

On-Demand Meter Read from CIS

Version 3.0

May 14th, 2010

1 Descriptions of Function

All prior work (intellectual property of the company or individual) or proprietary (non-publicly available) work should be so noted.

1.1 Function Name

On-Demand Meter Read from CIS.

1.2 Function ID

Identification number of the function

1.3 Brief Description

AMI systems consist of the hardware, software and associated system and data management applications that create a communications network between end systems at customer premises (including meters, gateways, and other equipment) and diverse business and operational systems of utilities and third parties. AMI systems provide the technology to allow the exchange of information between customer end systems and those other utility and third party systems. In order to protect this critical infrastructure, end-to-end security must be provided across the AMI systems, encompassing the customer end systems as well as the utility and third party systems which are interfaced to the AMI systems.

Meter reading services provide the basic meter reading capabilities for generating customer bills. Different types of metering services are usually provided, depending upon the type of customer (residential, smaller commercial, larger commercial, smaller industrial, larger industrial) and upon the applicable customer tariff.

- Periodic Meter Reading
- On-Demand Meter Reading
- Net Metering for DER and PEV
- Feed-In Tariff Metering for DER and PEV
- Bill - Paycheck Matching

Remote Connects and Disconnects will be handled in a similar manner.

1.4 Narrative

An on-demand meter read is issued in the *Customer Information System (CIS)* for any reason. The message is sent to the *AMI Head-End* and routed to the appropriate smart meter. When the message is received at the *NIC ESP*, it is converted and sent on to the *Meter Metrology Board* where the reading is taken and sends the data back to the *NIC ESP* to the *AMI Head-End*. The *AMI Head-End* sends the information to the *CIS* for the Customer *Service Representative (CSR)* to read and to the *Operational Data Store (ODS)* where it is logged as a meter event.

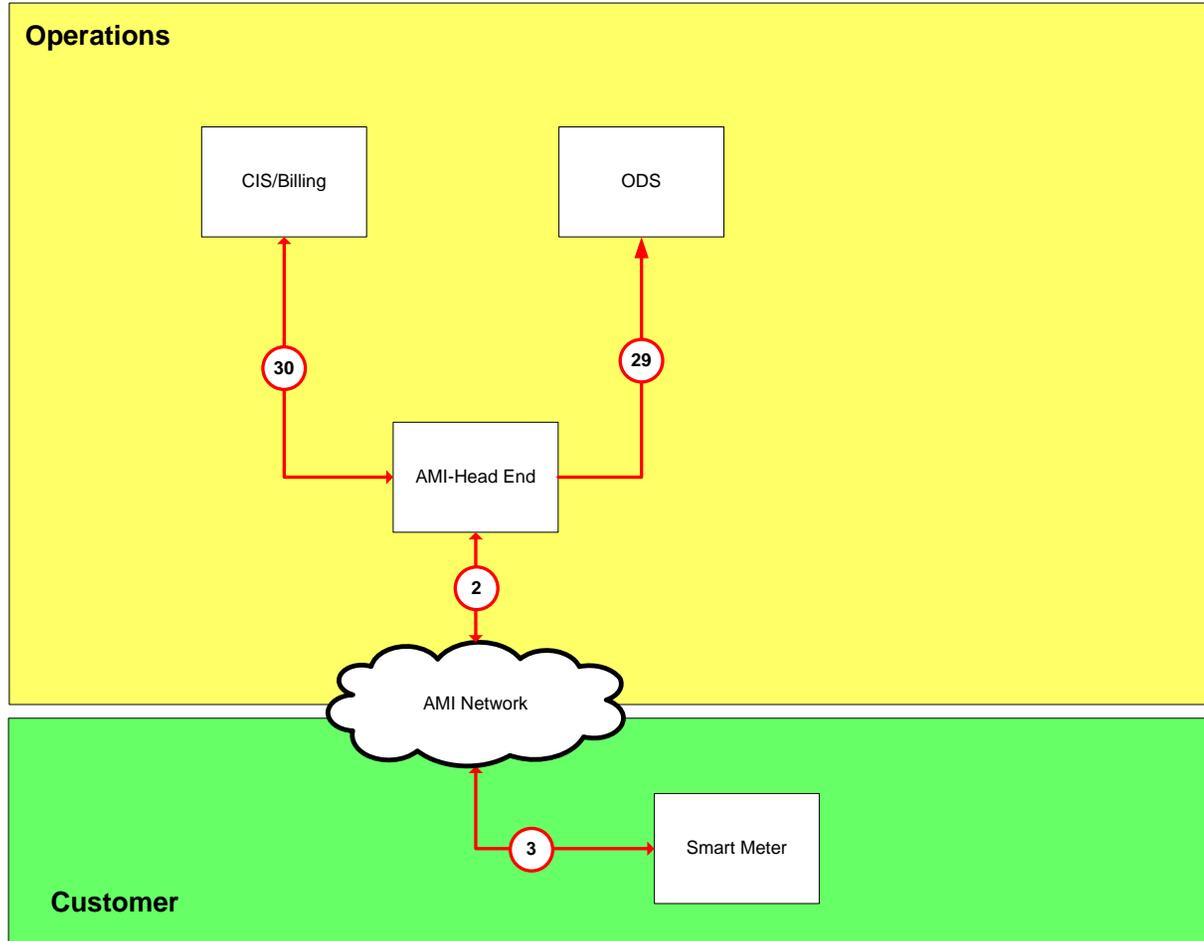


Figure 1-1
Context Diagram for On Demand Meter Read from CIS

1.5 Actor (Stakeholder) Roles

<i>Grouping (Community)</i>		<i>Group Description</i>
<i>Actor Name</i>	<i>Actor Type (person, organization, device, system, or subsystem)</i>	<i>Actor Description</i>
Customer	Person	Customer of the Electric Service Provider. Contracts with the ESP to receive quality electrical service. Agrees to participate in Demand Response program. May or may not (at time of system operation) choose to participate
CIS (MACSS)	System	Customer Information System internally called MACSS that is the system of record for customer data and billing.
AMI Head-End	System	The AMI Head-End is the back office system than controls the Advanced Metering Infrastructure.
NIC - ESP	Device	AMI side of the network interface card within the smart meter.
ODS	Sub-System	Operational Data Store is a sub-system of The Utility's data warehouse, which stores operational data i.e. all metering events and messages.
Meter Metrology Board	Device	The board, internal to the smart meter, on which the functions of the smart meter are configured and performed.

1.6 Information exchanged

<i>Information Object Name</i>	<i>Information Object Description</i>
On-Demand Request	On-Demand Request for a meter reading from a specific smart meter or group of smart meters

<i>Information Object Name</i>	<i>Information Object Description</i>
Return C12.19 formatted table	Data return request from a formatted table (meter reading)
C12.18 command to read a table	Data read request from a formatted table (meter reading)
getMeterReadings	61968 formatted data package command to get a meter reading
Request for Meter read from AMI Head-End	Request for meter read data from the AMI Head-End
Meter Data	Meter Data from a smart meter or group of smart meters
meterReadings	61968 formatted data package with meter read data

1.7 Activities/Services

<i>Activity/Service Name</i>	<i>Activities/Services Provided</i>

1.8 Contracts/Regulations

<i>Contract/Regulation</i>	<i>Impact of Contract/Regulation on Function</i>

<i>Policy</i>	<i>From Actor</i>	<i>May</i>	<i>Shall Not</i>	<i>Shall</i>	<i>Description (verb)</i>	<i>To Actor</i>

<i>Constraint</i>	<i>Type</i>	<i>Description</i>	<i>Applies to</i>

2 Step by Step Analysis of Function

Describe steps that implement the function. If there is more than one set of steps that are relevant, make a copy of the following section grouping (Steps to implement function, Preconditions and Assumptions, Steps normal sequence, Post-conditions) and provide each copy with its own sequence name.

2.1 Steps to implement function – Name of Sequence

On-Demand Meter Read from CIS.

2.1.1 Preconditions and Assumptions

<i>Actor/System/Information/Contract</i>	<i>Preconditions or Assumptions</i>

2.1.2 Steps – Name of Sequence

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
#	<i>Triggering event? Identify the name of the event.¹</i>	<i>What other actors are primarily responsible for the Process/Activity? Actors are defined in section0.</i>	<i>Label that would appear in a process diagram. Use action verbs when naming activity.</i>	<i>Describe the actions that take place in active and present tense. The step should be a descriptive noun/verb phrase that portrays an outline summary of the step. "If ...Then...Else" scenarios can be captured as multiple Actions or as separate steps.</i>	<i>What other actors are primarily responsible for Producing the information? Actors are defined in section0.</i>	<i>What other actors are primarily responsible for Receiving the information? Actors are defined in section0. (Note – May leave blank if same as Primary Actor)</i>	<i>Name of the information object. Information objects are defined in section 1.6</i>	<i>Elaborate architectural issues using attached spreadsheet. Use this column to elaborate details that aren't captured in the spreadsheet.</i>	<i>Reference the applicable IECSA Environment containing this data exchange. Only one environment per step.</i>
1.1	An On-Demand Meter Read is initiated in CIS by a CSR	CIS	CIS Request	CIS requests read from AMI Head-End	CIS	AMI Head-End	getMeterReadings	61968	
1.2		AMI Head-End	AMI Request	AMI Head-End sends request to AMI Network	AMI Head-End	AMI Network	Request for Meter read from AMI Head-End	proprietary	Use AMI Network Use Case
1.3		AMI Network	Meter Data to NIC - ESP	AMI Network to NIC - ESP	AMI Network	NIC - ESP	Meter Data	proprietary	
1.4		NIC - ESP	Meter Data to Meter Metrology Board	NIC - ESP sends request for meter read to Meter Metrology Board	NIC – ESP	Meter Metrology Board	C12.18 command to read a table	C12.18, C12.19 Hardware standardization needed	

¹ Note – A triggering event is not necessary if the completion of the prior step – leads to the transition of the following step.

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
1.5		Meter Metrology Board	Meter Metrology Board collects Meter Read Data	Meter Metrology Board collects Meter Read Data	Meter Metrology Board	Meter Metrology Board	Meter Data		
1.6		Meter Metrology Board	Meter Data to NIC - ESP	Meter Metrology Board sends Meter Read Data to NIC - ESP	Meter Metrology Board	NIC - ESP	Return C12.19 formatted table	C12.18, C12.19	
1.7		NIC - ESP	Meter Data to AMI Network	NIC - ESP sends Meter Data to AMI Network	NIC - ESP	AMI Network	Meter Data	proprietary	
1.8		AMI Network	Meter Data to AMI Head-End	AMI Network delivers Meter Data to AMI Head-End	AMI Network	AMI Head-End	Meter Data	proprietary	Use AMI Network Use Case
1.9		AMI Head-End	Meter Data to CIS	AMI Head-End sends Meter Data to CIS	AMI Head-End	CIS	meterReadings	61968	
1.10		AMI Head-End	Meter Data to ODS	AMI Head-End sends Meter Data to ODS	AMI Head-End	ODS	meterReadings	61968 **ODS will be a subscriber to this data from the ESB**	

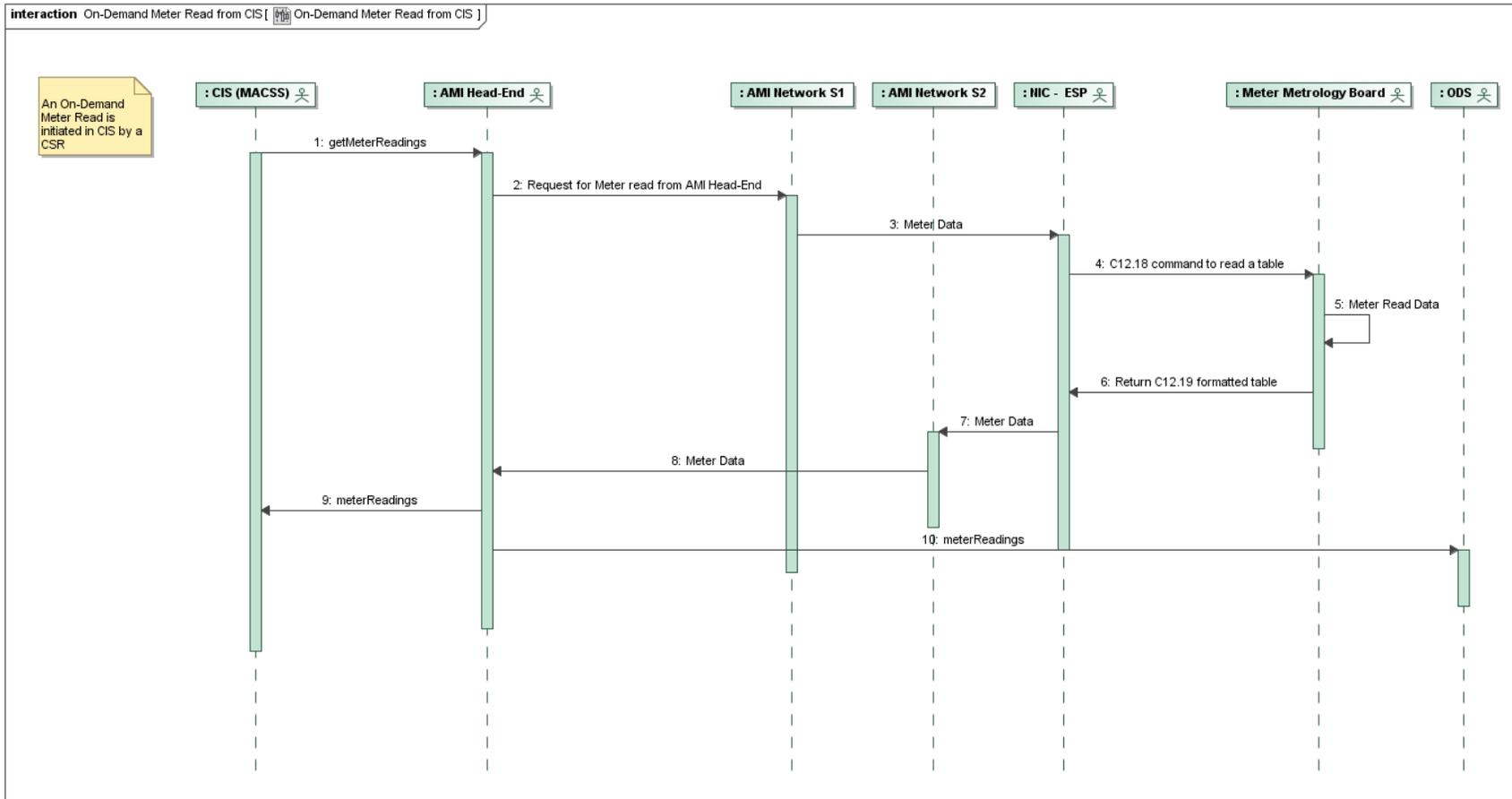
2.1.3 Post-conditions and Significant Results

<i>Actor/Activity</i>	<i>Post-conditions Description and Results</i>

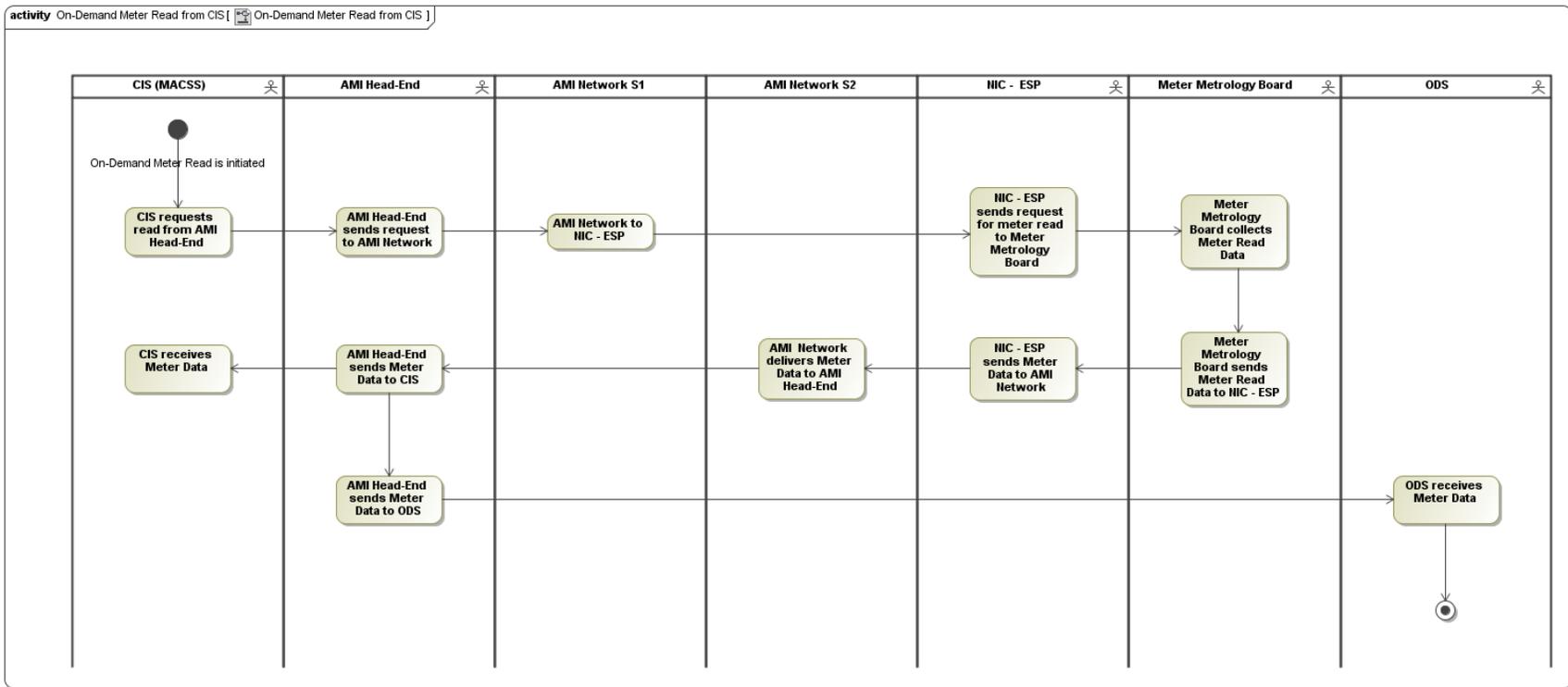
2.2 Architectural Issues in Interactions

Elaborate on all architectural issues in each of the steps outlined in each of the sequences above. Reference the Step by number.

2.3 Diagrams



On-Demand Meter Read from CIS Sequence Diagram



On-Demand Meter Read from CIS Activity Diagram

3 Auxiliary Issues

3.1 References and contacts

ID	Title or contact	Reference or contact information
[1]		

3.2 Action Item List

ID	Description	Status
[1]		

3.3 Revision History

No	Date	Author	Description
1.1	4-6-2010	Brian D. Green	Original Use Case
1.2	4-6-2010	Brian D. Green	Update steps
2.0	4-10-2010	John J. Simmins	Adding Brief Description, Narrative and fill in gaps.
2.1	4-10-2010	John J. Simmins	Minor Corrections
3.0	5-14-2010	Brian D. Green	Revisions and add diagrams