Draft Standard

Mplify 136.1 Draft (R2)

Allegro, Interlude and Legato Service Function Testing Business Requirements & Use Cases

July 2025

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

This draft document represents Mplify work in progress; it has not achieved full Mplify standardization and is subject to change. Changes are likely before this becomes a fully endorsed Mplify Standard. The reader is strongly encouraged to keep this in mind and review the Release Notes (if applicable) when making a decision on adoption. Additionally, because this document has not been adopted as a Final Specification in accordance with Mplify's Bylaws, Members are not obligated to license patent claims that are essential to implementation of this document under Mplify's Bylaws.

Disclaimer

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1   List of Contributing Members

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

2   Abstract

This document defines the Business Requirements and Use Cases to support Service Function Testing (SFT) at the Allegro, Interlude, and Legato Interface Reference Points. The requirements and use cases contained in this document support Service Function Testing for Service Activation and testing performed at other times during the lifecycle of the service. Service Activation/Service Readiness Testing is used prior to the service being handed off to the Customer. Other testing is performed on active services after they have been handed off to the Customer.

3   Release Notes

This document is still under review and is subject to change.

4 Terminology and Abbreviations

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

In addition, terms defined in MEF 55.1 [3] are included in this document by reference and are not repeated in the table below.

Term	Definition	Reference
Bundled	Two or more Test Profiles are related together in a bundle and are given an order in which they are run.	This document
Dependency	The related Test Profile is dependent on the success or failure of another Test Profile. As an example if test 1 passes, then test 2 is performed. If test 1 fails, then test 2 is not performed.	This document
Exclusivity	The related Test Profile requires that it be paired with a second Test Profile.	This document
Migration	The related Test Profile is being migrated to replace the Test Profile.	This document
Service Function Testing	The verification of the operation or definition of the Service Under Test. Includes Service Activation and testing performed on in-service Services for maintenance purposes.	This document
Service Identifier	The unique identifier for a specific Service.	This document
Service Specification	The specification of a set of attributes that define a Service type. These are defined in MEF 100, Mplify 101, and Mplify 102.	This document
Test Job	A definition of SFT for a specific Service Identifier.	This document
Test Profile	Detailed specification that includes the Test Job attributes and Service Specifications that are specified to be tested by this Test Profile.	This document
Substitution	The related Test Profile is substituted for the Test Profile.	This document

Table 1 – Terminology

Abbreviation	Definition	Reference
IRP	Interface Reference Point	MEF 55.1 [3]
SFT	Service Function Testing	This document

Table 2 – Abbreviations

5 Compliance Levels

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

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

6   Introduction

This document defines the Business Requirements and Use Cases for Service Function Testing (SFT). Service Function Testing is defined as testing that is performed either as a part of service verification, service activation, or service maintenance. The requirements and Use Cases are the same for the Allegro Interface Reference Point (IRP), the Interlude IRP, and the Legato IRP. There are no differences identified within this document between them. The requirements and Use Cases within this document will be used to develop an API specification and Developer's Guide. Examples of Service Function Tests include continuity tests, bandwidth profile testing, and delay, variation, and loss testing.

The Use Cases that are addressed in this document are:

- Create, Modify, Delete Test Profile

- Retrieve Test Profile List

- Retrieve Test Profile by ID

- Create, Modify, Delete, Suspend, Resume, Cancel Test Job w/Test Profile

- Create, Modify, Delete, Suspend, Resume, Cancel Test Job w/o Test Profile

- Retrieve Test Job List

- Retrieve Test Job by ID

- Retrieve Test Result List

- Retrieve Test Result by Test Job ID

- Subscribe to Notifications

- Unsubscribe to Notifications

- Generate Notifications

Within this document the terms Buyer/Client are used to representing the requesting entity. The terms Seller/Server are used to represent the responding entity.

7 Terminology Cross Reference

This document uses terminology primarily from previous work in Mplify. TMF653 [4] uses different terminology. To aid readers who are familiar with the previous work in either group, Table 3 provides a cross reference between the Mplify and TMF terms for the same thing.

TMF Term	Mplify Term
Service Test Specification	Test Profile
Service Test	Test Job
Test Measurement	Test Results

Table 3 – Terminology Cross Reference

8   Use Cases

The Use Cases addressed within this document are shown in Table 4. Each Use Case is further detailed along with requirements associated with this Use Case.

Use Case Number	Use Case Name	Use Case Description	Reference Section
1	Create Test Profile	The Buyer/Client creates a Test Profile that contains details of the measurement(s) to be performed.	Section 8.1.1
2	Modify Test Profile	The Buyer/Client modifies a Test Profile that contains details of the measurement(s) to be performed.	Section 8.1.2
3	Delete Test Profile	The Buyer/Client deletes a Test Profile that contains details of the measurement(s) to be performed.	Section 8.1.3
4	Retrieve Test Profile List	The Buyer/Client retrieves a list of Test Profiles that meet specified filter criteria.	Section 8.1.5
5	Retrieve Test Profile by Identifier	The Buyer/Client retrieves a specific Test Profile using the Test Profile Identifier.	Section 8.1.6
6	Create Test Job w/Test Profile	The Buyer/Client creates a Test Job that specifies the service to be tested and references a Test Profile.	Section 8.2.1

Use Case Number	Use Case Name	Use Case Description	Reference Section
7	Create Test Job w/o Test Profile	The Buyer/Client creates a Test Job that specifies the service to be tested and does not reference a Test Profile. Instead, attributes contained in the Test Profile are included in the Test Job.	Section 8.2.2
8	Retrieve Test Result List	The Buyer/Client retrieve a list of Test Results that meet a specified filter.	
9	Retrieve Test Result by Test Result ID	The Buyer/Client retrieves the Test Results for a specific Test Result ID.	
10	Suspend Test Job	The Buyer/Client suspends an In-Progress Test Job with or without a Test Profile.	Section 8.2.3
11	Resume Test Job	The Buyer/Client resumes a Suspended Test Job with or without a Test Profile.	Section 8.2.6
12	Cancel Test Job	The Buyer/Client cancels a Suspended, In-Progress, or Scheduled Test Job with or without a Test Profile.	Section 8.2.7
13	Modify Test Job w/Test Profile	The Buyer/Client modifies a Test Job that specifies the service to be tested and references a Test Profile.	Section 8.2.8
14	Modify Test Job w/o Test Profile	The Buyer/Client modifies a Test Job that specifies the service to be tested and does not reference a Test Profile. Instead, the attributes contained in the Test Profile are contained in the Test Job.	Section 8.2.9
15	Retrieve Test Job List	The Buyer/Client retrieves a list of Test Job that meet specified filter criteria.	Section 8.2.10
16	Retrieve Test Job by Identifier	The Buyer/Client retrieves a specific Test Job using the Test Job Identifier.	Section 8.2.11
17	Subscribe to Notifications	The Buyer/Client subscribes to SFT notifications.	Section 8.3.1

Use Case Number	Use Case Name	Use Case Description	Reference Section
18	Unsubscribe to Notifications	The Buyer/Client unsubscribes to SFT notifications.	Section 8.3.2
19	Send Notification	The Seller/Server generates SFT Notifications.	Section 8.3.3
20	Retrieve Suspend Test Job List	Retrieves a list of Suspend Test Job requests by filter criteria	8.2.12
21	Retrieve Suspend Test Job by Identifier	Retrieves all details of a specified Suspend Test Job request	8.2.13
22	Retrieve Resume Test Job List	Retrieves a list of Resume Test Job requests by filter criteria	8.2.14
23	Retrieve Resume Test Job by Identifier	Retrieves all details of a specified Resume Test Job request	8.2.15
24	Retrieve Cancel Test Job List	Retrieves a list of Cancel Test Job requests by filter criteria	8.2.16
25	Retrieve Cancel Test Job by Identifier	Retrieves all details of a specified Cancel Test Job request	8.2.17
26	Retrieve Modify Test Job List	Retrieves a list of Modify Test Job requests by filter criteria	8.2.18
27	Retrieve Modify Test Job by Identifier	Retrieves all details of a specified Modify Test Job request	8.2.19

Table 4 – Use Case Overview

Note: there may be roles that exist to limit what processes a user can create, modify, cancel, and delete. As an example, there might be a role that allows the creation of Test Profiles and a role that cannot create Test Profiles but can retrieve them. The assignment of these roles is outside the scope of this document.

8.1 Test Profile

The Use Cases and associated requirements related to the Test Profile are defined in this section.

8.1.1 Create Test Profile (Use Case 1)

1. The Buyer/Client can request that the Seller/Server create a Test Profile.

Attribute Name	Description	Value	Comments
Test Profile Identifier	A unique, within the Seller/Server, identifier for the Test Profile.	String	Set by Seller
Description	Text description of the Test Profile.	String	Set by Buyer
Creation Date	Date the Test Profile is created.	Date/Time	Set by Seller
Is Bundled	Determines whether specification represents a single Test Profile (false), or a bundle of Test Profiles (true).	Boolean	Set by Buyer Always set to FALSE for atomic Test Profiles
Lifecycle Status	Used to indicate the current Lifecycle Status of this Test Profile.	One of: Experimental Pending Approved Deprecated	Set by Buyer
Test Profile Lifecycle State		ASSIGNED AVAILABLE	
Test Profile Assigned	Indicates if the Test Profile is assigned to a Test Job	Boolean	Set by Seller
Test Profile Name	The name of the Test Profile.	String	Set by Buyer
Valid For	The last date that the Test Profile is valid	Date/Time	Set by Buyer
Last Update	Last time the Test Profile was modified by the Buyer.	Date/Time	Set by Seller
Test Profile Relationship	A list of Related Test Profiles.	See Table 6	Set by Buyer
Service Specific Test Profile Configuration	Service specific attributes that define how a test is performed for a given Test Specification.	Under Study	Set by Buyer

Related Service Offering	Relationship Service Offering Identifier.	String	Set by Buyer
Related Contact Information	Parties who manage or have an interest in this Test Profile.	See Table 7	Set by Buyer

Table 5 – Test Profile Attributes

Note: Lifecycle Status is used by the Buyer/Client to define who can access the Test Profile. As an example, a Test Profile with a Lifecycle Status of Experimental may only be able to be specified in a Test Job by a specific set of Users. This could be limited by the role that the User is assigned. All users who can create a Test Job may be able to assign Test Profiles with a Lifecycle Status of Approved. A Test Profile with a Lifecycle Status of Pending may be limited to some subset of all users.

Attribute Name	Description	Value	Comments
Related Service Specification Identifier	The Identifier of the related Service Specification that this Test Profile can be used to test.	String	Set by Buyer
Test Profile Relationship Identifier	The unique identifier for a related Test Profile.	String	Set by Buyer
Test Profile Relationship Name	The unique name for a related Test Profile.	String	Set by Buyer
Related Test Profile Role	The role for this relationship.	One of: Primary Secondary	Set by Buyer
Test Profile Relationship Order	The order which the related Test Jobs are run during a Test Job.	Numeric	Set by Buyer
Test Profile Relationship Valid For	The last date that the Test Profile is valid	Date/Time	Set by Buyer

Table 6 – Test Profile Relationship Attributes

Note: the Related Test Profile Role determines of the specified Test Profile is the first in the order of sequence or secondary in the order of sequence. The Test Profile Relationship Order specifies the order in which different Test Profiles are used to perform Test Jobs.

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
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 7 – Contact Attributes
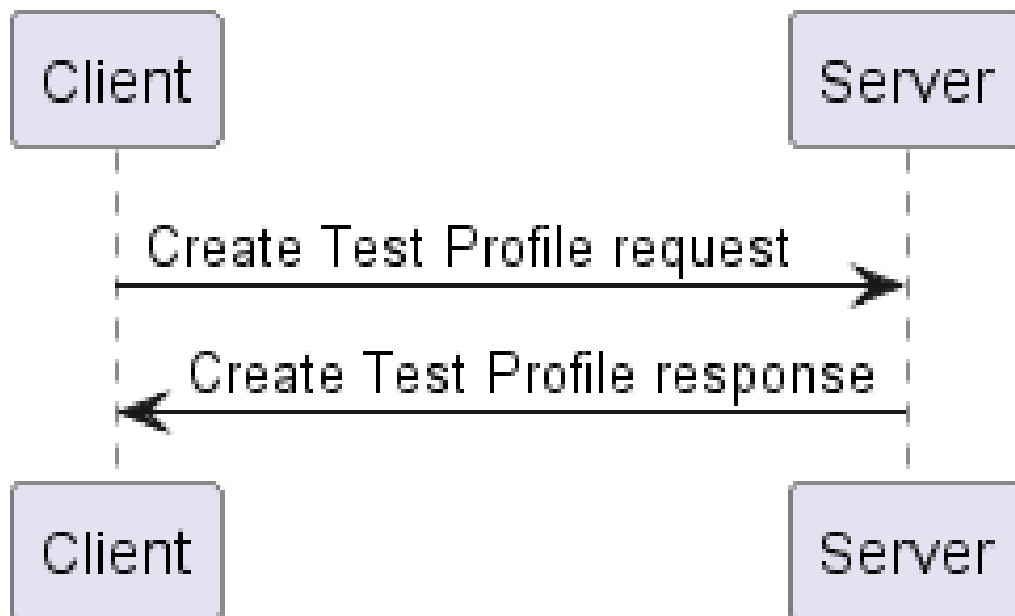
Figure 1 – High Level Create Test Profile Sequence Diagram

[R1]   The Buyer/Client Create Test Profile request **MUST** include the following attributes and any test specific attributes:

- Test Profile Name

- Valid For

- Lifecycle Status

[O1]   The Buyer/Client's Create Test Profile request **MAY** include any other attributes shown as Set by Buyer/Client in Table 5.

2. The Seller/Server responds to the Buyer/Client's request.

[R2]   If the request is successful, the Seller's response to a Create Test Profile request **MUST** echo back all Buyer/Client provided attributes.

[R3]   If the request is successful, the Seller's response to a Create Test Profile request **MUST** include the following attributes:

- Test Profile Identifier

- Creation Date

- Last Modify Date

- Test Profile State

- Test Profile Assigned

[R4]   The Last Modify Date **MUST** be the same as the Creation Date.

[R5]   If the request is not successful, the Seller/Server **MUST NOT** echo back all Buyer/Client provided attributes.

[R6]   If the request is not successful, the Seller/Server **MUST NOT** return a Test Profile Identifier, Creation Date, Profile State, Test Profile Assigned, or Last Modify Date.

[R7]   If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client.

8.1.2   Modify Test Profile (Use Case 2)

1. The Buyer/Client can request modifications to an existing Test Profile.

[R8]   The Buyer's Modify Test Profile request **MUST** include the following attributes:

- Test Profile Identifier

- At least one other attribute from shown as Set by Buyer/Client in Table 5.

[O2]   The Buyer's Modify Test Profile request **MAY** include any other attributes shown as Set by Buyer/Client in Table 5.

2. The Seller/Server responds to the Buyer's request in a synchronous manner.

[R9]   The Seller's response to a Modify Test Profile request **MUST** return all Test Profile attributes.

[R10]   The Last Modify Date **MUST** be set to the current date and time by the Seller.

[R11]   If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client.

Note: A Test Profile where Test Profile Assigned = TRUE cannot be modified. A Test Profile that is dependent on another Test Profile cannot be modified.

8.1.3   Delete Test Profile (Use Case 3)

1. The Buyer/Client can delete a Test Profile.

   [R12]   The Buyer's Delete Test Profile request **MUST** contain the Test Profile Identifier.

   [R13]   The Buyer's Delete Test Profile request **MUST NOT** contain any other attributes.

Note: A Test Profile where Test Profile Assigned = TRUE cannot be deleted. A Test Profile that is dependent on another Test Profile cannot be deleted.

2. The Seller/Server responds to the Buyer's request.

   [R14]   If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client.

8.1.4   Test Profile Dependency

Making a Test Profile dependent on another Test Profile or Bundled Test Profile allows the Buyer/Client to configure one Test Profile to need to complete successfully before another Test Profile or Bundled Test Profile is started. If the previous Test Profile does not complete successfully, the next Test Profile is not started. If Bundled Test Profiles are used, a Bundled Test Profile can be configured to need to complete successfully before another Bundled Test Profile or Test Profile can be started.
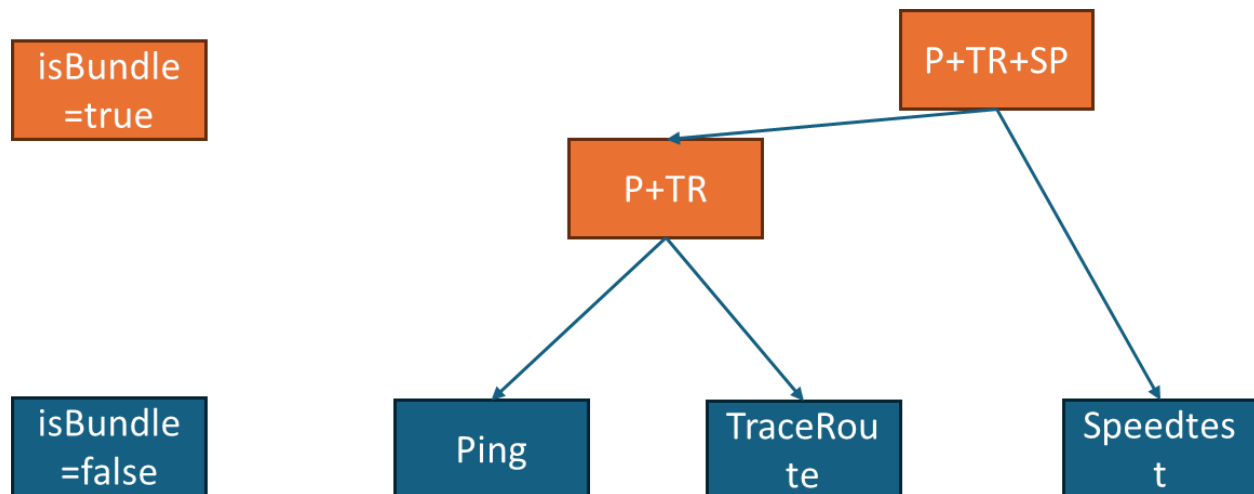
Figure 2 – Test Profile Dependency

Figure 2 shows the atomic Test Profiles in blue. Each of these is created as a separate Test Profile. Bundles, shown in orange, are created. The first bundles the Ping and Traceroute Test Profiles. The second bundle adds the Speedtest to that bundle to create a new bundle.

1. The Buyer/Client can create a dependency between two or more Test Profiles/Bundled Test Profiles.

   [R15] The Buyer's Modify Test Profile/Bundled Test Profile **MUST** include the following:

   - Test Profile Relationship Identifier or Bundled Test Profile Relationship Identifier

   [O3] If the Test Profile Relationship is changing, the Buyer's Modify Test Profile/Bundled Test Profile **MAY** include at least one of the following as applicable to the changes:

   - Test Profile Relationship with the following settings

     - Related Service Specification Identifier

     - Test Profile Relationship Identifier

     - Test Profile Relationship Name

     - Test Profile Relationship Type

     - Test Profile Relationship Role

     - Test Profile Relationship Order

     - Test Profile Relationship Valid For

8.1.5 Retrieve Test Profile List (Use Case 4)

1. The Buyer/Client can retrieve a list of Test Profiles.

   [O4] The Buyer's Retrieve Test Profile List request **MAY** contain none or more of the following attributes:

   - Creation Date ($<$, $>$)

   - Last Update ($<$, $>$)

   - Related Service Specification Identifier

2. The Seller/Server responds to the Buyer's request.

   [R16] If the request is successful, the Seller/Server **MUST** reply with all attributes in Table 5 to the Buyer/Client.

   [R17] If the request is successful but the Seller/Server finds no entries that match the filter criteria, they **MUST** return an empty list.

   [R18] If the request is unsuccessful, the Seller/Server **MUST NOT** echo back the criteria provided by the Buyer/Client.

   [R19] If the request is unsuccessful, the Seller/Server **MUST** return an error with explanation to the Buyer/Client.

8.1.6 Retrieve Test Profile by Identifier (Use Case 5)

1. The Buyer/Client can retrieve a Test Profile by Test Profile Identifier.

   [R20] The Buyer's Retrieve Test Profile by Test Profile Identifier **MUST** include the Test Profile Identifier.

   [R21] The Buyer's Retrieve Test Profile by Test Profile identifier request **MUST NOT** include other attributes.

2. The Seller/Server responds to the Buyer's request.

   [R22] If the request is successful, the Seller's response to a Retrieve Test Profile by Test Profile Identifier request **MUST** include all attributes as defined in Table 5.

   [R23] If the request is unsuccessful, the Seller/Server **MUST** return an error with explanation to the Buyer/Client.

8.2 Test Job

The Use Cases and associated requirements related to the Test Job are defined in this section.

8.2.1 Create Test Job w/Test Profile (Use Case 6)

1. The Buyer/Client is able to request that the Seller/Server create a Test Job.

   [R24] The Buyer's Create Test Job request **MUST** provide the following attributes:

   - Test Job Name

   - End Date Time

   - Valid For

   - Test Profile Identifier

   - Service ID From

   - Service ID To

   - Test Specific Attributes

Attribute Name	Description	Value	Comments
Test Job Identifier	The identifier of the Test Job.	String	Set by Seller
Test Job Name	The name of the Test Job.	String	Set by Buyer
Test Job Description	A description of the Test Job.	String	Set by Buyer
Start Date Time	The start date and time of the Test Job.	Date/Time	Set by Buyer If the Buyer desires to schedule a test, this is a future date/time. If the Buyer desires an immediate test, this is empty.
Actual Start Date Time	The actual time that a Test Job started.	Date/Time	Set by Seller/Server
End Date Time	The end date and time of the Test Job.	Date/Time	Set by Buyer
Actual End Date Time	The Actual end date and	Date/Time	Set by Seller/Server

Attribute Name	Description	Value	Comments
	time of the Test Job.		
Recurrence Period	The Date/Time that the Test Job is repeater.	One of: • None • Hourly • Daily • Weekly • Monthly	Set by Buyer/Client
Valid For	The last date that the Test Job is valid	Date/Time	Set by Buyer
Test Profile Identifier	The identifier of the Test Profile.	String	Set by Buyer
Service ID From	The attributes for a related service From side	See Table 9	
Service ID To	The attributes for a related service To side	See Table 9	
Service Specific Test Job Configuration	The schema to be used that defines the specific Test Measure attributes.	String	Set by Buyer

Table 8 – Test Job Attributes

Attribute Name	Description	Value	Comments
Related Service Identifier	The Service Identifier for the service to be tested.	String	Set by Buyer

Attribute Name	Description	Value	Comments
Related Service Name	The name of the service to be tested.	String	Set by Buyer

Table 9 – Related Service Test Job Attributes

[R25]   If the Test Job Valid For Date/Time is reached while in IN_PROGRESS, SUSPENED, ASSESSING_MODIFICATION state, the Seller/Server **MUST** complete the currently running Test Job.

[R26]   If the Valid For Date/Time is reached while SCHEDULED, the Seller/Server **MUST** cancel the Test Job.

2. The Seller responds to the Buyer's request.

[R27]   If the request is successful, the Seller's response to a Create Test Job request **MUST** echo back all Buyer/Client provided attributes.

[R28]   If the request is successful, the Seller **MUST** return the following attributes:

- Test Job Identifier

- Test Job State

[R29]   If the request is not successful, the Seller/Server **MUST NOT** echo back all Buyer/Client provided attributes.

[R30]   If the request is not successful, the Seller/Server **MUST NOT** return a Test Job Identifier or Test Job State.

[R31]   If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client

8.2.2   Create Test Job w/o Test Profile (Use Case 7)

1. The Buyer/Client is able to request that the Seller/Server create a Test Job without referencing a Test Profile.

[R32]   The Buyer's Create Test Job request **MUST** contain the following attributes:

- Test Job Name

- End Date Time

- Valid For

- Service ID From

- Service ID To

- Test Specific Attributes

- Service Specific Test Profile Attributes (Test Profile related) see Table 5

- Related Service Specification (Test Profile related) see Table 6

- Related Contact Information (Test Profile related) see Table 7

Attribute Name	Description	Value	Comments
Test Job Identifier	The identifier of the Test Job.	String	Set by Seller
Test Job Name	The name of the Test Job.	String	Set by Buyer
Test Job Description	A description of the Test Job.	String	Set by Buyer
Start Date Time	The start date and time of the Test Job.	Date/Time	Set by Buyer If the Buyer desires to schedule a test, this is a future date/time. If the Buyer desires an immediate test, this is empty.
Actual Start Date Time	The actual time that a Test Job started.	Date/Time	Set by Seller/Server
End Date Time	The end date and time of the Test Job.	Date/Time	Set by Buyer
Actual End Date Time	The Actual end date and time of the Test Job.	Date/Time	Set by Seller/Server
Valid For	The last date that the Test Profile is valid	Date/Time	Set by Buyer
Recurrence Period	The Date/Time that the Test Job is repeater.	One of: • None • Hourly • Daily • Weekly • Monthly	Set by Buyer/Client

Attribute Name	Description	Value	Comments
Service ID From	The attributes for a related service From side	See Table 11	
Service ID To	The attributes for a related service To side	See Table 11	
Test Job State	The state of the Test Job	One of: ACKNOWLEDGED ASSESSING_MODIFICATION CANCELLED COMPLETED IN_PROGRESS REJECTED SCHEDULED SUSPEND	Set by Seller
Service Specific Test Job Configuration	The schema to be used that defines the Test Measure attributes.	String	Set by Buyer

Table 10 – Seller Test Job Attributes

Attribute Name	Description	Value	Comments
Related Service Identifier	The Service Identifier for the service to be tested.	String	Set by Buyer
Related Service Name	The name of the service to be tested.	String	Set by Buyer

Table 11 – Seller Related Service Test Job Attributes

2. The Seller responds to the Buyer's request.

   [R33]　If the request is successful, the Seller's response to a Create Test Job request **MUST** echo back all Buyer/Client provided attributes.

   [R34]　If the request is successful, the Seller **MUST** return the following attributes:

   - Test Job Identifier

   - Test Job State

[R35]   If the request is not successful, the Seller/Server **MUST NOT** echo back all Buyer/Client provided attributes.

[R36]   If the request is not successful, the Seller/Server **MUST NOT** return a Test Job Identifier or Test Job State.

[R37]   If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client

8.2.3   Retrieve Test Result List (Use Case 8)

The Buyer/Client retrieve a list of Test Results that meet a specified filter.

1. The Buyer submits a Retrieve Test Result List request.

[O5]   The Buyer's Retrieve Test Result List request **MAY** contain none or more of the following attributes:

- Test Job Identifier

- Start Date Time

- End Date Time

- Service ID From

- Service ID To

- Related Service Specification Identifier (Test Profile related) see Table 6

- Related Contact Information Name (Test Profile related) see Table 7

Attribute Name	Description	Value	Comments
Test Job Identifier	The identifier of the Test Job.	String	Set by Buyer
Start Date Time	The start date and time of the Test Result for a given Test Job.	Date/Time	Set by Buyer
End Date Time	The end date and time of the Test Result for a given Test Job.	Date/Time	Set by Buyer
Service ID From	The From identifier for a related service	See Table 11	
Service ID To	The To identifier for a related service	See Table 11	

Attribute Name	Description	Value	Comments
Related Service Specification Identifier	The identifier of the related service specification	String	Set by Buyer
Related Contact Information Name	The contact for a Test Job	String	Set by Buyer

Table 12 – Retrieve Test Result List Attributes

If the test only has a single end point, the Service ID From is used to reflect the end point.

2. The Seller/Server responds to the Buyer/Client's request with a success message and a list of Test Result Identifiers for Test Jobs that match the filter criteria.

Attribute Name	Description	Value	Comments
Test Result Identifier	The identifier of the Test Results.	String	Set by Buyer
Test Job Identifier	The identifier of the Test Job	String	Set by Buyer
Actual Start Date Time	The actual start date and time of the Test Result for a given Test Job.	Date/Time	Set by Buyer
Actual End Date Time	The actual end date and time of the Test Result for a given Test Job.	Date/Time	Set by Buyer
Related Service	The attributes for a related service	See Table 11	

Table 13 – Retrieve Test Result List Response Attributes

[R38] If the request is successful, the Seller/Server **MUST** provide a list of Test Results that match the filter criteria as shown in Table 13.

[R39] If the request is not successful, the Seller/Server **MUST NOT** provide a list of Test Results.

8.2.4 Retrieve Test Result by Test Result Identifier (Use Case 9)

The Buyer/Client retrieves the Test Results for a specific Test Result for a given Test Job.

1. The Buyer/Client initiates a Retrieve Test Results by Test Result Identifier request.

Attribute Name	Description	Value	Comments
Test Result Identifier	The identifier of the Test Result.	String	Set by Buyer

Table 14 – Retrieve Test Result by Test Result Identifier Request Attributes

[R40]   The Buyer/Client Retrieve Test Results by Test Result Identifier request **MUST** contain the attributes shown in Table 14.

2. The Seller/Server responds to the Buyer/Client's request with a success message/code and returns the Test Results for a given Test Job.

Attribute Name	Description	Value	Comments
Test Result Identifier	The identifier of the Test Result	String	Set by Seller
Test Job Identifier	The identifier of the Test Job.	String	Set by Buyer
Actual Start Date Time	The actual time that a Test Job started.	Date/Time	Set by Seller/Server
Actual End Date Time	The Actual end date and time of the Test Job.	Date/Time	Set by Seller/Server
Service ID From	The attributes for a related service From side	See Table 11	
Service ID To	The attributes for a related service To side	See Table 11	
Service Specific Test Job Report	The schema to be used that defines the Test Result attributes.	String	Set by Seller

Table 15 – Retrieve Test Result by Test Result Identifier Response Attributes

[R41]   If the response is successful, the Seller/Server response **MUST** include all the attributes shown in Table 15.

[R42]   If the response is not successful, the Seller/Server **MUST NOT** include any of the attributes shown in Table 15 in their response.

8.2.5   Suspend Test Job (Use Case 10)

1. The Buyer/Client submits a Suspend Test Job request to suspend an existing Test Job.

[R43] The Buyer/Client's Suspend Test Job request **MUST** include the Test Job Identifier.

[R44] The Test Job **MUST** be in the IN_PROGRESS state.

Note: Test Jobs in the SCHEDULED state cannot be suspended.

2. The Seller/Server responds to the Buyer/Client's request with a success message/code and changes the state of the Test Job to SUSPENDED.

Attribute Name	Description	Value	Comments
Suspend Test Job Identifier	The identifier of the Suspend Test Job	String	Set by Seller
Test Job Identifier	The identifier of the Test Job.	String	Set by Seller
Suspend Test Job State	The state of the Test Job	One of: ACCEPTED ACKNOWLEDGED DECLINED REJECTED	

Table 16 – Seller Suspend Test Job Attributes

[R45] If the request is successful, the Seller/Server **MUST** return a response that includes the attributes shown in Table 16.

[R46] If the request is successful, the Seller/Server **MUST** suspend all testing and measurements being performed on the Test Job and place the Test Job in the SUSPENDED state when they receive a Suspend Test Job request from the Buyer/Client.

[R47] While in the SUSPENDED state, the Test Job **MUST NOT** perform any testing or measurements.

[R48] If the request is not successful, the Seller/Server **MUST NOT** suspend the Test Job.

[R49] If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client

3. The Test Job tests and measurements are suspended.

8.2.6 Resume Test Job (Use Case 11)

1. The Buyer/Client submits a Resume Test Job request to resume an existing Test Job.

[R50] The Buyer/Client's Resume Test Job request **MUST** include the Test Job Identifier.

[R51] The Test Job **MUST** be in the SUSPENDED state.

2. The Seller/Server responds to the Buyer/Client's request with a success message/code and changes the state of the Test Job to IN_PROGRESS.

Attribute Name	Description	Value	Comments
Resume Test Job Identifier	The identifier of the Resume Test Job	String	Set by Seller
Test Job Identifier	The identifier of the Test Job.	String	Set by Seller
Resume Test Job State	The state of the Test Job	One of: ACCEPTED ACKNOWLEDGED DECLINED REJECTED	

Table 17 – Seller Resume Test Job Attributes

Note: If the Valid Until Date/Time has expired while the Test Job is in the SUSPENDED state, the Test Job should be allowed to resume. It can then be cancelled by the Buyer/Client if desired.

[R52] If the request is successful, the Seller/Server **MUST** return a response that includes the attributes shown in Table 17.

[R53] If the request is successful, the Seller/Server **MUST** resume all testing and measurement being performed on the Test Job and place the Test Job in the IN_PROGRESS state when they receive a Resume Test Job request from the Buyer/Client.

[R54] If the request is not successful, the Seller/Server **MUST NOT** resume the Test Job, and the Test Job remains in the SUSPENDED state.

[R55] If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client

3. The Test Job tests and measurements are resumed.

8.2.7 Cancel Test Job (Use Case 12)

1. The Buyer/Client is able to request cancellation to an existing Test Job.

[R56] The Buyer's/Client's Cancel Test Job request **MUST** include the Test Job Identifier.

[R57] The Test Job **MUST** be in the SUSPENDED, IN_PROGRESS, or SCHEDULED state for a Buyer/Client to cancel it.

2. The Seller/Server responds to the Buyer's request.

Attribute Name	Description	Value	Comments
Cancel Test Job Identifier	The identifier of the Resume Test Job	String	Set by Seller
Test Job Identifier	The identifier of the Test Job.	String	Set by Seller
Cancel Test Job State	The state of the Cancel Test Job	One of: ACCEPTED ACKNOWLEDGED DECLINED REJECTED	

Table 18 – Seller Cancel Test Job Attributes

[R58] If the request is successful, the Seller/Server **MUST** return a response that includes the attributes shown in Table 18.

[R59] The Seller's response to a Cancel Test Job request **MUST** echo back Buyer/Client provided attributes.

[R60] The Seller's response to a Cancel Test Job request **MUST** include the attributes in Table 8.

[R61] If the request is successful, the Seller/Server **MUST** cancel all testing and measurement being performed on the Test Job and place the Test Job in the CANCELLED state.

[R62] If the request is not successful, the Seller/Server **MUST NOT** cancel the Test Job, and the Test Job remains in its previous state (SUSPENDED, IN_PROGRESS, or SCHEDULED).

[R63] If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client

3. The Seller/Server modifies the Test Job as requested.

8.2.8 Modify Test Job (Use Case 13)

1. The Buyer/Client is able to request modifications to an existing Test Job.

[R64] The Buyer's Modify Test Job request **MUST** include the Test Job Identifier.

[R65] The Buyer's Modify Test Job request **MUST** contain at least one of the following attributes:

- Test Job Description

- Test Job End Date/Time

- Test Job Name

- Test Job Start Date/Time

- Service ID From

- Service ID To

- Test Profile Identifier

- Test Attribute Schema

[R66] The Test Job **MUST** be in the SUSPENDED or SCHEDULED state for a Buyer/Client to modify it.

The Modify Test Job can be used to change the Test Profile Identifier in the event that a Test Job needs to perform an additional test. The Modify Test Job process cannot be used to change a Test Job created without a Test Profile to a Test Job with a Test Profile.

2. The Seller/Server responds to the Buyer's request.

Attribute Name	Description	Value	Comments
Modify Test Job Identifier	The identifier of the Modify Test Job.	String	Set by Seller
Test Job Identifier	The identifier of the Test Job.	String	Set by Buyer
Test Job Name	The name of the Test Job.	String	Set by Buyer
Test Job Description	A description of the Test Job.	String	Set by Buyer
Start Date Time	The start date and time of the Test Job.	Date/Time	Set by Buyer If the Buyer desires to schedule a test, this is a future date/time. If the

Attribute Name	Description	Value	Comments
			Buyer desires an immediate test, this is empty.
Actual Start Date Time	The actual time that a Test Job started.	Date/Time	Set by Seller/Server
End Date Time	The end date and time of the Test Job.	Date/Time	Set by Buyer
Actual End Date Time	The Actual end date and time of the Test Job.	Date/Time	Set by Seller/Server
Test Profile Identifier	The identifier of the Test Profile.	String	Set by Buyer
Service ID From	The attributes for a related service From side	See Table 9	
Service ID To	The attributes for a related service To side	See Table 9	
Test Specific Configuration	The schema to be used that defines the specific Test Measure attributes.	String	Set by Buyer
Modify Test Job State	The state of the Modify Test Job	One of: ACCEPTED ACKNOWLEDGED DECLINED REJECTED	

Table 19 – Modify Test Job Attributes

[R67] If the request is successful, the Seller/Server **MUST** return a response that includes the attributes shown in Table 19.

[R68] If the request is not successful, the Seller/Server **MUST NOT** echo back all Buyer/Client provided attributes.

[R69] If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client.

3. The Seller/Server modifies the Test Job as requested.

8.2.9 Modify Test Job w/o Test Specification (Use Case 14)

1. The Buyer/Client is able to request modifications to an existing Test Job.

[R70] The Buyer's Modify Test Job request **MUST** include the Test Job Identifier.

[R71] The Buyer's Modify Test Job request **MUST** contain at least one of the following attributes:

- Test Job Name

- Start Date Time

- End Date Time

- Valid For

- Service ID From

- Service ID To

- Test Attribute Schema

- Service Specific Test Profile Attributes (Test Profile related) see Table 5

- Related Service Specification (Test Profile related) see Table 6

- Related Contact Information (Test Profile related) see Table 7

[R72] The Test Job **MUST** be in the SUSPENDED or SCHEDULED state for a Buyer/Client to modify it.

2. The Seller/Server responds to the Buyer's request.

Attribute Name	Description	Value	Comments
Modify Test Job Identifier	The identifier of the Test Job.	String	Set by Seller
Test Job Identifier	The identifier of the Test Job.	String	Set by Buyer

Attribute Name	Description	Value	Comments
Test Job Name	The name of the Test Job.	String	Set by Buyer
Start Date Time	The start date and time of the Test Job.	Date/Time	Set by Buyer If the Buyer desires to schedule a test, this is a future date/time. If the Buyer desires an immediate test, this is empty.
Actual Start Date Time	The actual time that a Test Job started.	Date/Time	Set by Seller/Server
End Date Time	The end date and time of the Test Job.	Date/Time	Set by Buyer
Actual End Date Time	The Actual end date and time of the Test Job.	Date/Time	Set by Seller/Server
Valid For	The last date that the Test Profile is valid	Date/Time	Set by Buyer
Service ID From	The attributes for a related service From side	See Table 11	
Service ID To	The attributes for a related service To side	See Table 11	
Modify Test Job State	The state of the Modify Test Job	One of: ACCEPTED ACKNOWLEDGED DECLINED REJECTED	
Test Specific Configuration	The schema to be used that defines the Test Measure attributes.	String	Set by Buyer

Table 20 – Modify Test Job W/O Test Profile Attributes

[R73]   The Seller's response to a Modify Test Job request **MUST** echo back Buyer/Client provided attributes.

[R74]   The Seller's response to a Modify Test Job request **MUST** include the attributes in Table 20.

[R75]   If the request is not successful, the Seller/Server **MUST NOT** echo back all Buyer/Client provided attributes.

[R76]   If the request is not successful, the Seller/Server **MUST NOT** return a Test Job Identifier or Test Job State.

[R77]   If the Seller/Server encounters errors, they **MUST** return an error with explanation to the Buyer/Client.

3. The Seller/Server modifies the Test Job as requested.

Note: A Modify Test Job request cannot be used to modify the Test Profile of a test that is SUSPENDED or SCHEDULED. To accomplish this, the Test Job must be deleted, and a new Test Job created.

8.2.10   Retrieve Test Job List (Use Case 15)

1. The Buyer/Client submits a Retrieve Test Job List request using none or more of the filter criteria.

[R78]   The Buyer/Client's Retrieve Test Job List request **MUST** contain none or more of the following filter criteria:

- Service ID From

- Service ID To

- Start Date Time (<, >)

- End Date Time (<, >)

- Test Profile Identifier

- Test Job Name

2. The Seller/Server returns a response to the Buyer.

[R79]   If successful, the Seller/Server **MUST** return a list of Test Job Identifiers that match the selected filter criteria along with all filter criteria attributes.

[R80]   If successful but no matches to the filter criteria are found, the Seller/Server **MUST** return an empty list.

[R81]   If unsuccessful, the Seller/Server **MUST NOT** return a list of Test Job Identifiers or an empty list.

[R82]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors.

3. The Buyer has a list of the Test Job Identifiers that match the filter criteria.

8.2.11 Retrieve Test Job by Identifier (Use Case 16)

1. The Buyer/Client submits a Retrieve Test Job by Identifier request that includes the Test Job Identifier.

[R83] The Buyer/Client's Retrieve Test Job by Identifier request **MUST** include the Test Job Identifier and only the Test Job Identifier.

2. The Seller/Server responds to the Retrieve Test Job by Identifier request.

[R84] If successful, the Seller/Server **MUST** include all attributes shown in Table 8 in their response.

[R85] If unsuccessful, the Seller/Server **MUST NOT** return any attributes in their response.

[R86] If unsuccessful, the Seller/Server **MUST** return an indication of the errors encountered.

3. The Buyer/Client has all details of a Test Job.

8.2.12 Retrieve Suspend Test Job List (Use Case 20)

1. The Buyer/Client submits a Retrieve Suspend Test Job List request using none or more of the filter criteria.

[R87] The Buyer/Client's Retrieve Suspend Test Job List request **MUST** contain none or more of the following filter criteria:

- Start Date Time (<, >)

- End Date Time (<, >)

- Test Job Identifier

2. The Seller/Server returns a response to the Buyer.

[R88] If successful, the Seller/Server **MUST** return a list of Suspend Test Job Identifiers that match the selected filter criteria along with all filter criteria attributes.

[R89] If successful but no matches to the filter criteria are found, the Seller/Server **MUST** return an empty list.

[R90] If unsuccessful, the Seller/Server **MUST NOT** return a list of Suspend Test Job Identifiers or an empty list.

[R91] If unsuccessful, the Seller/Server **MUST** return an indication of the errors.

3. The Buyer has a list of the Suspend Test Job Identifiers that match the filter criteria.

8.2.13 Retrieve Suspend Test Job by Identifier (Use Case 21)

1. The Buyer/Client submits a Retrieve Suspend Test Job by Identifier request that includes the Suspend Test Job Identifier.

[R92] The Buyer/Client's Retrieve Suspend Test Job by Identifier request **MUST** include the Suspend Test Job Identifier and only the Suspend Test Job Identifier.

2. The Seller/Server responds to the Retrieve Suspend Test Job by Identifier request.

[R93] If successful, the Seller/Server **MUST** include all attributes shown in Table 16 in their response.

[R94] If unsuccessful, the Seller/Server **MUST NOT** return any attributes in their response.

[R95] If unsuccessful, the Seller/Server **MUST** return an indication of the errors encountered.

3. The Buyer/Client has all details of a Suspend Test Job.

8.2.14 Retrieve Resume Test Job List (Use Case 22)

1. The Buyer/Client submits a Retrieve Suspend Test Job List request using none or more of the filter criteria.

[R96] The Buyer/Client's Retrieve Resume Test Job List request **MUST** contain none or more of the following filter criteria:

- Start Date Time (<, >)

- End Date Time (<, >)

- Test Job Identifier

2. The Seller/Server returns a response to the Buyer.

[R97] If successful, the Seller/Server **MUST** return a list of Resume Test Job Identifiers that match the selected filter criteria along with all filter criteria attributes.

[R98] If successful but no matches to the filter criteria are found, the Seller/Server **MUST** return an empty list.

[R99] If unsuccessful, the Seller/Server **MUST NOT** return a list of Resume Test Job Identifiers or an empty list.

[R100]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors.

  3.   The Buyer has a list of the Resume Test Job Identifiers that match the filter criteria.

8.2.15   Retrieve Resume Test Job by Identifier (Use Case 23)

  1.   The Buyer/Client submits a Retrieve Resume Test Job by Identifier request that includes the Resume Test Job Identifier.

[R101]   The Buyer/Client's Retrieve Resume Test Job by Identifier request **MUST** include the Resume Test Job Identifier and only the Resume Test Job Identifier.

  2.   The Seller/Server responds to the Retrieve Resume Test Job by Identifier request.

[R102]   If successful, the Seller/Server **MUST** include all attributes shown in Table 17 in their response.

[R103]   If unsuccessful, the Seller/Server **MUST NOT** return any attributes in their response.

[R104]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors encountered.

  3.   The Buyer/Client has all details of a Resume Test Job.

8.2.16   Retrieve Cancel Test Job List (Use Case 24)

  1.   The Buyer/Client submits a Retrieve Cancel Test Job List request using none or more of the filter criteria.

[R105]   The Buyer/Client's Retrieve Cancel Test Job List request **MUST** contain none or more of the following filter criteria:

  • Start Date Time (<, >)

  • End Date Time (<, >)

  • Test Job Identifier

  2.   The Seller/Server returns a response to the Buyer.

[R106]   If successful, the Seller/Server **MUST** return a list of Cancel Test Job Identifiers that match the selected filter criteria along with all filter criteria attributes.

[R107]   If successful but no matches to the filter criteria are found, the Seller/Server **MUST** return an empty list.

[R108]   If unsuccessful, the Seller/Server **MUST NOT** return a list of Cancel Test Job Identifiers or an empty list.

[R109]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors.

3. The Buyer has a list of the Cancel Test Job Identifiers that match the filter criteria.

8.2.17 Retrieve Cancel Test Job by Identifier (Use Case 25)

1. The Buyer/Client submits a Retrieve Cancel Test Job by Identifier request that includes the Cancel Test Job Identifier.

[R110]   The Buyer/Client's Retrieve Cancel Test Job by Identifier request **MUST** include the Cancel Test Job Identifier and only the Cancel Test Job Identifier.

2. The Seller/Server responds to the Retrieve Cancel Test Job by Identifier request.

[R111]   If successful, the Seller/Server **MUST** include all attributes shown in Table 18 in their response.

[R112]   If unsuccessful, the Seller/Server **MUST NOT** return any attributes in their response.

[R113]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors encountered.

3. The Buyer/Client has all details of a Cancel Test Job.

8.2.18 Retrieve Modify Test Job List (Use Case 26)

1. The Buyer/Client submits a Retrieve Modify Test Job List request using none or more of the filter criteria.

[R114]   The Buyer/Client's Retrieve Modify Test Job List request **MUST** contain none or more of the following filter criteria:

- Start Date Time (<, >)

- End Date Time (<, >)

- Test Job Identifier

2. The Seller/Server returns a response to the Buyer.

[R115]   If successful, the Seller/Server **MUST** return a list of Modify Test Job Identifiers that match the selected filter criteria along with all filter criteria attributes.

[R116]   If successful but no matches to the filter criteria are found, the Seller/Server **MUST** return an empty list.

[R117]   If unsuccessful, the Seller/Server **MUST NOT** return a list of Modify Test Job Identifiers or an empty list.

[R118]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors.

3.   The Buyer has a list of the Test Job Identifiers that match the filter criteria.

8.2.19   Retrieve Modify Test Job by Identifier (Use Case 27)

1.   The Buyer/Client submits a Retrieve Modify Test Job by Identifier request that includes the Modify Test Job Identifier.

[R119]   The Buyer/Client's Retrieve Modify Test Job by Identifier request **MUST** include the Modify Test Job Identifier and only the Modify Test Job Identifier.

2.   The Seller/Server responds to the Modify Suspend Test Job by Identifier request.

[R120]   If successful, the Seller/Server **MUST** include all attributes shown in Table 19 or Table 20 in their response.

[R121]   If unsuccessful, the Seller/Server **MUST NOT** return any attributes in their response.

[R122]   If unsuccessful, the Seller/Server **MUST** return an indication of the errors encountered.

3.   The Buyer/Client has all details of a Modify Test Job.

8.3   Notifications

Notifications may be supported by the Seller/Server. If the Seller/Server supports notifications, the Buyer/Client may subscribe to them.

8.3.1   Register for Notifications (Use Case 17)

1.   The Buyer/Client registers for Notifications.

Attribute Name	Description	Value	Comments
Register Notification Identifier	The Identifier of the register for notification request (Hub ID)	String	Set by Seller/Server
Callback Address	The Callback Address being registered	String	Set by Buyer/Client
Notification Type	The type of notifications being registered for.	ne or more of: • Test Job Create • Test Job Attribute Value Change	Set by the Buyer/Client

Attribute Name	Description	Value	Comments
		• Test Job State Change • Test Job Delete • Test Profile Create • Test Profile Attribute Value Change • Test Profile State Change • Test Profile Delete • Test Job Results Available	
Action	Specification to Start Notifications or Stop Notifications.	One of: • START • STOP	Set by the Buyer/Client

Table 21 – Register for Notification Attributes

[R123] The Buyer/Client Register for Notifications request **MUST** include the following:

- Callback Address

- Zero or more Notification Types

- Action = START

2. The Seller/Server responds with an indication of success and includes the Register Notification Identifier.

[R124] If successful, the Seller/Server response **MUST** indicate success and include the Register Notification Identifier and echo back all Buyer/Client provided attributes.

[R125] If successful, the Seller/Server **MUST** begin sending the appropriate notifications to the Buyer/Client.

[R126] The Seller/Server **MUST NOT** send notifications if the Buyer/Client has not registered for them.

[R127] If unsuccessful, the Seller/Server **MUST NOT** return a Register Notification Identifier.

[R128] If the Seller/Server experiences any errors, they **MUST** return an error indication to the Buyer/Client.

8.3.2   Unregister for Notifications (Use Case 18)

1. The Buyer/Client unregisters for Notifications.

[R129]   The Buyer/Client Register for Notifications request **MUST** include the following:

- Callback Address

- Zero or more Notification Types

- Action = STOP

2. The Seller/Server responds with an indication of success.

[R130]   If successful, the Seller/Server response **MUST** indicate success.

[R131]   If successful, the Seller/Server **MUST** stop sending the appropriate notifications to the Buyer/Client.

[R132]   If unsuccessful, the Seller/Server **MUST NOT** stop sending the appropriate notifications to the Buyer/Client.

[R133]   If the Seller/Server experiences any errors, they **MUST** return an error indication to the Buyer/Client.

8.3.3   Send Notification (Use Case 19)

1. The Seller/Server sends a Notification to a Buyer/Client who has registered for Notifications when a Notification Event occurs.

Attribute Name	Description	Value	Comments
Event Notification Identifier	The Identifier of the notification	String	Set by Seller/Server
Test Profile Identifier	The Identifier of the Test Profile	String	Set by Seller/Server
Test Job Identifier	The Identifier of the Test Job	String	Set by Seller/Server
Notification Type	The type of notification being generated.	One or more of: • Test Job Create • Test Job Attribute Value Change • Test Job Test Results Ready • Test Profile Create	Set by the Seller/Server

Attribute Name	Description	Value	Comments
		• Test Profile Attribute Value Change • Test Profile Delete • Test Job Results Available	
Event Time	The time that the event in the notification occurred.	Date/time	Set by Seller

Table 22 – Notification Attributes

[R134] The Seller/Server's Notification **MUST** include the following attributes:

- Event Identifier

- Notification Type

- Event Time

Note: If the Notification Type is for a Test Profile, the Test Profile Identifier can be sent. If the Notification Type is for a Test Job, the Test Job Identifier can be sent.

2. The Buyer/Client acknowledges the receipt of the notification.

[O6] If the Seller/Server does not receive a response from the Buyer/Client to the notification, they **MAY** cease sending notifications to the Callback Address.

9   Process Flows

The Process Flows for Test Profile and Test Job are defined in the following sections.

9.1   Test Profile Lifecycle Flow

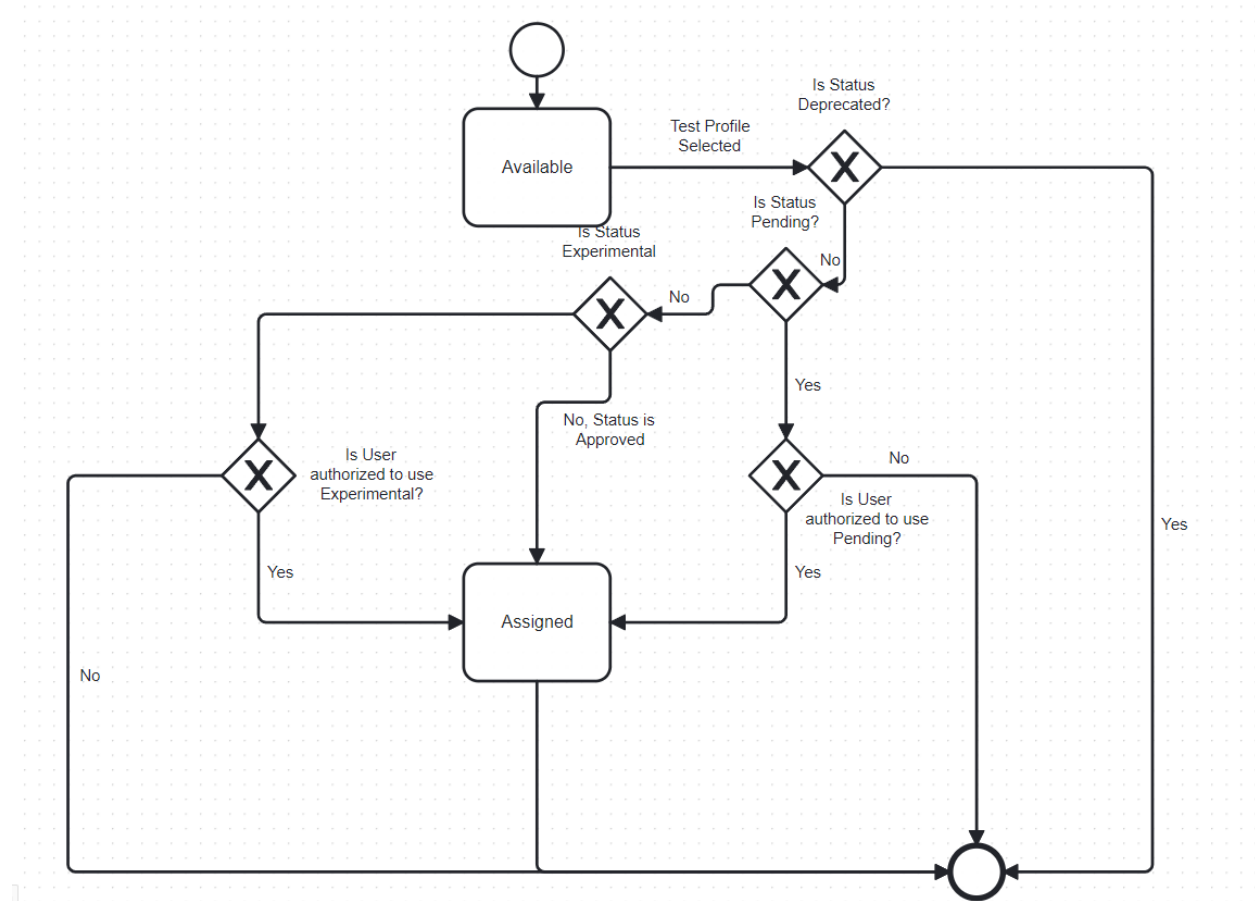The lifecycle flow for a Test Profile is reflected in this section.

Figure 3 – Test Profile Lifecycle Flow

State Name	Description	Comments
ASSIGNED	The Test Profile has been assigned to a Test Job.	
AVAILABLE	The Test Profile has been created or modified and is ready for users to specify in a Test Job.	

Table 23 – Test Profile Lifecycle States

When the Test Profile State is COMPLETED, the Test Profile Assigned becomes FALSE.

9.2 Test Job Process Flow

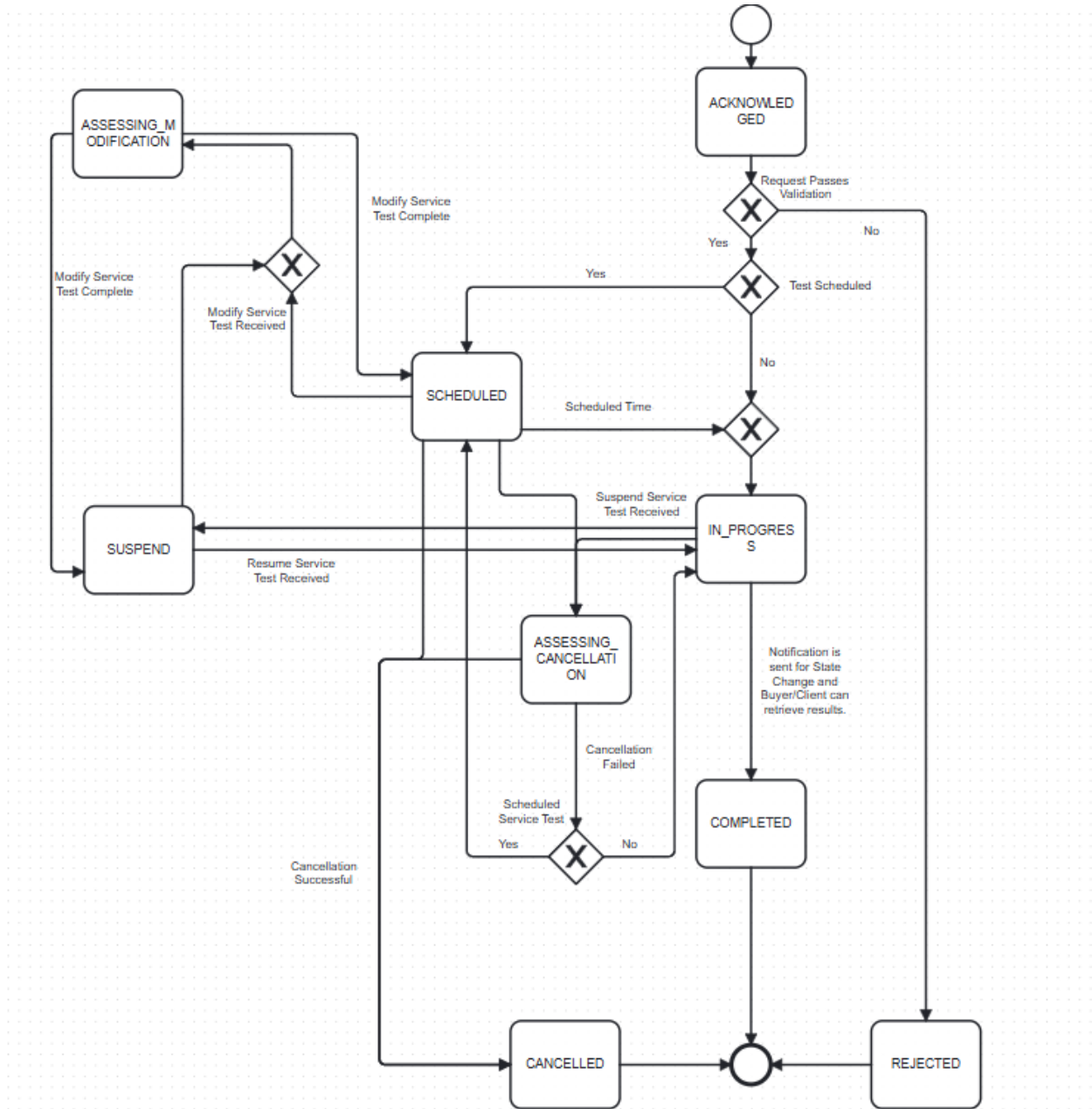The process Flow for Create Test Job is shown in Figure 4.

Figure 4 – Test Job Lifecycle

The Create Test Job State are detailed in Table 24.

State Name	Description	Comments
ACKNOWLEDGED	The Create Test Job request has been received from the Buyer/Client and the	

State Name	Description	Comments
	Seller/Server has assigned a Test Job Identifier to it. If the request attributes fail validation, the Create Test Job moves to the REJECTED state. If the attributes pass validation, it is then determined if the Create Test Job Start Date Time is immediate or if the Create Test Job Start Date Time indicates that the Test Job is to be scheduled for a later date time. If the Test Job is to be scheduled the Test Job moves to the SCHEDULED state and awaits the scheduled date and time. If the Test Job is to be performed immediately, the Test Job moves to the IN_PROGRESS state and Test Results begin.	
ASSESSING_CANCELLATION	A Cancel Test Job request is received while the Test Job is in the IN_PROGRESS or SCHEDULED state. If the Cancel Test Job request is approved, the Test Job moves to the CANCELLED state. If not, the Test Job returns to the IN_PROGRESS or SCHEDULED state.	
ASSESSING_MODIFICATION	A Modify Test Job request while the Test Job is in the SUSPEND or SCHEDULED state. If the Modify Test Job is accepted, the Test Job is updated. If the Modify Test Job is declined, the Test Job is not updated and returns to the SUSPEND or SCHEDULED state.	

State Name	Description	Comments
CANCELLED	A Cancel Test Job request is received from the Buyer/Client. If the request is accepted, the Test Job moves to the CANCELLED state. The Test Job must be in the IN_PROGRESS, SCHEDULED, or SUSPEND, state.	
COMPLETED	The Test Job has reached the End Date Time or has completed all Test Measurements and provided Test Results.	
IN_PROGRESS	Whether an immediate request or a scheduled request, the Test Job moves to the IN_PROGRESS state when it begins performing Test Results. If a Cancel Test Job request is received and accepted, the Test Job moves to the CANCELLED state. If the Cancel Test Job request is declined, the Test Job returns to the IN_PROGRESS state and continues Test Results until they are completed. If a Suspend Test Job request is received, the Test Job moves to the SUSPEND state.	
REJECTED	The Create Test Job request fails validation and is rejected.	
SCHEDULED	The Test Job is scheduled to start at a later time. The Test Job stays in the SCHEDULED state until the Start Date and Time is reached. The Test Job moves to IN_PROGRESS when the Start Date and Time is reached. A Test Job with the state	

State Name	Description	Comments
	SCHEDULED can be moved to the SUSPEND or CANCELLED state.	
SUSPEND	A Test Job in the IN_PROGRESS or SCHEDULED state receives a Suspend Test Job request. The Test Job moves to the SUSPEND state.	A Test Job cannot be modified unless it is in the SUSPEND state.

Table 24 – Create Test Job State

9.3 Modify Test Job Process Flow

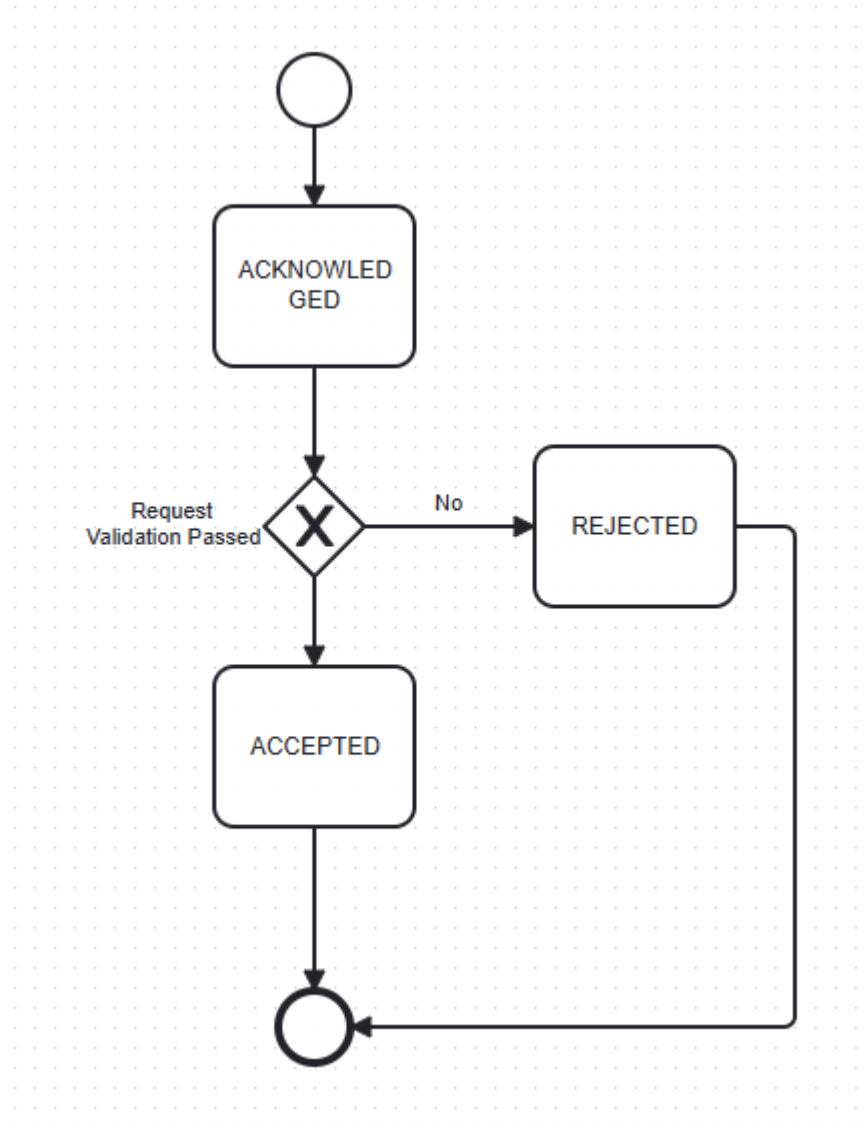The Modify Test Job process flow is shown in Figure 5.

Figure 5 – Modify Test Job Process Flow

The Modify Test Job State are defined in Table 25.

State Name	Description	Comments
ACKNOWLEDGED	The Modify Test Job request has been received from the Buyer/Client and the Seller/Server has assigned a Modify Test Job Identifier to it. If the request attributes fail validation, the Modify Test Job moves to the REJECTED state. If the attributes pass validation, it is determined if the Modify Test Job is accepted or declined. If accepted, it moves to the ACCEPTED state. If declined, it moves to the DECLINED state.	
ACCEPTED	The Modify Test Job is accepted, and the Test Job is modified.	
REJECTED	The Modify Test Job does not pass attribute validation, and the Modify Test Job is rejected.	

Table 25 – Modify Test Job State

9.4 Suspend Test Job Process Flow

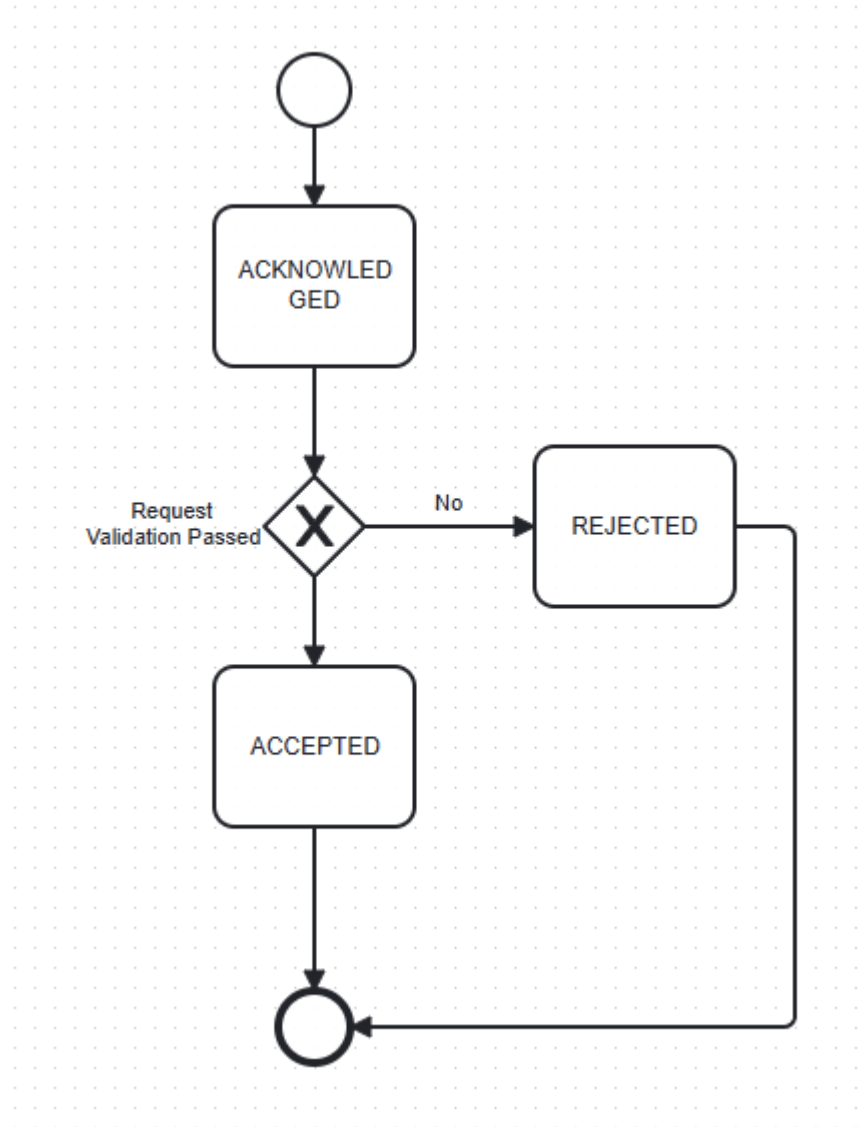The Suspend Test Job process flow is shown in Figure 6.

Figure 6 – Suspend Test Job Process Flow

The Suspend Test Job State are defined in Table 26.

State Name	Description	Comments
ACKNOWLEDGED	The Suspend Test Job request has been received from the Buyer/Client and the Seller/Server has assigned a Suspend Test Job Identifier to it. If the request attributes fail validation, the Suspend Test Job request moves to the REJECTED state. If the attributes pass validation, it is determined if the Suspend Test Job request is accepted or declined. If accepted, it moves to the ACCEPTED state.	Suspend Test Job Identifier is assigned for the Suspend Test Job request and is different than the Create Test Job request.
ACCEPTED	The Suspend Test Job is accepted, and the Test Job is suspended.	
REJECTED	The Suspend Test Job does not pass attribute validation, and the Suspend Test Job is rejected.	

Table 26 – Suspend Test Job State

9.5 Resume Test Job Process Flow
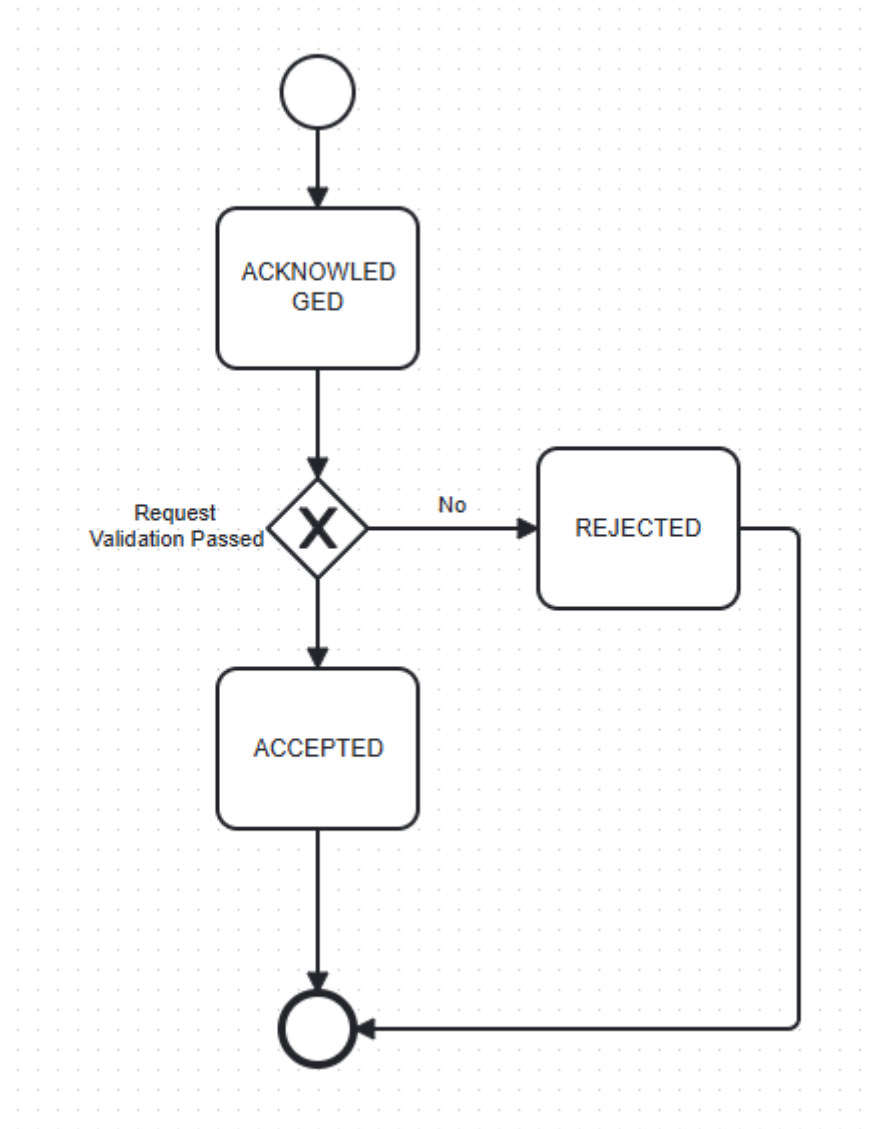
The Resume Test Job process flow is shown in Figure 7.

Figure 7 – Resume Test Job Process Flow

The Resume Test Job State are defined in Table 27.

State Name	Description	Comments
ACKNOWLEDGED	The Resume Test Job request has been received from the Buyer/Client and the Seller/Server has assigned a Resume Test Job Identifier to it. If the request attributes fail validation, the Resume Test Job request moves to the REJECTED state. If the attributes pass validation, it is determined if the Resume Test Job request is accepted or declined. If accepted, it moves to the ACCEPTED state.	
ACCEPTED	The Resume Test Job is accepted, and the Test Job is resumed.	
REJECTED	The Resume Test Job does not pass attribute validation, and the Resume Test Job is rejected.	

Table 27 – Resume Test Job State

9.6 Cancel Test Job Process Flow
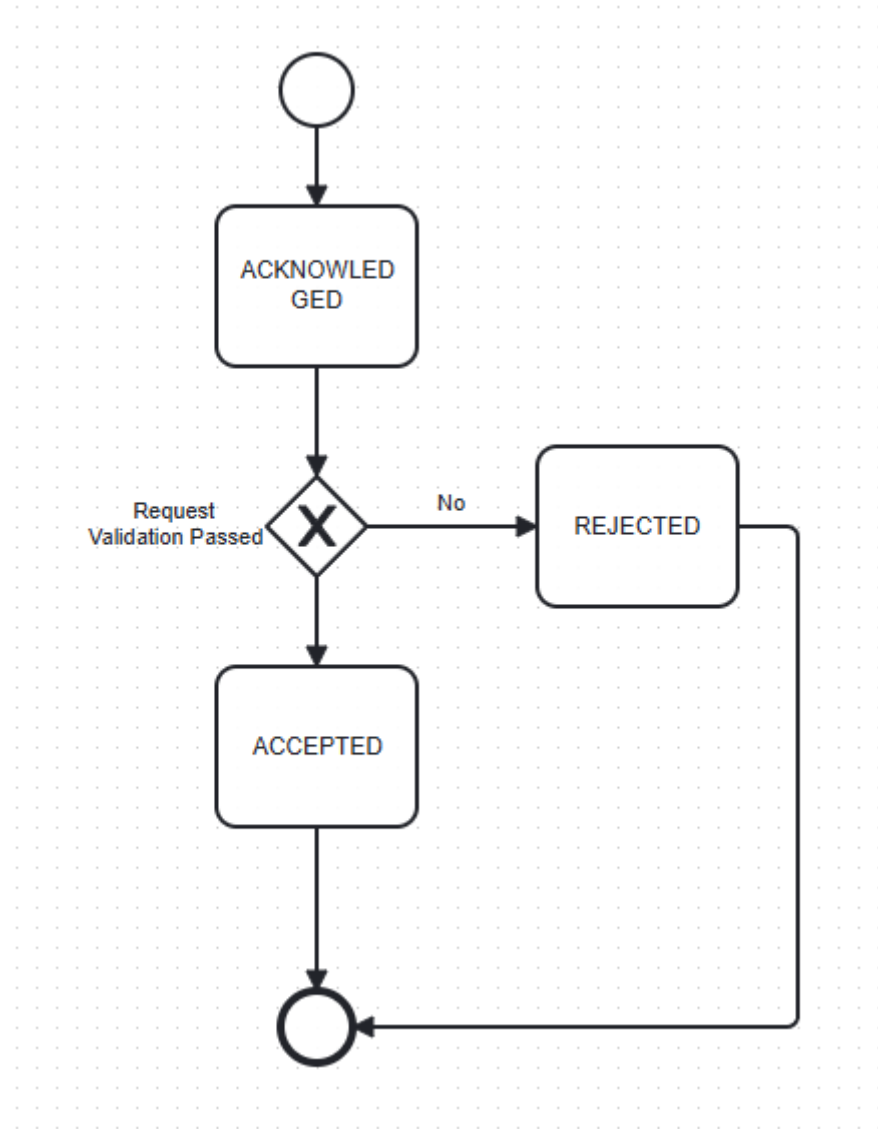
The Cancel Test Job process flow is shown in Figure 7.

Figure 8 – Cancel Test Job Process Flow

The Cancel Test Job State are defined in Table 27.

State Name	Description	Comments
ACKNOWLEDGED	The Cancel Test Job request has been received from the Buyer/Client and the Seller/Server has assigned a Cancel Test Job Identifier to it. If the request attributes fail validation, the Cancel Test Job request moves to the REJECTED state. If the attributes pass validation, it is determined if the Cancel Test Job request is accepted or declined. If accepted, it moves to the ACCEPTED state.	
ACCEPTED	The Cancel Test Job is accepted, and the Test Job is cancelled.	
REJECTED	The Cancel Test Job does not pass attribute validation, and the Cancel Test Job is rejected.	

Table 28 – Resume Test Job 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 55.1, *Lifecycle Service Orchestration (LSO): Reference Architecture and Framework*, January 2021

[4]   TMF653, *Test Job Management API REST Specification*, release 21.5, August 2021

Appendix A   Test Access Provisioning

Test Access connects the Test Resources to the Service Under Test (SUT). Test Access is provisioned by the Service Provisioning system before a Test Job can be run. This appendix explains the types of Test Resources and how the Service Provisioning system configures the Test Access before a Test Job is performed.

A.1   Test Resources

The term Test Resource is used to describe the function or device that performs the Test Results as instructed by the Test Job and Test Profile. There are two general types of Test Resources, Imbedded and External. An Imbedded Test Resource is included within a device or application that is within the path of a service. Examples of Imbedded Test Resources are applications that reside within a device and can be inserted into the path of a service within the device. External Test Resources are probes or other type of Test Resource that are externally connected to the device on which the SUT is provisioned.

Test Resources, as described in this document, are made up of three components, the Service Function Measurement Point (SFMP), the Generator Test Function (GTF), and the Collector Test Function (CTF). These are shown in both Imbedded and External uses in Figure 9.
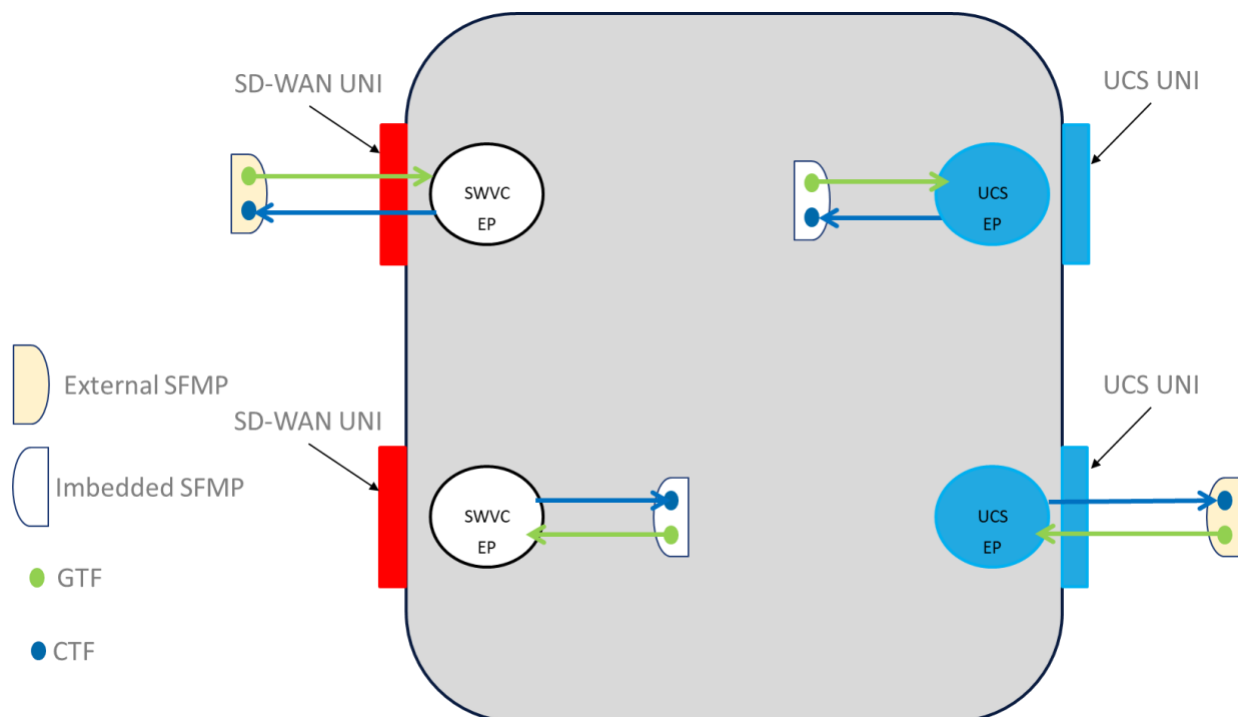

Figure 9 – Imbedded and External SFMP, GTF, and CTF

The SFMP, whether Imbedded or External, always contains one GTF and one CTF. In some cases, the GTF or CTF may be inactive. At least one of them is always active. As their names imply, the GTF generates test frames or packets that are formatted to be passed on the SUT. The CTF collects and counts, collects and processes, or collects and performs measurements on frames or packets that have been received from a GTF. Once the CTF has counted, processed, or performed

measurements, they discard the frames or packets. Testing is performed using a pair of GTF/CTFs. These may be co-located as when testing to a loopback or may be at either end of a service when testing between an ordered pair of points within the service.

The Test Resources that are shown in Figure 9 are controlled via the Test Management System which provisions, configures, and retrieves test results from the Test Resources. The Test Management System is assumed to be a part of the Service Orchestration Function (SOF). The Test Profiles are configured in the Test Management System. Test Jobs requests are sent to the Test Management System. The Test Management System then configures the SFMP to perform the test defined in the Test Profile and Test Job.

A.2   Test Access Configuration

The SFMP is connected to the SUT, either as an Imbedded or an External Test Resource. The physical or logical connection between the SUT and the SFMP is made using the Service Provisioning System. The SUT is identified in the Test Job as the *Related Service Identifier*. The Test Management System uses the *Related Service Identifier* to identify the SUT to the Service Provisioning System and requests that the SUT either be connected to an Imbedded or External SFMP including what the GTF and CTF are connected to.

Once the Service Provisioning Service has connected the SUT to the SFMP, the Test Management System then configures the SFMP, and Test Results are performed as specified in the Test Job. This process is shown in the sequence diagrams shown in Figure 10.
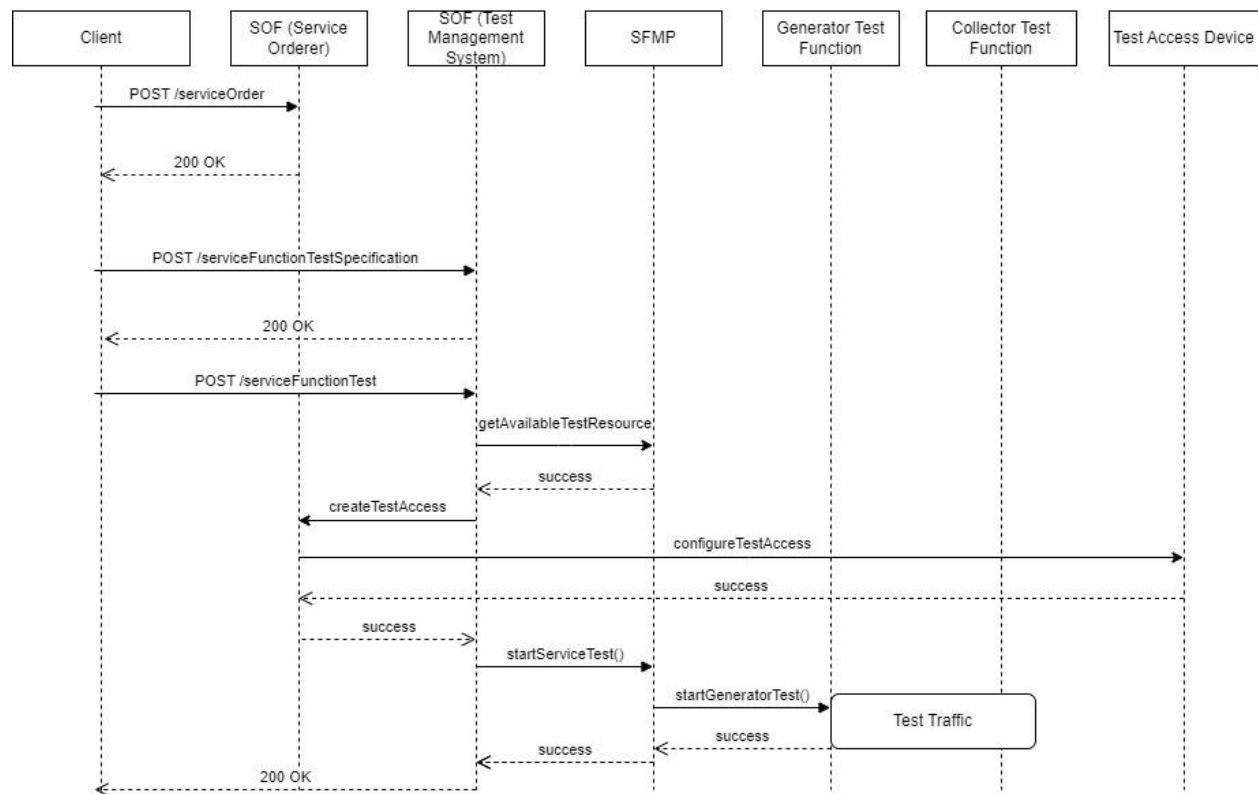

Figure 10 – Test Access Sequence Diagram

As seen in Figure 10, the request from the Test Management System verifies that an appropriate SFMP is available at the specified test point. If there is an SFMP available, the Test Management System sends a request to the Service Provisioning System to connect the SFMP to the SUT with the GTF and CTF connected appropriately to perform the Test Job.

Once the Service Provisioning System has completed the appropriate connections, it responds with a completion notice to the Test Management System. The Test Management System performs the Test Job and upon completing the Test Job, requests that the Service Provisioning System restore the SUT to its original configuration, which restores the service to its normal path.

The Test Management System then collects all measurements, performs any required calculations, and reports the results of the Test Job to the requestor.

Appendix B   Test Profile and Test Job Overview

There are two parts, Test Profile and Test Job, to SFT that are described within this document. This appendix describes how those two parts interact with each other.

B.1   Test Profile

The Test Profile is used to define what measurements are performed for a given service type. Test Profiles are specific to a specific service type and can be referenced by many different Test Jobs simultaneously. Test Profiles provide a repeatable set of instructions for a Test Job to perform ensuring that different instances of the same Service Offering are performed the same way.

Test Profiles contain the Lifecycle Status attribute that specifies where in the development process the Test Profile is located. This can range from Experimental whose use may be limited to a small number of users, to Deprecated where the Test Profile has been replaced by another Test Profile and is not intended for use. Lifecycle Status also includes Pending where the Test Profile is waiting to be approved and Approved, where the Test Profile has been approved for general use. The Lifecycle Status is often used to indicate what type of user can use the Test Profile.

Test Profiles also include the step by step test process in the Service Specific Test Profile Attributes. As an example, the steps for generating ICMP pings, measuring the response, and calculating the results are contained in these attributes.

Editor Note 1:   *After clarification of the Test Profile Relationship Type is received, the use of these relationship types will be added to this appendix.*

B.2   Test Job

The Test Job is a Service specific entity that defines the service to be tested, the Test Profile to be used, and the Service specific Test attributes. Test Jobs perform the actual Test Measurements and makes the Test Results available. As a Test Job runs, it uses the instructions in the Test Profile to perform the specified Test Measurements. Once the Test Job has completed the Test Measurements, it makes a report of the Test Results available.

Test Jobs can also be created without referencing a Test Profile, known as Test Job w/o Test Profile. Test Jobs w/o Test Profiles are often used for one off testing rather than repeatable standard tests. In that case, the Test Job defines the attributes that would be defined in the Test Profile including the steps to perform the Test Measurements. The Test Job performs the actual Test Measurements and makes a report of the Test Results available.

As an example, a Test Job is created to perform Test Measurements on an IP Service. The Test Profile that defines how to perform an ICMP ping test is referenced in the Test Job. When the Test Job runs, it performs the steps defined in the Test Profile on the Service under test. Once complete, results of the test are available, and can be retrieved by the user or can be automatically reported by the test system.