MultiSpeak Version 3.0 Interoperability Assertion

Statement of Interoperable Functionality Between:

Vendor(s)	Product	Product Version	Role	Web Client Interfaces	Web Server Interfaces
DCSI	TWACS™ OPTIMUM™	1.5	MR		MR→CB
Exceleron Software	PAMS	1.0	CB	MR→CB	
DCSI	TWCS™ OPTIMUM™	1.5	MR	CB→MR	
Exceleron Software	PAMS	1.0	CB		CB→MR
DCSI	TWACS™ OPTIMUM™	1.5	CD		CD→CB
Exceleron Software	PAMS	1.0	CB	CD→CB	
DCSI	TWACS™ OPTIMUM™	3.2	CD	CB→CD	
Exceleron Software	PAMS	1.0	CB		CB→CD

Summary:

Web Service interfaces using MultiSpeak standards were developed in order to provide Exceleron PAMS and DCSI customers with a way to provide meter readings collected with the TWACS AMI system and for coops to connect/disconnect customers for non-pay in PAMS using the TWACS™ DSI disconnect hardware.

Prerequisites:

AMRType in PAMS must be populated for TWACS specific meter types. If AMRType is not populated, PAMS may use Assertion 6 to retrieve all of the CD supported meters from TWACS, this will update PAMS AMRType field if not already populated.

Enable the Integration in TWACS™ OPTIMUM™

Minimal setup is required to define a Multispeak interface in OPTIMUM™. A Multispeak setup page is provided to define the interface(s) to Exceleron PAMS. Here, one will enter the Vendor's Company and Application names, along with the URL for the Exceleron Multispeak webservices. Interfaces are enabled by checking the supported interfaces check boxes.

Enable the Integration in PAMS

Minimal setup is required to define a Multispeak interface in PAMS and there is currently a setup procedure that needs to be run before web services are enabled. Contact Exceleron's MultiSpeak coordinator, Mark Cheng at 972-852-2796 to run the setup procedure.

Specific Vendor Assertions:

1) During the prepaid enrollment process, PAMS will request historical usage from TWACS™ OPTIMUM™ for a specific meter.

Importance to user: By allowing the CSR to view past meter usage from a specific meter, they can better help the consumer understand the concept of daily usage.

How Achieved: PAMS requests usage for the specified meter for a period of the last 30 days or whatever is available. OPTIMUM™ will return all archived peak demand (if available) and the usage readings for the meter and date range requested. If no data is returned, PAMS will assume that there is no historical data available for the specified meter.

2) PAMS can initiate a new reading and request latest meter readings by meter number from TWACS™ OPTIMUM™.

Importance to user:
The utility benefits because the Customer Service Representative doesn't have to log in to a separate system to get the most recent meter reading information.

How Achieved:
This feature is intended to be used by Customer Service to assist in answering customer questions or in completing connect/disconnect orders.

The CSR selects the "Get Latest Reading" button on the PAMS Usage History page which initiates a new reading for the specified meter number. Upon receipt of the requested data, it is posted to the Daily Usage table. TWACS™ will perform a physical read of the meter and return the peak demand (if available) and current usage to the PAMS system. If a new reading is not received within the timeout period set in PAMS, then PAMS will request the last available reading from TWACS™ and post that reading as a substitute.

3) PAMS can request the most recent archived usage for meters from TWACS™ OPTIMUM™

Importance to user: The previous day's readings are used by PAMS to calculate the energy charge that will be deducted from the prepaid balance. The default interval is set to 24 hours but can be increased or decreased as necessary.

How Achieved: PAMS requests the latest readings for each meter number to calculate the prepaid balance. TWACS™ returns the latest archived peak demand (if available) and the usage readings for each meter.

4) PAMS can request that a specific meter or list of meters be remotely disconnected by TWACS™ OPTIMUM™

Importance to user: In a prepaid environment, the ability to remotely disconnect and reconnect a meter is essential because the consumer is on a pay as you go agreement.

How Achieved: At the point when disconnect becomes necessary, PAMS will initiate a call to OPTIMUM™ with a list of meters to be disconnected. Upon completion of the disconnect process, OPTIMUM™ will report the results back to PAMS. The returned status from OPTIMUM™ may be "Unknown" until a full interval has passed after which the hardware will then have calculated if usage is no longer accruing in the meter. PAMS may request the state of the disconnect meter (after a full interval has passed) to retrieve a confirmed disconnect of the meter.

5) PAMS can request that a specific meter or list of meters be remotely reconnected by TWACS™ OPTIMUM™

Importance to user: Upon confirmation that a disconnect account has been paid current, it is critical to get the service restored as soon as possible.

How Achieved: PAMS will initiate a call to OPTIMUM™ with a list of meters to be reconnected. Upon completion of the reconnect process, OPTIMUM™ will report the results back to PAMS using the CDStateChangedNotification web service. The returned status from OPTIMUM™ may be "Unknown" until a full interval has passed after which the hardware will then have calculated if usage is again accruing in the meter. PAMS may request the state of the disconnect meter (after a full interval has passed) to retrieve a confirmed reconnect of the meter.

6) PAMS can request all CD supported meters from TWACS™ OPTIMUM™.

Importance to user: The user can determine which consumers in PAMS model have meters with TWACS™ AMR disconnect capabilities.

How Achieved: PAMS calls the GetCDSupportedMeters method on the CD-CB interface supported by OPTIMUM™. AMRType and TransponderID are updated in PAMS.

Summary of Interoperability Test Results (#2A CB>MR)
Products: TWACS™ OPTIMUM™ and Exceleron PAMS

Table 1
Recommended MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (CB)	Supported by Client[2] (MR)	Verified Inter-operable[3]
GetMeterByAccountNumber	Returns the requested Meter(s) data given Account Number.	X		
GetMeterByMeterId	Returns the requested Meter data given meterID	X		
GetMeterByServLoc	Returns the requested Meter(s) data given Service Location.	X		
GetMeterByMeterNo	Returns the requested Meter data given Meter Number.	X		
GetAllCustomers	Returns all required customer data for all customers	X		
GetServiceLocationByCustId	Returns the requested Service Location data given Customer ID.	X		
GetServiceLocationByServLoc	Returns the requested Service Location data given Service Location ID	X		
GetCustomerByCustId	Returns the requested Customer if it exists.	X		
GetAllServiceLocations	Returns all required Service Location data for all Service Locations	X		
GetMeterByCustID	Returns the requested Meter(s) data given Customer ID	X		
GetServiceLocationByAccountNumber	Returns the requested Service Location data given Account Number	X		
GetAllMeters	Returns all required Meter data for all Meters			
GetMethods	Requests a list of web service methods supported by the AMR application	X	X	X
PingURL	Queries status of the AMR application.	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.

Table 2
Optional MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (CB)	Supported by Client[2] (MR)	Verified Inter-operable[3]
GetCustomerByName	Returns the requested Customer(s) data given First and Last name	X		
GetServiceLocationByServiceType	Returns the requested Service Location(s) data given the Service Type			
GetModifiedMeters	Returns all required Meter data for all Meters that have been modified since the specified sessionID			
GetDomainNames	Enables systems to exchange information about application-specific or installation-specific lists of information, such as the lists of counties for this installation or the list of serviceStatusCodes used by the server	X		
GetCustomerByMeterNo	Returns the requested Customer data given a Meter Number	X		
GetCustomerByDBAName	Returns the requested Customer given the Doing Business As (DBA) name			
ModifyCBDataForMeter	Allows MR to Modify CB data for a single Meter.			
GetServiceLocationByLoadGroup	Returns the requested Service Location(s) data for a given Load Group			
GetServiceLocationByGridLocation	Returns the requested Service Location(s) data given a single Grid Location	X		
GetServiceLocationByMeterNo	Returns the requested Service Location data given the meter number of a meter served at that location	X		
GetServiceLocationByShutOffDate	Returns the requested Service Location(s) data given the Service ShutOff Date			
HistoryLogChangedNotification	MR Notifies CB of a change in the History Log by sending the changed historyLog object			
ReadingChangedNotification	MR Notifies CB of a change in Meter Reads by sending the changed meterRead objects	X	X	X
GetDomainMembers	Enable systems to exchange information about application-specific or installation-specific lists of information, such as the lists of counties for this installation or the list of serviceStatusCodes used by the server	X		
GetModifiedServiceLocations	Returns all required Service Location data for all Service Locations that have been modified since the specified sessionID			
GetServiceLocationByPhaseCode	Returns the requested Service Location(s) data given the Phase			
GetServiceLocationByServiceStatus	Returns the requested Service Location(s) data given the Service Status			
ModifyCBDataForCustomer	Allow MR to Modify CB data for a specific customer			
GetModifiedCustomers	Returns all required customer data for all customers that have been modified since the specified sessionID			
GetMeterByAMRType	Returns the requested Meter(s) data given AMR Type.	X		
ModifyCBDataForServiceLocation	Allow MR to Modify CB data for the Service Location			

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.

Summary of Interoperability Test Results (#2A MR>CB)
Products: TWACS™ OPTIMUM™ and Exceleron PAMS

Table 3
Recommended MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (MR)	Supported by Client[2] (CB)	Verified Inter-operable[3]
CustomerChangedNotification	CB Notifies MR of a change in the Customer object by sending the changed customer object		X	
GetAMRSupportedMeters	Returns all meters that have AMR	X	X	X
GetHistoryLogByMeterNo	Returns History Log Data for a given MeterNo and Date Range		X	
GetHistoryLogsByDate	Returns History Log Data for a all Meters Given a Date Range		X	
GetHistoryLogsByDateAndEventCode	Returns History Log Data for a all Meters Given the eventCode and a Date Range		X	
GetHistoryLogsByMeterNoAndEventCode	Returns History Log Data for a given MeterNo, eventCode and Date Range		X	
InitiateMeterReadByMeterNumber	CB requests a new meter reading from MR, on meters selected by meter number.	X	X	X
GetReadingsByDate	Returns Reading Data for All Meters Given a Date Range			
GetLatestReadingByMeterNo	Returns Meter Reading Data for a given MeterNo and Date Range	X	X	X
GetReadingsByMeterNo	Returns Meter Reading Data for a given MeterNo and Date Range	X	X	X
IsAMRMeter	Return true if given meterNo has AMR	X		
MeterAddNotification	CB Notifies MR to Add the associated Meter(s).	X	X	
MeterChangedNotification	CB Notifies MR of a change in the Meter object by sending the changed meter object.		X	
MeterRemoveNotification	CB Notifies MR to remove the associated Meter(s).	X	X	
ServiceLocationChangedNotification	CB Notifies MR of a change in the Service Location	X	X	
GetMethods	Requests a list of web service methods supported by the Customer Billing program.	X	X	X
PingURL	Queries status of the Customer Billing program.	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.

Table 4
Optional MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (MR)	Supported by Client[2] (CB)	Verified Inter-operable[3]
CancelDisconnectedStatus	CB Notifies MR of Meters that should be removed from disconnected status.(i.e. made active).	X	X	
CancelPlannedOutage	Notify MR of Cancellation of Planned Outage Given a List of MeterNumbers	x		
CancelUsageMonitoring	Notify MR of Cancellation Of Zero Usage Monitoring.(ie Move Ins).	X	X	
GetDomainMembers	Enable systems to exchange information about application-specific or installation-specific lists of information, such as the lists of counties for this installation or the list of serviceStatusCodes used by the server			
GetDomainNames	Enable systems to exchange information about application-specific or installation-specific lists of information, such as the lists of counties for this installation or the list of serviceStatusCodes used by the server.			
GetModifiedAMRMeters	Returns all meters that support AMR and that have been modified since the specified sessionID			
GetReadingsByBillingCycle	Returns all required Reading Data for a given BillingCycle and Date Range			
InitiateDisconnectedStatus	CB Notifies MR of Meters that have been disconnected and no AMR reading is expected.	X	X	
InitiatePlannedOutage	Notify MR of Planned Outage Meters Given a List of MeterNumbers and Start and End Dates of the Outage	x		
InitiateUsageMonitoring	Notify MR of Meters Where Zero Usage is Expected.(ie Move outs).	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.

Summary of Interoperability Test Results (#2A CD>CB)
Products: TWACS™ OPTIMUM™ and Exceleron PAMS

Table 5
Recommended MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (CD)	Supported by Client[2] (CB)	Verified Inter-operable[3]
CustomerChangedNotification	CB Notifies MR of a change in the Customer object by sending the changed customer object		X	
GetCDSupportedMeters	Returns all meters that have AMR	X	X	X
InitiateConnectDisconnect	CB requests a disconnect state changednew meter reading from CD, on CDEvent meterIds.	X	X	X
GetCDMeterState	Returns the disconnect state of a meter.	X	X	X
MeterChangedNotification	CB Notifies MR of a change in the Meter object by sending the changed meter object.		X	
ServiceLocationChangedNotification	CB Notifies MR of a change in the Service Location	X	X	
GetMethods	Requests a list of web service methods supported by the Customer Billing program.	X	X	X
PingURL	Queries status of the Customer Billing program.	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.

Table 6
Optional MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (CD)	Supported by Client[2] (CB)	Verified Inter-operable[3]
GetDomainMembers	Enable systems to exchange information about application-specific or installation-specific lists of information, such as the lists of counties for this installation or the list of serviceStatusCodes used by the server			
GetDomainNames	Enable systems to exchange information about application-specific or installation-specific lists of information, such as the lists of counties for this installation or the list of serviceStatusCodes used by the server.			
GetModifiedCDMeters	Returns all meters that support AMR and that have been modified since the specified sessionID			

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.

Summary of Interoperability Test Results
Interface #5
CB → CD

Table 7
Recommended MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (CB)	Supported by Client[2] (CD)	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
GetAllServiceLocations	Returns all required Service Location data for all Service Locations			
CDStateChangedNotification	Notifies a change in connect/disconnect state change.	X		
GetServiceLocationByCustID	Returns the requested Service Location data given Customer ID.	X		
GetServiceLocationByServLoc	Returns the requested Service Location data given Service Location ID	X		
GetAllCustomers		X		
GetAllMeters	Returns all required customer data for all customers	X		
GetMeterByAccountNumber	Returns all required Meter data for all Meters	X		
GetServiceLocationByAccountNumber	Returns the requested Service Location data given Account Number			
GetMeterByServLoc	Returns the requested Meter(s) data given Service Location.			
GetMeterByMeterNo	Returns the requested Meter data given Meter Number.	X		
GetMeterByCustID	Returns the requested Meter(s) data given Customer ID	X		
GetCustomerByCustID	Returns the requested Customer if it exists.	X		
GetMeterByMeterID	Returns the requested Meter data given meterID	X		

Table 8
Optional MultiSpeak Methods

Method Name	Importance to User	Supported by Server[1] (CB)	Supported by Client[2] (CD)	Verified Inter-operable[3]
GetModifiedServiceLocations	Returns all required Service Location data for all Service Locations that have been modified since the specified sessionID			
getModifiedCustomers	Returns all required customer data for all customers that have been modified since the specified sessionID			
getServiceLocationByServiceStatus	Returns the requested Service Location data given Service Location ID			
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).			
GetCustomerByName	Returns the requested Customer(s) data given First and Last name	X		
ModifyCBDataForCustomer	Allow MR to Modify CB data for a specific customer			
GetCustomerByMeterNo	Returns the requested Customer data given a Meter Number	X		
GetModifiedMeters	Returns all required Meter data for all Meters that have been modified since the specified sessionID			
GetServiceLocationByMeterNo	Returns the requested Service Location data given the meter number of a meter served at that location			
ModifyCBDataForMeter	Allows MR to Modify CB data for a single Meter.			
GetCustomerByDBAName	Returns the requested Customer given the Doing Business As (DBA) name	X		
ModifyCBDataForServiceLocation	Allow MR to Modify CB data for the Service Location			
GetServiceLocationByGridLocation	Returns the requested Service Location(s) data given a single Grid Location			

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 Distribution Control Systems Inc.:

_____ Product Marketing Manager
Name: Edward Kobeszka Title

Date : 02/20/2007_____

For Exceleron Software, Inc.

_____ CTO
Name: Craig Hutson Title

Date : 02/20/2007_____

Assertions Verified by:

_____ MultiSpeak Testing Agent
Name: Hannu Huhdanpaa Title

UISOL,Inc.. .
Testing Agent

Date : 02/20/2007_____

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.

Neither NRECA, Cornice Engineering, Inc. (MultiSpeak Project Coordinator), nor UISOL, Inc, 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, Cornice Engineering, Inc., nor UISOL, Inc. 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.