# 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 |
|---|---|---|---|---|---|---|
| DCSI | TWACS™ OPTIMUM™ | 1.5 | MR | | | MR→CB |
| National Information Solutions Cooperative | iVUE | 1.8 | CB | | MR→CB | |
| DCSI | TWACS™ OPTIMUM™ | 1.5 | MR | | CB→MR | |
| National Information Solutions Cooperative | iVUE | 1.8 | CB | | | CB→MR |

## Summary:

Web Service interfaces using MultiSpeak standards were developed in order to provide NISC iVUE and DCSI customers a way to keep the system databases synchronized without having to update and maintain data in both systems through manual processes. It provides a way for iVUE to collect and display metering data using the TWACS™ AMI solution.

## Prerequisites:

iVUE must be configured to input a list of known substations from TNS. This process is a manual process that must be configured by the iVUE operator. GetAMR supported meters must also be invoked to populate data in iVUE in order to initially align iVUE with TNS.

### *Enable the Integration in TWACS™ OPTIMUM™*

OPTIMUM™ runs on its own server as a "gateway" from iVUE to TNS. No setup is required.

### *Enable the Integration in iVUE*

There is currently a setup procedure that needs to be run before web services are enabled. Contact NISC's MultiSpeak coordinator, Deena Williams at (x 2846) to run the setup procedure.

## Specific Vendor Assertions:

**1) iVUE will notify TWACS™ OPTIMUM™ of newly deployed (added) AMR meters**

***Importance to user:*** This function will save the utility time and money during the initial deployment and ongoing maintenance of their TWACS™ AMI system by removing the need to manually enter or import a list of newly deployed AMR meters in the TWACS™ Net Software (TNS).

***How Achieved:*** When an in-stock meter is installed at a meter service location on iVUE CIS.

A transaction history record is created for the meter installation (Transaction = 'MTRINSREM', Activity = 'ADD', Meter Status = 1 or 2), which is picked up and the meter number and status is passed to OPTIMUM™. OPTIMUM™ forwards the request to TNS for processing.

Note: See Meter Remove Notification use case for Meter Exchanges, which creates both a Meter Add Notification and a Meter Remove Notification.

Notification of meter add (deployment) is sent to OPTIMUM™ and compared to existing meters in the TWACS™ system. If conflicting meter information is received, an error message is returned to iVUE and logged in TNS. If the meter data does not conflict with any existing meters in TNS, then an entry is added to the TNS Bulk Importer process for automatic creation of the meter. If the meter already exists in TNS an error is flagged and logged as a duplicate meter.

**2) iVUE will notify TWACS™ OPTIMUM™ of exchanged AMR meters**

***Importance to user:*** This function will save the utility time and money during the ongoing maintenance of their TWACS AMI system by removing the need to manually enter meter change information in TNS

***How Achieved:*** A meter exchange is performed in the iVUE CIS.

A transaction history record is created for the meter exchange (Transaction = 'MTREXC', Activity = 'ADD'), and the out and in meters and statuses are picked up and passed to OPTIMUM™. This will generate a Meter Remove Notification for the 'out' meter and a Meter Add Notification for the 'in' meter.

Review Assertions 1 and 3 for TNS handling of Meter Add Notification and Meter Remove Notification messages.

**3) iVUE will notify TWACS™ OPTIMUM™ of removed AMR meters**

***Importance to user:*** This function will save the utility time and money during the ongoing maintenance of their systems by removing the need to manually enter a list of removed AMR meters in TNS.

***How Achieved:***
A remove from service transaction is completed in iVUE using standard procedures.

A transaction history record is created for the meter removal (Transaction = 'MTRINSREM', Meter Service Function = 'Remove Meter'), which is picked up and the meter number and status is passed to OPTIMUM™.

Notification of meter remove is sent to OPTIMUM™. If the meter exists in TNS it is disabled and flagged as removed. If the meter is not found in TNS or if it is already disabled, an error message is returned to iVUE.

Note: The meter is deleted from TNS, but historical meter reads may be saved if cascade delete is turned off in TNS.

**4) iVUE will notify TWACS™ OPTIMUM™ of changed customer/service location information**

*Importance to user:* This function will save the utility time and money by removing the need to manually enter initial and changed customer information to the TWACS™ AMI system.

## *How Achieved:*

## Service Location Changed Notification

iVUE notifies OPTIMUM™ of a change in any of several service location specific elements by sending the changed service location information.

If a property of a service location such as the customer id, account number, map location, revenue class or billing cycle changes within iVUE, notification is sent to TNS via this function.

All service location changes made to the TNS system are logged in the System Log.

**5) iVUE will notify TWACS™ OPTIMUM™ of locations where Usage should be monitored.**

*Importance to user:* Provides automatic maintenance of status groups within TNS that are used to track locations where electric usage is not expected, such as vacant dwellings. This function is intended to save the utility money by allowing for a "soft disconnect" of a meter versus sending an employee to "hard disconnect" the meter. The utility can take comfort in knowing they will be notified within a day of usage occurring at a virtually disconnected location.

*How Achieved:* A disconnect order is processed within the iVUE CIS.

The meter status on meter inventory is made "inactive installed" (status 2) and neither the "Disconnect at Transformer" nor the "Dead Plug" options are checked.

A transaction history record is created for the disconnect order (Transaction = 'SRVORD', SO function = 'DS', SO Status = 'C'), which is picked up and the meter number and status is passed to TNS via OPTIMUM™.

Within TNS, the Meter is placed in a "Usage Monitoring Group."

**6) iVUE will notify TWACS™ OPTIMUM™ of locations where Usage Monitoring is no longer required.**

*Importance to user:* This feature is intended to benefit the utility by removing the necessity to manually remove meters from the Usage Monitoring status group.

*How Achieved:* A reconnect order is processed within the iVUE CIS.

The meter status on meter inventory is made "active" (status 1).

A transaction history record is created for the reconnect order (Transaction = 'SRVORD', SO function = 'RS', 'RN', 'RO' or 'NS', SO Status = 'C'), which is picked up and the meter number and status is passed to TNS.

Within TNS, the Meter is removed from a "Usage Monitoring Group" and placed back in the original collection group

**7) iVUE will notify TWACS™ OPTIMUM™ of locations where no AMR reading is expected.**

*Importance to user:*
This feature is intended to benefit the utility by removing the necessity to manually add meters to the disconnected status group.

*How Achieved:*
Customer Billing notifies OPTIMUM™ that meter(s) have been disconnected and no AMR reading is expected using the initiateDisconnectedStatus method.

Use Case:
When a meter is totally disconnected and no electricity is available to power the AMR device, a disconnect order is processed within the iVUE CIS.

The meter status on meter inventory is made "inactive installed" (status 2) and the "Disconnect at Transformer" or "Dead Plug" are checked indicating power to the meter is disconnected:

In this scenario a transaction history record is created for the disconnect order (Transaction = 'SRVORD', SO function = 'DS', SO Status = 'C'), which is picked up and the meter number and status is passed to TNS.

Within TNS, the Meter is placed in an inactive state. This will remove the meter from their original scheduled collection process.

**8) iVUE will notify TWACS™ OPTIMUM™ of locations where AMR readings are once again expected.**

*Importance to user:*
This feature will benefit the utility by removing the necessity to manually remove meters from the disconnected status group using the CancelDisconnectedStatus method.

*How Achieved:*
iVUE notifies OPTIMUM™ that meter(s) should no longer be considered disconnected and that an AMR reading is expected. Within TNS, the meter is marked as enabled. This can be verified by viewing the individual meter in TNS.

Use Case:
A reconnect order is processed within the iVUE CIS.

The meter status on meter inventory is made "active" (status 1).

A transaction history record is created for the reconnect order (Transaction = 'SRVORD', SO function = 'RS', 'RN', 'RO' or 'NS', SO Status = 'C'), which is picked up and the meter number and status is passed to TNS

Within TNS, the Meter is removed from an inactive state and placed back in the original collection group. The meter's group setup can be viewed using TNS Database Report.

**9) iVUE 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.

*Method 1*: The CSR selects the "Read Now" button on the iVUE Reading Interval History panel which initiates a new reading for the specified meter number and when the reading is returned it is posted to the Interval/Daily Reading table. OPTIMUM™ will request TNS to perform a physical read of the meter and return the current usage to the iVUE system. If a new reading is not received within the timeout period set in iVUE, then iVUE will request the last available reading from TNS and post that reading as a substitute.

*Method 2*: The CSR selects the reading "binoculars" button on the iVUE Service Order Connect/Disconnect Meter panel which initiates a new reading for the specified meter number and when the reading is returned it is posted to the Service Order reading field. Again, TNS will perform a physical read of the meter and return the current usage to the iVUE system.  As with method 1, the latest available reading can be retrieved if no new reading is received.

**10) iVUE can request all AMR supported meters from TWACS™ OPTIMUM™**

***Importance to user:*** The user can determine which consumers in the iVUE model have meters with TWACS AMR capabilities.

***How Achieved:***  iVUE calls the GetAMRSupportedMeters method on the MR-CB interface supported by OPTIMUM™.  AMRType and TransponderID are updated in iVUE.

# Summary of Interoperability Test Results (#2A CB>MR)
## PRODUCTS: DCSI TWACS™ OPTIMUM™ and NISC iVUE

**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 | X | | |
| 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 | | | |
| 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. | | | |
| 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: DCSI TWACS™ OPTIMUM™ and NISC iVUE

### 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 | X | X |
| GetAMRSupportedMeters | Returns all meters that have AMR | X | X | X |
| GetHistoryLogByMeterNo | Returns History Log Data for a given MeterNo and Date Range | | | |
| GetHistoryLogsByDate | Returns History Log Data for a all Meters Given a Date Range | | | |
| GetHistoryLogsByDateAndEventCode | Returns History Log Data for a all Meters Given the eventCode and a Date Range | | | |
| GetHistoryLogsByMeterNoAndEventCode | Returns History Log Data for a given MeterNo, eventCode and Date Range | | | |
| 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 | X | | |
| GetLatestReadingByMeterNo | Returns Meter Reading Data for a given MeterNo and Date Range | X | | |
| GetReadingsByMeterNo | Returns Meter Reading Data for a given MeterNo and Date Range | X | | |
| IsAMRMeter | Return true if given meterNo has AMR | X | | |
| MeterAddNotification | CB Notifies MR to Add the associated Meter(s). | X | X | X |
| MeterChangedNotification | CB Notifies MR of a change in the Meter object by sending the changed meter object. | X | X | X |
| MeterRemoveNotification | CB Notifies MR to remove the associated Meter(s). | X | X | X |
| ServiceLocationChangedNotification | CB Notifies MR of a change in the Service Location | X | 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 | 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 | 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 | X | | |
| InitiateDisconnectedStatus | CB Notifies MR of Meters that have been disconnected and no AMR reading is expected. | X | 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 | 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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Assertions Verified by:

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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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