

MultiSpeak Version 3.0 Interoperability Assertion

Statement of Interoperable Functionality Between:

Vendor(s)	Product	Product Version	Role	Batch Interface	Web Client Interfaces	Web Server Interfaces
Hunt Technologies Inc.	Command Center	2.2.2	MR			MR→EA
Milsoft Utility Solutions	WindMil	7.1	EA		MR→EA	
Milsoft Utility Solutions	Milsoft Web Server	7.1	EA			EA→MR
Hunt Technologies Inc.	Command Center	2.2.2	MR		EA→MR	

Summary:

WindMil is capable of requesting AMR data from Hunt's Command Center using MultiSpeak web services. Assuming consumers in the WindMil model are assigned the appropriate meter numbers, WindMil can use this interface to determine which of those meters have Hunt AMR endpoints and the type of endpoint each meter has. WindMil can request the most recent meter readings or can request the meter data from all AMR supported meters on the system for a single, given day. WindMil can request all available interruption information between a given pair of dates.

Imported signal strength and interruption information are visible in WindMil's Circuit Element editor and can be displayed graphically using WindMil's Color by Custom mode. The phase information is reported as a warning when Milsoft's phase data differs from that of Hunt's. The kW demand data can be stored directly as calculated load and can also be stored as billing load so that it may be used in a future load allocation operation.

A Command Center user is able to request meter connectivity information from the Milsoft Web Server via the Endpoint Diagnostic screen within Hunt's Command Center. This meter connectivity information allows Command Center to display upline, downline and sibling meters to the user for diagnostic purposes.

Prerequisites:

For this interface to be useful, the user's electrical system must be modeled to the consumer level in WindMil. Each consumer in the WindMil model for which meter data is desired must have an associated meter number which corresponds to a meter number in the Command Center software. WindMil provides several different ways to import these meter numbers from a billing system, but that

dataflow is not part of this interface. Furthermore, Hunt's Command Center must be accessible from the machine on which WindMil is running.

Specific Vendor Assertions:

1) WindMil can request all AMR supported meters from Command Center

Importance to user: The user can determine which consumers in the WindMil model have meters with Hunt AMR endpoints and can determine the type (TS1 or TS2) of each of those endpoints.

How Achieved: The user selects the "Import AMR vendor tags" box in the AMR Data Importer in WindMil. When the Run button is clicked, WindMil calls the GetAMRSupportedMeters method on the MR-EA interface supported by Command Center. If Command Center reports that a meter is AMR supported, the appropriate AMR type will be visible in WindMil on the Consumer Data page of the Circuit Element Editor for the consumer having that meter number.

2) WindMil can request meter readings from Command Center

Importance to user: The user can retrieve kW demand and/or kWh readings for every AMR supported meter with an associated consumer in WindMil and can receive kVAR data from meters that provide it. This load data can be used directly by WindMil's engineering analysis functions, or it can be used indirectly to facilitate the allocation of load on the model. The WindMil user requests all readings taken by the AMR system on some given day.

In addition to the actual meter readings, Command Center also provides the phase of each meter, its signal strength, and the time of day at which the reading was taken. The phase information can be used to detect modeling errors in the WindMil model, and the signal strength may help pinpoint possible voltage problems on the electrical system.

How Achieved: The user selects the "Import AMR meter readings" box in the AMR Data Importer in WindMil and then chooses a date in the past for which he would like to receive meter readings. The user selects whether the readings should be imported into calculated load and/or billing load and chooses the appropriate billing load group for the imported data. The user also chooses an assumed power factor to use for meters that do not provide kVAR data. When the Run button is clicked, WindMil calls the GetReadingsByDate method on the MR-EA interface supported by Command Center. The returned load data for each meter is stored in the fields the user requested. The signal strength of each meter is visible in WindMil on the Consumer Data page of the Circuit Element Editor for the consumer having that meter number. If Command Center reports

that a meter has a different phase configuration than is modeled in WindMil, WindMil generates a warning which gives details about the discrepancy.

Instead of importing meter readings from a given date, the user may choose to import the latest meter readings. In this case the GetLatestReadings method is called instead of GetReadingsByDate.

3) WindMil can request interruption data from Command Center

Importance to user: The WindMil user can retrieve the total number of interruptions that occurred between a given pair of dates for each AMR supported meter. The WindMil user can use this information to verify customer complaints about outages and to inform his assumptions used in reliability analysis.

How Achieved: The user selects the “Import outage events occurring from” box in the AMR Data Importer in WindMil and then chooses the pair of dates between which he would like to receive interruption events. When the Run button is clicked, WindMil calls the GetHistoryLogsByDate method on the MR-EA interface supported by Command Center. The returned outage event results for each meter are visible in WindMil on the Consumer Data page of the Circuit Element Editor for the consumer having that meter number. The results can be viewed graphically in WindMil by using the Color by Custom feature.

4) Command Center can request connectivity information from WindMil

Importance to user:

It is useful when identifying distribution trouble spots, which may result in communication issues between an AMR device and substation processing equipment, for the user to review data provided by the AMR system such as signal strength and phase for the device being studied with comparable data for neighboring AMR devices. The meter connectivity information provided by the Milsoft Web Server provides upline, downline and any sibling meter connectivity for the requested meter number.

How Achieved:

Within the Command Center software’s Endpoint Diagnostics screen, the user selects the “Click to View” link provided next to “Nearby Meters.” A dialog box will open showing any upline, downline and sibling meters along with the most recently reported signal strength, phase and the date reported.

**Summary of Interoperability Test Results
Interface #4
MR→EA**

**Table 1
Recommended MultiSpeak Methods**

Method Name	Importance to User	Supported by Server ¹ (MR)	Supported by Client ² (EA)	Verified Inter-operable ³
GetMethods	Requests a list of methods supported by the server.	X	X	X
PingURL	Verifies that the server is running and reachable.	X	X	X
GetAMRSupportedMeters	Requests a list of all AMR supported meters.	X	X	X
GetLatestReadingsByMeterNo	Requests the most recent meter reading for a given meter.	X		
GetLatestReadings	Returns the most recent readings for all AMR supported meters.	X	X	X
GetReadingsByDate	Requests all meter readings taken between two dates.	X	X	X
GetReadingsByMeterNo	Returns all readings for a given meter taken between two dates.	X		

**Table 2
Optional MultiSpeak Methods**

Method Name	Importance to User	Supported by Server ¹ (MR)	Supported by Client ² (EA)	Verified Inter-operable ³
GetDomainMembers	Requests the members of a given domain (type of fixed information, such as all of the counties in the database).			
GetDomainNames	Requests the domains (lists of fixed information, such as the counties served, or the acceptable statusCodes for this installation).			
GetHistoryLogByMeterNo	Requests data about meter events for a specific meter.	X		
GetHistoryLogsByDate	Requests all outage events occurring between two dates.	X	X	X
GetHistoryLogsByDateAndEventCode	Requests data about meter events for a specific event type and date range.	X		
GetHistoryLogsByMeterNoAndEventCode	Requests data about meter events for a specific meter and date range.	X		
GetModifiedAMRMeters	Requests changes in AMR meters since a specific data exchange session.			
GetReadingsByUOMAndDate	Requests all meter readings taken between two dates for a specific type of reading (UOM = unit of measure, e.g. kW).			

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.

Products: Milsoft Web Server and Command Center
Summary of Interoperability Test Results
Interface #4
EA → MR

Table 3
Recommended MultiSpeak Methods

Method Name	Importance to User	Supported by Server ¹ (EA)	Supported by Client ² (MR)	Verified Inter-operable ³
GetMethods	Requests a list of methods supported by the server.	X	X	X
PingURL	Verifies that the server is running and reachable.	X	X	X

EA → MR

Table 4
Optional MultiSpeak Methods

Method Name	Importance to User	Supported by Server ¹ (EA)	Supported by Client ² (MR)	Verified Inter-operable ³
GetAllCircuitElements	Returns all circuit elements.	X		
GetChildCircuitElements	Returns circuit elements immediately fed by the given line section or node (eaLoc)	X		
GetDomainMembers	The client requests from the server a list of names of domains supported by the server			
GetDomainNames	Requests the domains (lists of fixed information, such as the counties served, or the acceptable statusCodes for this installation).			
GetDownlineCircuitElements	Returns all circuit elements downline from the given circuit element	X		
GetDownlineMeterConnectivity	Returns the meter connectivity for all meters down line from a given meter	X	X	X
GetModifiedCircuitElements	Returns all circuit elements that have been modified since the previous session identified	X		
GetParentCircuitElements	Returns circuit elements immediately upstream of the given line section or node (eaLoc).	X		
GetSiblingMeterConnectivity	Returns all meters on the same transformer as the given meter.	X	X	X
GetSubstationNames	Returns all substation names	X		
GetUplineCircuitElements	Returns circuit elements in the shortest route to source from the given line section or node (eaLoc).	X		
GetUplineMeterConnectivity	Returns all meters from the first up line distribution transformer.	X	X	X

- 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.

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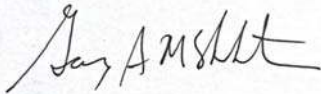


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Disclaimer:

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

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