**MultiSpeak Version 4.1 Interoperability Assertion**

Vendor Neutral Statement of Interoperable Functionality using NRECA’s independent laboratory’s test harness:

<table>
<thead>
<tr>
<th>Vendor(s)</th>
<th>Product</th>
<th>Product Version</th>
<th>Role</th>
<th>Batch Interface</th>
<th>Web Client Interfaces</th>
<th>Web Server Interfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yantai Dongfang Wisdom Electric Co., Ltd</td>
<td>AMI-HES</td>
<td>2.0</td>
<td>CD</td>
<td></td>
<td>CB</td>
<td>CD</td>
</tr>
<tr>
<td>Yantai Dongfang Wisdom Electric Co., Ltd</td>
<td>AMI-MDM</td>
<td>2.0</td>
<td>CB</td>
<td></td>
<td></td>
<td>CB</td>
</tr>
<tr>
<td>Yantai Dongfang Wisdom Electric Co., Ltd</td>
<td>AMI-HES</td>
<td>2.0</td>
<td>MR</td>
<td></td>
<td>CB</td>
<td>MR</td>
</tr>
<tr>
<td>Yantai Dongfang Wisdom Electric Co., Ltd</td>
<td>AMI-HES</td>
<td>2.0</td>
<td>OD</td>
<td></td>
<td></td>
<td>OA</td>
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<tr>
<td>Yantai Dongfang Wisdom Electric Co., Ltd</td>
<td>AMI-MDM</td>
<td>2.0</td>
<td>OA</td>
<td></td>
<td></td>
<td>OA</td>
</tr>
</tbody>
</table>

**Summary:**

Web Service interfaces using MultiSpeak® 4.1 standards were developed in order to provide the following capabilities to utilities that have AMI:

- Enable (CB) client application to command (CD) AMI system to send a real time request to immediately disconnect or reconnect power at a meter or to ‘Arm’ the meter for manual reconnect.
- Enable MDM can obtain historical meter data from the HES system.
Prerequisites:

- AMI system must be deployed. The MultiSpeak interface must be enabled and configured in AMI.

Specific Vendor Assertions:

1. The (CB) application client initiates a meter commissioning which is executed via the (MR) HES system.
   - Importance to User: The utility can initiate a meter commissioning which is executed via the HES system. Meter commissioning is required to ensure connectivity has been established with the meter, that any information needed to communicate with the meter has been defined in both MDM and the HES, and the meter will begin capturing usage and events.
   - How Achieved: MDM user initiates the command in the MDM web user interface, at which time MDM requests the HES for immediately commissioning of the meter with a MeterAddNotification. HES execute the commissioning of the meter and return synchronously MDM the commissioning of the meter status with MeterAddNotificationResponse.

2. The (CB) application client initiates a meter decommissioning which is executed via the (MR) HES system.
   - Importance to User: The utility can initiates a meter decommissioning which is executed via the HES system. Meter decommissioning is required to inform the HES when a meter needs to be removed from a service point (so that no further reads or events will arrive from the meter) and to stop any communication between the device and the HES.
   - How Achieved: MDM user initiates the command in the MDM web user interface, at which time MDM requests the HES for immediately decommissioning of the meter with a MeterRemoveNotification. HES execute the decommissioning of the meter and return synchronously MDM the decommissioning of the meter status with MeterRemoveNotificationResponse.

3. The (CB) application client initiates a remote disconnect or reconnection of service, which is executed via the (CD) AMI system.
   - Importance to User: The utility can perform a service disconnect on a single meter or list of meters remotely in situations such as move - out,
termination of service or to suspend service for reasons of non-payment. The utility can reconnect service remotely in situations such as move-in, or to restore service following receipt of payment from a customer previously disconnected for non-payment.

- **How Achieved:** Utility user initiates the command in the (CB) client application web interface, at which time (CB) application requests the (CD) AMI system, via an InitiateConnectDisconnect, to send a real time request to immediately disconnect power or reconnect power. After the meter responds, (CD) AMI system returns the new connect/disconnect state of the meter asynchronously with a CDStateChangedNotification.

4. **MDM will request an on-demand meter reading from HES**

- **Importance to User:** Utility users can respond to customer questions and better provide answers by verifying a meter reading on-demand during a conversation with the customer. This capability will also verify communications and power status at the meter to verify a reported outage.

- **How Achieved:** Utility user can initiate the request through the MDM(CB) web user interface, at which time MDM(CB) requests a read from the meter with an InitiateMeterReadingsByMeterID request to the HES(MR). The HES(MR) pings the meter and returns the data to MDM(CB) with a ReadingChangedNotification, for displaying to the user. Optionally, the action can be initiated by another application or automated workflow, with the results returned to the sponsor application.

5. **The (CB) application client will obtain historical meter readings from the (MR)HES system.**

- **Importance to User:** Utility users can respond to customer questions and better provide answers by verifying a historical meter reading during a conversation with the customer.

- **How Achieved:** MDM user can initiate the request through the (CB)web user interface, at which time MR requests a read from AMI database with a GetReadingsByMeterNo or GetLatestReadingByMeterNo for a given meter. GetReadingsByMeterNo will return all readings taken between two dates, GetLatestReadingByMeterNo will return the most recent meter reading.

6. **MDM initiate an on-demand meter status check from HES.**
- **Importance to User:** Utility users can initiate an on-demand meter status check, which is executed via HES. On-demand meter status check purposes is to check the meter’s operational status.

- **How Achieved:** MDM user initiate the request through the MDM web user interface, at which time MDM requests a status from the meter with an InitiateOutageDetectionEventRequest to the HES. HES check the meter status and returns the data to MDM with an ODEventNotification.

**Product: HES**

**Summary of Interoperability Test Results (MR)**

Table 1  
MultiSpeak Methods (MR)

<table>
<thead>
<tr>
<th>Object Name</th>
<th>MR-CB</th>
<th>Importance to User</th>
<th>Supported by Server(^1) (MR)</th>
<th>Supported by Client(^2) (CB)</th>
<th>Verified Interoperable(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MeterAddNotification</td>
<td>REC</td>
<td>Notifies MR to add the associated meter(s).</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>MeterRemoveNotification</td>
<td>REC</td>
<td>Notifies MR to remove the associated meter(s)</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>InitiateMeterReadingsByMeterID</td>
<td>REC</td>
<td>Requests a new meter reading from MR, on meters selected by meter ID</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>getLatestReadingByMeterID</td>
<td>REC</td>
<td>Returns the most recent meter reading data for a given MeterID</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>getReadingsByMeterID</td>
<td>REC</td>
<td>Returns meter reading data for a given MeterID and date range</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>GetMethods</td>
<td>REQ</td>
<td>Requests a list of web service methods supported by the application.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>PingURL</td>
<td>REQ</td>
<td>Queries status of the application</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Summary of Interoperability Test Results (CD)**

Table 2  
MultiSpeak Methods (CD)

<table>
<thead>
<tr>
<th>Object Name</th>
<th>CD-CB</th>
<th>Importance to User</th>
<th>Supported by Server(^1) (CD)</th>
<th>Supported by Client(^2) (CB)</th>
<th>Verified Interoperable(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>InitiateConnectDisconnect</td>
<td>REC</td>
<td>Initiates connect or disconnect action.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>GetMethods</td>
<td>REQ</td>
<td>Requests a list of web service methods supported by the application.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>PingURL</td>
<td>REQ</td>
<td>Queries status of the application</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
### Summary of Interoperability Test Results (OD)

**Table 3**

**MultiSpeak Methods (OD)**

<table>
<thead>
<tr>
<th>Object Name</th>
<th>OA-OD</th>
<th>Importance to User</th>
<th>Supported by Server(^1) (OD)</th>
<th>Supported by Client(^2) (OA)</th>
<th>Verified Inter-operable(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>InitiateOutageDetectionEventRequest</td>
<td>REC</td>
<td>Initiates OutageDetectionEvents.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>GetMethods</td>
<td>REQ</td>
<td>Requests a list of web service methods supported by the application.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>PingURL</td>
<td>REQ</td>
<td>Queries status of the application.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Summary of Interoperability Test Results (OA)

**Table 4**

**MultiSpeak Methods (OA)**

<table>
<thead>
<tr>
<th>Object Name</th>
<th>OA-OD</th>
<th>Importance to User</th>
<th>Supported by Server(^1) (OA)</th>
<th>Supported by Client(^2) (OD)</th>
<th>Verified Inter-operable(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODEventNotification</td>
<td>REC</td>
<td>Provides notification of a change in OutageDetectionDevice</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>GetMethods</td>
<td>REQ</td>
<td>Requests a list of web service methods supported by the application.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>PingURL</td>
<td>REQ</td>
<td>Queries status of the application.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Products: MDM

**Summary of Interoperability Test Results (CB)**

**Table 5**

**MultiSpeak Methods (CB)**

<table>
<thead>
<tr>
<th>Object Name</th>
<th>CB-CD</th>
<th>Importance to User</th>
<th>Supported by Server(^1) (CB)</th>
<th>Supported by Client(^2) (CD)</th>
<th>Verified Inter-operable(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDStateChangedNotification</td>
<td>REC</td>
<td>Notifies CB of state change for a connect/disconnect device by meterID and loadActionCode.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>ReadingChangedNotification</td>
<td>REC</td>
<td>Provides notification of a change in meter reads.</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>GetMethods</td>
<td>REQ</td>
<td>Requests a list of web service methods supported by the application.</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>PingURL</td>
<td>REQ</td>
<td>Queries status of the application.</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

REQ: Inclusion is required for this interface

REC: Inclusion is recommended for this interface

OPT: Inclusion is optional for this interface

1 Supported by Server means that the server has demonstrated in some interoperability test (not necessarily with this client) that it can support the method.

2 Supported by Client means that the client has demonstrated in some interoperability test (not necessarily with this server) that it can call the method.

3 Verified Interoperable means that both the client and server have demonstrated in this interoperability test that they can usefully transfer data using this method.
Certified by:

For:
Yantai Dongfang Wisdom Electric Co., Ltd
AMI-HES
AMI-MDM

Signature: Zheng Yipeng
Date: Oct 28, 2022
Name: Zheng Yipeng
Title: Staff Engineer

Assertions Verified by:

Signature: Alex Abogado
Date: Oct 27, 2022
Name: Alex Abogado
Title: MultiSpeak Testing Agent

Testing Agent: KLM Technologies LLC

Disclaimer:

The assertions made in this document are statements of the vendors offering the products listed above. The Testing Agent has observed the software performing the tasks described in these vendor assertions.

Neither NRECA, NRECA MultiSpeak Project Coordinator, nor KLM Technologies LLC, acting on behalf of NRECA, makes any warranty or guarantee that the software will perform as described in this assertion when installed at any specific utility. Furthermore, neither NRECA, NRECA MultiSpeak Project Coordinator, nor KLM Technologies LLC, makes any warranty or guarantee that the software described will be suitable for any specific purpose or need.

As used herein, the word verify shall mean an expression of the Testing Agent’s professional opinion to the best of its information, knowledge and belief, and does not constitute a warranty or guarantee by NRECA or the Testing Agent.

Signature: Zheng Yipeng
Email: 517868836@qq.com
"Yantai Wisdom-AMI-MultiSpeak-V-4-1-Interoperability-Assertion 20221021V2" History

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