



Interim AMS Services Reference Guide

CenterPoint Energy/IBM

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1. Introduction

1.1 Identification

This reference guide describes the service interface contract of the AMS Services developed by CenterPoint Energy (CNP).

1.2 Description

The AMS Services is a collection of Web services developed by CNP to allow internal and external systems to access a group of functionality provided by CNP's Automated Metering System (AMS).

1.3 Purpose

The document primarily focuses on the interface contract between the service provider and the service consumer. The detail design of the services themselves is not included in this document.

1.4 References

- [1] ZigBee, "ZigBee Smart Energy Profile Specification", Revision 15
- [2] CNP/IBM, "CNP AMS Services – Technical Design"

2. AMS Services Overview

The following is a list of the service operations provided by the AMS Services system.

2.1 HAN Services

2.1.1 Send Display Message by Group

The Send Display Message by Group service allows the service consumer to send a display message to HAN devices that belong to a meter group.

2.1.2 Send Load Control Event by Group

The Send Load Control Event by Group service allows the service consumer to send a load control event to HAN devices that belong to a meter group.

2.2 Common Services

2.2.1 Get Service Request Status

The Get Service Request Status service allows the service consumer to retrieve the current status of a given service request.



3. Security

3.1 Security Requirements

1. AMS Services authentication will be by mutual authentication over Secure Socket Layer (SSL).
2. A competitive retailer's consuming application must provide a certificate in the SSL handshake
3. The competitive retailer is responsible for obtaining, deploying and maintaining a certificate for the purpose of using CenterPoint Energy AMS services, and must register with CenterPoint Energy, in advance, the full distinguished name of the certificate they intend to use, along with the name of the Certificate Authority used to sign it. Signing certificates must meet these requirements:
 - a. The certificate must be signed by a well-known public Certificate Authority or by an authority from which CenterPoint Energy can readily obtain the certificate (such as an authority maintained by the state or a common trade entity).
 - b. Certificates using 1024 bits must have an expiration date no more than one year (plus up to a one month grace period) from the issue date. Certificates using 2048 bit or longer keys do not have this restriction.
 - c. CenterPoint Energy will review and approve each Certificate Authority and each certificate to ensure reliability and security
4. Competitive retailers are encouraged, though not required, to use a Certificate Authority that maintains revocation lists and validation services. CenterPoint will endeavor to validate certificates against the available revocation lists.
5. Regardless, competitive retailers must notify CenterPoint Energy immediately if they believe the private key of the certificate used for accessing AMS services has been compromised.
6. CenterPoint Energy will maintain a master list of certificate names and competitive retailer identities used to map the certificate distinguished name to a meaningful identity.
7. Competitive retailers are responsible for renewing their certificate prior to its expiration date. Expired certificates will not be accepted for authentication. *CenterPoint does NOT need to be notified when a certificate has been renewed as long as the certificate distinguished name does not change.*

4. Detail Service Contract

This section provides the detail service contract for AMS Services.
 All the input parameters are mandatory unless stated specifically as optional.

4.1 HAN Services

4.1.1 Display Message by Group

Operation	SendDisplayMessageByGroup
Description	Sends a message to be displayed on the HAN devices that belong to a given meter application group. A

		service request Id is returned from this operation, which can be used to check the status of the service request. The application group is determined by the REP's Duns number.		
Daily Allowance		130/group		
Input	Field Name	Data Type	Size	Description
	RequesterId	String	Max 100 char	The identifier of the requester
	RequesterType	RequesterTypeEnum	N/A	The type of the requester: REP or TDSP
	RepDunsNumber	string	15 char	The Duns number if requester type is REP. Optional if requester type is TDSP.
	DisplayMessage	DisplayMessage	N/A	The DisplayMessage complex data type contains the following fields:
	MessageId	unsignedShort	N/A	Message identifier
	MessageControl	unsignedByte	N/A	Optional. Control code for the message. See ZigBee Smart Energy Profile Specification (Reference [1]).
	DurationInMinutes	unsignedShort	N/A	For how long (in minutes) the message will be displayed on the HAN device
	StartTime	dateTime	N/A	Indicates when the message will be displayed
	Message	string	Max 200 char	The message to be displayed by the HAN devices. The 3000 character size limit is for message storage in CNP AMS Services database. Actual message size limit can be much smaller for different HAN devices.
Output	ServiceRequestId	guid	N/A	The Id of the service request
Fault	Message	string	N/A	The message describing the error
	ErrorCode	unsignedShort	4 digit	A numerical code for the type of the error (See Appendix B)

4.1.2 Send Load Control Event by Group

Operation		SendLoadControlEventByGroup		
Description		Sends a load control event to the HAN devices that belong to a given meter application group. A service request Id is returned from this operation, which can be used to check the status of the service request. The application group is determined by the REP's Duns number.		
Daily Allowance		130/meter		
Input	Field Name	Data Type	Size	Description
	RequesterId	String	Max 100 char	The identifier of the requester
	RequesterType	RequesterTypeEnum	N/A	The type of the requester: REP or TDSP
	RepDunsNumber	String	15 char	The Duns number if requester type is REP. Optional if requester type is TDSP.

LoadControlEvent	LoadControlEvent	N/A	The LoadControlEvent complex data type contains the following fields:
EventId	unsignedInt	N/A	Event identifier
UtilityEnrollmentGroup	unsignedByte	N/A	The utility enrollment group the HAN devices belong to. If this parameter is specified, only devices in this group will receive the load control event.
DurationInMinutes	unsignedShort	N/A	How long (in minutes) the load control event will last
Criticality	unsignedByte	N/A	The criticality of the load control event
CoolingTemperatureOffset	unsignedByte	N/A	Optional. The offset of the cooling temperature in Celsius. 0xFF indicates that the temperature offset is not used.
HeatingTemperatureOffset	unsignedByte	N/A	Optional. The offset of the heating temperature in Celsius. 0xFF indicates that the temperature offset is not used.
CoolingTemperatureSetPoint	short	N/A	Optional. The set point of the cooling temperature in Celsius. 0x8000 indicates that the temperature set point is not used.
HeatingTemperatureSetPoint	short	N/A	Optional. The set point of the heating temperature in Celsius. 0x8000 indicates that the temperature set point is not used.
AverageLoadAdjustmentPercentage	byte	N/A	Optional. The averaged adjustment percentage. A value of 0x80 indicates the field is not used.
DutyCycle	unsignedByte	N/A	Optional. Defines the maximum On state duty cycle as a percentage of time. A value of 0xFF indicates the field is not used.
StartTime	dateTime	N/A	Indicates when the load control event will start
LoadControlEventBehaviors	Collection	N/A	A list of any of the following LoadControlEventBehaviorEnum values: <ul style="list-style-type: none"> • RandomizeEndTime RandomizeStartTime
DeviceGroupClasses	Collection	N/A	A list of any of the following DeviceGroupClassEnum values: <ul style="list-style-type: none"> • ElectricVehicle • ExteriorLighting • GenerationSystem • HvacCompressor • InteriorLighting • IrrigationPump • ManagedCommercialAndIndustrialLoad • MiscLoad



				<ul style="list-style-type: none"> • PoolPump • SmartAppliance • StripHeater • WaterHeater
Output	ServiceRequestId	guid	N/A	The Id of the service request
Fault	Message	string	N/A	The message describing the error
	ErrorCode	unsignedShort	4 digit	A numerical code for the type of the error (See Appendix B)

4.2 Common Services

4.2.1 Get Service Request Status

Operation		GetServiceRequestStatus		
Description		Retrieves the current status of a given service request.		
Daily Allowance		Unlimited		
Input	Field Name	Data Type	Size	Description
	PrevServiceRequestId	guid	N/A	The identifier of the service request to check status for
	RequesterId	string	Max 100 char	The identifier of the requester
	RequesterType	RequesterTypeEnum	N/A	The type of the requester: REP or TDSP
	RepDunsNumber	string	9 char	The Duns number if requester type is REP. Optional if requester type is TDSP.
Output	ServiceRequestStatus	ServiceRequestStatus Enum	N/A	Possible service request status: <ul style="list-style-type: none"> • New • Pending • Successful • Failed • Cancelled
Fault	Message	string	N/A	The message describing the error
	ErrorCode	unsignedShort	4 digit	A numerical code for the type of the error (See Appendix B)



5. Appendix

5.1 Appendix A - Sample WSDL

WSDL will be provided by request, please request it from your CenterPoint Energy CR relations contact

5.2 Appendix B - Error Code Table

Error Code	Description
1000	Generic business logic error
1001	The daily limit for a given service request has been reached. No more request of the same type can be submitted for the rest of the day
1002	The given ESIID is not found in the AMS Services system
1003	An error occurred when accessing the database
1004	No more slot for new HAN devices for a given premise
1005	An error occurred when calling a web service agent (such as the Itron OpenWay service agent)
1006	No HAN device is found for the given service request
1007	No service request is found
1008	An error occurred when translating the input data to the AMS service