TRANSPOWER

Operations Division

UG-SD-785 Web Service Dispatch Simulator User Guide

This Userguide is part of the Business Support and Development (SD) process within Transpower and forms part of the System Operator function. The document can be found in the *Operational Documentation Library*

Document Status:	**Issued**
Published Date	**15/12/2025**

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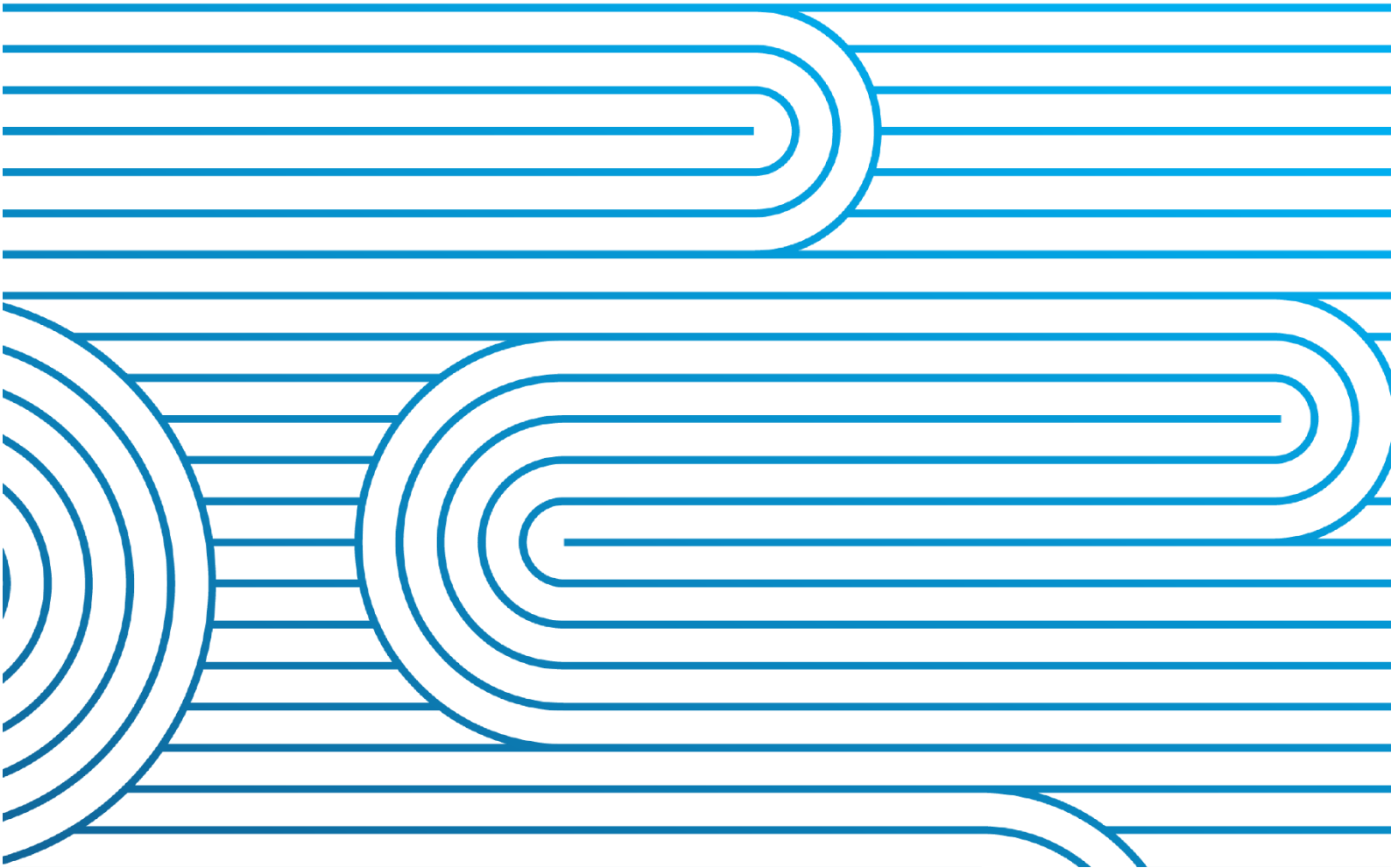

Version	Date	Change
1.0	August 2019	First published version.
2.0	August 2022	Cyclic Review: Reissued no change
3.0	December 2025	Cyclic review. Updated acknowledgement to include ACKR

	Position	Date
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Latest Version Approved by:	Issac Ulusele on behalf of Ramu Naidoo	December 2025

Related Documents
1. Dispatch Policy and Guideline
2. Market Dispatch Integration Pack

IMPORTANT

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CONTENTS

1 INTRODUCTION

1.1 DOCUMENT PURPOSE AND SCOPE

This is the user guide for the Web Services Dispatch Simulator ("the Simulator").

The Simulator is provided for testing of participants' Web Services dispatch interfaces. The Simulator will send dispatch-like instructions automatically or manually to selected nodes configured to a Participant's Dispatch Endpoint.

The language in this User Guide assumes detailed technical knowledge of Dispatch System concepts. For more information please refer to the Glossary in section 4 and Related Documents listed at the front of this Guide.

1.2 INTERACTION WITH MARKET DISPATCH INTEGRATION PACK

The technical specifications and standards of the endorsed interconnection protocols, i.e. ICCP and Web Services, are defined in the Market Dispatch Integration Pack ("the Integration Pack"). The Integration Pack contains the details required by software developers to develop a Dispatch System Interface. Once built, the interface can connect to the Simulator for functional testing, prior to integration testing with live Transpower systems.

2 INITIALISATION

2.1 ACCESS

Transpower will provide access to the Simulator on application. When making a new connection or changing an existing connection to the Dispatch Service, please indicate to the Market Analyst coordinating the connection that access is required and provide:

- A static IP address where the connection to the Simulator will be made
- The Dispatch System configuration detailing which assets (dispatched Blocks, Stations and Units) are connected to which Dispatch Endpoint.

Transpower will provide log-in credentials and a URL for access. The URL is the user interface for the Simulator. Transpower will configure the interface to present each Endpoint owned by the user company.

The user credentials may be used by multiple instances, up to the limit indicated by each Endpoint configuration (see below).

2.2 FUNCTIONALITY

The Simulator sends dispatch instruction-like messages to a defined target (the user-provided IP address), automatically and manually via the user interface.

2.2.1 Automatic Instructions

Automatic instructions are random numbers generated within a configurable range, generated and sent at a regular frequency. Automatic instructions are sent regardless of receipt of a Dispatch Acknowledgement from the target.

Transpower configures the Simulator's default settings for automatic dispatch instructions, including, for each Dispatch Group:

- the numerical limits of the automatic dispatch instructions

- the frequency of automatic dispatch instructions

2.2.2 Manual Instructions

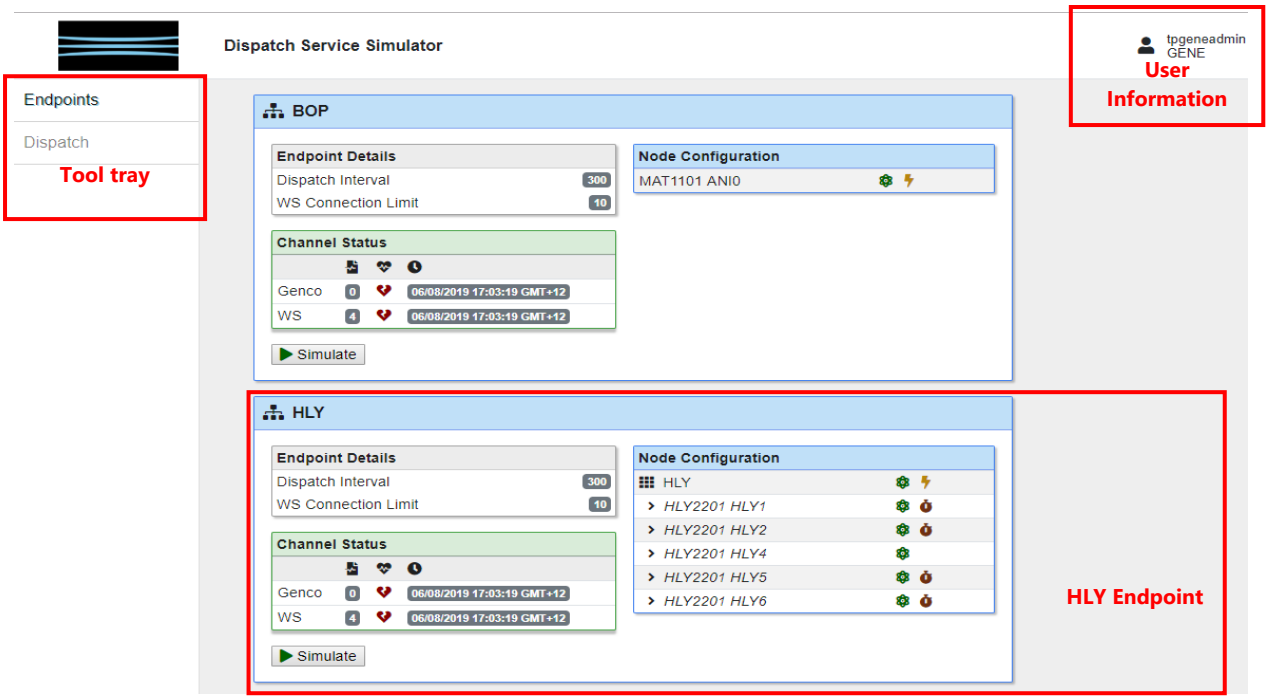
Dispatch instructions can be generated and sent manually, for each Dispatch Type for each asset. There are no numerical limits for manual instructions and 'unreal' values e.g. negative numbers can be sent for Dispatch Types which would not normally allow them. Further information is detailed below.

2.2.3 Dispatch Acknowledgement

The Simulator presents a web interface to visualize heartbeats, acknowledgements and dispatch instructions. Business Acknowledgements to instructions sent from the simulator will be received and visualised as part of a log of instructions and responses.

3 User Interface

3.1 Home Screen (Endpoints)



3.1.1 User Information

Displays the Username for the Participant ('tpgeneadmin') and the Endpoint Owner as modelled in the market system (here, 'GENE').

3.1.2 Tool tray

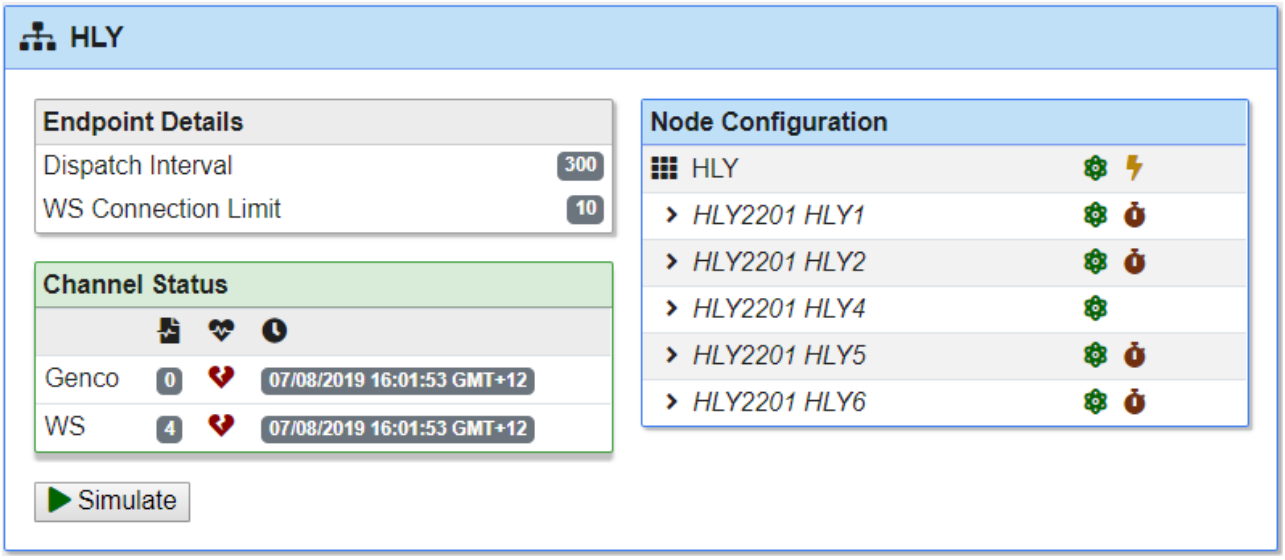
The Tool Tray consists of two items:

- **Endpoints** – the home screen and displays configuration and connectivity the Endpoints for the Participant. In the example two Endpoints are modelled, 'BOP' and 'HLY'.
- **Dispatch** – the log of dispatch instructions sent from the Simulator to the Participant, and the Acknowledgement status of each.

3.1.3 Endpoint information

Described in detail below.

3.2 Endpoint Information



3.2.1 Endpoint Details

These are elements configurable by Transpower, showing:

- **Dispatch Interval** – The default auto-dispatch interval in seconds.
- **WS Connection Limit** – The number of allowable Web Service clients for this Endpoint.

3.2.2 Channel Status

This is the current status of Participant interface connections for the Endpoint. For both Endpoints in the example, the channel status shows GENCO and WS (Web Service) are the configured communications channels.

- **Heartbeat Frequency** – the time limit in seconds between each Heartbeat poll.
- **Heartbeat Status** – whether each communications channel is Connected or Disconnected
- **Heartbeat Status Timestamp** – the time stamp of the last received Heartbeat poll.

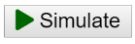
3.2.3 Node Configuration

These are the assets (generation or load Blocks, Stations, or Units) which are receiving dispatch instructions at this Endpoint. In the example, Endpoint HLY is configured with the follow nodes: HLY (station) consisting of multiple units HLY2201 HLY1, HLY2201 HLY2… HLY2201 HLY6.

Each asset is configured to receive Dispatch Instructions for one or more Dispatch Groups:

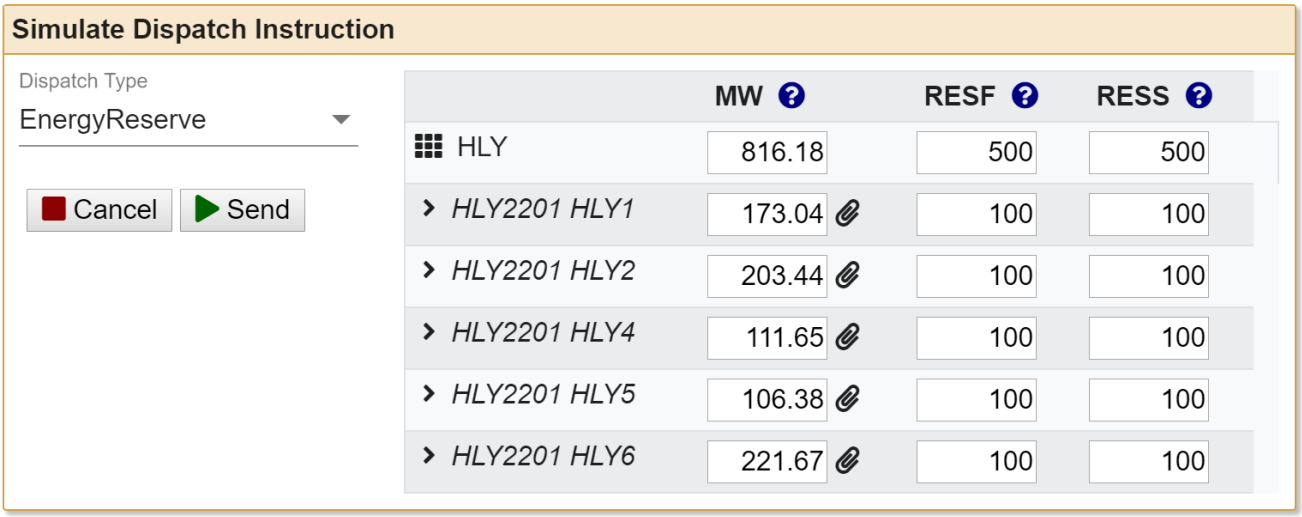
- **EnergyReserve** – Instructions for Energy (MW) and Instantaneous Reserve (RESF and RESS), plus secondary instructions
- **Voltage** – Instructions for Voltage (VOLT) and Reactive Power (MVAR)
- **Frequency** – Instructions for Frequency (MFK or SFK)
- **Interruptible Load (not shown)** – Instructions for Instantaneous Reserve (INTF and INTS).

3.3 SIMUATOR INTERFACE

Pushing the Simulate  button expands the Simulate Dispatch Instruction interface. This is the interface for manually sending dispatch instruction-like messages from the Simulator to the connected Web Service Dispatch Interface.

From the drop-down list, select which Dispatch Group you would like to send instructions for. The list is populated by the subscribed Dispatch Groups; in this case, for HLY Endpoint, Dispatch Groups **EnergyReserve**, **Frequency** and **Voltage** are subscribed.

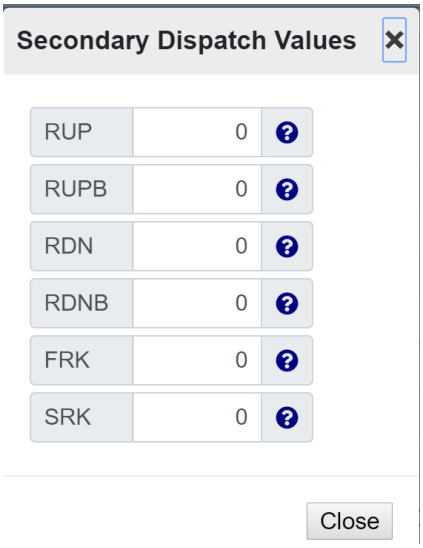
Selecting **EnergyReserve** further expands the interface, as shown below. Pushing Cancel returns the screen to the previous state.



The table on the right is populated with the current dispatch instructions for each of the Primary Dispatch Types for that Dispatch Group. In the case of **EnergyReserve** Dispatch Group, the Primary Dispatch Instruction are **MW** (Energy), **RESF** (Fast Instantaneous Reserve, FIR) and **RESS** (Sustained Instantaneous Reserve, SIR). The structure displayed for editing is the full structure possible, and the values are pre-populated. Changing the Dispatch Type drop-down will regenerate the instruction set with new values generated randomly (within predefined limits).

To send a dispatch instruction, enter the desired value into the field for the Dispatch Type for the selected node (Block/Station/Unit), and push Send. The values for each are unrestricted; users may enter excessively large numbers, negative numbers or null quantities for testing bad data handling.

Where Secondary Dispatch Instructions are associated with a Dispatch Group, such as Ramping and Risk quantities for the EnergyReserve Dispatch Group, these may be entered by selecting the paperclip icon and entering values as desired into the pop-up dialog. The question mark icons have hover-over contextual information about what each of the Secondary Instructions signify. Enter the value in the required field and select Close. Note these values are not visible in the Dispatch Instruction log view (see below).

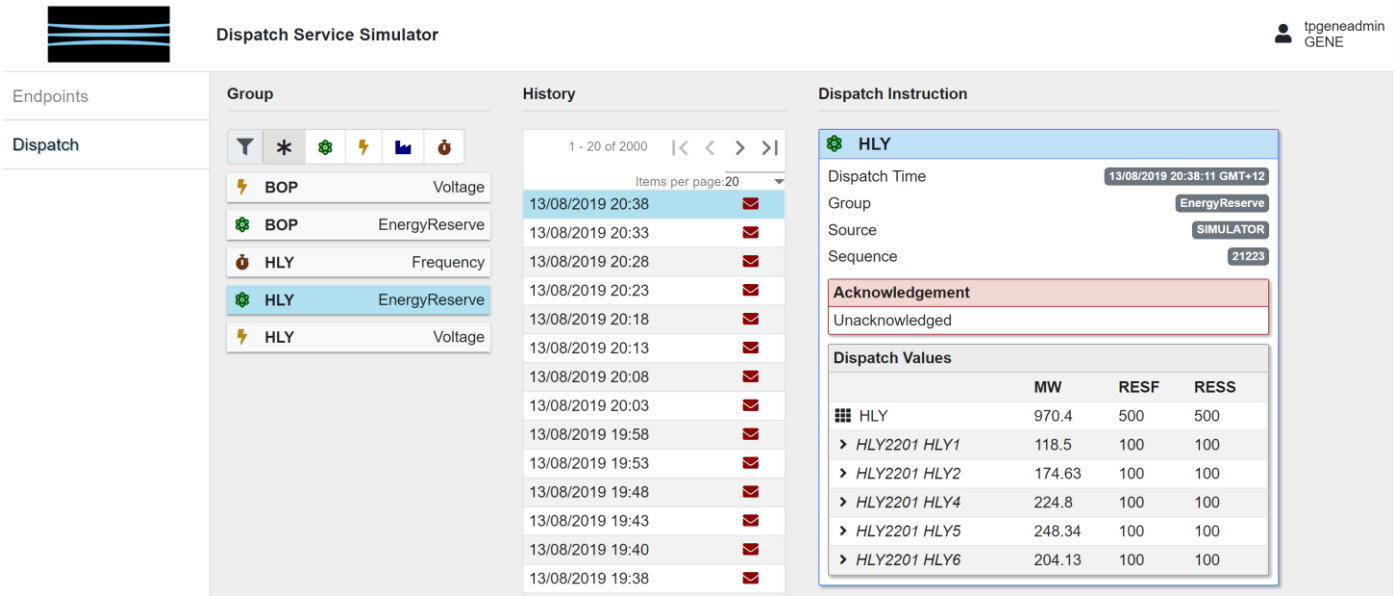


3.4 DISPATCH INSTRUCTION LOG

The Dispatch Instruction Log is a log of Dispatch Instructions sent from the Simluator to the Endpoint Owner. In this context a Dispatch Instruction is the complete set of information for a given Dispatch Group, for a given Endpoint.

The Log can be selected from the Tool Tray on the left hand side of the screen. Information is presented on the central window in three columns:

- **Group** – A selectable list of Dispatch Groups for each Dispatch Endpoint in alphabetical order of Endpoint, also filterable by Dispatch group by selecting the corresponding symbols above the list
- **History** – A selectable list of Dispatch Instructions ordered by Dispatch Issue Time, with accompanying symbol indicating whether Business Acknowledgement has been received by the Simulator for each instruction
- **Dispatch Instruction** – Details of a specific Dispatch Instruction selected from the History list.



4 Definitions of Key Terms

Term	Definition
Acknowledgement	A message sent, by a participant to the system operator, to acknowledge receipt of (ACK), acceptance of (ACKA), rejection of (ACKR) or querying of (ACKQ), a Dispatch Instruction. Note ACKR is only permitted for dispatch notified load or dispatch notified generation
Dispatch	Dispatch refers generally to the end-to-end processes and software systems that issue Dispatch Instructions from the system operator's Market System to participants, irrespective of the interconnection protocol(s) adopted.
Dispatch endpoint	A collection of Blocks and/or Nodes that a participant nominates to receive Dispatch Instructions for. Each Dispatch Instruction is targeted at a Dispatch Endpoint. It was previously known as *Dispatch Site* when used in relation to ISD/GENCO.
Dispatch group	A collection of Dispatch Types that are related to a defined generation capability and are dispatched together.
Dispatch instruction	An electronic instruction issued by the system operator to generators and ancillary service agents in accordance with dispatch schedules and co-ordinator actions.
Interconnection protocol	In the context of this policy and guideline, this term is synonymous with 'channels' and may refer to ISD/GENCO, ICCP, Web Services (RESTful), or a combination of them.
Market Dispatch Integration Pack	A document that provides the technical information about the new interconnection protocols for dispatch and outlines the requirements for establishing these new interconnection protocols between the system operator and participants.
Market System	The system operator's core system that manages scheduling, pricing and dispatch for the system operator.
Participant	The Electricity Industry Participation Code stipulates that dispatch instructions are to be issued to generators, ancillary service agents, and dispatch capable load purchasers. In the context of this policy and guideline, participant refers to electricity industry participants who receive dispatch instructions from the system operator.
Subscribe	In the context of this policy and guideline, it refers to the act of a participant electing to receive dispatch instructions at a given dispatch endpoint for a given dispatch group.
System operator	Service provider responsible for scheduling and dispatching electricity, in a manner that avoids fluctuations in frequency or disruption of supply. The system operator is Transpower.
Third-party agent	It refers to third parties who are appointed by participants to receive dispatch instructions and send acknowledgement on behalf of the participants. It may also be called an intermediate agent.
Web services	It is one of the interconnection protocols available for sending dispatch instructions to and receiving acknowledgements from participants. Specifically, it refers to RESTful delivery of JSON formatted content over HTTPS, either as an event stream (SSE) or via the standard request/response pattern.

5 DOCUMENT INFORMATION

5.1 COPYRIGHT INFORMATION

5.2 REVISION HISTORY

SharePoint Revision	Date	Change	Section
1.0	19/8/19	Initial Issue	
2.0	26/8/2022	Cyclic review: Reissued no change	
3.0	15/12/2025	**Cyclic review:** Updated acknowledgement to include ACKR.	4

5.3 METADATA

Document ID Information

Document ID number:	UG-SD-0785
Document Title:	UG-SD-785 Web Service Dispatch Simulator User Guide
Document Type:	Userguide
SharePoint Version:	V3
Document Status:	Issued
Severity of Consequences:	Minor
Frequency of use	Six Monthly
Level of Risk:	Low

DMS Structure

Macro-Process:	Business Support and Development (SD)	
Process:	Tools	
Process Hierarchy:	*L1:* 06 Support	*L2:* 20 Support
	L3: 20-09 Tools/Software	*L4:* [Business Model L4]
Document Complexity Rating (days)	21 days	

Document Control

Business Group Owner:	Market Services		
Prepared by (Writer/Reviewer):	Dean Eagle		
Peer Reviewer	[Peer Reviewer]		
Approved by (Owner 1):	Isaac Ulusele on behalf of Ramu Naidoo		
Approved by (Owner 2):	Click or tap here to enter text.		
Approved by (Owner 3):	Click or tap here to enter text.		
Published Date: *(only changed by Doc Administrator)*	15/12/2025		
Update Type:	Cyclic Review		
Next Review Date:	15/12/2028		
Review Period:	3 years		
Primary User Group(s):	External		
Secondary User Group(s):	Click or tap here to enter text.		
Hardcopy Kept in:	[Control Room Folder/Section]		
To be published on TP Web site	true	Web Area:	N/A