”, which can be used by the Seller to notify the Buyer on the progress of the Buyer’s Create Product Offer Qualification request in case the Seller uses the Deferred Response type.

Use Case #	Use Case Name	Use Case Description
1	Register for POQ Notifications	A request initiated by the Buyer to instruct the Seller to send notifications of POQ and/or POQ Item State changes (see section 9) in the event the Seller uses the Deferred Response method to respond to a Create Product Offering Qualification request.
2	Create POQ	A request initiated by the Buyer to determine if the Seller can provide a particular Product Offering per specified Product Attributes.

2a	Create POQ with Action = INSTALL with a Product Offering	The request is based on a Product Offering with the defined Product Attributes to zero or more Installation Places as specified in the Product Specification per POQ Item. The Seller also provides estimated time intervals to complete these deliveries.
2b	Create POQ with Action = INSTALL with a Product Specification	The request is based on a Product Specification with the defined Product Attributes to zero or more Installation Places per POQ Item. The Seller also provides estimated time intervals to complete these deliveries.
2c	Create POQ with Action = CHANGE with a Product Identifier	The request is based on a POQ with the defined Product specified in the POQ Item. The Seller also provides estimated time intervals to complete these deliveries.
3	Retrieve POQ List	A request initiated by the Buyer to retrieve a list of POQs based on filter criteria
4	Retrieve POQ by Product Offering Qualification Identifier	A request initiated by the Buyer to retrieve the full details of a single Product Offering Qualification based on a POQ identifier.
5	Send POQ Notification	Seller sends Notifications on the progress of the Product Offering Qualification to the Buyer who subscribed for Notifications.

**Table 3 – Use Case Table**

- [R2] A Buyer **MUST** be able to initiate Use Cases 2a, 2c, and 4 described in Table 3.
- [R3] The Seller **MUST** be able to provide an Immediate Response or a Deferred Response for Use Case 2a and 2c.
- [D1] A Buyer **SHOULD** be able to initiate Use Case 2b as described in Table 3.
- [D2] A Buyer **SHOULD** be able to register with the Seller for POQ notifications as described in Use Case 1 and Retrieve POQ List as described in Use Case 3 in Table 3.

Note that the alternative is for the Buyer to poll for the results using Use Case 3.

- [CR1]<[D1] The Seller **MUST** be able to provide an Immediate Response or a Deferred Response for Use Case 2b.



- [R4] If a Deferred Response is provided, the Seller **MUST** support the ability for the Buyer to register for Notifications (Use Case 1) and to generate Notifications (Use Case 5) when the Buyer has registered for them.
- [R5] If a Buyer has registered for notifications, the Seller **MUST** generate notifications to the Buyer.
- [R6] If the Buyer has not registered for notifications, the Seller **MUST NOT** generate notifications to the Buyer.

### 8.3 POQ Use Cases

#### 8.3.1 Register for POQ Notifications (Use Case 1)

A request initiated by the Buyer to instruct the Seller to send notifications in the event the Seller uses the Deferred Response method to respond to a Create Product Offering Qualification request. Step 1 is in section 8.3.1.1 and step 2 is in section 8.3.1.2

##### 8.3.1.1 Buyer Input for Register for POQ Notifications

1. The Buyer sends the Register for POQ Notifications request to the Seller specifying the criteria of where to send such notifications as shown in Table 4.

Attribute	Description	Type
Buyer ID	The unique identifier of the organization that is acting as the customer in this transaction. See MEF W150 [6] section 8.8 for requirements around the use of this attribute.	String
Seller ID	The unique identifier of the organization that is acting as the supplier in this transaction. See MEF W150 [6] section 8.8 for requirements around the use of this attribute.	String
Return Address Information	The detailed information on the mechanism and address specifying where the Seller is to send any POQ Notifications. There can be multiple destinations for one Buyer.	String
List of Notification Types	The types of notifications that the Buyer wishes to receive. Each Item in the list is either POQ_STATE_CHANGE (send notification when there is a change to the POQ State attribute) or POQ_ITEM_STATE_CHANGE (send notification when there is a change to the POQ Item State attribute).	One of: <ul style="list-style-type: none"> <li>• POQ_STATE_CHANGE</li> <li>• POQ_ITEM_STATE_CHANGE</li> </ul>
Action	Specification to Start Notifications or Stop Notifications	String that is one of: <ul style="list-style-type: none"> <li>• START</li> <li>• STOP</li> </ul>

**Table 4 – Register for POQ Notification Buyer Attributes**

The following are the requirements on the Buyer when making the Register for POQ Notification request. The requirements around specifying the Buyer ID and Seller ID attributes are described in MEF W150 [6] section 8.8.

- [R7] When making a Register for POQ Notification request, the Buyer **MUST** specify the Return Address Information and Action attributes shown in Table 4.

**8.3.1.2 Seller Response to Register for POQ Notification**

2. The Seller receives this request, records the destination for such notifications for this Buyer, and returns an acknowledgement to the Buyer.

Table 5 defines the attributes that the Seller uses to respond to the POQ Notification Request.

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully fulfill the request. The detailed response options are for further study but include Success, Not supported and Invalid Return Address Information.	String

**Table 5 – Service Site Seller Response Attributes for Use Cases 4**

- [R8] When responding to a Register for POQ notification request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 5.

The Seller is aware of where to send POQ Notifications as described in Use Case 5 in Table 3. Note that in the case where the Seller provides an immediate response to a Create Product Offering Qualification request, there are no notifications sent by the Seller for this request since the POQ reaches its’ final State before the response is provided.

**8.3.1.3 Register for POQ Notifications Alternative Paths**

1. The Seller returns an error message if an error is encountered while processing that prevents the Seller from completing the request.
2. The Seller returns an error if they only use the Immediate Response method when responding to Create Product Offering Qualification requests.

**8.3.2 Create Product Offering Qualification with Product Offering (Use Case 2)**

A request initiated by the Buyer to determine whether the Seller can feasibly deliver a particular Product Offering (or Product Offerings), and where applicable to a specific set of Installation Places / Service Sites. The Seller also provides estimated time intervals to complete these deliveries. The Buyer may know the Installation Place Identifier and/or the Service Site Identifier (typically based on previously executed Validate Installation Place or Retrieve Service Site List Operations) though this is not mandatory unless mandated by the Seller.

Use Case 2 starts with the creation of a POQ request. The attributes and values for the creation of a POQ regardless of Action are shown in Table 6.

Attribute	Description	Type
Buyer ID	The unique identifier of the organization that is acting as the customer in this transaction. See MEF W150 [6] section 8.8 for requirements around the use of this attribute.	String
Seller ID	The unique identifier of the organization that is acting as the supplier in this transaction. See MEF W150 [6] section 8.8 for requirements around the use of this attribute.	String
Project Identifier	An identifier that is used to group Product Offering Qualifications that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Product Offering Qualifications together.	String
External Identifier	An identifier that is used to group things that represent a unit of functionality that is important to a Buyer (unique for the Buyer).	String
Immediate Response Only	If this flag is set to True, the Buyer requires an Immediate Response to this request. If the Seller is unable to provide an Immediate Response, the Seller is to reply with an appropriate error.	Boolean
Provide Alternate	An indicator which when the value is "true" means that alternative solutions may be provided. If "true", the Seller may provide Alternative Product Offering Configurations in the response such as a Product Offering with a lower bandwidth than requested. If "false" the Seller is to reply only with exact matches.	Boolean
Requested POQ Completion Date	The desired date by which the Buyer wants to receive a response to the Create Product Offering Qualification request. If the Seller cannot meet the expected date, the Seller may choose to reject the request using the UNABLE_TO_MEET_TIME status.	Date/Time
Buyer Contact Information	The contact information for the person or organization representing the Buyer that can answer questions related to this POQ request.	Contact information as defined in Table 9
Product Offering Qualification Items	The Product Offering Qualification is composed of Product Offering Qualification Items. This is the list of associated Product Offering Qualification Items.	One or more Product Offering Qualification Items as defined in Table 7.

**Table 6 – Attributes for Buyer request to Create POQ**

The requirements around specifying the Buyer ID and Seller ID attributes in Table 6 are described in MEF W150 [6] section 8.8.

- [R9] The Buyer **MUST** specify the Immediate Response Only, Provide Alternate, and Buyer Contact Information attributes defined in Table 6 when initiating a Create POQ request.
- [R10] For Use Case 2b the Buyer **MUST** specify the Provide Alternate as TRUE.
- [R11] If the Immediate Response Only = *False*, the Buyer **MUST** additionally specify Requested Response Date attribute defined in Table 6 when initiating a Create POQ request.
- [R12] The Buyer **MUST** specify at least one Product Offering Qualification Item in the Create POQ request.

- [O1] The Buyer **MAY** specify other attributes in Table 6.

Each POQ request contains one or more POQ Items. POQ Items cover Use Cases 2a, 2b, and 2c. The process, steps, and requirements for the POQ Items for these Use Cases are described in the following sections.

### **8.3.2.1 Create POQ Request for Use Cases 2a and 2b**

Use Cases 2a and 2b both address the INSTALL Action for POQ Items. The difference between them is if they are based on a Product Offering (Use Case 2a) or a Product Specification (Use Case 2b). When a Product Offering is specified by the Buyer, the Seller's response relates to that Product Offering including alternate Product Offerings selected by the Seller. When a Product Specification is specified by the Buyer, the response includes multiple Product Offerings that are offered based on that Product Specification. The key difference is the focus of the response, either on a single Product Offering or a Product Specification with multiple Product Offerings.

- [R13] The Seller response to Use Case 2b **MUST** include one Product Offerings under the specified Product Specification.

Note: This Product Offering may have a POQ Confidence Level equal to RED if there are no matching Product Offerings with a POQ Confidence Level of GREEN or YELLOW.

- [R14] The Seller response to Use Case 2b **MUST** include the Product Offering with the highest POQ Confidence Level possible (i.e. GREEN, or YELLOW if no GREEN) as the Product Offering in the response.
- [O2] The Seller response to Use Case 2b **MAY** include additional Product Offerings as Alternate Offerings regardless of the POQ Confidence Level of the Product Offering.
- [R15] The Seller response to a Use Case 2a request **MUST** match the Product Offering specified in the request.
- [R16] The Seller response to a Use Case 2b request **MUST** match the Product Specification specified in the request.
- [O3] Response provided as Alternate Product Offering Proposals **MAY** be of different Product Offering or Product Specification than requested by the Buyer.

Alternate Product Offerings normally come from the same Product Specification but can, when applicable, come from different Product Specifications.

Step 1 is in section 8.3.2.1.1. Steps 2 and 3 are in section 8.3.2.1.2.

8.3.2.1.1 Buyer Request for a Create Product Offering Qualification with Action = INSTALL (Use Case 2a and 2b)

1. The Buyer sends a Create Product Offering Qualification request to the Seller. This request contains one or more POQ Items with the Action = INSTALL, each of which specifies one of the Seller’s Product Offerings (e.g., a CE UNI), or Product Specifications, the Installation Place or Service Site in which it is to be installed if applicable, and/or associations with other POQ Items, or existing Products if applicable (e.g., an Access E-Line Product Offering connected to a particular UNI and ENNI).

The Buyer also includes other information in the request such as Requested Response Date and Product Specific Attributes.

In some cases, the Buyer can specify associations with multiple candidate Products. In this case, the Seller processes the relationships as specified in the Product Specification.

The Buyer may include a list of ENNIs between the Buyer and Seller as associated Products. The ENNIs in the list might need to all be in the same Geographic Area as defined by the Seller (same city, same county, etc.). The Seller uses any of the ENNIs in the list to respond to the POQ Request.

Table 7 defines the attributes that may be used by a Buyer to describe each POQ Item included in a POQ. The Buyer requirements to formulate this request follow the table.

Attribute	Description	Type
Product Offering Qualification Item Identifier	An identifier for this POQ item, which is unique within this POQ.	String
POQ Item Action	The POQ Item Action associated with this POQ item. INSTALL means that this POQ Item being evaluated is a completely new deployment. CHANGE means that this is a change to an existing Product (e.g., to increase the bandwidth).	String that is: <ul style="list-style-type: none"> <li>• INSTALL</li> </ul>
Product Specification	The identifier of a Product Specification associated with this POQ Item. This identifier is specified by the Seller and is established between the Buyer and Seller prior to issuing any POQ requests.	String
Product Offering Identifier	The identifier for a Product Offering associated with this POQ Item. This identifier is specified by the Seller and is established between the Buyer and Seller prior to issuing any POQ requests.	String
Product-Specific Attributes	The technical attributes for the Product that would be delivered to fulfill this POQ Item. This essentially specifies the values for attributes defined in the Product Specification or Product Offering.	See applicable Product Schema
Product Relationships	A list of Products that are related to the Product Offering.	A list of Product Relationships as defined in Table 10.

Attribute	Description	Type
POQ Item Relationships	A list of other POQ Items in this POQ that are related to the Product Offering.	A list of POQ Item Relationships as defined in Table 11.
POQ Item Place Relationship	The description of the Place the POQ Item is located at if applicable	See Table 8
POQ Item End Customer Name	The name of the End Customer	String

**Table 7 – Buyer POQ Item Attributes for INSTALL Action**

**[R17]** The Buyer **MUST** specify the following attributes as defined in Table 7 for each POQ Item:

- Product Offering Qualification Item Identifier
- POQ Item Action
- Product Offering Identifier or the Product Specification
- Product-Specific Attributes

Attribute	Description	Type
POQ Item Place Role	The role of the Place	String
POQ Item Place Type	The method used to describe the place at which this POQ Item is installed or is to be installed if this POQ Item is to be installed at a particular place. A list of one or more Installation Place Representations can be provided if the type is INSTALLATION_PLACE_REPRESENTATION	String that is one of: <ul style="list-style-type: none"> <li>• SERVICE_SITE_IDENTIFIER</li> <li>• INSTALLATION_PLACE_IDENTIFIER</li> <li>• INSTALLATION_PLACE_REPRESENTATION</li> </ul>
POQ Item Place	The detailed place at which this POQ Item is installed or is to be installed if this POQ Item is to be installed at a particular place.	A Service Site Identifier as defined in MEF W150 [6], an Installation Place Identifier as defined in MEF W150 [6], one or more Installation Place Fielded Address Representation as defined in MEF W150 [6], an Installation Place Formatted Address Representation as defined in MEF W150 [6], an Installation Place Label Representation as described in MEF W150 [6] or an Installation Place Geographic Point Representation as defined in MEF W150 [6].
POQ Item Place Sub Unit List	A list of zero or more sub units included within the boundary of the Installation Place for this POQ Item.	See MEF 150 [6] Table 4 for details
POQ Item Place Contact	The person to call to get access to this Place in case such access is required to complete the evaluation of this POQ Item.	Contact information as specified in Table 9.

**Table 8 – Buyer POQ Item Place Relationship Attributes**

- [R18]** If the Product Specification mandates a Place, the POQ Item Place Relationship **MUST** be used to detail the place relationship.
- [R19]** If the Product Specification for that Product Offering mandates specifying one or more places, the Buyer **MUST** specify the following attributes of Place Relationship:
  - POQ Item Place Role
  - POQ Item Place Type
  - POQ Item Place
  - POQ Item Place Contact
- [R20]** If the Product Specification for that Product Offering mandates not specifying a place, the Buyer **MUST NOT** specify the following attributes of the Place Relationship:
  - POQ Item Place Role
  - POQ Item Place Type
  - POQ Item Place
  - POQ Item Place Contact
- [R21]** When specifying the POQ Item Place in Table 8, the method of doing so **MUST** match the POQ Item Place Type in Table 8.

Note: when specifying a POQ Item Place by the Unknown Method, the Buyer must provide sufficient clarity that allows the Seller to match to precisely one place. For this reason, the success rates of POQs is significantly better if the Buyer uses an Installation Place Identifier returned as described in MEF W150 [6] Use Case 1 (Validate Address) or Service Site Identifiers that were returned in MEF W150 [6] Use Cases 3 (Retrieve Service Site List).

When specifying an Installation Place Identifier with additional Sub Unit information, one or more Sub Units can be provided with the Installation Place Identifier to describe exactly where the Buyer wants the Product to be installed.

Table 9 defines the attributes used to specify Contact Information.

Attribute	Description	Type
Contact Name	The person or organization to be contacted.	String
Contact Phone Number	The telephone number for this contact.	String
Contact Phone Number Extension	The telephone number extension for this contact.	String

Attribute	Description	Type
Contact Email Address	The email address for this contact.	String
Contact Postal Address	The postal address if the contact.	Installation Place Fielded Address Representation
Contact Organization	The organization of the contact	String

**Table 9 – Contact Information Attributes**

**[R22]** When specifying Contact Information, the Buyer or Seller **MUST** specify the Contact Name, Contact Phone Number, and Contact email Address defined in Table 9.

Different Product Offerings and Product Specifications have different requirements to allow them to be fully specified. These requirements are defined in the Product Specifications. For example, a UNI Product Offering might be defined to require the place where the UNI is to be installed but mandate that no other Products be related to it. By contrast, an Access E-Line Product Offering might be mandated not to have any places associated with it, but to require that it be related to a particular UNI Product at one end and an ENNI Product at the other end. How these requirements are defined in the Product Specification is outside the scope of this document, there are requirements that apply herein.

**[R23]** A relationship between the POQ Item and an existing Product **MUST** use the Product Relationships attribute to detail the relationship.

Note: A Product Relationship is used whenever there is a Product in Inventory.

**[R24]** A relationship between the POQ Item and other POQ Items **MUST** use the POQ Item Relationships attribute to detail the relationship.

**[O4]** When the Buyer specifies an `INSTALLATION_PLACE_IDENTIFIER` or `INSTALLATION_PLACE_REPRESENTATION` POQ Item Place Type, they **MAY** include one or more Sub Units as defined in MEF W150 [6] Table 14 which contains the Sub Unit Type and Sub Unit Name.

Table 10 defines the attributes used to specify a Product Relationship and the requirements for doing so follow this table.



Attribute	Description	Type
Related Product Identifier	<p>A list of one or more Identifiers of existing Products (unique within this Seller). When the Buyer provides multiple Related Product Identifiers the Seller determines if a list is supported as defined in the Product Specification.</p> <p>An example of Related Product Identifiers is a list of ENNI Product Identifiers in the same locality that are provided in the POQ request versus a specific ENNI Product Identifier that is provided for the Product Order.</p>	List of strings
Relationship Nature	<p>Specifies the nature of relationship to the related Product. The nature of 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.</p>	String that is one of the relationship types specified in the Product Specification.

**Table 10 – Product Relationship Attributes**

**[R25]** A Buyer specifying a Product Relationship **MUST** specify all of the attributes in Table 10.

Table 11 defines the attributes used to define a POQ Item Relationship.

Attribute	Description	Type
Related POQ Item Identifier	An identifier of a related POQ Item (unique within this POQ Request).	String
Relationship Nature	Specifies the nature of relationship to the related POQ item. The nature of required relationships vary for Product Offerings of different types. For example, a UNI or ENNI Product Offering 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 Product Offerings such as multipoint IP or Firewall Product Offerings 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 11 – POQ Item Relationship Attributes**

**[R26]** A Buyer specifying a POQ Item Relationship **MUST** specify all of the attributes in Table 11.

8.3.2.1.2 Seller Response to Create Product Offering Qualification with Product Offering or Product Specification

2. If the Seller is using the Deferred Response type to respond to a Create POQ with Product Offering request, they send an acknowledgement response to the Buyer. The acknowledgement response is detailed in the requirements in this section.
3. The Deferred Response is detailed in requirements in this section. At this point, this Use Case concludes while the Seller works to complete the POQ.

Table 12 defines the attributes that the Seller uses to respond in addition to the attributes received in the Buyer’s Create POQ Request when the Seller uses the Deferred Response method to respond to this request.

Attribute	Description	Type
Seller Response Code	Indicates if the Seller was able to successfully accept the POQ request. The detailed response options are for further study but include Success and Failure.	String
Product Offering Qualification Identifier	The identifier of the Product Offering Qualification that is unique within this Seller.	String

POQ State	The State of the Product Offering Qualification	One of: <ul style="list-style-type: none"> <li>• ACKNOWLEDGED</li> <li>• IN_PROGRESS</li> <li>• READY</li> <li>• REJECTED</li> <li>• UNABLE_TO_MEET_TIME</li> </ul>
POQ Create Date	Date when the POQ was created within the Seller’s system	This value is set by the Seller.
Expected Completion Date	The date that the POQ is expected to be completed by.	String
POQ Items	The POQ Item attributes as specified in Table 7	List of POQ Items as defined in Table 7

**Table 12 – Sellers Deferred Response to Create POQ**

Attribute	Description	Type
POQ Item State	The State of the POQ Item	One of: <ul style="list-style-type: none"> <li>• ABANDONED</li> <li>• ACKNOWLEDGED</li> <li>• IN_PROGRESS</li> <li>• READY</li> <li>• REJECTED</li> <li>• UNABLE_TO_MEET_TIME</li> </ul>

**Table 13 – Seller’s Deferred Response to Create POQ, POQ Item State Attribute**

- [R27] When providing a Deferred Response to a Create Product Offering Qualification request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 12.
- [R28] Each POQ Item in the Seller’s response **MUST** correspond to precisely one POQ Item in the Buyer’s request.
- [R29] If the Seller Response Code indicates success, the Seller **MUST** specify the Product Offering Qualification Identifier attribute in Table 12 in the response.
- [R30] If the Seller Response code indicates success, the Seller **MUST** represent the POQ State as ACKNOWLEDGED per section 9.1.
- [R31] If the Seller Response code indicates success, all POQ Items **MUST** be in the ACKNOWLEDGED State.
- [R32] The Product Offering Qualification Identifier **MUST** be unique within the Seller’s system.
- [R33] If the Seller Response code indicates success, the Seller **MUST** specify the POQ Item State and the POQ Create Date.
- [R34] If the Seller Response Code indicates success, the Seller **MUST** echo back all attributes contained in the Buyer’s request as shown in Table 6 and Table 7.

- [R35]** If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify the Product Offering Qualification Identifier or any other attributes in Table 12 in the response.
4. If the Seller is using the Immediate Response method to respond to a Create POQ with Product Offering request (Use Case 2a), the Seller determines, for each POQ Item, if they can feasibly deliver the Product Offering configuration requested.
    - a. The Seller is highly confident that they can deliver the Product Offering and Product Specific Attributes. It is not expected that the Seller will change this after an order is placed, they return a response with confidence = “GREEN”.
    - b. The Seller is confident that they can deliver the Product Offering and Product Specific Attributes subject to a feasibility check. The delivery of the Product Offering is subject to checks that the Seller may not carry out until later in the pre-sales/fulfillment process. The Seller cannot be highly confident that they can deliver the Product Offering until those checks are performed. There is a possibility that the Seller may determine that they will not be able to deliver the Product Offering. If these limitations are true, the Seller returns a response with confidence=“YELLOW”.

Note: The Buyer and Seller may agree on a method where a confidence of YELLOW is returned with a specific lead time value that can be interpreted by the Buyer as the Seller saying that they can provide the Product Offering but cannot provide a valid lead time in their response.

- c. The Seller cannot deliver the Product Offering and Product Specific Attributes as specified. The Seller may or may not have alternate Product Offerings that could be substituted. The Seller returns a response with confidence = “RED”.

Table 14 defines the attributes sent by the Seller to the Buyer across the Cantata or Sonata IRP as an Immediate Response to the Create POQ request (Use Case 2). These attributes are also used in Seller’s response to Retrieve POQ by Product Offering Qualification Identifier (Use Case 4).

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully complete the request. The detailed response options are for further study but include Success and Failure. To clarify, “Success” implies completing the request regardless of if the outcome is that there was insufficient information provided by the Buyer to complete the POQ, and regardless of if the Seller is able to provide the requested Product(s).	String
Product Offering Qualification Identifier	The identifier of the Product Offering Qualification request that is unique within this Seller.	String
POQ Create Date	Date when the POQ was created within the Seller’s system	This value is set by the Seller.
POQ State	The State used to convey the POQ State.	One of: <ul style="list-style-type: none"> <li>• ACKNOWLEDGED</li> <li>• IN_PROGRESS</li> <li>• READY</li> <li>• REJECTED</li> <li>• UNABLE_TO_MEET_TIME</li> </ul>
Seller Contact Information	The contact information for the person or organization who can answer questions related to this POQ request.	Contact information as defined in Table 9.
Product Offering Qualification Items	The Product Offering Qualification is composed of Product Offering Qualification Items. This is the Seller’s response to each of the POQ Items sent in the request.	One or more Product Offering Qualification Items as defined in Table 15.

**Table 14 – Seller Immediate Response to Create POQ Attributes**

[O5] A Seller **MAY** respond with an Immediate Response when the Buyer has specified Immediate Response Only = FALSE.

The following requirements apply to a Seller providing an Immediate Response to a POQ Create Request (Use Case 2a or 2b).

- [R36] When providing an immediate response to a Create POQ request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 14.
- [R37] When providing an immediate response to a POQ create request and the Seller Response Code indicates success, the Seller **MUST** echo back all attributes included in the Buyer’s request.
- [R38] If the Seller Response Code indicates success, the Seller **MUST** specify the following attributes in Table 14:
  - Product Offering Qualification Identifier
  - POQ Create Date
  - Seller Contact Information

- Product Offering Qualification Items.

- [R39]** If the Seller Response Code indicates success, the Seller **MUST** specify the POQ State attribute as **READY** as shown in Table 14 in the response.
- [R40]** If the Seller Response code indicates success and the POQ State indicates “**READY**”, then for each Product Offering Qualification Items in the request, the Seller **MUST** specify the Product Offering Qualification Item State attribute in Table 14 in the response and all of those items must indicate a POQ Item State of **READY** (See section 9.1).
- [R41]** If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify any of the attributes in Table 14 in the response except for Seller Response Code.

Table 15 defines the attributes sent by the Seller in addition to those echoed back to the Buyer in response to each POQ Item in the Buyer request from Create POQ with Product Offering and Create POQ with Product Specification (Use Case 2a or 2b) in Table 3. These attributes are also used in Seller’s response to Retrieve POQ by Product Offering Qualification Identifier (Use Case 4).

Attribute	Description	Type
POQ Item State	The State of the Seller’s evaluation of the feasibility to deliver this POQ Item. Set by the Seller.	String that is one of: <ul style="list-style-type: none"> <li>• <b>ACKNOWLEDGED</b></li> <li>• <b>IN_PROGRESS</b></li> <li>• <b>READY</b></li> <li>• <b>REJECTED</b></li> <li>• <b>UNABLE_TO_MEET_TIME</b></li> </ul>

POQ Item Confidence Level	<p>The level of confidence of the Seller to be able to service the request. Note that this response is only an evaluation of the technical feasibility of delivery independent of when the Product Offering can be delivered.</p> <p>GREEN: The Seller is highly confident that they can deliver the Product Offering. It is not expected that the Seller will change this after an order is placed.</p> <p>YELLOW: The Seller is confident that they can deliver the Product Offering subject to a feasibility check. The delivery of the Product Offering is subject to checks that the Seller may not carry out until later in the pre-sales/fulfillment process. The Seller cannot be highly confident that they can deliver the Product Offering until those checks are performed. There is a possibility that the Seller may determine that they will not be able to deliver the Product Offering.</p> <p>RED: The Seller cannot deliver the Product Offering as specified. The Seller may or may not have alternate Product Offerings that could be substituted.</p> <p>Set by the Seller.</p>	<p>String that is one of</p> <ul style="list-style-type: none"> <li>• GREEN</li> <li>• YELLOW</li> <li>• RED</li> </ul>
POQ Item Confidence Reason	The reason for the POQ Confidence Level value.	String
Installation Interval	The Installation Interval for the POQ Item.	See Table 16
Product Offering Identifier	The Product Offering Identifier (unique within this Seller associated with this Product Offering) that is sent by the Buyer	String
Guaranteed Until Date	The date until which the Seller guarantees the validity of these POQ results.	Date/Time
Alternate Product Offering Proposals	A list of zero or more proposed alternative Product Offerings that the Seller is proposing to the Buyer.	List of Alternate Product Offering Proposals as shown in Table 17.
Delivery Type	The mechanism used to deliver the Product to the Installation Place or Service Site.	<p>One of:</p> <ul style="list-style-type: none"> <li>○ OFF-NET w/o Build</li> <li>○ OFF-NET w/Build</li> <li>○ ON-NET w/o Build</li> <li>○ ON-NET w/Build</li> </ul>
3 <sup>rd</sup> Party Provider	If the Delivery Type is OFF-NET what 3 <sup>rd</sup> Party Provider is used to connect to that Installation Place or Service Site.	String
3 <sup>rd</sup> Party Provider Product Offering	If the Delivery Type is OFF-NET, the 3 <sup>rd</sup> Party Provider's Product Offering that is used to connect to the Installation Place or Service Site.	String

**Table 15 – POQ Item Attributes for Seller Response**

Attribute	Description	Type
Duration Unit	The Unit for the Installation Interval Value.	String that is one of <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>
Duration Value	The value of the duration	Integer

**Table 16 – POQ Item Duration Attributes for Seller Response**

The following requirements apply to a Seller’s Immediate Response to the Create POQ request (Use Case 2a and 2b).

- [R42] Each POQ Item in the Seller’s response **MUST** correspond to precisely one POQ Item in the Buyer’s request.

The following requirements apply to each POQ Item in the response.

- [R43] The Seller **MUST** specify the POQ Item Confidence Level.
- [R44] If the POQ Item Confidence Level attribute is GREEN or YELLOW, the Seller **MUST** specify the Installation Interval and Delivery Type attributes from Table 15 in the response.
- [D3] The Seller **SHOULD** specify the Guaranteed Until attribute from Table 15 in the response.
- [O6] If the Delivery Type is OFF-NET w/Build or OFF\_NET w/o Build, the Seller **MAY** provide the 3<sup>rd</sup> Party Provider and 3<sup>rd</sup> Party Provider Product Offering.

Alternate Product Offering Proposals represent other Product Offerings that the Seller is proposing to meet the needs of the Buyer. For example, the Buyer might be requesting a Product Offering with 500Mb/s of bandwidth; but at this place, the Seller cannot deliver that Product Offering but can deliver a Product Offering using a similar Product Offering that supports 1Gb/s.



A Seller may specify any number of Alternate Product Offering Proposals in response to one POQ Item. Table 17 defines the attributes that allow a Seller to specify each of these Alternate Product Offering Proposals. Requirements on how the Seller formulates this response follow the table.

Attribute	Description	Type
Alternate Product Offering Proposal Identifier	A unique identifier for this Alternate Product Offering Proposal assigned by the Seller.	String
Alternate Product Offering POQ Confidence Level	The level of confidence of the Seller to be able to service the request with the Alternate Product Offering. Note that this response is only an evaluation of the technical feasibility of delivery independent of when the Product Offering can be delivered. GREEN: The Seller is highly confident that they can deliver the Product Offering. It is not expected that the Seller will change this after an order is placed. YELLOW: The Seller is confident that they can deliver the Product Offering subject to a feasibility check. The delivery of the Product Offering is subject to checks that the Seller may not carry out until later in the pre-sales/fulfillment process. The Seller cannot be highly confident that they can deliver the Product Offering until those checks are performed. There is a possibility that the Seller may determine that they will not be able to deliver the Product Offering.  Set by the Seller.	String that is one of <ul style="list-style-type: none"> <li>• GREEN</li> <li>• YELLOW</li> </ul>
Alternate Product Offering POQ Confidence Reason	The reason for the Alternate Product Offering POQ Confidence Level value.	String
Alternate Product Offering Installation Interval	The Installation Interval to deliver the Alternate Product Offering	Duration
Alternate Product Offering Identifier	The Product Offering Identifier (unique within this seller associated with this alternate Product Offering)	String
Guaranteed Until Date	The date until which the Seller guarantees the validity of these POQ results.	Date/Time
Delivery Type	The mechanism used to deliver the Product to the Installation Place or Service Site.	One of: <ul style="list-style-type: none"> <li>○ OFF-NET w/o Build</li> <li>○ OFF-NET w/Build</li> <li>○ ON-NET w/o Build</li> <li>○ ON-NET w/Build</li> </ul>
3 <sup>rd</sup> Party Provider	If the Delivery Type is OFF-NET what 3 <sup>rd</sup> party provider is used to connect to that Installation Place or Service Site.	String
3 <sup>rd</sup> Party Provider Product	If the Delivery Type is OFF-NET, the 3 <sup>rd</sup> party providers Product that is used to connect to the Installation Place or Service Site.	String

Attribute	Description	Type
Product Offering-Product Specific Attributes	The technical attributes for the Product Offering that would be delivered to fulfill this POQ Item. This essentially specifies the values for attributes defined in the Product Specification. The detail of the Product Specification is for further study.	For further study.

**Table 17 – Alternate Product Offering Proposal Attributes**

- [O7] For Use Cases 2a and 2c, the Seller **MAY** specify Alternate Product Offering Proposals only when all of the following are true:
  - the Buyer has set Provide Alternate to “True”;
  - the Seller has determined that the POQ Confidence Level for this item is “YELLOW” or “RED”; and
  - the Seller has alternate Product Offerings (e.g., similar but lower bandwidth) that may be adequate
- [R45] The Seller **MUST** specify the POQ Item Confidence Level.
- [R46] The Seller **MUST** specify the Installation Interval and Delivery Type attributes from Table 17 in the response.
- [D4] The Seller **SHOULD** specify the Guaranteed Until attribute from Table 17 in the response.
- [R47] The Alternate Product Offering Proposal Identifier **MUST** be unique within the POQ Item.
- [O8] If the Delivery Type is OFF-NET w/Build or OFF\_NET w/o Build, the Seller **MAY** provide the 3<sup>rd</sup> Party Provider and 3<sup>rd</sup> Party Provider Product Offering.
- [O9] The Alternate Product Offering Proposal **MAY** be from the same Product Specification as the Buyer’s request.

If the Seller provided an Immediate Response, the Buyer has received a response with a Product Offering Qualification and therefore knows if the Seller can fulfill the request. If the Seller is using the Deferred Response method, the Seller has acknowledged the POQ to the Buyer and the Buyer is aware of the unique Product Offering Qualification Identifier to be used in other Use Cases.

**8.3.2.2 Create Product Offering Qualification Request for Use Case 2c**

Use Case 2c addresses the CHANGE Action for POQ Items.

8.3.2.2.1 Buyer Request for a Create Product Offering Qualification with Action = CHANGE (Use Case 2c)

1. The Buyer sends a Create Product Offering Qualification request to the Seller. This request contains one or more POQ Items with the Action = CHANGE, each of which specifies the Seller’s Product, and/or associations with other Product Offerings, Product Specifications, or Products if applicable (e.g., an Access E-Line Product Offering connected to a particular UNI and ENNI).

The Buyer also includes other information in the request such as Requested Response Date and Product Specific Attributes.

Table 18 defines the attributes that may be used by a Buyer to describe each POQ Item included in a POQ. The Buyer requirements to formulate this request follow the table.

Attribute	Description	Type
Product Offering Qualification Item Identifier	An identifier for this POQ item, which is unique within this POQ.	String
POQ Item Action	The POQ Item Action associated with this POQ item. CHANGE means that this is a change to an existing Product (e.g., to increase the bandwidth).	String that is: <ul style="list-style-type: none"> <li>CHANGE</li> </ul>
Product Identifier	The identifier of a Product associated with this POQ Item.	String
Product Offering Identifier	The identifier for a Product Offering associated with this POQ Item. This identifier is specified by the Seller and is established between the Buyer and Seller prior to issuing any POQ requests.	String
Product-Specific Attributes	The technical attributes for the Product that would be delivered to fulfill this POQ Item. This essentially specifies the values for attributes defined in the Product Specification or Product Offering.	See applicable Product Schema
Product Relationships	A list of Products that are related to the Product Offering.	A list of Product Relationships as defined in Table 10.
POQ Item Place Relationship	The description of the Place the POQ Item is located at if applicable	See Table 8
POQ Item Relationships	A list of other POQ Items in this POQ that are related to this POQ Item.	A list of POQ Item Relationships as defined in Table 11.

**Table 18 – Buyer POQ Item POQ Item Action = CHANGE Attributes**

**[R48]** The Buyer **MUST** specify the following attributes as defined in Table 18:

- Product Offering Qualification Item Identifier
- POQ Item Action for each POQ Item
- Product Identifier

- Product Offering Identifier
  - Product Specific Attributes
- [R49] The Product Offering specified **MUST** be from the same Product Specification.
- [O10] The Seller **MAY** allow the Buyer to specify a different Product Offering than used in the original Product Order.
- [R50] If the POQ Item Action is CHANGE, the Buyer **MUST** specify the Product Identifier attribute in Table 18.
- [R51] A relationship between the POQ Item and an existing Product **MUST** use the Product Relationships attribute to detail the relationship.

Note: A Product Relationship is used whenever there is a Product in Inventory.

- [R52] A relationship between the POQ Item and other POQ Items **MUST** use the POQ Item Relationships attribute to detail the relationship.

Table 10 defines the attributes used to specify a Product Relationship and the requirements for doing so follow this table.

- [R53] A Buyer specifying a Product Relationship **MUST** specify all of the attributes in Table 10.

Table 11 defines the attributes used to define a POQ Item Relationship.

- [R54] A Buyer specifying a POQ Item Relationship **MUST** specify all of the attributes in Table 11.

#### 8.3.2.2.2 Seller Response to Create Product Offering Qualification with POQ Item Action = CHANGE

2. If the Seller is using the Deferred Response type to respond to a Create POQ with Product Identifier request, they send an acknowledgement response to the Buyer. The acknowledgement response is detailed in the requirements in this section.
3. The Deferred Response is detailed in requirements in this section. At this point, this Use Case concludes while the Seller works to complete the POQ.

Table 19 defines the attributes that the Seller uses to respond in addition to the attributes received in the Buyer's Create POQ Request when the Seller uses the Deferred Response method to respond to this request.

Attribute	Description	Type
Seller Response Code	Indicates if the Seller was able to successfully accept the POQ request. The detailed response options are for further study but include Success and Failure.	String
Product Offering Qualification Identifier	The identifier of the Product Offering Qualification that is unique within this Seller.	String
POQ State	The State of the Product Offering Qualification	ACKNOWLEDGED
POQ Create Date	Date when the POQ was created within the Seller's system	This value is set by the Seller.
Expected Completion Date	The date that the POQ is expected to be completed by.	String
POQ Items	The POQ Item attributes as specified in Table 7	List of POQ Items as defined in Table 7

**Table 19 – Sellers Deferred Response to Create POQ**

Attribute	Description	Type
POQ Item State	The State of the POQ Item	One of: <ul style="list-style-type: none"> <li>• ACKNOWLEDGED</li> </ul>

**Table 20 – Seller's Deferred Response to Create POQ, POQ Item State Attribute**

- [R55] When providing a Deferred Response to a Create Product Offering Qualification request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 19.
- [R56] If the Seller Response Code indicates success, the Seller **MUST** specify the Product Offering Qualification Identifier attribute in Table 19 in the response.
- [R57] If the Seller Response code indicates success, the Seller **MUST** represent the POQ State as ACKNOWLEDGED per section 9.1.
- [R58] All POQ Items **MUST** be in the ACKNOWLEDGED State.
- [R59] The Product Offering Qualification Identifier **MUST** be unique within the Seller's system.
- [R60] If the Seller Response code indicates success, the Seller **MUST** specify the POQ Create Date and POQ State.
- [R61] If the Seller Response code indicates success, the Seller **MUST** specify the POQ Item State.
- [R62] If the Seller Response Code indicates success, the Seller **MUST** echo back all attributes contained in the Buyer's request as shown in Table 18.
- [R63] If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify the Product Offering Qualification Identifier or any other attributes in Table 19 in the response.

4. If the Seller is using the Immediate Response method to respond to a Create POQ with (Use Case 2c), the Seller determines, for each POQ Item, if they can feasibly deliver the Product Offering configuration requested.
  - d. The Seller is highly confident that they can deliver the Product Offering and Product Specific Attributes. It is not expected that the Seller will change this after an order is placed, they return a response with confidence = “GREEN”.
  - e. The Seller is confident that they can deliver the Product Offering and Product Specific Attributes subject to a feasibility check. The delivery of the Product Offering is subject to checks that the Seller may not carry out until later in the pre-sales/fulfillment process. The Seller cannot be highly confident that they can deliver the Product Offering until those checks are performed. There is a possibility that the Seller may determine that they will not be able to deliver the Product Offering. If these limitations are true, the Seller returns a response with confidence=“YELLOW”.

Note: The Buyer and Seller may agree on a method where a confidence of YELLOW is returned with a specific lead time value that can be interpreted by the Buyer as the Seller saying that they can provide the Product Offering but cannot provide a valid lead time in their response.

- f. The Seller cannot deliver the Product Offering and Product Specific Attributes as specified. The Seller may or may not have alternate Product Offerings that could be substituted. The Seller returns a response with confidence = “RED”.

Table 14 defines the attributes sent by the Seller to the Buyer across the Cantata or Sonata IRP as an Immediate Response to the Create POQ request (Use Case 2). These attributes are also used in Seller’s response to Retrieve POQ by Product Offering Qualification Identifier (Use Case 4).

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully complete the request. The detailed response options are for further study but include Success and Failure. To clarify, “Success” implies completing the request regardless of if the outcome is that there was insufficient information provided by the Buyer to complete the POQ, and regardless of if the Seller is able to provide the requested Product(s).	String
Product Offering Qualification Identifier	The identifier of the Product Offering Qualification request that is unique within this Seller.	String
POQ Create Date	Date when the POQ was created within the Seller’s system	This value is set by the Seller.
POQ State	The States used to convey the POQ State.	String that is one of: • READY
Seller Contact Information	The contact information for the person or organization who can answer questions related to this POQ request.	Contact information as defined in Table 9.
Product Offering Qualification Items	The Product Offering Qualification is composed of Product Offering Qualification Items. This is the Seller’s response to each of the POQ Items sent in the request.	One or more Product Offering Qualification Items as defined in Table 15.

**Table 21 – Seller Immediate Response to Create POQ Attributes**

Note: A Seller may respond with an Immediate Response when the Buyer has specified a Deferred Response.

The following requirements apply to a Seller providing an Immediate Response to a POQ Create Request (Use Case 2c).

- [R64] When providing an immediate response to a Create POQ request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 14.
- [R65] When providing an immediate response to a POQ create request and the Seller Response Code indicates success, the Seller **MUST** echo back all attributes included in the Buyer’s request.
- [R66] If the Seller Response Code indicates success, the Seller **MUST** specify the following attributes in Table 14:
  - Product Offering Qualification Identifier
  - POQ Create Date
  - POQ State
  - Seller Contact Information
  - Product Offering Qualification Items.
- [R67] If the Seller Response Code indicates success, the Seller **MUST** specify the POQ State attribute in Table 14 in the response.

- [R68]** If the Seller Response code indicates success and the POQ State indicates “READY”, then for each Product Offering Qualification Items in the request, the Seller **MUST** specify the Product Offering Qualification Item State attribute in Table 14 in the response and all of those items must indicate a POQ Item State of READY (See section 9.1).
- [R69]** If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify any of the attributes in Table 14 in the response except for Seller Response Code.

Table 15 defines the attributes sent by the Seller in addition to those echoed back to the Buyer in response to each POQ Item in the Buyer request from Create POQ with Product (Use Case 2c) in Table 3. These attributes are also used in Seller’s response to Retrieve POQ by Product Offering Qualification Identifier (Use Case 4).

Attribute	Description	Type
POQ Item State	The State of the Seller’s evaluation of the feasibility to deliver this POQ Item. Set by the Seller.	String that is one of: • READY
POQ Item Confidence Level	The level of confidence of the Seller to be able to service the request. Note that this response is only an evaluation of the technical feasibility of delivery independent of when the Product Offering can be delivered.  GREEN: The Seller is highly confident that they can deliver the Product Offering. It is not expected that the Seller will change this after an order is placed. YELLOW: The Seller is confident that they can deliver the Product Offering subject to a feasibility check. The delivery of the Product Offering is subject to checks that the Seller may not carry out until later in the pre-sales/fulfillment process. The Seller cannot be highly confident that they can deliver the Product Offering until those checks are performed. There is a possibility that the Seller may determine that they will not be able to deliver the Product Offering. RED: The Seller cannot deliver the Product Offering as specified. The Seller may or may not have alternate Product Offerings that could be substituted.  Set by the Seller.	String that is one of • GREEN • YELLOW • RED
POQ Item Confidence Reason	The reason for the POQ Confidence Level value.	String
Installation Interval	The Installation Interval Unit and Value.	Duration
Product Offering Identifier	The Product Offering Identifier (unique within this Seller associated with this Product Offering)	String
Guaranteed Until Date	The date until which the Seller guarantees the validity of these POQ results.	Date/Time
Alternate Product Offering Proposals	A list of one or more proposed alternative Product Offerings that the Seller is proposing to the Buyer.	List of Alternate Product Offering Proposals as shown in Table 17.



Attribute	Description	Type
Delivery Type	The mechanism used to deliver the Product to the Installation Place or Service Site.	One of: <ul style="list-style-type: none"> <li>○ OFF-NET w/o Build</li> <li>○ OFF-NET w/Build</li> <li>○ ON-NET w/o Build</li> <li>○ ON-NET w/Build</li> </ul>
3 <sup>rd</sup> Party Provider	If the Delivery Type is OFF-NET what 3 <sup>rd</sup> party provider is used to connect to that Installation Place or Service Site.	String
3 <sup>rd</sup> Party Provider Product	If the Delivery Type is OFF-NET, the 3 <sup>rd</sup> party providers Product that is used to connect to the Installation Place or Service Site.	String

**Table 22 – POQ Item Attributes for Seller Response**

The following requirements apply to a Seller’s Immediate Response to the Create POQ request (Use Case 2c).

- [R70] Each POQ Item in the Seller’s Immediate or Deferred response **MUST** correspond to precisely one POQ Item in the Buyer’s request.

The following requirements apply to each POQ Item in the response.

- [R71] The Seller **MUST** specify the POQ Item State attribute in Table 15. For Use Case 2c, this **MUST** be READY.
- [R72] The POQ Confidence Level **MUST** be provided.
- [R73] The POQ Confidence Level attribute is GREEN or YELLOW, the Seller **MUST** specify the Installation Interval (Installation Interval Unit and Installation Interval Value) attribute.
- [R74] The POQ Confidence Level attribute is GREEN or YELLOW, the Seller **MUST** specify the Delivery Type in addition to the attributes from [R44].
- [D5] The Seller **SHOULD** specify the Guaranteed Until attribute from Table 15 in the response.
- [O11] If the Delivery Type is OFF-NET w/Build or OFF\_NET w/o Build, the Seller **MAY** provide the 3<sup>rd</sup> Party Provider and 3<sup>rd</sup> Party Provider Product Offering.

Alternate Product Offering Proposals represent other Product Offerings that the Seller is proposing to meet the needs of the Buyer. For example, the Buyer might be requesting a Product Offering with 500Mb/s of bandwidth; but at this place, the Seller cannot deliver that Product Offering but can deliver a Product Offering using a similar Product Offering that supports 1Gb/s.

A Seller may specify any number of Alternate Product Offering Proposals in response to one POQ Item. Table 17 defines the attributes that allow a Seller to specify each of these Alternate Product Offering Proposals. Requirements on how the Seller formulates this response follow the table.

<b>Attribute</b>	<b>Description</b>	<b>Type</b>
Alternate Product Offering Proposal Identifier	A unique identifier for this Alternate Product Offering Proposal assigned by the Seller.	String
Alternate Product Offering POQ Confidence Level	<p>The level of confidence of the Seller to be able to service the request with the Alternate Product Offering. Note that this response is only an evaluation of the technical feasibility of delivery independent of when the Product Offering can be delivered.</p> <p>GREEN: The Seller is highly confident that they can deliver the Product Offering. It is not expected that the Seller will change this after an order is placed.</p> <p>YELLOW: The Seller is confident that they can deliver the Product Offering subject to a feasibility check. The delivery of the Product Offering is subject to checks that the Seller may not carry out until later in the pre-sales/fulfillment process. The Seller cannot be highly confident that they can deliver the Product Offering until those checks are performed. There is a possibility that the Seller may determine that they will not be able to deliver the Product Offering.</p> <p>Set by the Seller.</p>	String that is one of <ul style="list-style-type: none"> <li>• GREEN</li> <li>• YELLOW</li> </ul>
Alternate Product Offering POQ Confidence Reason	The reason for the Alternate Product Offering POQ Confidence Level value.	String
Alternate Product Offering Installation Interval	The Installation Interval for the interval to deliver the Alternate Product Offering	Duration
Alternate Product Offering Identifier	The Product Offering Identifier (unique within this seller associated with this alternate Product Offering)	String
Delivery Type	The mechanism used to deliver the Product to the Installation Place or Service Site.	One of: <ul style="list-style-type: none"> <li>○ OFF-NET w/o Build</li> <li>○ OFF-NET w/Build</li> <li>○ ON-NET w/o Build</li> <li>○ ON-NET w/Build</li> </ul>
Guaranteed Until Date	The date until which the Seller guarantees the validity of these POQ results.	Date/Time
3 <sup>rd</sup> Party Provider	If the Delivery Type is OFF-NET what 3 <sup>rd</sup> party provider is used to connect to that Installation Place or Service Site.	String
3 <sup>rd</sup> Party Provider Product	If the Delivery Type is OFF-NET, the 3 <sup>rd</sup> party providers Product that is used to connect to the Installation Place or Service Site.	String
Product Offering-Product Specific Attributes	The technical attributes for the Product Offering that would be delivered to fulfill this POQ Item. This essentially specifies the values for attributes defined in the Product Specification. The detail of the Product Specification is for further study.	For further study.

**Table 23 – Alternate Product Offering Proposal Attributes**

- [O12] For Use Case 2a and 2c, the Seller **MAY** specify Alternate Product Offering Proposals only when all of the following are true:
  - the Buyer has set Provide Alternate to “True”;
  - the Seller has determined that the POQ Confidence Level for this item is “YELLOW” or “RED”; and
  - The Seller has alternate Product Offerings (e.g., similar but lower bandwidth) that may be adequate, then the Seller may return one or more Alternate Product Offering Proposals.
- [R75] The Seller **MUST** specify the POQ Item Confidence Level.
- [R76] The Seller **MUST** specify the Installation Interval and Delivery Type attributes from Table 23 in the response.
- [D6] The Seller **SHOULD** specify the Guaranteed Until attribute from Table 23 in the response.
- [R77] The Alternate Product Offering Proposal Identifier **MUST** be provided and be unique within the POQ Item.
- [O13] If the Delivery Type is OFF-NET w/Build or OFF\_NET w/o Build, the Seller **MAY** provide the 3<sup>rd</sup> Party Provider and 3<sup>rd</sup> Party Provider Product Offering.
- [O14] The Alternate Product Offering Proposal **MAY** be from the same Product Specification as the Buyer’s request.

If the Seller provided an Immediate Response, the Buyer has received a response with a Product Offering Qualification and therefore knows if the Seller can fulfill the request. If the Seller is using the Deferred Response method, the Seller has acknowledged the POQ to the Buyer and the Buyer is aware of the unique Product Offering Qualification Identifier to be used in other Use Cases.

### 8.3.3 Retrieve POQ List (Use Case 3)

The Buyer requests a summarized list of Product Offering Qualifications from the Seller based on POQ filter criteria. Although it is not mandatory, this will typically only be executed after the Buyer has sent at least one Create Product Offering Qualification request. Otherwise, the result will be an empty list. Step 1 is in section 8.3.3.1. Steps 2, 3, and 4 are in section 8.3.3.2.

#### 8.3.3.1 Buyer Request to Retrieve Product Offering Qualification List

1. The Buyer sends a Retrieve POQ List request to the Seller specifying a set of filter criteria.

Table 24 defines the attributes sent from the Buyer to the Seller across the Sonata IRP for Operations involved in Use Case 3 as defined in Table 3.



<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 W150 [6] section 8.8 for requirements around the use of this attribute.	String
Seller ID	The unique identifier of the organization that is acting as the supplier in this transaction. See MEF W150 [6] section 8.8 for requirements around the use of this attribute.	String
POQ State	The States used to convey the qualification status. The Buyer is requesting information on all POQs that are presently in this State.	String that is one of: <ul style="list-style-type: none"> <li>• ACKNOWLEDGED</li> <li>• IN_PROGRESS</li> <li>• READY</li> <li>• REJECTED</li> <li>• UNABLE_TO_MEET_TIME</li> </ul>
From POQ Create Date	The “From” part of a date range associated with the date when the POQ was created within the Seller’s system	Date/Time
To POQ Create Date	The “To” part of a date range associated with the date when the POQ was created within the Seller’s system	Date/Time
From Requested Response Date	The “From” part of a date range associated with the Requested Response Date. The Buyer is requesting information on all POQs that have a Requested Response Date the same as or later than this attribute.	Date/Time
To Requested Response Date	The “To” part of a date range associated with the Requested Response Date. The Buyer is requesting information on all POQs that have a Requested Response Date the same as or earlier than this attribute.	Date/Time
External Identifier	The Buyer is requesting information on all POQs that are associated with this External Identifier. External Identifiers are labels set by the Buyer when the POQ was created.	String
Project Identifier	An identifier that is used to group Product Offering Qualifications that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Product Offering Qualifications together.	String

**Table 24 – Retrieve POQ List Attributes**

The following are the requirements on the Buyer when making the request for the Operation associated with Use Case 3. The requirements around specifying the Buyer ID and Seller ID attributes in Table 24 are described in MEF W150 [6] section 8.8.

[O15] The Buyer **MAY** specify any of the attributes in Table 24 when formulating a Retrieve POQ List request (Use Case 3).

In general, of course, the Buyer will be required to specify at least some of these attributes to avoid getting a Too Many Records response code.

**8.3.3.2 Seller Response to Buyer Retrieve POQ List Request**

2. The Seller receives the request and attempts to match the Buyer’s filter criteria with POQs known to the Seller.
3. If the filter criteria match zero or more POQs known to the Seller, a positive response is returned with the Seller’s POQ information including a Product Offering Qualification Identifier (that is unique within this Seller) for each POQ returned.

Table 25 defines the attributes that the Seller uses to respond to the Retrieve POQ List request.

Attribute	Description	Type
Seller ID	The unique identifier of the organization that is acting as the customer in this transaction. See MEF W150W150 [6] section 8.8 for requirements around the use of this attribute.	String
Buyer ID	The unique identifier of the organization that is acting as the supplier in this transaction. See MEF W150W150 [6] section 8.8 for requirements around the use of this attribute.	String
Seller Response Code	A unique response identifier, indicating if the Seller was able to successfully fulfill the request. The detailed response options are for further study but include Success, Failed, Too many Records, or No Records Found.	String
Product Offering Qualification List	A list of Product Offering Qualifications that are included in the Seller’s response. Each of these includes the attributes shown in Table 26	List

**Table 25 – Seller Response Attributes for Use Case 4**

Attribute	Description	Type
Product Offering Qualification Identifier	The Product Offering Qualification Identifiers (each of which is unique within the Seller) that match the criteria associated with the Buyer’s request.	String
POQ State	For each of the above Product Offering Qualification Identifiers, this is the current State of the POQ (per section 9.1)	String
POQ Create Date	Date when the POQ was created within the Seller’s system	Date/Time

Requested Response Date	For each of the above Product Offering Qualification Identifiers, this is the Requested Response Date specified by the Buyer in the Create POQ request.	Date/Time
Project Identifier	An identifier that is used to group Product Offering Qualifications that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Product Offering Qualifications together.	String
External Identifier	The Buyer is requesting information on all POQs that are associated with this External Identifier. External Identifiers are labels set by the Buyer when the POQ was created.	String

**Table 26 – Seller Response Per Product Offering Qualification Attributes for Use Case 4**

- [R78]** When responding to a Retrieve POQ List request the Seller **MUST** specify the Seller Response Code attribute shown in Table 25.
- [R79]** If the Seller Response Code does not indicate success, the Seller **MUST NOT** reply with any attributes from Table 25 except the Seller Response Code.
- [R80]** If the Seller Response Code indicates success, the Seller **MUST** specify zero or more POQs in the Product Offering Qualification List in Table 25.
- [R81]** For each POQ returned, the Seller **MUST** specify the attributes in Table 26 for this POQ.

4. The Buyer receives a list of Product Offering Qualifications that meet the filter criteria.

**8.3.3.3 Retrieve POQ List Alternative Paths**

1. The Seller returns an error message if an error is encountered while processing that prevents the Seller from completing the request.
2. If the Seller finds no Product Offering Qualifications that meet the filter criteria, they reply to the Buyer with an empty list.
3. If the Seller finds Too Many Records that meet the filter criteria, they return either an empty list or an agreed upon number of records.

**8.3.4 Retrieve POQ by Product Offering Qualification Identifier (Use Case 4)**

The Buyer requests the details of a single Product Offering Qualification based on a POQ identifier. The Buyer knows the Product Offering Qualification Identifier of the POQ they wish to retrieve as a result of having completed either the Create Product Offering Qualification Operation or the Retrieve POQ List Operation.

1. The Buyer sends the Retrieve POQ by Identifier request to the Seller specifying the Product Offering Qualification Identifier as defined in Table 14.

The following are the requirements on the Buyer when making the request for the Operation associated with Use Case 4. The requirements around specifying the Buyer ID and Seller ID attributes are described in MEF W150 [6] section 8.8.

- [R82] The Buyer **MUST** specify the Product Offering Qualification Identifier attribute in Table 14 when formulating a Retrieve POQ by Identifier request (Use Case 4).
2. The Seller receives the request and returns all POQ information for the POQ with this Product Offering Qualification Identifier as shown in the following Table 6, Table 14, Table 15, and Table 17.
- [R83] If the POQ Item State Attribute is **READY**, the Seller **MUST** specify the POQ Confidence Level, POQ Confidence Reason, and if the Confidence Level is **GREEN** or **YELLOW**, the Installation Interval, and Delivery Type from Table 15 in the response.

The attributes for the Seller's response to this request are defined in Table 14. While the same attributes are used, the requirements differ.

The following requirements apply to a Seller formulating a response to a Retrieve POQ by Product Offering Qualification Identifier request (Use Case 4).

- [R84] When responding to a Retrieve POQ by Product Offering Qualification Identifier request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 14.
- [R85] If the Seller Response Code to the Retrieve POQ by Product Offering Qualification Identifier indicates success, the Seller **MUST** specify the following attributes in Table 14 in the response:
- Product Offering Qualification Identifier
  - POQ State
  - POQ Create Date
  - POQ Item(s)
- [R86] If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify any of the attributes in Table 14 in the response.

Each POQ Item in the Seller's response corresponds to precisely one POQ Item in the Buyer's request. The attributes for POQ Items in the Seller's response to this request are the same as an Immediate Response to the Create POQ request (Use Case 2) (See Table 17)) and the following requirements. While the same attributes are used, the requirements differ.



The following requirements apply to a Seller specifying each POQ Item as part of a response to a Retrieve POQ by Identifier request (Use Case 4).

- [R87] The Seller **MUST** specify the Product Offering Qualification Item Identifier attribute in Table 15.
- [R88] This number **MUST** match precisely one of the Product Offering Qualification Item Reference Numbers.
- [R89] The Seller **MUST** specify the POQ Item State attribute in Table 17.
- [D7] If the POQ Item State Attribute is READY, then the Seller **SHOULD** specify the Guaranteed Until attribute from Table 17 in the response.
- [R90] If the POQ Item State Attribute is REJECTED the Seller **MUST** specify only the following attributes in Table 15:
  - POQ Item Identifier
  - POQ Item State

### 8.3.5 Send POQ Notification

When a Seller uses the Deferred Response method, they need to be able to provide asynchronous notifications to the Buyer when any of the POQ Items or the POQ itself changes State. These notifications are sent only if the Buyer has registered for these notifications and the Seller has responded to the Buyer's Create POQ request with a Deferred Response. No notification is sent when the POQ is created. Any time the POQ or a POQ Item defined within the POQ changes State (see section 9), the Seller sends a notification to the Buyer with the attributes defined in Table 27. Note that these notifications do not specify what has changed; only that a change has occurred. The Buyer receiving this notification would then need to issue a Retrieve POQ by Product Offering Qualification Identifier request to get the latest details associated with the POQ.

The Seller sends notifications for POQ State change and POQ Item State change. POQ States are shown in Figure 2 and POQ Item States are shown in Figure 3. Notifications are sent only if the particular Buyer has subscribed to notifications from this Seller.

Note that there may be multiple parties within the Buyer who have subscribed to receive these notifications.

Attribute	Description	Type
Product Offering Qualification Identifier	The identifier for the POQ (unique within this Seller) that has changed State.	String
Product Offering Qualification Item Identifier	The identifier for the POQ Item that has changed State.	String
Notification Type	The type of State change that occurred. CHANGE happens any time a POQ changes State or any of the POQ Items associated with the POQ changes State.	String that is one of <ul style="list-style-type: none"> <li>• POQ_STATE_CHANGE</li> <li>• POQ_ITEM_STATE_CHANGE</li> </ul>
POQ State	The State of the Product Offering Qualification	One of: <ul style="list-style-type: none"> <li>• ACKNOWLEDGED</li> <li>• IN_PROGRESS</li> <li>• READY</li> <li>• REJECTED</li> <li>• UNABLE_TO_MEET_TIME</li> </ul>
POQ Item State	The State of the POQ Item	One of: <ul style="list-style-type: none"> <li>• ABANDONED</li> <li>• ACKNOWLEDGED</li> <li>• IN_PROGRESS</li> <li>• READY</li> <li>• REJECTED</li> <li>• UNABLE_TO_MEET_TIME</li> </ul>

**Table 27 – Notification of POQ State Change Attributes**

- [R91] A Seller **MUST NOT** send Notifications to Buyers for Notification Types for which the Buyer has not registered.
- [R92] A Seller **MUST** only send POQ State Change or POQ Item State Change Notifications for POQs where the Seller has responded to the Buyer’s Create POQ request with a Deferred Response. In this case, the Seller **MUST** send a notification to all of the targets specified by the Buyer in their Register for POQ Notifications request every time there is a change in State of either that POQ or any of the items associated with that POQ.
- [R93] If there is a POQ State Change, the Seller **MUST** include the POQ State in the notification.
- [R94] If there is a POQ Item State change, the Seller **MUST** include POQ Item State in the notification.

Note: There are no notifications sent for a request with an Immediate Response.

The Buyer becomes aware of the change of State of the POQ. Typically, this will cause the Buyer to issue Retrieve POQ by Product Offering Qualification Identifier requests to the Seller to obtain the results of this POQ.

## 9 Process Flows

### 9.1 Product Offering Qualification Process Flows

- [R95] If the Seller provides Immediate Responses, the Seller **MUST** support the READY POQ State and its associated State transitions as specified in Figure 2.
- [R96] If the Seller provides Deferred Responses, the Seller **MUST** support all POQ States and their associated State transitions as specified in Figure 2.

The Product Offering Qualification process flow is shown below. The diagram captures various States that the POQ goes through in its lifecycle. The specific States are managed by the Seller based on its processing. If the Buyer subscribes POQ Notifications for the Notification Type POQ\_STATE\_CHANGE, the Buyer will receive a notification every time the State changes for a Product Offering Qualification.

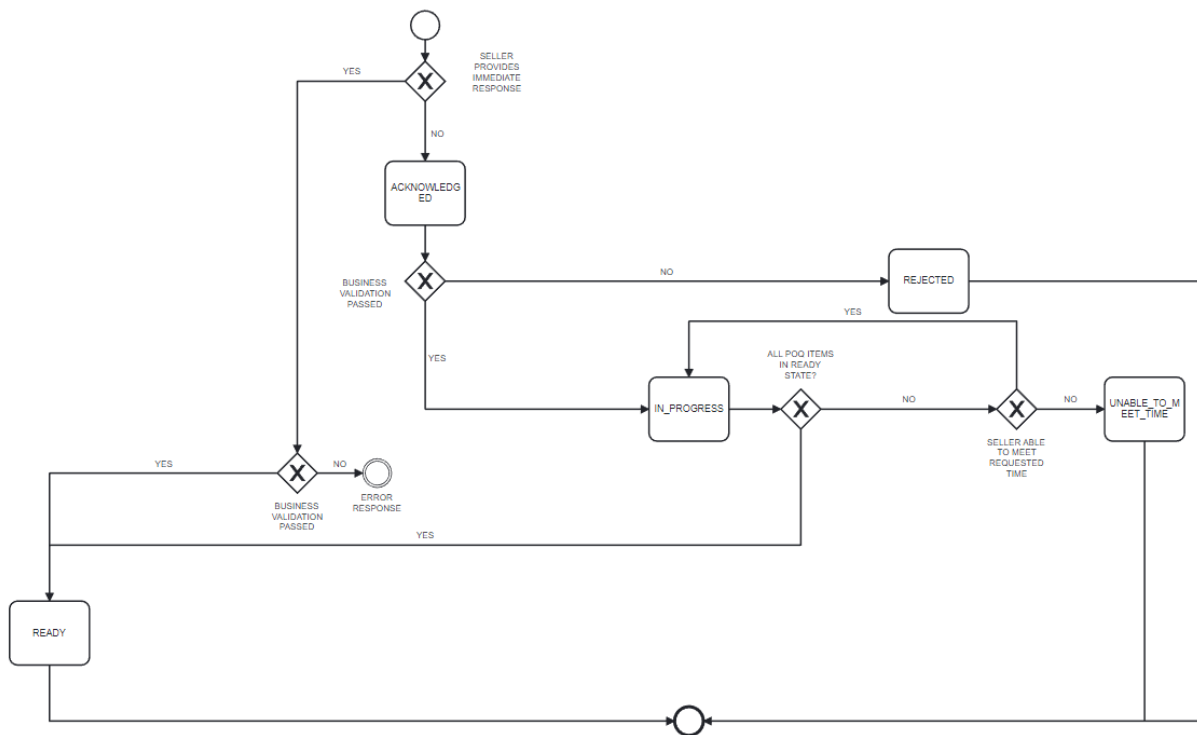


Figure 2 – Product Offering Qualification Process Flow

The definitions of the various States are as follows:

State	Description
ACKNOWLEDGED	A Product Offering Qualification has been received by the Seller and has passed basic validation. For an Immediate response, the POQ moves to the READY State and does not pass through the ACKNOWLEDGED State. For a Deferred response, a Product Offering Qualification Identifier is assigned in the ACKNOWLEDGED State and the POQ moves to the IN_PROGRESS State when it passes business validation. If the POQ does not pass validation, the POQ moves to the REJECTED State.
IN_PROGRESS	The IN_PROGRESS State is when the POQ is currently being worked by the Seller.
READY	The READY State is where the Product Offering Qualification has been internally approved by the Seller and has either been sent in an Immediate Response to the Buyer or is ready for the Buyer to retrieve. When all POQ Items are in the READY State, the overall POQ moves to the READY State. Note that the READY State does not imply that the Seller can deliver all POQ Items in this POQ. It only means that the POQ has been completed.
REJECTED	A Product Offering Qualification was submitted, and it has failed at least one of the business validation checks the Seller performs after it reached the ACKNOWLEDGED State.
UNABLE_TO_MEET_TIME	This State is set when the Seller is unable to provide a Product Offering Qualification in the timeframe required by the Buyer (e.g., if an immediate response or a response date is set but cannot be met by the Seller).

**Table 28 – Product Offering Qualification Process Flow Values**

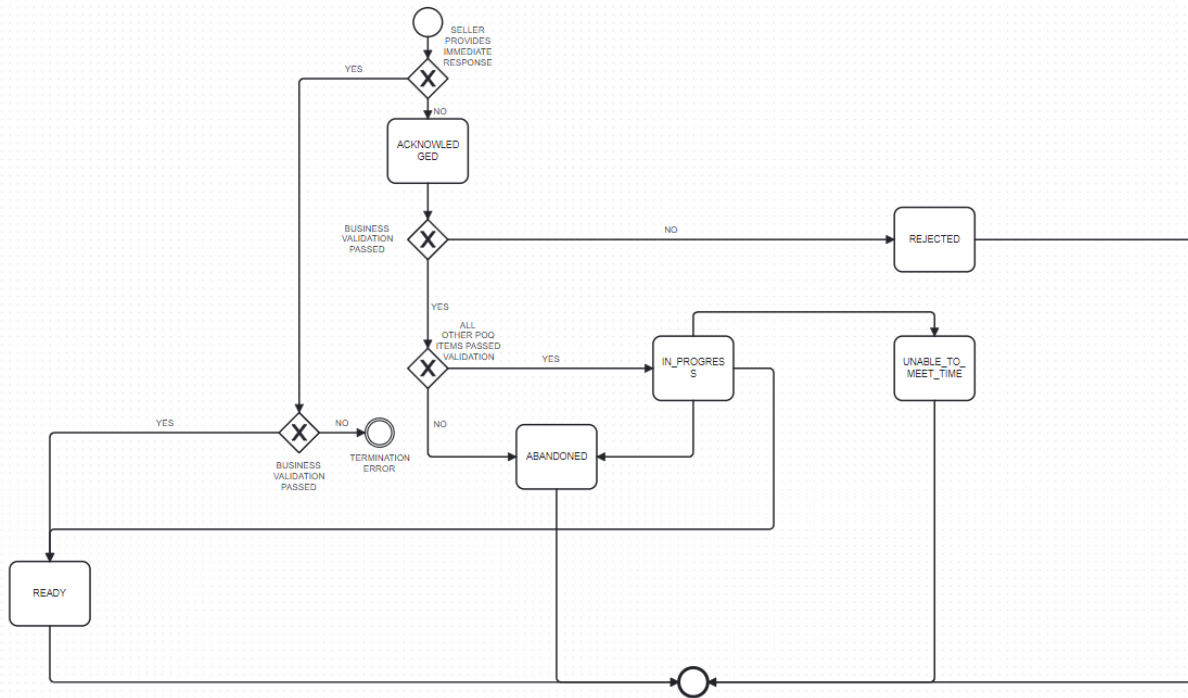
- [R98] If the Seller Response code indicates success and the POQ State indicates READY, then for each POQ Item in the Immediate or Deferred request, the Seller **MUST** specify the Product Offering Qualification Items attribute in Table 14 in the response and all of those items must indicate a POQ Item State of READY (See section 9.29.2) as shown in Table 29.
- [R99] If the Seller Response code indicates success and the POQ State indicates IN\_PROGRESS, then for each POQ Item in the request, the Seller **MUST** specify the Product Offering Qualification Items attribute in Table 14 in the response and all of those items must indicate a POQ Item State of READY or IN\_PROGRESS (See section 9.2) as shown in Table 29.
- [R100] The State interactions as shown in Table 29 **MUST** be implemented by the Seller.

	POQ STATE				
	ACKNOWLEDGED	IN_PROGRESS	READY	REJECTED	UNABLE_TO_MEET_TIME
ABANDONED	0	0	0	0 OR MORE BUT NOT ALL	0 OR MORE
ACKNOWLEDGED	1 OR MORE	0 OR MORE BUT NOT ALL	0	0	0
IN_PROGRESS	0 OR MORE BUT NOT ALL	ONE OR MORE	0	0	0
READY	0 OR MORE BUT NOT ALL	0 OR MORE BUT NOT ALL	ALL	0 OR MORE BUT NOT ALL	0 OR MORE BUT NOT ALL
REJECTED	0	0	0	1 OR MORE	0
UNABLE_TO_MEET_TIME	0	0	0	0	1 OR MORE

Table 29 – POQ State to POQ Item State Response Matrix

## 9.2 Product Offering Qualification Item Process Flow

The Product Offering Qualification Item Process Flow diagram is shown below. The diagram captures various States that the POQ Item goes through in its lifecycle. The specific States are managed by the Seller based on its processing and/or based on Buyer's action.



**Figure 3 – Product Offering Qualification Item Process Flow**

**[R101]** If the Seller provides an Immediate Response, the Seller **MUST** support READY State and its associated State transitions specified in Figure 3.

**[R102]** If the Seller provides a Deferred Response, the Seller **MUST** support all POQ Item States and their associated State transitions as specified in Figure 3.

The definitions of the various Product Offering Qualification Item States are as follows:

State	Description
ABANDONED	The ABANDONED State is applied to POQ Items that are in an ACKNOWLEDGED or IN_PROGRESS State when the POQ State is moved to a Final State other than READY.
ACKNOWLEDGED	A Product Offering Qualification Item has been received by the Seller and has passed basic validation. For an Immediate response, the POQ Item moves to the READY State and does not pass through the ACKNOWLEDGED State.
IN_PROGRESS	The IN_PROGRESS State is when the POQ Item is currently being worked by the Seller.
READY	The READY State is where the POQ Item has been internally approved by the Seller. Note that the READY State does not imply that the Seller can deliver the requested POQ Item. It only means that the response for this POQ Item is complete.
REJECTED	A POQ Item was submitted, and it has failed at least one of the business validation checks the Seller performs after it reached the ACKNOWLEDGED State.

UNABLE_TO_MEET_TIME	This State is set when the Seller is unable to provide a Product Offering Qualification Item response in the timeframe required by the Buyer (e.g., if an immediate response or a response date is set but cannot be met by the Seller). When a POQ Item goes to UNABLE_TO_MEET_TIME, all POQ Items that are not READY move to ABANDONED.
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**Table 30 – Product Offering Qualification Item State Values**

**[R103]** If a POQ Item is in the IN\_PROGRESS State and another POQ Item moves to the UNABLE\_TO\_MEET\_TIME State, all POQ Items in IN\_PROGRESS State **MUST** move to the ABANDONED State.



## 10 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 50.1, *MEF Services Lifecycle Process Flows*, August 2017
- [4] MEF 55.1, *LSO Reference Architecture*, January 2021
- [5] MEF 55.1.1, *Amendment to MEF 55.1: Reference Architecture and Framework – Terminology*, October 2023
- [6] MEF W150, *Address and Service Site Management*, October 2022
- [7] MEF 128.1, *LSO API Security Profile*, April 2024
- [8] TMF679, *Product Offering Qualification API REST Specification*, May 2018

## Appendix A Acknowledgements (Informative)

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