

SPECIFICATION



Web Service Design Specification

Dispatch Service (DS)

Issue 3.0

This document provides the design specification for
the Dispatch Service (DS) web service.

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1 Introduction

1.1 Purpose

- 1 The purpose of this document is to provide design specification for the Dispatch Service (DS) web service.
- 2 These specifications and requirements are reviewed by relevant information solution stewards and infrastructure solutions SMEs and approved by relevant infrastructure solution steward.

1.2 Assumptions and Limitations

- 3 The design specification document only describes the Dispatch Service Web Service module hosted by the IESO for instruction retrieval.
- 4 The design specification document is a living document.

1.3 Conventions

- 5 The standard conventions followed for this document are as follows:
 - Quotation marks are used to highlight process or component names;
 - Italics are used to highlight publication, titles of procedures, letters and forms; and
 - All time mentioned in this document is in East Standard Time (EST).

1.4 Glossary

This glossary does not repeat terms or roles defined in guide IESO_GDE_0308 *Alter IESO* Glossary.

Standard Infrastructure Solution Requirements Glossary

- 6 **Load Testing** is the process of putting demand on a system or device and measuring its response. Load testing is performed to determine a system's behaviour under both normal and anticipated peak load conditions. It helps to identify the maximum operating capacity of an application as well as any bottlenecks and determine which element is causing degradation. When the load placed on the system is raised beyond normal usage patterns, in order to test the system's response at unusually high or peak loads, it is known as stress testing. The load is usually so great that error conditions are the expected result, although no clear boundary exists when an activity ceases to be a load test and becomes a stress test.
- 7 **Non-functional requirements** are requirements which specify criteria that can be used to judge the operation of a system, rather than specific behaviours. This should be contrasted with functional requirements that specify set behaviour or functions. In general, functional requirements define what a system is supposed to do whereas non-functional requirements

define how a system is supposed to be. Non-functional requirements are often called qualities of a system.

- 8 **Non-functional requirements categories** provide a framework for identifying, and structure in documenting non-functional requirements.
- 9 **Reliability** includes aspects such as availability, mean time before failure, and recoverability.
- 10 **Performance** involves things such as throughput of information through the system, system response time (for GUI or API), batch cycle time, and start-up time. For convenience, the performance category is defined to include capacity.
- 11 **Security** protects information as well as functions and specifies who has access under identified scenarios. Security includes privacy issues.
- 12 **Supportability** specifies a number of other requirements. For information solution requirements this includes adaptability and configurability.
- 13 **Performance Test** is used to determine the speed or effectiveness of a computer, network, software program, or device. This process can involve quantitative tests done in a lab, such as measuring the response time or the number of MIPS (millions of instructions per second) at which a system functions. Qualitative attributes such as reliability, scalability and Interoperability may also be evaluated. Performance testing is often done in conjunction with stress testing.
- 14 **Stress Testing** - see Load Testing.
- 15 **System specifications** detail the attributes, design and Interfaces for a solution designed to meet one or multiple information solution requirement documents. A system specification may address portions of multiple information solution requirement documents.

1.5 How This Document Is Organized

- 16 Section 2 describes the web service operations provided by the module
- 17 Section 3 describes the simple and complex types used in the web service operations

– End of Section –

2 Web Service Operations

2.1 Operation: login

Description

The Login operation allows user to authenticate against IESO's external Active Directory.

It provides users a unique authentication token to be used in subsequent web service calls.

The Login operation also returns the list of permissions the user has.

Request

Field	Type	Cardinality	Examples/Explanations
Username	String	1	The username to access the web service
Password	String	1	The corresponding password

Response

Field	Type	Cardinality	Examples/Explanations
authToken	String	1	Must be passed in as a header on all subsequent web service requests. It is only valid for one client (IP address) and username, and expires after 15 minutes of inactivity. If the Authentication Token expires, user will have to call the Login request again to refresh the token.
accessPermissions	<u>AccessPermissions</u>	0..*	List of Access Permission the user has been granted
permission	<u>AccessPermission</u>		Access Permission the user has been granted for the Market Participant specified

Field	Type	Cardinality	Examples/Explanations
participantName	String		Market Participant Short name as registered with the IESO in the registration system
Role	<u>AccessRole</u>		Access role the user has on the Market Participant. <ul style="list-style-type: none"> • Operator • Viewer

Fault

Field	Type	Cardinality	Examples/Explanations
ErrorCodes	<u>ErrorWarningCode</u>	0..*	
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

XML Header

An XML header named “ws-auth-token” with authorization token string (authToken) as its value must be passed with all subsequent web service requests.

2.2 Operation: retrieveDispatch

Description

The retrieveDispatch operation allows for users to retrieve dispatch instructions from the Dispatch Service system.

Users can utilize the filtering capabilities to narrow down their result.

Up to 60 days of historical dispatch instructions will be stored in the Dispatch Service System for retrieval.

Request

Field	Type	Cardinality	Examples/Explanations
Filters	<u>Filters</u>		
MESSAGE_ID	String	0..*	List of MESSAGE_IDs to retrieve
DATE_SENT	DateTime	0..*	List of dates the dispatch instruction is sent Date must be submitted in the following format: YYYY-MM-DD
DISPATCH_TYPE	<u>DispatchType</u>	0..5	<ul style="list-style-type: none"> • ENG - Energy • ORA – Reserve Activation • RESV - Reserve • RGR – Regulation with Regulation Range • RGS – Regulation with Set Point
PARTICIPANT_NAME	String	0..*	List of PARTICIPANT_NAMEs to retrieve
STATE	<u>DispatchState</u>	0..*	List of dispatch instruction states <ul style="list-style-type: none"> • New - Dispatch initial state denoting a new dispatch that requires an accept/reject response from the Participant • Timed Out - If a dispatch has not been accepted or rejected within the active window • Accepted - The dispatch has been accepted • Rejected - The dispatch has been rejected
ACTIVE	Boolean	0..1	The last confirmed dispatch for each unique Resource <ul style="list-style-type: none"> • true • false
RESOURCE_ID	String	0..*	List of RESOURCE_IDs to retrieve
DELIVERY_DATE	Date	0..*	List of DELIVERY_DATEs, DELIVERY_HOURS and/or DELIVERY_INTERVALs the dispatch instruction is sent for.
DELIVERY_HOUR	Integer	0..*	

DELIVERY_INTERVAL	Integer	0..*	
DELIVERY_START_TIME	DateTime	0..1	Start/Stop time requests are associated with dispatches for regulation if a stop time has been provided
DELIVERY_STOP_TIME	DateTime	0..1	
RESPONDER	String	0..*	List of RESPONDERs to dispatch instructions
LAST_UPDATED_SINCE	DateTime	0..1	<p>Date and time since which (greater than the time) dispatch instruction was last updated. This filter corresponds to LAST_UPDATED field in the response.</p> <p>The LAST_UPDATED field will get updated when:</p> <ol style="list-style-type: none"> 1. User Accept, Reject or leave dispatch instruction to be timed out via Dispatch Service Web UI or API 2. ConfirmReceipt is sent via web UI or API 3. IESO control room Accept or Reject dispatch instruction on behalf of MP after dispatch instructions time out 4. Dispatch Service application changes ACTIVE flag for dispatch instruction (this can happen when there's an updated dispatch which gets accepted, thereby changing the prior dispatch ACTIVE flag to 0 and setting the prior dispatch LAST_UPDATE value to the current time) <p>The following will generate a change in LAST_UPDATED field:</p> <ol style="list-style-type: none"> 1. Dispatch Created (STATE=NEW) 2. ConfirmReceipt 3. ActionDispatch (STATE=ACCEPT or STATE=REJECT) - Caused by MP or IESO control room 4. Timed Out (STATE=TIMEDOUT) 5. ACTIVE flag is Set 6. ACTIVE flag is Cleared
SENT_SINCE	DateTime	0..1	Date and time since which (equal or greater than the time) dispatch instruction was sent. This filter corresponds to DATE_SENT field in the response.
HISTORY_DAYS	Integer	0..1	Number of historical days of dispatch instructions to retrieve

offset		0..1	Offset the results returned by the number specified. Usually used along with the limit filter. E.g. There are a total of 100 results returned, to retrieve only results 10-30, a limit of 20 and an offset of 10 should be specified. Min Inclusive: 0
limit		0..1	Limit the number of results returned Min Inclusive: -1

Response

Field	Type	Cardinality	Examples/Explanations
Dispatch Instructions	<u>DispatchInstructions</u>	0..*	
Dispatch Instruction	<u>DispatchInstruction</u>	0..*	
MESSAGE_ID	String	0..1	Unique identifier assigned to the dispatch instruction
PARTICIPANT_NAME	String	0..1	Market Participant Short Name
DATE_SENT	DateTime	0..1	Date/time the dispatch was issued by the IESO.
LAST_UPDATED	DateTime	0..1	Date/time the dispatch was last updated.
DISPATCH_TYPE	<u>DispatchType</u>	0..1	Type of dispatch. See <u>DispatchType</u> for list of Dispatch Types.
STATE	<u>DispatchState</u>	0..1	Dispatch status. See <u>DispatchState</u> for list of Dispatch States.
ACTIVE	Boolean	0..1	Whether or not the dispatch is the last confirmed dispatch for the resource per dispatch type.
RESOURCE_ID	String	0..1	Name of the resource being dispatched
DELIVERY_DATE	DateTime	0..1	Date the dispatch instruction applies to YYYY-MM-DD
DELIVERY_HOUR	Integer	0..1	Hour the dispatch instruction applies to Min Inclusive: 1 Max Inclusive: 24

Field	Type	Cardinality	Examples/Explanations
DELIVERY_INTERVAL	Integer	0..1	The five-minute interval the dispatch applies to. Min Inclusive: 1 Max Inclusive: 12
DELIVERY_START_TIME	DateTime	0..1	Start time of the dispatch request. Start time requests are associated with dispatches for contract activation. YYYY-MM-DDTHH:MN:SS
DELIVERY_STOP_TIME	DateTime	0..1	Stop time of the dispatch request. Stop time requests are associated with dispatches for contract activation YYYY-MM-DD HH:MN:SS
AMOUNT	Double	0..1	Value assigned to the dispatch (content is dependent on dispatch type) (floating point number)
LIMIT_TYPE	<u>LimitType</u>	0..1	Type of manual limit applied to the resource. See <u>LimitType</u> for list of limit types. <ul style="list-style-type: none"> • FIX – Resource is manually set • MAX – Resource limited to maximum energy output • MIN – Resource limited to minimum energy output • OTD – Manual, on-demand, one time dispatch
VG_OI	String	0..1	Variable Generation Obligation Indicator for the dispatch instruction. <ul style="list-style-type: none"> • Mandatory • Release • <i>null</i> for non-Variable Generators.
RESERVE_CLASS	String	0..1	Class of reserve being requested in the in a RESV type dispatch request. <ul style="list-style-type: none"> • 10S – 10 minute spinning • 10N – 10 minute non-spinning • 30R – 30 minute reserve
REGULATION_RANGE	Double	0..1	Regulation range dispatch specified for regulation dispatches

Field	Type	Cardinality	Examples/Explanations
RESPONDER	String	0..1	Username of the user that responded to the dispatch instruction
EXPIRES_AT	DateTime	0..1	End of the active window/when the dispatch instruction expires.

Fault

Field	Type	Cardinality	Examples/Explanations
ErrorCodes	<u>ErrorWarningCode</u>	0..*	
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

Business/Validation Rules

1. Same filters are ORed together. E.g. Specifying multiple DELIVERY_DATE will return results for all DELIVERY_DATEs specified
2. Different filters are ANDed together. E.g. Specifying a DELIVERY_DATE and a DELIVERY_HOUR will only return results that satisfy both filtering criteria.

Message ID Format

The format of Message_ID is as following:

RD_txxxxxmmddyhhiz

Where the fields are described as:

t - dispatch type (1 character, one of the following: REA. R for OR dispatch, E for Energy dispatch, A for activation)

xxxxxx - 6 digit cycling sequence, incrementing by 1

mm - month (2 digits)

dd - day (2 digits)

y - year (1 digit)

hh - hour (2 digits)

ii - interval (2 digits)

z - resource type (1 character, one of the following: GL. G for generator, L for load)

2.3 Operation: confirmReceipt

Description

The confirmReceipt operation should be used after the retrieveDispatch operation to notify the IESO that the user has received the dispatch instruction sent by the IESO.

Request

Field	Type	Cardinality	Examples/Explanations
MESSAGE_ID	String	0..*	Send a list of MESSAGE_IDs to the Dispatch Service to confirm receipt

Response

Field	Type	Cardinality	Examples/Explanations
MESSAGE_ID	String	0..*	List of MESSAGE_IDs that have successfully confirmed the receipt
ErrorCodes	<u>ErrorWarningCode</u>	0..*	
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

Fault

Field	Type	Cardinality	Examples/Explanations
ErrorCodes	<u>ErrorWarningCode</u>	0..*	
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

Business/Validation Rules

1. If multiple MESSAGE_IDs are provided in the request, the ones confirmed successfully will be returned in the response.
2. If some of the MESSAGE_IDs cannot be confirmed, the confirmed ones will be returned in the response while the unconfirmed ones will be returned as part of the ErrorCodes section in the response.
3. If all of the MESSAGE_IDs cannot be confirmed, a fault will be returned with the appropriate error codes and descriptions.
4. confirmReceipt can be called on the same Message_ID multiple times without producing an error or warning. However, the timestamp for the first confirmReceipt operation will be saved; subsequent calls will not change the timestamp.

2.4 Operation: dispatchAction

Description

Once a dispatch instruction has been retrieved and receipt confirmation has been sent back to the Dispatch Service web service. User is allowed to respond to the dispatch.

Request

Field	Type	Cardinality	Examples/Explanations
action	<u>DispatchActionRow</u>	1..*	One of more dispatch instructions to action on
MESSAGE_ID	String	1	MESSAGE_ID of the dispatch instruction to action on

ACTION	<u>DispatchActionType</u>	1	Action user wishes to apply to the dispatch instruction <ul style="list-style-type: none"> • Accept • Reject
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Response

Field	Type	Cardinality	Examples/Explanations
actionResponse	<u>DispatchActionResponseRow</u>	0..*	
MESSAGE_ID	String	1	A unique identifier for the dispatch instruction
PARTICIPANT_NAME	String	1	Registered SHORT_NAME of the Market Participant
STATE	<u>DispatchState</u>	1	Dispatch State of the instruction message
RESPONDER	String	1	User that responded to the dispatch instruction
ErrorCodes	<u>ErrorWarningCode</u>	0..*	
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

Fault

Field	Type	Cardinality	Examples/Explanations
ErrorCodes	<u>ErrorWarningCode</u>	0..*	
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

Business/Validation Rules

5. If multiple actions are sent for the same MESSAGE_ID within the active window, the last response will overwrite any preceding responses.

– End of Section –

3 Web Service Types

3.1 Simple Types

AccessRole

Field	Type	Enumeration
AccessRole	Enumeration (String)	<ul style="list-style-type: none">• Operator• Viewer

DispatchActionType

Field	Type	Enumeration
DispatchActionType	Enumeration (String)	<ul style="list-style-type: none">• Accept• Reject

DispatchState

Field	Type	Enumeration
DispatchState	Enumeration (String)	<ul style="list-style-type: none">• New• Timed Out• Accepted• Rejected

DispatchType

Field	Type	Enumeration
DispatchType	Enumeration (String)	<ul style="list-style-type: none"> • ENG • ORA • RESV • RGR • RGS

LimitType

Field	Type	Enumeration
LimitType	Enumeration (String)	<ul style="list-style-type: none"> • FIX • MAX • MIN • OTD

3.2 Complex Types

AccessPermission

Field	Type	Cardinality	Examples/Explanations
participantName	String	1	Market Participant Short name as registered with the IESO in the registration system
role	<u>AccessRole</u>	1	Access role the user has on the Market Participant. <ul style="list-style-type: none"> • Operator • Viewer

AccessPermissions

Field	Type	Cardinality	Examples/Explanations
AccessPermissions	<u>AccessPermission</u>	0..*	List of Access Permission the user has been granted

DispatchActionResponseRow

Field	Type	Cardinality	Examples/Explanations
MESSAGE_ID	String	1	A unique identifier for the dispatch instruction
PARTICIPANT_NAME	String	1	Registered SHORT_NAME of the Market Participant
STATE	<u>DispatchState</u>	1	Dispatch State of the instruction message
RESPONDER	String	1	User that responded to the dispatch instruction

DispatchActionRow

Field	Type	Cardinality	Examples/Explanations
MESSAGE_ID	String	1	Unique identifier assigned to the dispatch instruction
ACTION	<u>DispatchActionType</u>	1	Market Participant's response to the instruction

DispatchInstruction

Field	Type	Cardinality	Examples/Explanations
MESSAGE_ID	String	0..1	Unique identifier assigned to the dispatch instruction
PARTICIPANT_NAME	String	0..1	Market Participant Short Name
DATE_SENT	DateTime	0..1	Date/time the dispatch was issued by the IESO
DISPATCH_TYPE	<u>DispatchType</u>	0..1	Type of dispatch. See <u>DispatchType</u> for list of Dispatch Types.
STATE	<u>DispatchState</u>	0..1	Dispatch status. See <u>DispatchState</u> for list of Dispatch States.

Field	Type	Cardinality	Examples/Explanations
ACTIVE	Boolean	0..1	Whether or not the dispatch is the last confirmed dispatch for the resource per dispatch type.
RESOURCE_ID	String	0..1	Name of the resource being dispatched
DELIVERY_DATE	DateTime	0..1	Date the dispatch instruction applies to YYYY-MM-DD
DELIVERY_HOUR	Integer	0..1	Hour the dispatch instruction applies to Min Inclusive: 1 Max Inclusive: 24
DELIVERY_INTERVAL	Integer	0..1	The five-minute interval the dispatch applies to. Min Inclusive: 1 Max Inclusive: 12
DELIVERY_START_TIME	DateTime	0..1	Start time of the dispatch request. Start time requests are associated with dispatches for contract activation. YYYY-MM-DDTHH:MN:SS
DELIVERY_STOP_TIME	DateTime	0..1	Stop time of the dispatch request. Stop time requests are associated with dispatches for contract activation YYYY-MM-DD HH:MN:SS
AMOUNT	Double	0..1	Value assigned to the dispatch (content is dependent on dispatch type) (floating point number)
LIMIT_TYPE	<u>LimitType</u>	0..1	Type of manual limit applied to the resource. See <u>LimitType</u> for list of limit types.
VG_OI	String	0..1	Variable Generation Obligation Indicator for the dispatch instruction. <ul style="list-style-type: none"> • Mandatory • Release

Field	Type	Cardinality	Examples/Explanations
			<ul style="list-style-type: none"> • <i>null</i> for non-Variable Generators.
RESERVE_CLASS	String	0..1	Class of reserve being requested in the in a RESV type dispatch request. <ul style="list-style-type: none"> • 10S – 10 minute spinning • 10N – 10 minute non-spinning • 30R – 30 minute reserve
REGULATION_RANGE	Double	0..1	Regulation range dispatch specified for regulation dispatches
RESPONDER	String	0..1	Username of the user that responded to the dispatch instruction
EXPIRES_AT	DateTime	0..1	End of the active window/when the dispatch instruction expires.
LAST_UPDATED	DateTime	0..1	Date/time the dispatch was last updated.

DispatchInstructions

Field	Type	Cardinality	Examples/Explanations
DispatchInstruction	<u>DispatchInstruction</u>	0..1	A list of Dispatch Instructions

ErrorWarningCode

Field	Type	Cardinality	Examples/Explanations
Code	Integer	1	Unique identifier of the Error/Warning Code
Description	String	1	Description of the Error/Warning Code
MessageId	String	0..1	MessageId the error applies to

Filters

Field	Type	Cardinality	Examples/Explanations
MESSAGE_ID	String	0..*	Unique identifier assigned to the dispatch instruction
DATE_SENT	DateTime	0..*	YYYY-MM-DDThh:mm:ss
DISPATCH_TYPE	<u>DispatchType</u>	0..*	Type of dispatch. See <u>DispatchType</u> for list of Dispatch Types.
PARTICIPANT_NAME	String	0..*	Market Participant Short Name
STATE	<u>DispatchState</u>	0..*	Dispatch status. See <u>DispatchState</u> for list of Dispatch States.
ACTIVE	Boolean	0..1	Whether or not the dispatch is the last confirmed dispatch for the resource per dispatch type.
RESOURCE_ID	String	0..*	Name of the resource being dispatched
DELIVERY_DATE	DateTime	0..*	Date the dispatch instruction applies to YYYY-MM-DD
DELIVERY_HOUR	Integer	0..*	Min Inclusive: 1 Max Inclusive: 24
DELIVERY_INTERVAL	Integer	0..*	Min Inclusive: 1 Max Inclusive: 12
DELIVERY_START_TIME	DateTime	0..1	Start time of the dispatch request. Start time requests are associated with dispatches for contract activation. YYYY-MM-DDTHH:MN:SS
DELIVERY_STOP_TIME	DateTime	0..1	Stop time of the dispatch request. Stop time requests are associated with dispatches for contract activation YYYY-MM-DD HH:MN:SS
RESPONDER	String	0..*	Username of the user that responded to the dispatch instruction
SINCE	DateTime	0..1	All dispatch instructions since the specified date YYYY-MM-DD HH:MN:SS

Field	Type	Cardinality	Examples/Explanations
HISTORY_DAYS	Integer	0..1	Number of historical days of dispatch instructions to retrieve Min Inclusive: 0

– End of Section –

4 Web Service Error Warning Codes

Table 1 - List of possible Error Codes returned by the Web Service

Operation	Error Code	Error Description
Login	-13	Username or Password is invalid
Login	-1	System error has occurred
Login	-12	User <Username> authorization failed
Login	-14	User permissions are missing
retrieveDispatch	-1	System error has occurred
retrieveDispatch	-21	Request exceeded maximum number of days allowed. Maximum number of history days allowed = <MAX_DAYS>
retrieveDispatch	-23	User does not have permission to retrieve dispatches for one or more of the participants specified.
confirmReceipt	-2	Message ID <MESSAGE_ID> is invalid or user does not have permission to perform an action on it.
confirmReceipt	-1	System error has occurred
dispatchAction	-2	Message ID <MESSAGE_ID> is invalid or user does not have permission to perform an action on it.
dispatchAction	-35	Multiple actions provided for the same message ID <MESSAGE_ID>
dispatchAction	-33	Response threshold has expired for <MESSAGE_ID> <ACTION>
dispatchAction	-34	User has not confirmed receipt of MESSAGE_ID <MESSAGE_ID>

– End of Section –

5 Web Service WDSL and Endpoint URLs

The following are Dispatch Service web service WDSL and endpoint URLs for different environments.

Production (To Be Implemented):

[Web Service WSDL](#)

[Web Service Endpoint](#)

Sandbox:

[Web Service WSDL](#)

[Web Service Endpoint](#)

– End of Section –

References

Document Name	Document ID
Dispatch Notification System Web Service Design Specification	SPEC-155

– End of Document –