MultiSpeak Version 4.1 Interoperability Assertion

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

Vendor(s)	Product	Product Version	Role	Batch Interface	Web Client Interfaces	Web Server Interfaces
Yantai Dongfang Wisdom Electric Co.,Ltd	AMI-HES	2.0	CD		CB	CD
Yantai Dongfang Wisdom Electric Co.,Ltd	AMI-MDM	2.0	CB			CB
Yantai Dongfang Wisdom Electric Co.,Ltd	AMI-HES	2.0	MR		CB	MR
Yantai Dongfang Wisdom Electric Co.,Ltd	AMI-HES	2.0	OD		OA	OD
Yantai Dongfang Wisdom Electric Co.,Ltd	AMI-MDM	2.0	OA			OA

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.**
   - o **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.
   - o **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.**

   - o **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.
   - o **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.**

   - o **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.

- o **How Achieved:** Utility user initiates the command in the (CB) client
  application web user 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

- o **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.
- o **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.

- o **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.
- o **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.

- o **Importance to User:** Utility users can initiate an on-demand meterstatus check, which is executed via HES. On-demand meter status check purposes is to check the meter's operational status.
- o **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)

Object Name	MR-CB	Importance to User	Supported by Server[1] (MR)	Supported by Client[2] (CB)	Verified Inter-operable[3]
MeterAddNotification	REC	Notifies MR to Add the associated meter(s).	X		X
MeterRemoveNotification	REC	Notifies MR to remove the associated meter(s)	X		X
InitiateMeterReadingsByMeterID	REC	Requests a new meter reading from MR, on meters selected by meter ID	X		X
getLatestReadingByMeterID	REC	Returns the most recent meter reading data for a given MeterID	X		X
getReadingsByMeterID	REC	Returns meter reading data for a given MeterID and date range	X		X
GetMethods	REQ	Requests a list of web service methods supported by the application.	X		X
PingURL	REQ	Queries status of the application	X		X

Summary of Interoperability Test Results (CD)

Table 2
MultiSpeak Methods (CD)

Object Name	CD-CB	Importance to User	Supported by Server[1] (CD)	Supported by Client[2] (CB)	Verified Inter-operable[3]
InitiateConnectDisconnect	REC	Initiates connect or disconnect action.	X		X
GetMethods	REQ	Requests a list of web service methods supported by the application.	X		X
PingURL	REQ	Queries status of the application	X		X

Summary of Interoperability Test Results (OD)

Table 3
MultiSpeak Methods (OD)

Object Name	OA-OD	Importance to User	Supported by Server[1] (OD)	Supported by Client[2] (OA)	Verified Inter-operable[3]
InitiateOutageDetectionEventRequest	REC	Initiates OutageDetectionEvents.	X		X
GetMethods	REQ	Requests a list of web service methods supported by the application.	X		X
PingURL	REQ	Queries status of the application	X		X

Summary of Interoperability Test Results (OA)

Table 4
MultiSpeak Methods (OA)

Object Name	OA-OD	Importance to User	Supported by Server[1] (OA)	Supported by Client[2] (OD)	Verified Inter-operable[3]
ODEventNotification	REC	Provides notification of a change in OutageDetectionDevice	X		X
GetMethods	REQ	Requests a list of web service methods supported by the application.	X		X
PingURL	REQ	Queries status of the application.	X		X

Products: MDM

Summary of Interoperability Test Results (CB)

Table 5
MultiSpeak Methods (CB)

Object Name	CB-CD	Importance to User	Supported by Server[1] (CB)	Supported by Client[2] (CD)	Verified Inter-operable[3]
CDStateChangedNotification	REC	Notifies CB of state change for a connect/disconnect device By meterID and loadActionCode.	X		X
ReadingChangedNotification	REC	Provides notification of a change in meter reads.	X		X

GetMethods	**REQ**	**Requests a list of web service methods supported by the application.**	**X**		**X**
PingURL	**REQ**	**Queries status of the application.**	**X**		**X**

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
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Name: Alex Abogado

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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.

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