IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

GROUPCHATTER, LLC, Plaintiff, v. GENERAL ELECTRIC COMPANY, GE ENERGY MANAGEMENT SERVICES, INC., and GE GRID SOLUTIONS, LLC, and LANDIS+GYR TECHNOLOGIES, LLC and LANDIS+GYR TECHNOLOGY, INC., and ITRON, INC. Defendants.	CIVIL ACTION FILE NO. 1:16-cv-00486-WSD [LEAD CASE] NO. 1:16-cv-00711-TCB NO. 1:16-cv-01800-WSD

PLAINTIFF'S LPR 4.1 DISCLOSURE OF ASSERTED CLAIMS AND INFRINGEMENT CONTENTIONS AGAINST GENERAL ELECTRIC COMPANY, GE ENERGY MANAGEMENT SERVICES, INC. AND GE GRID SOLUTIONS, LLC

Plaintiff GroupChatter, LLC ("GroupChatter" or "Plaintiff") makes the following *LPR 4.1 Disclosure of Asserted Claims and Infringement Contentions* to General Electric Company, GE Energy Management Services, Inc. and GE Grid

Solutions, LLC (collectively "GE") pursuant to the Local Patent Rules and the Court's Order (Dkt. Nos. 57 & 58).

These infringement contentions are based upon publicly available information describing GE products, systems, and their use. GroupChatter reserves the right to amend its infringement contentions and asserted claims as the case progresses based upon information obtained through discovery and as permitted by the Local Rules. GroupChatter reserves the right to amend its infringement contentions as permitted by the Joint Preliminary Report and Discovery Plan and reserves the right to amend its infringement contentions responsive to claim construction proceedings and claim construction rulings by the Court in this case or in any related case.

LPR 4.1 (b) INFRINGEMENT CONTENTIONS.

(1) Each claim of each patent in suit that is allegedly infringed by each opposing party.

GE infringes, directly and indirectly, claims 1, 2, 3, 8, 10, 13, 14, 17, 18, 20, 21, 22, 29 & 30 of United States Patent No. 7,969,959 (the "'959 Patent") either literally or under the doctrine of equivalents.[1] Claims 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16, 20, and 21 of United States Patent No. 8,199,740 (the "'740 Patent")

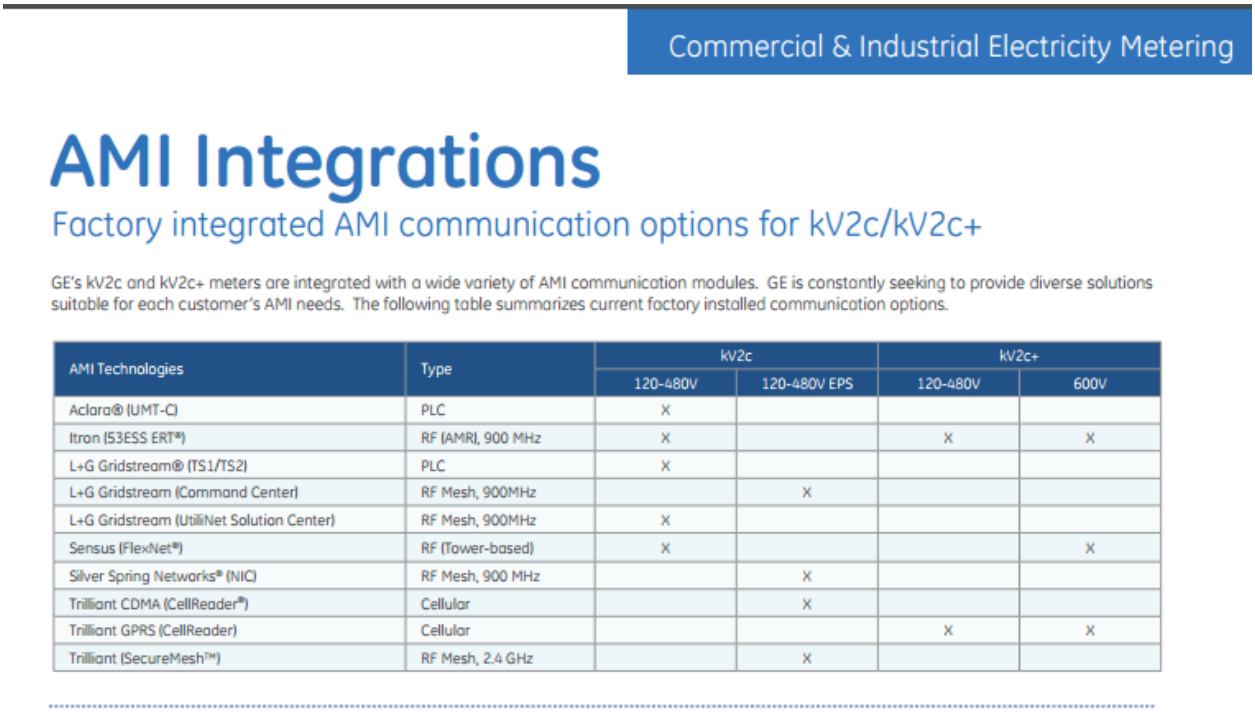
[1] Specific elements or steps that GroupChatter contends are met under the doctrine of equivalents are noted in the claim charts. GroupChatter contends that some elements or steps are met both literally and under the doctrine of equivalents.

either literally or under the doctrine of equivalents; claims 1, 2, 3, 4, 8, 10, 11, 12, 13, and 16 of United States Patent No. 9,014,659 (the "'659 Patent") either literally or under the doctrine of equivalents; and claims 1, 2, 3, 8, 9, and 11 of United States Patent No. 8,588,207 (the "'207 Patent") either literally or under the doctrine of equivalents.

(2) Separately for each asserted claim, each accused apparatus, method, composition or other instrumentality ("Accused Instrumentality") of each accused party of which the claiming party is aware. This identification shall be a specific as possible, with each apparatus identified by name or model number, if known, and each method identified by name if known;

The Accused Instrumentality for each asserted claim is GE's Smart Metering System that employ meter with two-way communication capability to collect and transmit meter data to support various applications and distribution automation. Generally, GE refers to these systems as Grid IQ. The Accused Instrumentalities include components, associated systems, and subsystems identified by name and functionality detailed in the accompanying infringement claim charts and any other GE messaging system having the same relevant functionality and components identified by Plaintiff in these infringement contentions. These include: Grid IQ AMI System consists of subsystems and components including RF Mesh components, Smart Metering Operations Suite, Grid IQ Connect, Grid IQ Network Communications Platform, access points, subscriber units, and endpoints ("Grid

IQ"). Accused Instrumentalities also include AMI integrations by GE and Itron, Inc. ("Itron") and/or Landis+Gyr Technologies, LLC and Landis+Gyr Technology, Inc. ("Landis+Gyr") such as the GE document below contemplates.



Commercial & Industrial Electricity Metering

AMI Integrations

Factory integrated AMI communication options for kV2c/kV2c+

GE's kV2c and kV2c+ meters are integrated with a wide variety of AMI communication modules. GE is constantly seeking to provide diverse solutions suitable for each customer's AMI needs. The following table summarizes current factory installed communication options.

AMI Technologies	Type	kV2c		kV2c+	
		120-480V	120-480V EPS	120-480V	600V
Aclara® (UMT-C)	PLC	X			
Itron (53ESS ERT®)	RF (AMR), 900 MHz	X		X	X
L+G Gridstream® (TS1/TS2)	PLC	X			
L+G Gridstream (Command Center)	RF Mesh, 900MHz		X		
L+G Gridstream (UtiliNet Solution Center)	RF Mesh, 900MHz	X			
Sensus (FlexNet®)	RF (Tower-based)	X			X
Silver Spring Networks® (NIC)	RF Mesh, 900 MHz		X		
Trilliant CDMA (CellReader®)	Cellular		X		
Trilliant GPRS (CellReader)	Cellular			X	X
Trilliant (SecureMesh™)	RF Mesh, 2.4 GHz		X		

Plaintiff has attempted to identify each accused component of the system as is ascertainable from publically available information. To the extent that components of the system are not explicitly named or referenced in publically available information, Plaintiff reserves the right to supplement its infringement contentions or otherwise identify these products and services as their names become known.

GE and third-party documents cited in GroupChatter's infringement claim chart and further identifying the Accused Instrumentalities are being produced with these disclosures.

GE performs the claimed methods when it provides (to various degrees depending upon the deployment) automated metering infrastructure (AMI) equipment and services to its customers. Services include but are not limited to project management, system design, training, software as a service, network installation, endpoint installation, field engineering (e.g., on-site field installation support and testing) integration services, system administration, daily operations support, database administration, WAN backhaul communications, configuration support, network design and site surveys, integration support, on-site commissioning, network monitoring, software license and upgrades, hosting, monitoring, technical support, and system audit services.

GE Grid IQ endpoints include, as examples, electric meters, water meters, gas meters, DA devices, and load control switches that are equipped with an AMI module. Meters include hardware/software/firmware combinations that measure the supply of electricity, gas, or water provided by a customer to the customer's consumer. Network devices include collectors, routers, and radios that are often physically deployed in a customer service territory. Routers include, as examples,

GE-furnished network devices that provide intermediate communication and data processing between endpoints and collectors. Routers can also communicate with other routers.

GE directs and controls the operation and use of the Accused Instrumentalities. Depending on the particular deployment, GE works closely with its customers and accordingly directly infringes, indirectly infringes (based on direct infringement by the customer or end user), and/or jointly infringes the asserted claims. GE licenses (and thereby retains ownership of) firmware and software to its customers. Customers are granted licenses to use the firmware and software in connection with use of equipment that is provided by GE (e.g., equipment used for the Grid IQ communication network). GE restricts customers, licensees, and end users from modifying the GE Grid IQ systems or using them except as authorized by GE.

GE and its customers work closely to design systems that perform according to the asserted claims and restricts licensees' use of the system per the terms of the license. In such situations, end users' performance of steps of the claimed methods are attributable to GE. Through service agreements and contractual terms governing their relationship, GE conditions end users' participation in and use of the GE AMI system, and the receipt of the benefit from use of the system and

claimed methods, upon the end users performing certain steps of the claimed methods. GE provides on-site commissioning, optimization, orientation (including training for customers to maintain and troubleshoot RF equipment) and configuration of collector equipment and other RF equipment. GE operates system backhaul, and network operations center, and system equipment that may not be located within the customer service territory. In many cases, a GE customer uses GE equipment, firmware, field tools, and software to monitor and manage the consumer's usage of GE customer offerings (e.g., gas, water, electricity).

GE provides hardware, firmware, software, and other items purchased or licensed from GE. Hardware includes for example, collectors and endpoints. Software and hardware include for example without limitation GE Grid IQ AMI systems, Grid Solutions, Grid IQ AMI P2MP Solution, GE's MDS wireless product portfolio, MDS PulseNET, GE Grid IQ Connect SaaS, Grid IQ Connect, GE Wireless AMI, Grid IQ Network Communications Platform, RF Mesh, Smart Grid Communications Solutions, Communications Infrastructure for Grid Applications, MDS Orbit Platform, SMOS Smart Metering Operations Suite, GE Digital Energy Grid IQ Solution, GE DRMS and related or analogous systems.

Equipment provided by GE for various deployments (and accordingly, the makeup of an Accused Instrumentality) depend upon various factors for each

deployment. System analysis and requirements, locations, deployment approach, customer needs, end-user consumer specifics (e.g., location), system optimization needs, and the like affect the number and type of network devices required for an AMI system to function properly. Endpoint installations are deployed so that communication routes are contiguous and endpoints are located within range of an appropriate network device to enable adequate communication. In some cases, customer requirements/requests dictate which specific equipment GE provides for a deployment. For example, a customer may provide WAN backhaul in some deployments but not others.

To the extent GE, Itron and/or Landis+Gyr provide network elements or operation services that perform all steps of the asserted method claims or all elements of asserted apparatus claims, such collaboration constitutes joint infringement of the asserted claim.

(3) A chart identifying specifically where each element of each asserted claim is found within each Accused Instrumentality, including for each element that such party contends is governed by 35 U.S.C. § 112(6), the identity of the structure(s), act(s), or material(s) in the Accused Instrumentality that performs the claimed function;

Infringement claim charts for each of the asserted patents are attached as Exhibits A through D.

(4) Whether each element of each asserted claim is claimed to be literally present or present under the doctrine of equivalents, or both in the Accused Instrumentality.

At this time, based upon publicly available information and without access to the GE Grid IQ protocol specifications, Plaintiff contends that each element of each asserted claim, as set forth in Exhibits A through D is literally present in the GE Grid IQ system. Plaintiff contends that certain elements or steps of claims identified in the claim charts (see, e.g., '959 Claim 1(f)) may alternatively be met under the doctrine of equivalents.

(5) For any patent that claims priority to an earlier application, the priority date to which each asserted claims allegedly is entitled.

GroupChatter contends the Asserted Claims are entitled to a date of invention between June and August 2004. The basis of Plaintiff's contention is the inventors' conception of the claimed subject matter in that period of time followed by diligent reduction to practice prior to constructive reduction to practice in December 16, 2004 when the inventors filed Provisional Application Ser. No. 60/363,094.

LPR 4.1 (c) DOCUMENT PRODUCTION ACCOMPANYING DISCLOSURE.

(1) Documents sufficient to evidence each instance of providing the claimed invention to a third party, by sale, offer to sell, or other manner of transfer, prior to the date of application for the patent in suit;

(2) All documents evidencing the conception, reduction to practice, design, and development of each claim invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant in the Disclosure, whichever is earlier;

(3) A copy of the file history for each patent in suit; and

(4) A copy of all non-U.S. patents claiming a common priority with any patent asserted in the case, together with a copy of all prior art cited in such non-U.S. patent proceedings.

The patents in suit and their corresponding file histories are being produced at GC000001-001169. After conducting a reasonable and diligent investigation, Plaintiff is not aware of any documents described in paragraph (1) and is producing documents described in paragraph (2). Plaintiff expects to produce non-privileged, confidential correspondence from the period prior to the inventors filing their provisional application in December 2004 showing and discussing their conception, reduction to practice, design, and development of the claimed inventions. Additional materials are available for inspection at GroupChatter's office at 1400 Preston Road, Suite 475, Plano, Texas 75093. Plaintiff is not aware of any non-U.S. patents claiming a common priority with any asserted patent.

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that all counsel of record are being served with a copy of this document via electronic mail this 20th day of July, 2016.

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EXHIBIT A

GroupChatter, LLC v. GE, Civil Action No. NO. 1:16-cv-00486-WSD
Plaintiff's LPR 4.1 INFRINGEMENT CONTENTION CLAIM CHART – U.S. PATENT NO. 7,969,959

GroupChatter presently asserts GE infringes claims 1, 2, 3, 8, 10, 13, 14, 17, 18, 20, 21, 22, 29, and 30 directly and indirectly. This chart sets forth Plaintiff's infringement contentions relating to the '959 Patent and GE Accused Instrumentalities. Identification of the Accused Instrumentalities is made here with as much specificity as possible with model names or numbers and methods provided if known. Specific configurations and deployed elements of the GE Accused Instrumentalities may differ, and the specifics of each deployment are not generally available to the public.

These contentions articulate the structure and acts that constitute direct infringement of the '959 patent and identify specifically where each element of each asserted claim is found within each Accused Instrumentality. This disclosure is not intended to describe all acts of inducement or contributory infringement GE has and continues to commit by providing, developing, installing, testing, deploying, and directing the use of GE Accused Instrumentalities by GE customers and end users. As discovery proceeds, these contentions and the specific Itron components identified here as meeting certain claim elements or performing certain claim steps may change in view of claim construction and additional information learned through discovery.

Claim 1 – GE Systems	
1 (a) A method of alerting a group of recipients over a wireless network, each recipient comprising a mobile device capable of transmitting and	GroupChatter contends the preamble is not limiting. In the event the preamble is found to impose a meaningful limitation on the scope of the claim, the GE Accused Instrumentalities as described in more detail below. GE provides hardware, firmware, software, and other items purchased are licensed from GE. Hardware includes for example, collectors, transmitters, and endpoints. Accused Instrumentalities include GE Grid IQ AMI systems, Grid Solutions, Grid IQ AMI P2MP Solution, GE's MDS wireless product portfolio, MDS PulseNET, GE Grid IQ Connect SaaS, Grid IQ Connect, GE Wireless AMI, Grid IQ Network Communications Platform, RF Mesh, Smart Grid Communications Solutions, Communications Infrastructure for Grid Applications, MDS Orbit Platform, SMOS Smart Metering Operations Suite, GE Digital Energy Grid IQ

receiving data, the method comprising the steps of:	Solution, GE DRMS and related or analogous systems (collectively referred to herein as Grid IQ, GE Grid IQ AMI, GE System(s) or similar terms). Accused Instrumentalities further include storage (e.g., servers, databases, etc.,), programs (e.g., applications, etc.), hardware (e.g., transmitters, repeaters, collectors, communication modules, endpoints) referred to herein (by way of example) that relate to the patent claims as outlined herein to provide customers with AMI products, services, and solutions. Accused Instrumentalities include GE Grid IQ AMI systems and related subsystems (e.g., Grid Solutions). To the extent the preamble is limiting, GE (and/or GE customers) performs the method, (including alerting groups of recipients) by making, using, selling, and operating Grid IQ AMI systems and analogous systems. Accused Instrumentalities include deployments operated or built with partners (e.g., Silver Spring Networks, Consert, etc.). Of course, each utility's smart grid needs will be different. In Norcross, GE is working with startup Consert (../articles/read/consert-claims-faster-more-complete-home-energy-network/), which will offer real-time home energy sensors and controls over a 3G cellular network, Carlson said. That's a big project for Consert, which won a GE Ecomagination investment (../articles/read/ge-announces-ecomagination-challenge-winners/) last year and is also backed by Qualcomm and Verizon (../articles/read/consert-claims-faster-more-complete-home-energy-network/). Exhibit 29. "Consert and 3G are part of our go-to-market strategy," Carlson said, though he made it clear GE would also support mesh networking and other common smart meter communications technologies. Still, it's a good plug for cellular smart grid, as well as an interesting example of one smart grid platform making use of an existing communications system, rather than building its own. GE hasn't picked a cellular provider for the project yet, Carlson said.

	Exhibit 29. *The Grid IQ AMI P2MP Solution has exceptional coverage and supports multiple applications on the same network. This single network features pervasive coverage for metering and distribution grid monitoring and sensing regardless of whether the devices are battery operated or powered. Each access point in the system supports thousands of connected devices providing unicast, downlink multicast and broadcast capabilities and supports group configuration and control. The ability to leverage a common network infrastructure for multiple applications provides immediate and significant ROI.* Exhibit 1. *Remote "Endpoint" devices, such as utility smart meters or fault indicators, communicate directly with the "Access Points" deployed either on towers or utility poles allowing for flexible low cost deployments. An Endpoint a is device containing a small RF module designed for easy integration and ultra-low power operation in Smart Meters or sensors. A network of Access Points can provide redundant coverage for a wide area, such as a city or a county and has industry leading range enabling ubiquitous coverage. The Access Point is designed for indoor or outdoor operation and can be easily deployed on buildings, utility poles or communication towers enabling low cost pervasive coverage in the most challenging environments.* Exhibit 1. *from wellhead monitoring to utility substation automation, our wireless*

devices are packaged for industrial environments and have been rated and tested to harsh industrial specifications. Our wireless networks carry serial and IP/Ethernet traffic, plus analog and digital I/O signals connected directly to field devices and sensors, accommodating an extensive array of industrial protocols.

Exhibit 16.

Grid Solutions, a General Electric and Alstom joint venture, is serving customers globally with over 20,000 employees in approximately 80 countries. Grid Solutions helps enable utilities and industry to effectively manage electricity from the point of generation to the point of consumption, helping to maximize the reliability, efficiency and resiliency of the grid.

Exhibit 16.

Exhibit 32.

Covering GE's MDS wireless product portfolio, from data acquisition to backhaul, MDS PulseNET is capable of creating, storing and software trending derived metrics using built-in program logic. MDS PulseNET software provides warning performance thresholds that can trigger exception events, which in turn can trigger specific actions, such as sending messages to trouble ticketing systems or other management systems.

Learn more about our MDS PulseNET solutions.

Exhibit 32.

Residential ANSI® Meters (http://www.aclara.com/products/smart-meters/ansi-smart-meter/residential-ansi-meters-2/)

I-210 Series

The I-210 Series of single phase electronic meters offers a wide range of functionality with a design that is a powerful combination of accuracy, reliability and value. Set apart by their industry leading quality, these meters come with various integrated communication technologies as well as a fully rated service switch.
Learn More. (http://www.aclara.com/products/smart-meters/ansi-smart-meter/residential-ansi-meters-2/)

Exhibit 9.

kV2c Series

The kV2c Series of commercial and industrial meters moves beyond revenue metering to real-time instrumentation, true power quality monitoring and real cost of service measurements. Applications range from simple energy rating to collecting load analysis information on a polyphase or single phase circuit, and our patented Fitzall™ feature allows for inventory reductions.
Learn More. (http://www.aclara.com/products/smart-meters/ansi-smart-meter/commercial-and-industrial-ansi-meters/)

Exhibit 9.

kV2C

Aclara Meters' most advanced electricity metering product, the kV2c, delivers world class capability around revenue metering and protection, power quality, and cost of service measurements. Designed around a proprietary data acquisition chip, this product delivers advanced sampling and data analytics capability.

Versatility
The kV2c meter family is a versatile metering platform for commercial and industrial applications. The kV2c meter offers easy and powerful functional upgrades with a unique combination of soft switches and option boards to meet your metering needs in a rapidly evolving smart metering space. The kV2c starts as a bi-directional, coincident demand meter with five demand measures, real-time pricing, and real time data monitoring. Soft switches, or firmware upgrades, are available to add such functions as TOU, transformer and line loss compensation, power factor, 4 quadrant measurements, instrument transformer correction, and increased recording channels.

Inventory Management
The kV2c wide range voltage power supply (120V to 480V) combined with the Fitzall™ feature enables a significant meter inventory reduction while covering many applications. Fitzall™ is a Aclara Meters exclusive tool for commercial and industrial electronic meter inventory reduction, which allows two meter forms, 9S for transformer rated and 16S for self-contained to meter any service type.

Exhibit 24.

kV2c Family

Aclara Meters' kV2c meter family is designed for revenue class metering in commercial and industrial applications. The kV2c meter moves beyond revenue metering to real time instrumentation, true power quality monitoring and real cost of service measurements. Whether you are metering the simplest energy rate or collecting critical quality of service and load analysis information on a polyphase or a single phase circuit, there is a kV2c meter configuration to meet your needs.

The Aclara Meters kV meter family, including our most advanced kV2c family of meters, is a widely accepted ANSI Commercial & Industrial meter with over 3.5 million units deployed in the field since its introduction. The robust revenue-grade meter design is based on cutting edge technology that provides the highest accuracy and reliability in the market. The Aclara Meters kV2c product family includes 2 models to provide the ultimate in flexibility and customer choice, including the first to offer a polyphase product for 600V 3-phase, 3-wire service.

The I-210 product family includes 2 models to provide the ultimate in flexibility and customer choice:

- kV2c
  This is Aclara Meters' flagship meter product offering all of the required revenue grade metering functionality and advanced power quality monitoring for polyphase metering. Learn More.
- kV2c+
  Ideal for extremely harsh environments, this model builds on our kV2c design and includes a more robust power supply and suitability for 600V applications. Learn More.

Exhibit 25.

kV2c*+ Meter Equipped with Trilliant Networks CellReader™ Communications Module

Exhibit 34.

The kV2c+ with CellReader Communications Module uses digital cellular technology to provide public radio frequency (RF) communications coupled with the best available and most cost effective wireless coverage in the US and Canada. It features both scheduled reads and on-demand reads via a wireless two-way communications network and has both packet data transmission capabilities (faster and more reliable than traditional transmission modes) as well as circuit-switched data communications (traditional dial-up modem). The CellReader module can operate on any public GSM network, such as those operated by Rogers Wireless, T-Mobile and AT&T Wireless.

Exhibit 34.

GE Energy's kV2c+ meter with integrated CellReader Communications Module from Trilliant Networks uses digital cellular technology to make all meter information available any time, anywhere. This solution is ideal for commercial and industrial meter applications that need an upgrade path from analog cellular and telephone line solutions to a digital cellular solution. This solution is also well suited for hard-to-read, load research, power quality applications, and demand response applications.

Exhibit 34.

GE Energy's I-210TM Singlephase Meter with integrated Itron® 52ESS ERT® is an electronic watthour meter designed for measuring and communicating energy consumption in singlephase services to Itron reading systems. By developing a single board that contains the metering and the ERT functionality, GE Energy continues its strong tradition of reliability and affordability.

Exhibit 35.

Exhibit 36.

GE Energy's I-210+ with integrated DCSI UMT-R (Universal Meter Transponder—Residential) provides remote two-way access to consumption and voltage data contained in the meter through the TWACS® fixed network power line communication system. This combined solution brings significant value to the marketplace.

Exhibit 36.

Exhibit 37.

GE Energy's I-210+ meter with integrated Silver Spring Networks (SSN) Network Interface Card (NIC) combines the accuracy and flexibility of our latest single-phase metering platform with the power and flexibility of SSN's two-way Smart Energy Network. This GE/SSN I-210+ meter brings significant value to the market- place for today and into the future.

Exhibit 37.

Exhibit 38.

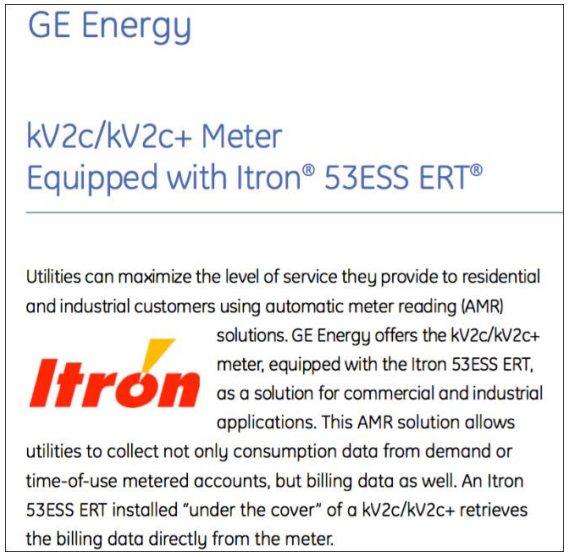


Exhibit 38.

kV2c* Meter Equipped with the Silver Spring Networks PowerPoint® Network Interface Module

Exhibit 39.

About the Silver Spring Networks' kV2c PowerPoint® Network Interface Module

- Full two-way, 900MHz, spread spectrum communications
- Powerful radio communications – Full one watt of output power
- Reads metrology data directly from meter register
- Serves as a signal relay for other network devices (such as water, gas, or other electric meters)
- Robust AMR capabilities – easy to program, large breadth of transmitted parameters, remote demand reset capabilities

Exhibit 39.

IEC Smart Meters

Residential Smart Meters

SGM3000 Series (http://www.aclara.com/products/ice-smart-meters/sgm-3000/)
The SGM3000 series of single phase and polyphase IEC Smart Energy Meters provides reliable and robust metering solutions for utilities and their customers for residential and commercial applications. Available in single phase and three phase models, the SGM3000 series offers advanced, comprehensive, and flexible technologies to cover applications ranging from basic, energy-only metering to smart metering with advanced communications and demand management. Learn More. (http://www.aclara.com/products/ice-smart-meters/sgm-3000/)

Exhibit 10.

SGM1300 Dual Element Smart Energy Meter (http://www.aclara.com/products/ice-smart-meters/sgm1300/)
Aclara Meters' SGM1300 is an advanced, modular, single phase and dual element smart meter suitable for both residential and small commercial environments. With advanced communications, the SGM1300 offers two way communications between the meter and the utility's nominated Head End System and includes support for a ZigBee Home Area Network enabling communications with devices such as gas meters and consumer In Home Displays for real time energy monitoring. Learn More. (http://www.aclara.com/products/ice-smart-meters/sgm1300/)

Exhibit 10.

SGM1100 Smart Energy Meter (http://www.aclara.com/products/ice-smart-meters/test/)
SGM1100 Series are single phase smart energy meters compliant with IEC regulatory standards. Delivering high quality, functionality, and application flexibility, this series also provides PLC AMI communications based on PoweRline Intelligent Metering Evolution (PRIME) standard and DLMS/COSEM protocols. Learn More. (http://www.aclara.com/products/ice-smart-meters/test/)

Exhibit 10.

Commercial Smart Meters

SGM3000 Series (http://www.aclara.com/products/ice-smart-meters/sgm3000/)
The SGM3000 series of commercial and industrial meters moves beyond revenue metering to real-time instrumentation, true power quality monitoring and real cost of service measurements. From simple energy rating to quality of service and load analysis, the SGM3000 series can be configured to meet all your high precision smart metering needs. Learn More. (http://www.aclara.com/products/ice-smart-meters/sgm3000/)

Exhibit 10.

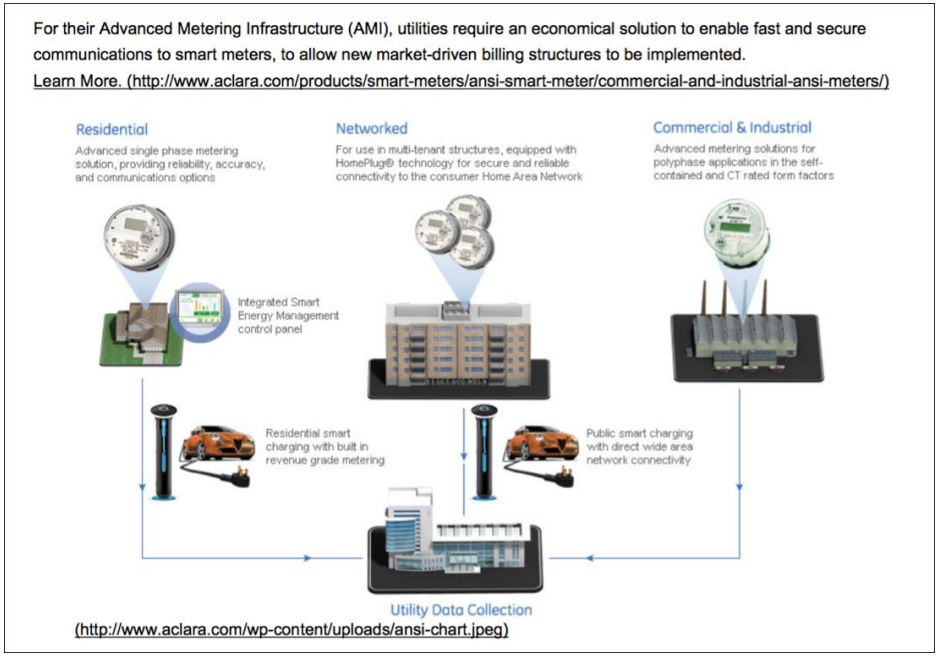


Exhibit 9.

SMOS (Smart Metering Operations Suite) provides visibility to data retrieved from network management services, a network of Access Points and devices. SMOS also provides the back-office integration functions that deliver data from across the network to core operational systems, such as Outage Management Systems and other applications. SMOS supports various industry standard interfaces and protocols.

Exhibit 1.

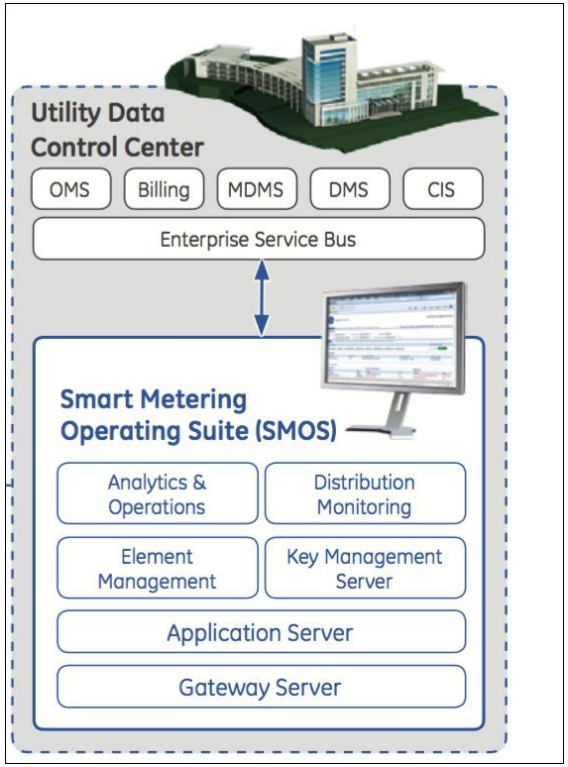


Exhibit 1.

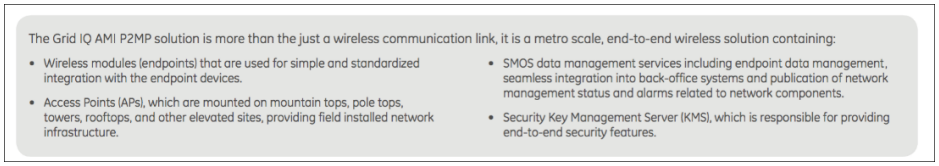
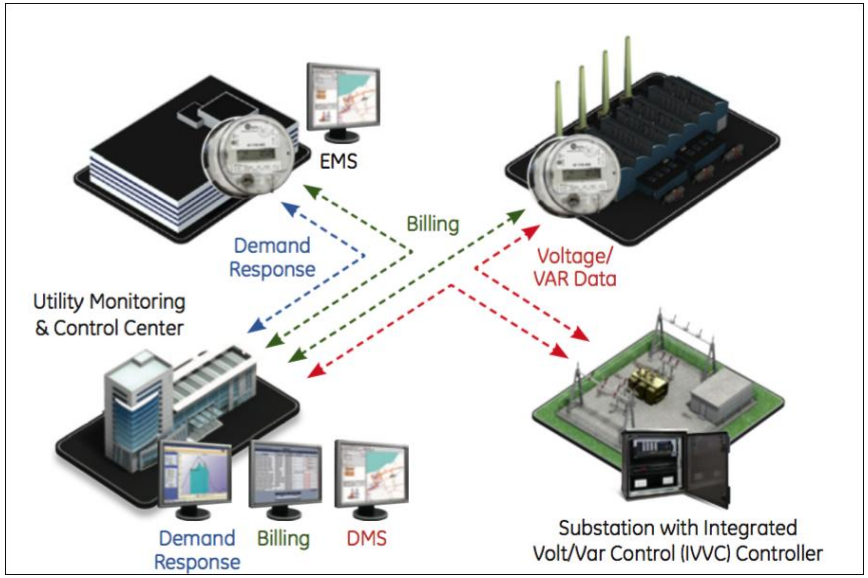


Exhibit 1.


EMS
Billing
Demand Response
Voltage/ VAR Data
Utility Monitoring & Control Center
Demand Response
Billing
DMS
Substation with Integrated Volt/Var Control (IVVC) Controller

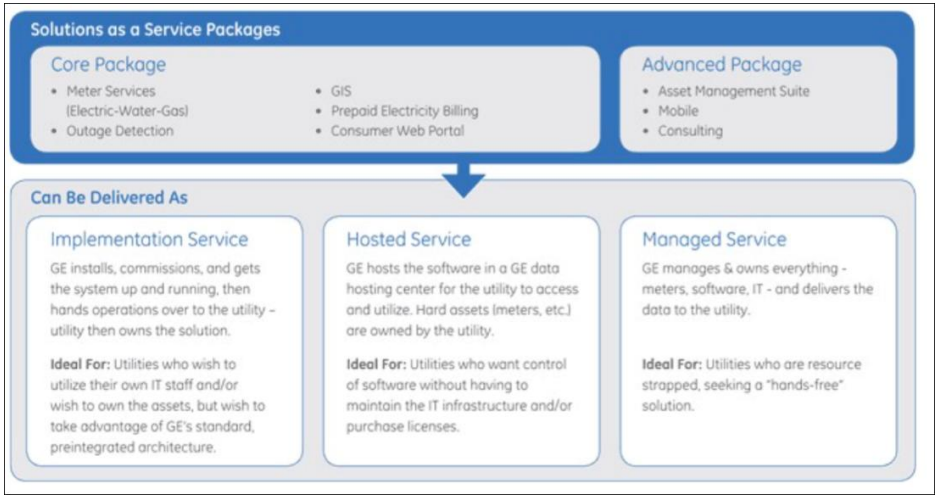

Solutions as a Service Packages
Core Package
Meter Services (Electric-Water-Gas)
Outage Detection
GIS
Prepaid Electricity Billing
Consumer Web Portal
Advanced Package
Asset Management Suite
Mobile
Consulting
Can Be Delivered As
Implementation Service
GE installs, commissions, and gets the system up and running, then hands operations over to the utility – utility then owns the solution.
Ideal For: Utilities who wish to utilize their own IT staff and/or wish to own the assets, but wish to take advantage of GE's standard, preintegrated architecture.
Hosted Service
GE hosts the software in a GE data hosting center for the utility to access and utilize. Hard assets (meters, etc.) are owned by the utility.
Ideal For: Utilities who want control of software without having to maintain the IT infrastructure and/or purchase licenses.
Managed Service
GE manages & owns everything - meters, software, IT - and delivers the data to the utility.
Ideal For: Utilities who are resource strapped, seeking a "hands-free" solution.

Exhibit 2.

GE's Grid IQ™ Connect SaaS Awarded Best Smart Grid Solution by Municipal Utility Customers

- *GE's Solution as a Service Offering Helps Modernize Utilities' Electrical Grids*
- *Grid IQ SaaS included in GE's Portfolio of Advanced Industrial Internet Solutions*

Exhibit 4.

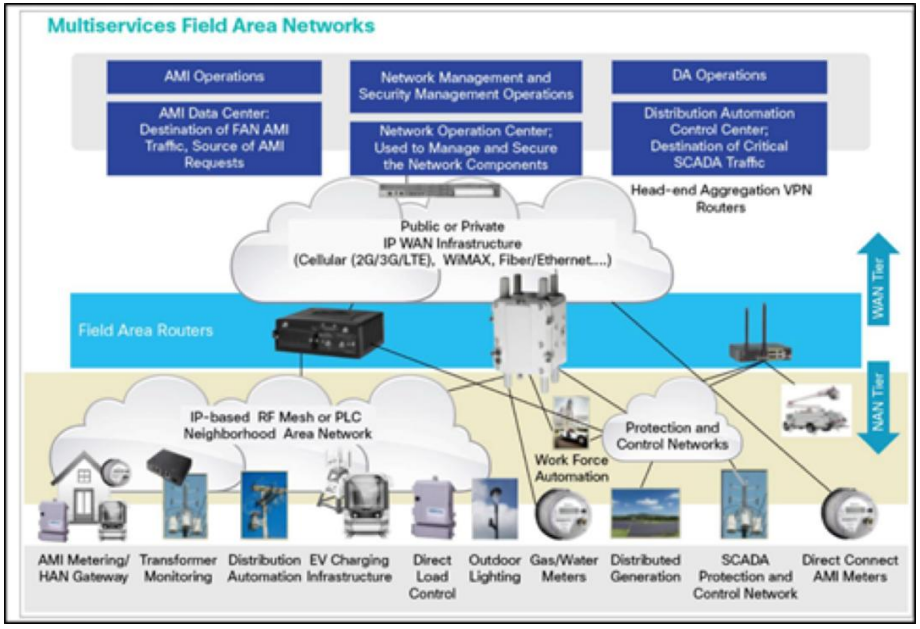


Exhibit 64.

	Grid IQ Connect is a services-based program offered by GE's Solution as a Service business. It offers customers incredible value from accelerated benefits due to the speed at which the system is deployed, technology risk mitigation and by providing smaller utilities access to technology otherwise not affordable in traditional project delivery models. The offering consists of five primary services to enhance the effectiveness of advanced meter infrastructure systems and other aspects of grid operations. These services include meter data services, pre-payment services, outage detection and notification services, asset monitoring services and consumer portal services. Exhibit 4. *GE's SaaS offerings are available via three levels of delivery modes—total managed services, software as a service and deployment at the customer site. Additionally, its advanced application solutions provide municipal utilities with comprehensive outage management (Grid IQ Restore) and demand response capabilities (Grid IQ Respond). Currently, Grid IQ Connect is being utilized by Electric Cities of Georgia, the city of Norcross, Ga., and the city of Leesburg, Fla.* Exhibit 4. *"Here's General Electric's smart grid-as-a-service pitch. The city utility of Norcross, Ga. wants a smart grid, but doesn't have the money to buy one for itself. GE's Grid IQ Solutions as a Service will build it for a monthly fee, and then run it all from a giant cloud computing platform in Atlanta."*

	Exhibit 29. *"General Electric has been slow to announce new customers for the smart-grid-as-a-service offering it launched in late 2011. But that doesn't mean it's not filling up its dance card with small municipal and rural cooperative utilities interested in a subscription-based smart grid -- or that the market for this kind of novel deployment may not be nearing an inflection point.* Exhibit 30. *"In the past three months, GE has named the municipal utilities of Holly Spring, Miss. and Skiatook, Okla. as customers, adding their names to those of flagship customers Norcross, Ga. and Leesburg, Fla. Three or four more customers are using the service, another three or four signed up in the fourth quarter of 2013, and an additional three are expected to sign up in the near future,"* Exhibit 30. *"Grid IQ Connect is a services-based program offered by GE's Solution as a Service (SaaS) business. It offers customers incredible value from accelerated benefits due to the speed at which the system is deployed, technology risk mitigation and by providing smaller utilities access to technology otherwise not affordable in traditional project delivery models. The offering consists of five primary services to enhance the effectiveness of advanced meter infrastructure systems and other aspects of grid operations.*

	These services include meter data services, pre-payment services, outage detection and notification services, asset monitoring services and consumer portal services." Exhibit 31. *GE's SaaS offerings are available via three levels of delivery modes-total managed services, software as a service and deployment at the customer site. Additionally, its advanced application solutions provide municipal utilities with comprehensive outage management (Grid IQ Restore) and demand response capabilities (Grid IQ Respond). Currently, Grid IQ Connect is being utilized by Electric Cities of Georgia, the city of Norcross, Ga., and the city of Leesburg, Fla.* Exhibit 31. *"Advancements in digital technology have led to an increased demand on electrical grids worldwide," said Craig Mims, utilities director for the city of Norcross. "Implementing GE's Grid IQ Connect technology has helped modernize our grid and provide our customers with more efficient and reliable electricity."* Exhibit 31. *Advanced grid management technologies, such as Grid IQ Respond and Grid IQ Restore, enable municipal utilities to deploy smart grid technology faster, allowing customers to realize all of the benefits associated with implementing these advanced systems in a much shorter time span. Not only*

does Grid IQ Connect reduce technology risks and software costs to municipal utilities by using a SaaS-hosted model, it also provides a choice of capital expenditure and operational expense pricing options to fit the individual needs of each customer.

Exhibit 31.

In addition, Grid IQ Connect provides utilities with a means to improve operations and customer services while also improving customer engagement and account management. The technology helps reduce the duration of system outages and lower municipal utility operating costs.

Exhibit 31.

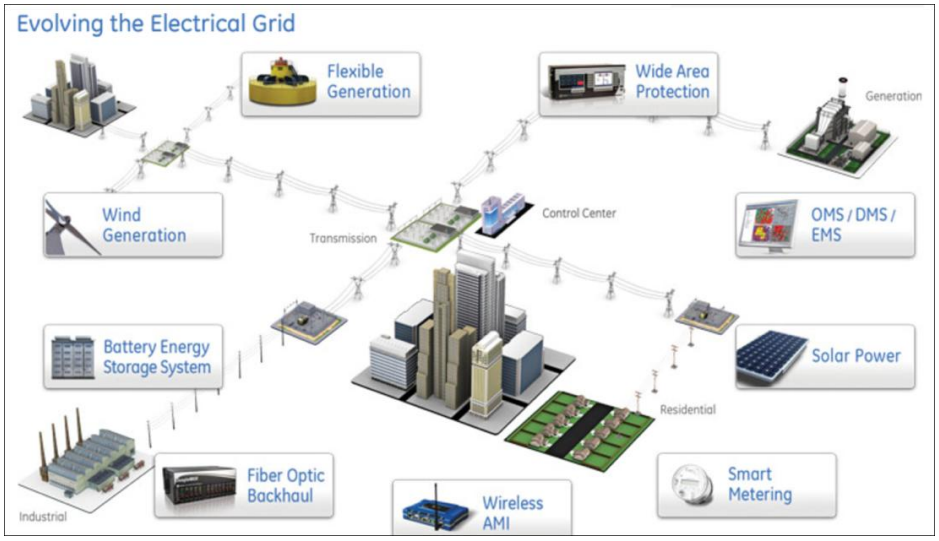


Exhibit 26.

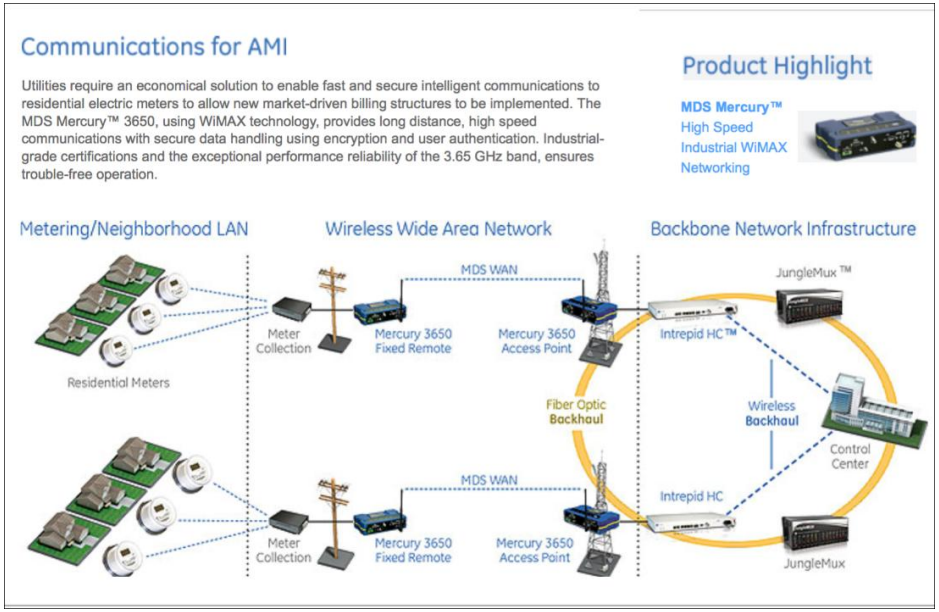

Communications for AMI
Utilities require an economical solution to enable fast and secure intelligent communications to residential electric meters to allow new market-driven billing structures to be implemented. The MDS Mercury™ 3650, using WiMAX technology, provides long distance, high speed communications with secure data handling using encryption and user authentication. Industrial-grade certifications and the exceptional performance reliability of the 3.65 GHz band, ensures trouble-free operation.
Product Highlight
MDS Mercury™
High Speed
Industrial WiMAX
Networking
Metering/Neighborhood LAN
Wireless Wide Area Network
Backbone Network Infrastructure
MDS WAN
JungleMux ™
Meter Collection
Mercury 3650 Fixed Remote
Mercury 3650 Access Point
Intrepid HC™
Residential Meters
Fiber Optic Backhaul
Wireless Backhaul
Control Center
MDS WAN
Intrepid HC
Meter Collection
Mercury 3650 Fixed Remote
Mercury 3650 Access Point
JungleMux

Exhibit 27.

Exhibit 28.

Grid IQ AMI systems include or access one or more wireless networks.
GE communicates with (e.g., alerts) endpoints using various technologies including but not limited to: RF Mesh, Cellular, Power Line Carrier, RS-232, RS-485, and Analog Phone Modems. (See e.g., Exhibit 25). To the extent these and analogous technologies include wireless components (e.g., routers, transmitters, receivers, transceivers, repeaters), they are part of an accused wireless network.

Exhibit 14

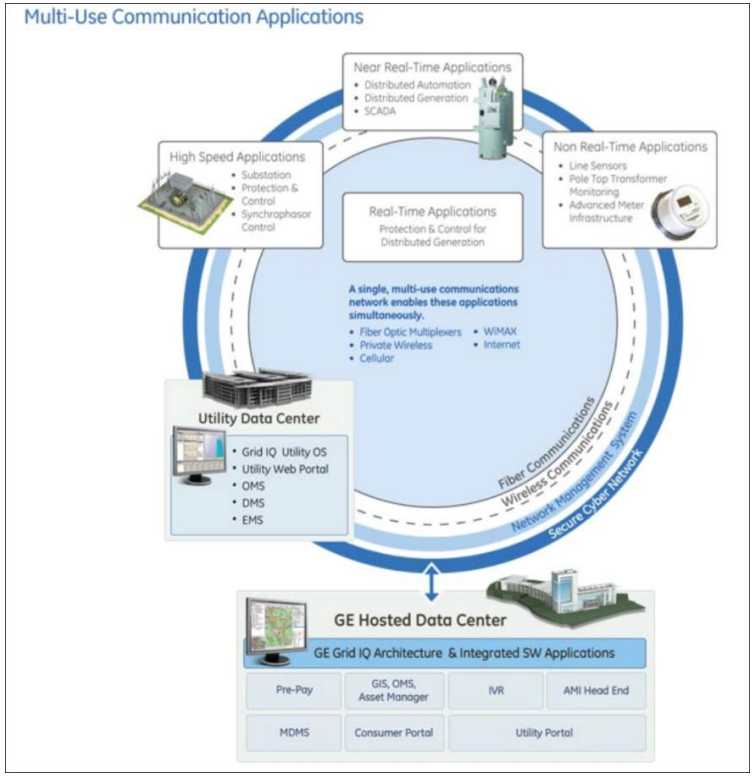
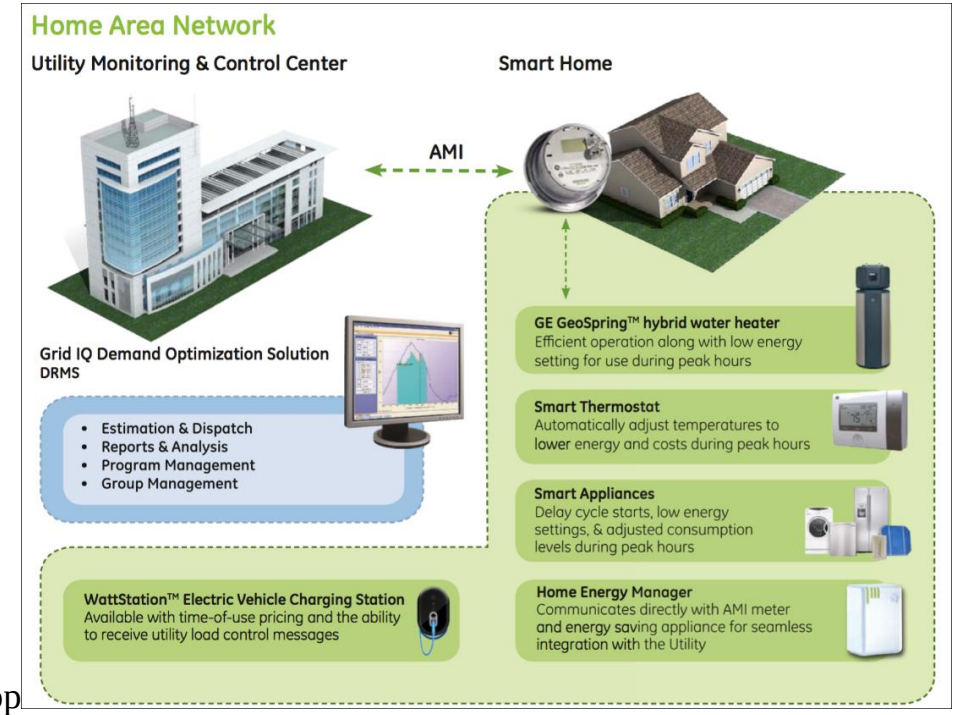

Multi-Use Communication Applications
Near Real-Time Applications
• Distributed Automation
• Distributed Generation
• SCADA
High Speed Applications
• Substation
• Protection & Control
• Synchrophasor Control
Non Real-Time Applications
• Line Sensors
• Pole Top Transformer Monitoring
• Advanced Meter Infrastructure
Real-Time Applications
Protection & Control for Distributed Generation
A single, multi-use communications network enables these applications simultaneously.
• Fiber Optic Multiplexers
• Private Wireless
• Cellular
• WiMAX
• Internet
Utility Data Center
• Grid IQ Utility OS
• Utility Web Portal
• OMS
• DMS
• EMS
Fiber Communications
Wireless Communications
Network Management System
Secure Cyber Network
GE Hosted Data Center
GE Grid IQ Architecture & Integrated SW Applications
Pre-Pay
GIS, OMS, Asset Manager
IVR
AMI Head End
MDMS
Consumer Portal
Utility Portal

Exhibit 5.



op

Exhibit 12.

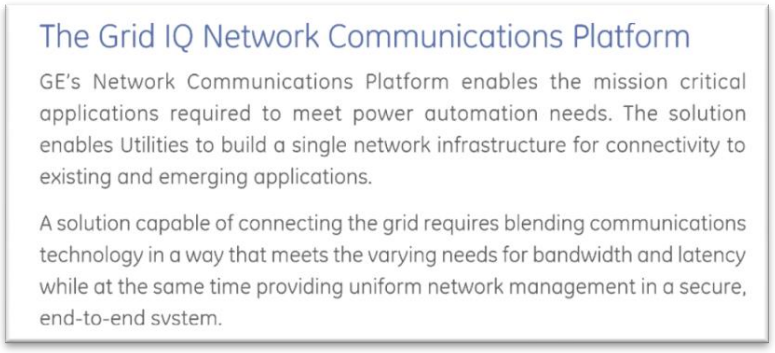


Exhibit 14

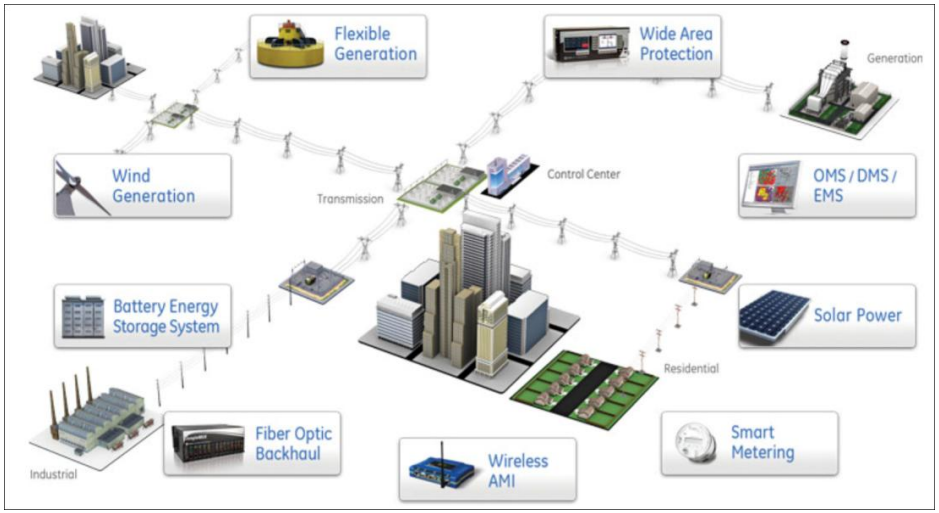


Exhibit 26.

Whether deployed in large metropolitan areas, sparse rural areas or in between, the Grid IQ AMI P2MP Solution provides Utilities with thousands of square miles of robust, reliable wireless coverage, with minimal network infrastructure. In addition, the solution has the ability to service multiple applications including Smart Metering, Distribution Monitoring, battery-powered applications requiring long life, as well as below ground and in-building assets.

Exhibit 1.

RF Mesh offers a cost performance that is best deployed in dense suburban environments. As urban densities increase and suburban densities decrease, the total cost per meter increases drastically for an RF Mesh enabled meter. This is because the network requires the addition of multiple routers and collectors to relay signals through the neighborhood area network as densities decrease.

Exhibit 1.

The Grid IQ AMI P2MP Solution is a Point-to-Multipoint or RF "Star" architecture with numerous coverage and throughput benefits ideal for the RF propagation environments from rural to urban. Further, the Network is more than an AMI solution. It is built to support various Grid Modernization applications beyond Smart Metering.

Exhibit 1.

The Grid IQ AMI P2MP solution is more than the just a wireless communication link, it is a metro scale, end-to-end wireless solution containing:

- Wireless modules (endpoints) that are used for simple and standardized integration with the endpoint devices.
- Access Points (APs), which are mounted on mountain tops, pole tops, towers, rooftops, and other elevated sites, providing field installed network infrastructure.
- SMOS data management services including endpoint data management, seamless integration into back-office systems and publication of network management status and alarms related to network components.
- Security Key Management Server (KMS), which is responsible for providing end-to-end security features.

Exhibit 1.

The Grid IQ Network Communications Platform

GE's Network Communications Platform enables the mission critical applications required to meet power automation needs. The solution enables Utilities to build a single network infrastructure for connectivity to existing and emerging applications.

A solution capable of connecting the grid requires blending communications technology in a way that meets the varying needs for bandwidth and latency while at the same time providing uniform network management in a secure, end-to-end system.

Exhibit 5.

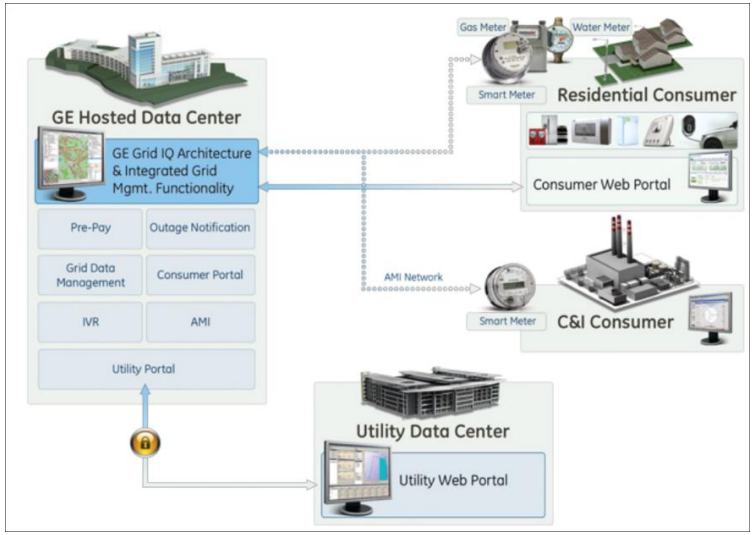


Exhibit 2.

- AMR/AMI Plug and Play designed to accommodate: RF, PLC, Cellular (GPRS/CDMA), Ethernet (See attached table for currently offered factory integrated solutions)
- Complete range of S-base and A-base forms
- 4-quadrant industrial or substation measures
- Powerful functional upgrades provide 4-channel 64 kb, 20-channel 192 kB, or 20-channel 384 kB recording for voltage, current, energy, apparent power, reactive power, distortion power, power factor, THD, TDD, DPF.
- Per phase AC instrumentation (amps, volts, and frequency)

Exhibit 63.

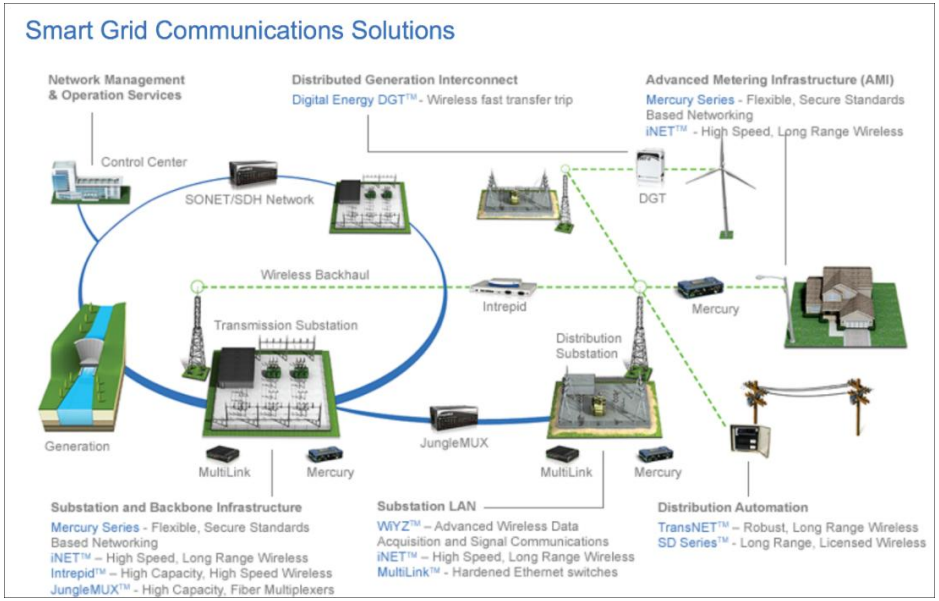


Exhibit 6.

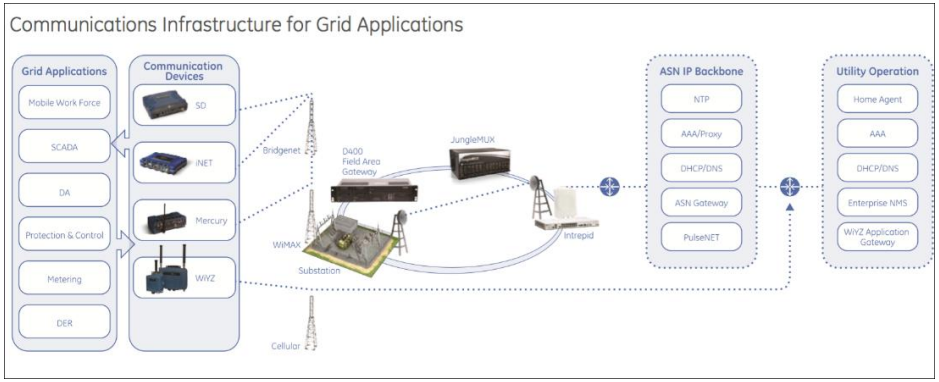


Exhibit 13.

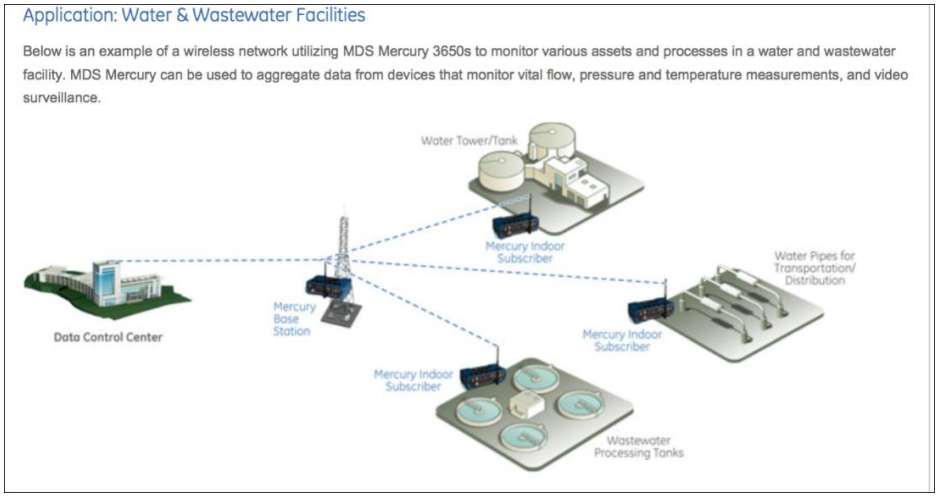


Exhibit 21.

Aclara Meters' most advanced residential electricity metering product line, the I- 210+c, delivers smart grid capability for today and the future. This residential meter was derived from our commercial and industrial product

line, taking our advanced metrology capability learned over 10 years of solid state metering design. This meter contains the advanced polyphase functionality that Aclara Meters has been known for.

Exhibit 23.

AMI TECHNOLOGIES	TYPE	I-210+	I-210+c
Aclara UMT-R	PLC	X	
Ingenu RPMA	RF P2MP	X	X
Itron 54ESS ERT, 55ESS ERT, 56ESS ERT	1-way RF AMR	X	
Itron 57ESS ERT	1-way RF AMR		X
Itron Cellular EVDO & HSPA	Cellular Network		X
Sensus FlexNet	RF P2MP		X
Silver Springs Networks NIC 310	RF Mesh	X	
Silver Springs Networks NIC 410	RF Mesh		X
Silver Springs Networks MicroAP	Cellular & RF Mesh		X
Trilliant SecureMesh	RF Mesh	X	X

Exhibit 23.

Below is an example of a Smart Grid Advanced Metering Infrastructure (AMI) private wireless network utilizing MDS Mercury 3650s.

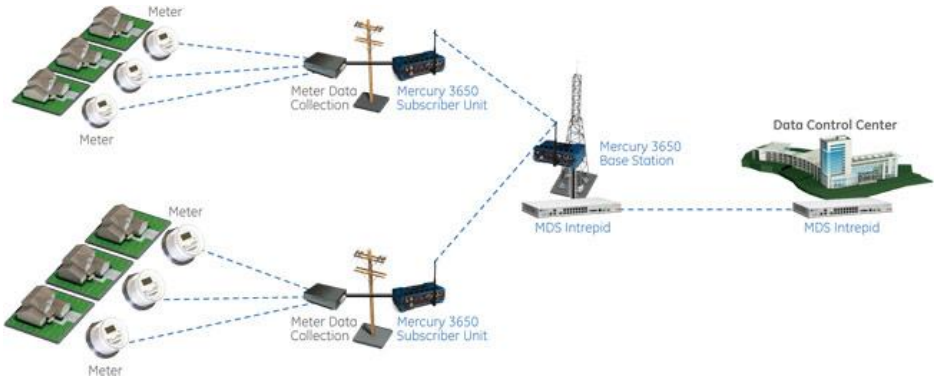


Exhibit 21

Outdoor Subscriber Unit - ODU

The MDS Mercury radios are equipped with an embedded spectrum analyzer to assist in deployment and troubleshooting.

- 2 x 23 dBm
- 1 Ethernet port, 1 serial port, 1 USB host
- Optional built-in WiFi
- Integrated antenna
- Power over Ethernet (PoE)
- 10-60 VDC option
- MIMO matrix A/B
- -40° C to +70° C
- IEEE 1613 compliant
- General Safety by CSA / UL 60950

Exhibit 22.

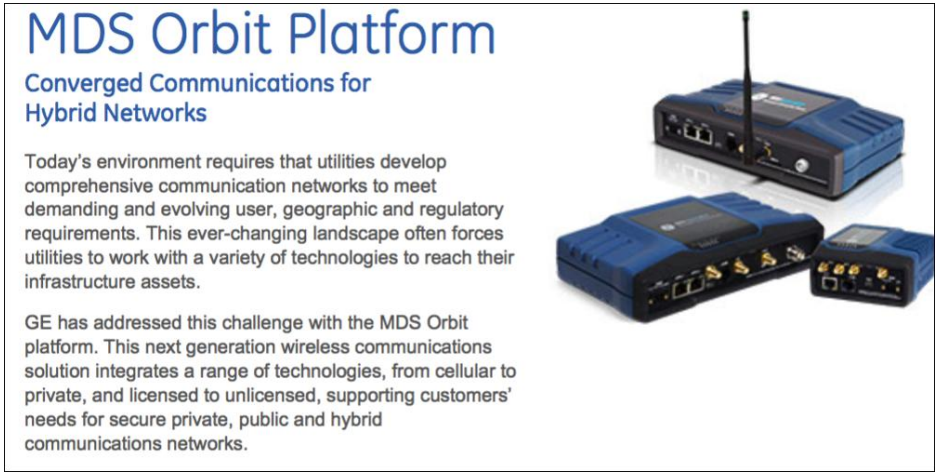
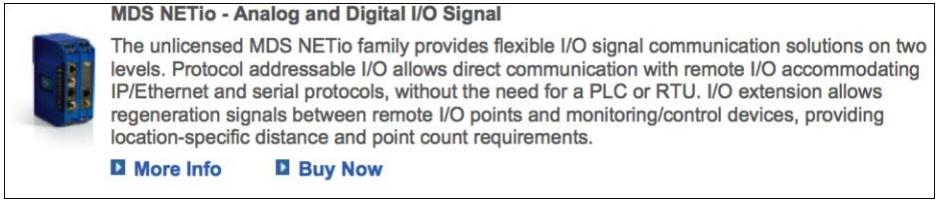


Exhibit 17.

Exhibit 17.



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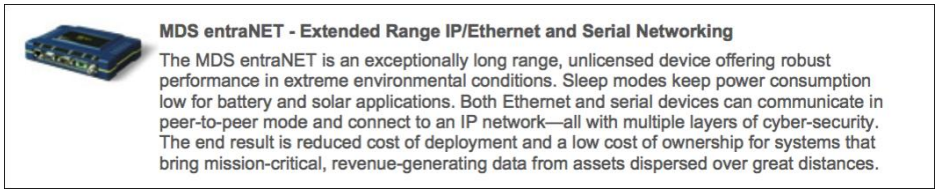


Exhibit 18.

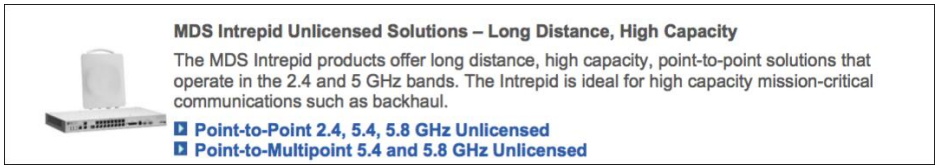


Exhibit 18.

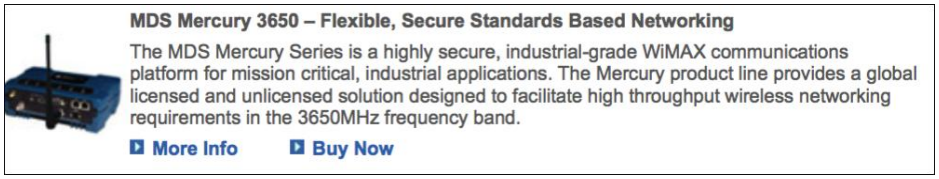


Exhibit 18.

Exhibit 18.

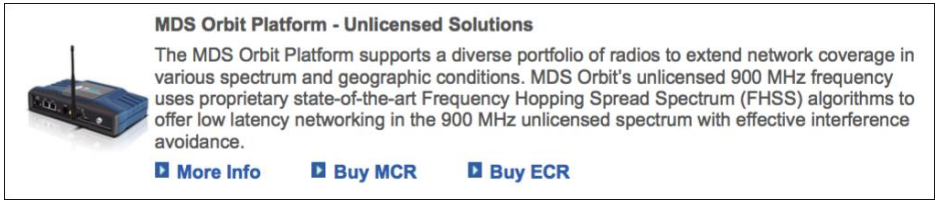


Exhibit 18.

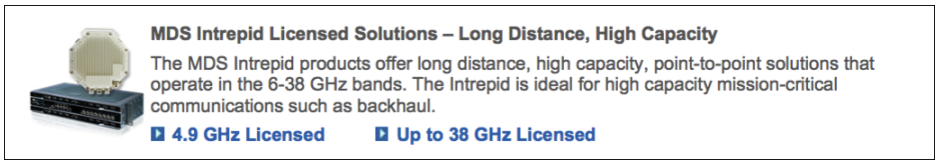


Exhibit 19.

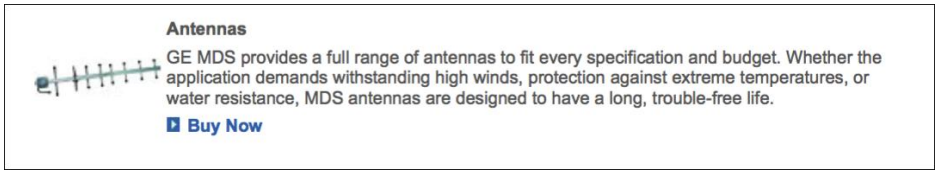


Exhibit 20.

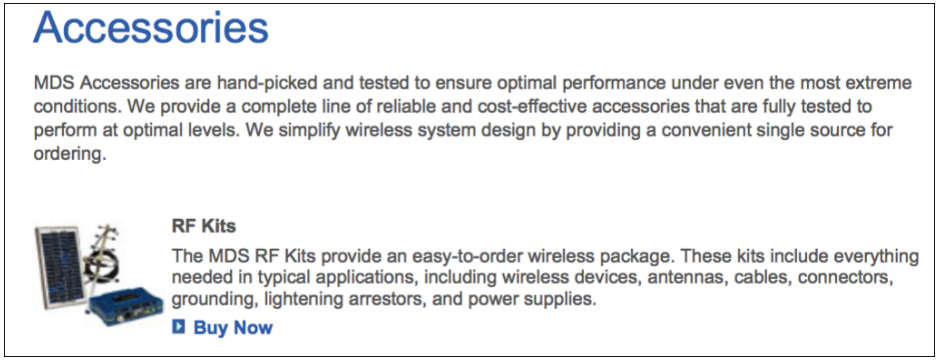


Exhibit 20.

Exhibit 19.

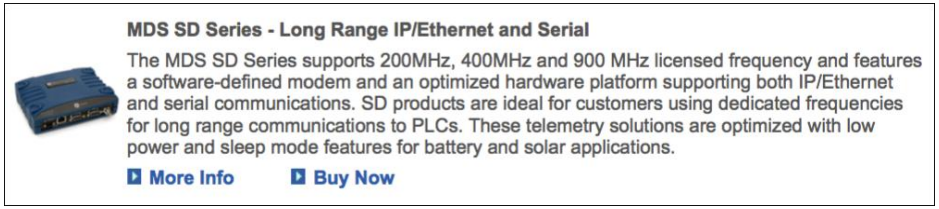


Exhibit 19.

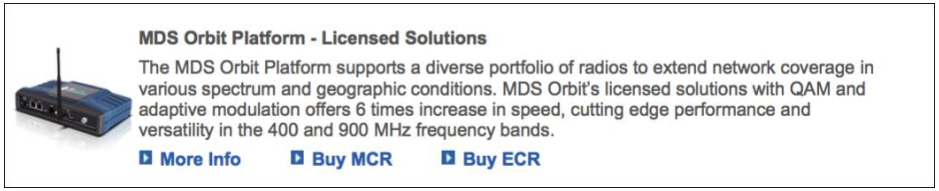


Exhibit 19.

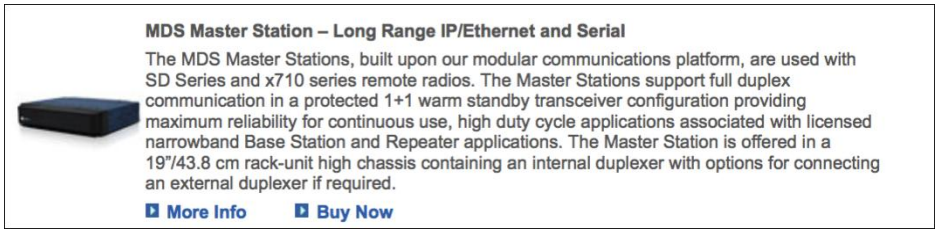
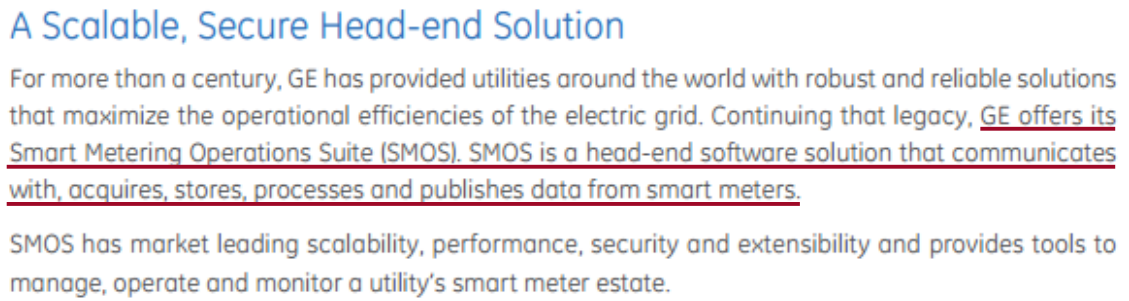


Exhibit 19.



GE Digital Energy, *SMOS Smart Metering Operations Suite*, GEA-12699C(E) (2014) *available at*: https://www.gedigitalenergy.com/products/brochures/SmartMetering/SmartMeterOperationsSuite.pdf

	• Supports a broad range of communication technologies including 2G (GPRS), 3G, 4G, wireless PTMP (2.4 GHz). • Supports GE Meters: - IEC Smart Electric Meters (SGM3000™, SGM1300™ and SGM1000™ platforms) - IEC Smart Gas Meter G4 ZV - ANSI Smart Electric Meters (I-210 and KV2c platforms) GE Digital Energy, *SMOS Smart Metering Operations Suite*, GEA-12699C(E) (2014) *available at*: https://www.gedigitalenergy.com/products/brochures/SmartMetering/SmartMeterOperationsSuite.pdf
	Each of the endpoint recipients in the group of Grid IQ endpoint recipients alerted in the claimed method comprise a mobile device capable of transmitting and receiving data. In the Grid IQ Smart Metering System Accused Instrumentalities, endpoint recipients are two-way nodes on the network (e.g., the smart grid nodes that include ERTs or MIUs, DA devices, etc.). Mobile modules transmit and receive data. Alerting groups of recipients includes communication related to on-demand readings, remote disconnects/reconnects, demand-response, load shedding, and OTA updates. **Software, hardware, interfaces, and systems**

used for alerting groups of recipients are Accused Instrumentalities.

Meters used in Grid IQ systems and the components (software, hardware, etc.) used to program the meters and enable the meters for two-way wireless communication are Accused Instrumentalities. Exemplary meters are listed below by model number to the extent known.

I-210+ equipped with SSN's NIC - GE Energy's I-210+ meter with integrated Silver Spring Networks (SSN) Network Interface Card (NIC) combines the accuracy and flexibility of our latest single-phase metering platform with the power and flexibility of SSN's two-way Smart Energy Network.
Fact Sheet

Exhibit 44.

I-210+ equipped with UMT-R - GE Energy's I-210+ with integrated DCSI UMT-R (Universal Meter Transponder-Residential) provides remote two-way access to consumption and voltage data contained in the meter through the TWACS® fixed network power line communication system.
Fact Sheet

Exhibit 44.

I-210 equipped with DCSI's EMT-3G - under the meter cover as a personality module to the I-210 meter and monitors power consumption using a pulse-initiator output signal from the I-210. Customers who have TWACS(R) two-way power line communications system can now take advantage of the new I-210 without having to invest in additional communication infrastructure.
Fact Sheet

Exhibit 44.

I-210 equipped with Hunt TS1 - The I-210 TS1 Endpoint Transmitter is designed to provide internal AMR capability to GE Energy's I-210 singlephase electronic residential meter. It is installed under the cover and monitors power consumption using the energy pulse signal from the I-210 meter. With this solution, customers who have Hunt Technologies' TS1 power line communications system can now take advantage of the I-210.
Fact Sheet

Exhibit 44.

I-210

I-210 equipped with Itron 52ESS ERT - This product features the I-210 meter integrated with the Itron 52ESs ERT module. It is designed for measuring and communicating energy consumption in singlephase services to Itron reading systems.
Fact Sheet

Exhibit 44.

kV2c+ equipped with Trilliant Networks CellReader-GSM - GE Energy's kV2c+ meter with an integrated CellReader Communications Module from Trilliant Networks uses digital cellular technology to make all meter information available anytime, anywhere. The CellReader module can operate on any public GSM network, such as those operated by Rogers Wireless, T-Mobile and AT&T Wireless.
Fact Sheet

Exhibit 44.

kV2c+ equipped with Trilliant Networks CellReader-CDMA - GE Energy's kV2c+ meter with an integrated CellReader Communications Module from Trilliant Networks uses digital cellular technology to make all meter information available anytime, anywhere. The CellReader module can operate on any public CDMA network, such as Verizon Wireless, Bell Mobility, Telus Mobility, and Sprint PCS.
Fact Sheet

Exhibit 44.

kV2c equipped with SSN PowerPoint - This solution combines the power and flexibility of the kV2c meter with the 2-way wireless networking AMR capability offered by Silver Spring Networks. This is an under-the-cover solution where all metrology calculations are performed by the kV2c meter.
Fact Sheet

Exhibit 44.

kV2c equipped with UtiliNet - GE Energy's kV2c with integrated Cellnet UtiliNet® endpoint combines the accuracy and robustness of our electronic polyphase meter with the power and flexibility of Cellnet's UtiliNet two-way network.
Fact Sheet

Exhibit 44.

kV2c/kV2c+ equipped with Itron 53ESS ERT - This product was specifically designed to add internal Itron ERT functionality to the kV2c and kV2c+ meters. The 53ESS ERT reads the resulting parameters directly from the internal meter register and transmits this data back to the Itron meter reading software via three Standard Consumption Messages.
Fact Sheet

Exhibit 44.

kV2c equipped with Hunt TS2 - With this product, customers who have Hunt Technologies' TS2 bi-directional power line carrier (PLC) system can take advantage of the flexibility that the kV2c meter offers, without having to invest in additional communication infrastructure. This is an under-the-cover, direct register read solution.
Fact Sheet

Exhibit 44.

kV2c equipped with Hunt TS1 DRR Endpoint Transmitter - This solution is designed to provide internal, under-the-cover AMR capability to GE's family of polyphase commercial and industrial meters. Customers that have Hunt Technologies' TS1 power line carrier (PLC) AMR system can take advantage of the flexibility that the kV2c meter offers, without having to invest in additional communication infrastructure. A self-contained 480V solution is also available.
Fact Sheet

Exhibit 44.

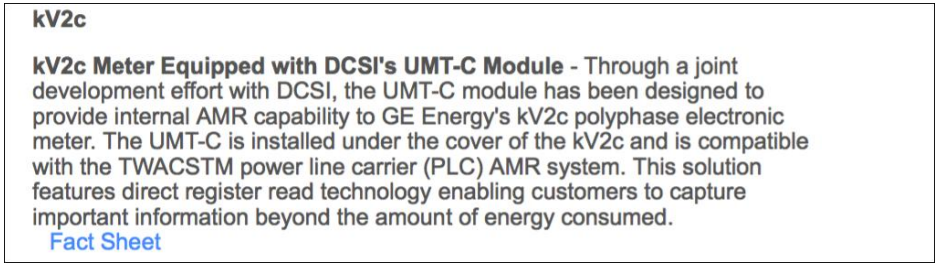


Exhibit 44.

GE communication modules comprise mobile transceivers and are Accused Instrumentalities:

GE Smart Metering System endpoints (including smart meters, DA nodes, and home gateway devices) comprise a mobile device capable of transmitting and receiving data.

GE's I-210 or SGM3000 Meter and Meter Communications Module

The Electric MCM is integrated with both the I-210 ANSI and SGM3000 IEC Family of meters and provides:

- Up to fifteen minute intervals and daily register reads provided every fifteen minutes over the network, including precise event correlation across reads.
- Two-way meter communication to support on demand functionality, meter configuration, and remote meter disconnect.
- Last gasp meter reporting for power outage.
- Over the air updates of endpoint firmware.

Exhibit 8

Remote "Endpoint" devices, such as utility smart meters or fault indicators, communicate directly with the "Access Points" deployed either on towers or utility poles allowing for flexible low cost deployments. An Endpoint a is device containing a small RF module designed for easy integration and ultra-low power operation in Smart Meters or sensors. A network of Access Points can provide redundant coverage for a wide area, such as a city or a county and has industry leading range enabling ubiquitous coverage. The Access Point is designed for indoor or outdoor operation and can be easily deployed on buildings, utility poles or communication towers enabling low cost pervasive coverage in the most challenging environments.

Exhibit 1

Network Communication Devices

GE's industrial strength network communication devices are extremely scalable, utilize a common SNMP based network management system, and provide FIPS 140-2 compliant security standards to authenticate and network users. The communication is built using a portfolio of IP-based networking devices, including:

- Fiber and wireless high capacity backhaul products
- Hardened Ethernet switches and serial extension
- Narrowband licensed and unlicensed wireless access technology for non-real-time monitoring and battery powered applications

Furthermore, the solution is integrated on a common management and security platform that enables NERC/CIP compliance across the network.

Exhibit 13.

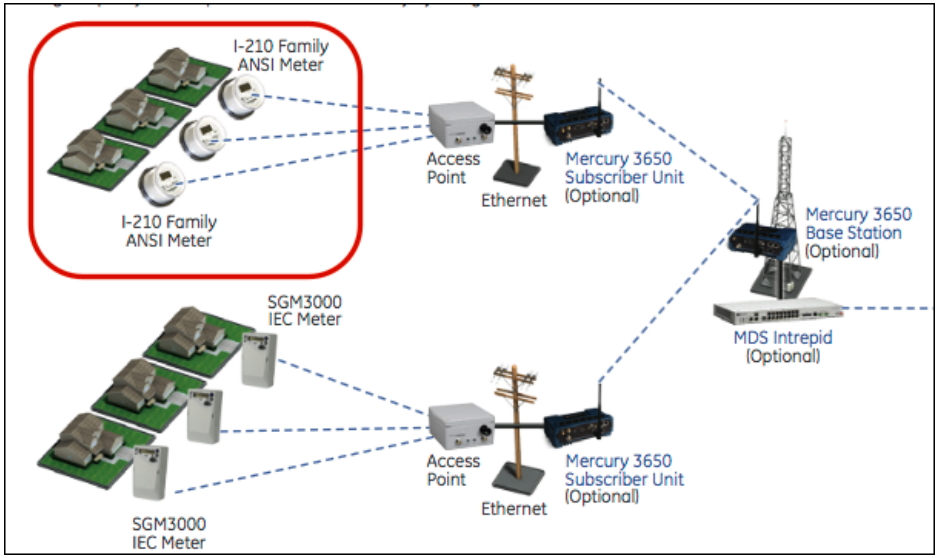

I-210 Family
ANSI Meter
I-210 Family
ANSI Meter
Access
Point
Ethernet
Mercury 3650
Subscriber Unit
(Optional)
Mercury 3650
Base Station
(Optional)
MDS Intrepid
(Optional)
SGM3000
IEC Meter
SGM3000
IEC Meter
Access
Point
Ethernet
Mercury 3650
Subscriber Unit
(Optional)

Exhibit 1

GE's MDS WiYZ™ Remote

MDS WiYZ Remotes are packed with features and functionality to match up with a diverse range of remote monitoring and control requirements. Each Remote accommodates 2 Analog Inputs, 2 Analog Outputs, 2 Digital Inputs and 2 Digital Outputs. One RS232 port is used for configuration.Optional radio configuration to operate on the Grid IQ AMI P2MP network.

- Configurable sample periods allow remotes to periodically sample sensor and I/O data, and transmit back to the gateway at specified intervals, conserving battery power and reducing network traffic.
- Condition-based data transmission allows remote to transmit data only when there is a change of state for a Digital Input.
- I/O extension can be implemented to regenerate sensor and I/O signals between devices.

Exhibit 1

OVERVIEW | AMI / AMR | COMMUNICATIONS | METERMATE SOFTWARE

AMR/AMI Plug and Play Designed

GE's I-210+ meters have been designed to specifically accommodate Smart Grid communications technology, making communications interchangeable and interoperable. As factory integrated and tested communications modules embedded within the smart meter, the I-210 family supports multiple RF Mesh and PLC communication technologies.

All communications is extensively tested to ensure our meters perform flawlessly, even in the harshest of radio frequency (RF) environments.

Factory Integrated Communication Options for I-210+ and I-210+c Meters

AMI TECHNOLOGIES	TYPE	I-210+	I-210+c
Aclara UMT-R	PLC	X	
Ingenu RPMA	RF P2MP	X	X
Itron 54ESS ERT, 55ESS ERT, 56ESS ERT	1-way RF AMR	X	
Itron 57ESS ERT	1-way RF AMR		X
Itron Cellular EVDO & HSPA	Cellular Network		X
Sensus FlexNet	RF P2MP		X
Silver Springs Networks NIC 310	RF Mesh	X	
Silver Springs Networks NIC 410	RF Mesh		X
Silver Springs Networks MicroAP	Cellular & RF Mesh		X
Trilliant SecureMesh	RF Mesh	X	X

Exhibit 9

Exhibit 10

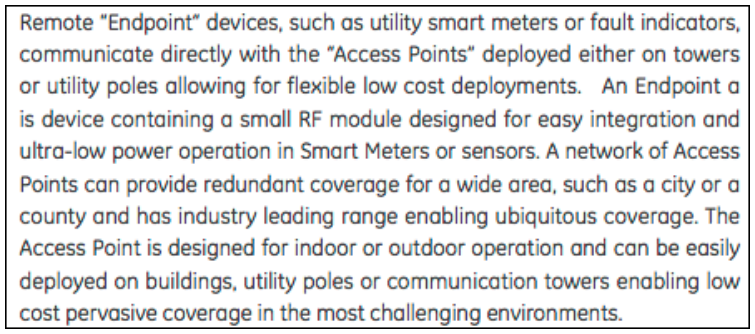

Remote "Endpoint" devices, such as utility smart meters or fault indicators, communicate directly with the "Access Points" deployed either on towers or utility poles allowing for flexible low cost deployments. An Endpoint a is device containing a small RF module designed for easy integration and ultra-low power operation in Smart Meters or sensors. A network of Access Points can provide redundant coverage for a wide area, such as a city or a county and has industry leading range enabling ubiquitous coverage. The Access Point is designed for indoor or outdoor operation and can be easily deployed on buildings, utility poles or communication towers enabling low cost pervasive coverage in the most challenging environments.

Exhibit 1

GE provides industrially hardened communications networks for leading industrial and energy companies with best-in-class solutions for exceptional reliability. Our communications solutions include a broad range of high quality industrial wireless, hardened optical networks, broadband power line solutions, professional services and accessories, delivering comprehensive networks that are designed to be flexible and tailored to meet customers' objectives and unique geographic requirements.

GE supplies rugged communications networks to a variety of markets including energy, oil and gas, mining, water/wastewater and transportation.

Exhibit 6.

Accused instrumentalities operate over wireless network components provided by GE:

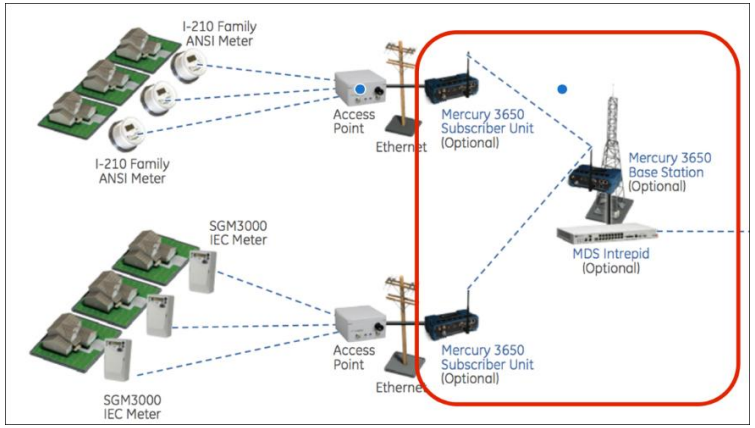


Exhibit 1

Radio Frequency (RF) Mesh and Power Line Carrier (PLC)Networks have been the most widely deployed network architectures for AMI. However, when looking to achieve cost effective, reliable coverage across dense, rural and sparse suburban environments, Grid IQ AMI P2MP is the optimal solution.

RF Mesh offers a cost performance that is best deployed in dense suburban environments. As urban densities increase and suburban densities decrease, the total cost per meter increases drastically for an RF Mesh enabled meter. This is because the network requires the addition of multiple routers and collectors to relay signals through the neighborhood area network as densities decrease.

Exhibit 7.

The Grid IQ AMI P2MP Solution has exceptional coverage and supports multiple applications on the same network. This single network features pervasive coverage for metering and distribution grid monitoring and sensing regardless of whether the devices are battery operated or powered. Each access point in the system system supports thousands of connected devices providing unicast, downlink multicast and broadcast capabilities and supports group configuration and control. The ability to leverage a common network infrastructure for multiple applications provides immediate and significant ROI.

Exhibit 7.

Accused instrumentalities work with a variety of endpoints:

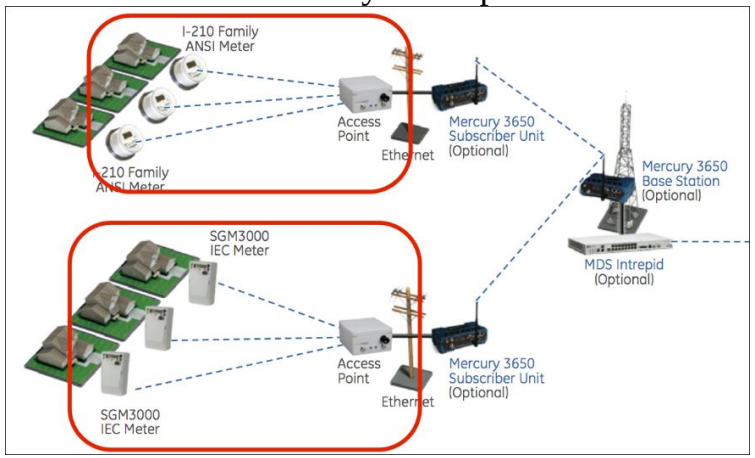


Exhibit 1

	Exhibit 1
1 (b) storing for each recipient an assigned primary identifying address and one or more group addresses that are shared with selected ones of the other recipients;	GE Grid IQ stores the assigned primary identifying address for each endpoint and one or more group addresses that are shared with selected other recipients. Hardware, software, interfaces, and systems used for storing primary identifying addresses and group addresses (including commands, software, databases, etc.) are Accused Instrumentalities. Grid IQ systems may be delivered to customers by GE or operated by GE under GE's Software-as-a-Service or fully Managed Service solution. To the extent the Software-as-a-Service and Managed Service solution are distinct from the specific systems identified in these contentions, Plaintiff identifies these GE products as additional Accused Instrumentalities. This step may be performed by customers or end users of the Accused Instrumentalities following GE's instructions and using the Accused Instrumentalities as directed by GE. Accused Instrumentalities may rely on addressing schemes in accordance with ZigBee, IPv6, and/or ANSCI C12.22 protocols, where a group address is implemented by a multicast and/or broadcast address.

Michael	Anderson	Landis+Gyr	Tim	Morgan	Duke Energy
Larry	Barto	Georgia Power Company	Young	Nguyen	Pacific Gas & Electric
Ed	Beroset	Elster Electricity, LLC	Dan	Nordell	Xcel Energy
Brent	Cain	Itron	Tony	Osmanski	PPL Electric Utilities Corp.
Dan	Gunderson	Minnesota Power	Terry	Penn	Georgia Power Company
Anthony	Hawkins	CPS Energy	Derl	Rhoades	Alabama Power Company
David	Jirikovic	Consumers Energy	Greg	Sheran	Southern California Edison
Larry	Kotewa	CNT Energy	Shannon	Spizzirri	Southern California Edison
Ed	May	Itron	Kostas	Tolios	DTE Energy
Bill	Mazza	Sensus	Richard	Tucker	Tucker Engineering
Mike	Miller	Itron	James	Tucker	SDG&E
Avygdor	Moise	Future DOS R&D, Inc.	Ginger	Zinkowski	GE

Exhibit 41.

4.2. Native IP Address

The term "Native IP Address" denotes a Native Address that MAY be used to reach a C12.22 Node on its C12.22 IP Network Segment. The Native IP Address includes the binary IP address, and an OPTIONAL port number that MAY be followed by an OPTIONAL protocol identifier. The Native IP Address SHALL be encoded as described below in Section 4.3, "Encoding of Native IP Addresses".

The IP address of the C12.22 IP Node MUST be configured before the C12.22 IP Node attempts to send or receive any C12.22 Message on its C12.22 IP Network Segment. If the port number is not explicitly configured by the controlling application, it SHALL be set to the default port number, 1153 (see Section 4.4, "Standardized Port Numbers", below).

It is beyond the scope of this specification to define the method of configuration, the configuration parameters, or any administrative controls that the system administrator may wish to implement to assign an IP address.

Exhibit 42.

4.6. IP Multicast

In addition to unicast, the ANSI C12.22 protocol requires the support of a multicast message delivery service from the network. In cases where C12.22 IP Nodes MUST perform Native IP Address discovery (e.g., the discovery of the Native IP Address of C12.22 IP Relays that provide a route out of the C12.22 IP Network Segment, or the discovery of the Native IP Address of a C12.22 IP Master Relay on the C12.22 IP Network), the C12.22 IP Nodes use IP multicast to send a C12.22 Message that contains an EPSEM Resolve Service Request on the IP LAN.

Exhibit 42.

IP multicast is also desirable, for example, when a C12.22 Host needs to read a multitude of C12.22 Nodes (e.g., meters) that are configured with a common C12.22 multicast group ApTitle. Using IP multicast, the C12.22 Host MAY send a C12.22 Message containing an EPSEM Read Service Request that reaches all C12.22 Nodes on the C12.22 IP Network Segment.

For these reasons, all C12.22 IP Relays and Master Relays SHALL support IP multicast, and it is RECOMMENDED that all C12.22 Nodes support IP multicast. Any IPv4 C12.22 IP Node that supports IP multicast SHALL use the Internet Group Management Protocol version 1 (IGMPv1) [10] as a minimum, to report (i.e., request) membership in the C12.22 multicast group to its local router(s). It is RECOMMENDED that C12.22 IP Nodes implement IGMPv3 [11].

Exhibit 42.

Any IPv6 C12.22 IP Node that supports IP multicast SHALL use Multicast Listener Discovery version 2 (MLDv2) (RFC 3810 [12]), possibly within ICMPv6 (RFC 4443 [13]), to report membership.

Routers that interconnect C12.22 IP Nodes on the C12.22 IP Network Segment MUST support Protocol Independent Multicast - Sparse Mode (PIM-SM) (RFC 4601 [14]) along with IGMPv1 (RFC 1112 [10]) as a minimum for IPv4, or MLDv2 for IPv6 (RFC 3810 [12]). It is RECOMMENDED that they implement IGMPv3 [11]. It is beyond the scope of this specification to define the mechanism for selecting an initial Rendezvous Point (RP) for the C12.22 multicast group, the use of shared versus source trees, or the mechanism for inter-domain multicast routing.

For IPv6, all C12.22 IP Relays, C12.22 IP Master Relays, and all C12.22 IP Nodes configured to support broadcast and multicast (see Section 5.3, "Using IP Broadcast/Multicast", below) SHALL join the global-scope multicast address, FF0E::204, as well as all of the assigned, reduced-scope, multicast addresses:

link-local -- FF02::204;
admin-local -- FF04::204;
site-local -- FF05::204; and
organization-local -- FF08::204.

Exhibit 42.

For IPv4, all C12.22 IP Relays, C12.22 IP Master Relays, and all C12.22 IP Nodes configured to support broadcast/multicast SHALL join the assigned multicast address of 224.0.2.4. This global address does not provide for the type of scoping discussed above for IPv6, nor is it compatible with the administratively scoped IP multicast

Exhibit 42.

4.8. Encoding of Multicast and Broadcast Addresses

ANSI C12.22 Tables provide BINARY Elements for encoding a broadcast or multicast Native IP Address for transport within a C12.22 Message. The encoding of these Table Elements is identical to that defined in Section 4.3, "Encoding of Native IP Addresses". These fields SHALL be used as shown in Figure 2.

Exhibit 42.

Group addresses for relevant devices are stored according to ANSI C12.19 standards.

7.2. Extensions to the IP Module

To support the reception of multicast IP datagrams, the IP module must be extended to maintain a list of host group memberships associated with each network interface. An incoming datagram destined to one of those groups is processed exactly the same way as datagrams destined to one of the host's individual addresses.

Incoming datagrams destined to groups to which the host does not belong are discarded without generating any error report or log entry. On hosts with more than one network interface, if a datagram arrives via one interface, destined for a group to which the host belongs only on a different interface, the datagram is quietly discarded. (These cases should occur only as a result of inadequate multicast address filtering in a local network module.)

https://tools.ietf.org/html/rfc1112

Group Address Binding

The binding of IP host group addresses to physical hosts may be considered a generalization of the binding of IP unicast addresses. An IP unicast address is statically bound to a single local network interface on a single IP network. An IP host group address is dynamically bound to a set of local network interfaces on a set of IP networks.

https://tools.ietf.org/html/rfc1112

6. SENDING MULTICAST IP DATAGRAMS

6.1. Extensions to the IP Service Interface

Multicast IP datagrams are sent using the same "Send IP" operation used to send unicast IP datagrams; an upper-layer protocol module merely specifies an IP host group address, rather than an individual IP address, as the destination. However, a number of extensions may be necessary or desirable.

	https://tools.ietf.org/html/rfc1112 7. RECEIVING MULTICAST IP DATAGRAMS 7.1. Extensions to the IP Service Interface Incoming multicast IP datagrams are received by upper-layer protocol modules using the same "Receive IP" operation as normal, unicast datagrams. Selection of a destination upper-layer protocol is based on the protocol field in the IP header, regardless of the destination IP address. However, before any datagrams destined to a particular group can be received, an upper-layer protocol must ask the IP module to join that group. Thus, the IP service interface must be extended to provide two new operations: JoinHostGroup (group-address, interface) LeaveHostGroup (group-address, interface) https://tools.ietf.org/html/rfc1112

5.3. Using IP Broadcast/Multicast

A C12.22 IP Node's use of broadcast/multicast is based on its capabilities as defined in its configuration parameters (flags) and as expressed in the Node's accepted registration attributes [1] (<connection-type>.BROADCAST_AND_MULTICAST_SUPPORTED). The mapping of the C12.22 IP Node's Broadcast/Multicast parameter (flag) to IP broadcast/multicast usage is defined in Table 2.

C12.22 Broadcast and Multicast Supported Flag	IP Broadcast/Multicast Supported
0	The C12.22 IP Node does not accept IP broadcast, and it does not accept IP multicast messages.
1	The C12.22 IP Node accepts both IP broadcast (IPv4 only) and IP multicast messages (IPv4 and IPv6).

Table 2: C12.22 to IP Broadcast/Multicast Mapping

If a C12.22 IP Node is configured to accept IP broadcast and multicast messages, it SHALL join the "All C1222 Nodes" multicast group (see Section 4.6, "IP Multicast", above), and SHALL use the default port 1153. In addition, it SHALL accept IP network directed or limited (local scope) broadcast messages sent to port 1153. Note that successful communication using network directed broadcast requires configuration of network routers, which by default SHALL NOT forward directed broadcasts as per RFC 2644 [17].

Exhibit 42.

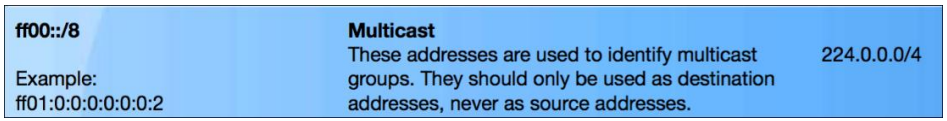


Exhibit 67.

Exhibit 43.

	Cellnet's UtiliNet endpoint provides internal AMR capability to GE's kV2c polyphase commercial and industrial meter. The module is an option board that occupies the modem card slot within the meter. The kV2c equipped with the UtiliNet endpoint is a direct register-read solution which allows the utility to access the full feature set of the kV2c meter. Information such as consumption, power quality, diagnostic, and interval data, as well as any additional data contained in the meter's ANSI® C12.19 tables is accessible through UtiliNet. The endpoint reads this data, can perform demand resets, and analyzes status data. The data returned through the network has the full resolution and the accuracy provided by the meter. Using the flexibility of the meter's ANSI C12.19 tables, the endpoint can also reconfigure the tables for changes in rates. Calendar information can be downloaded from the meter to the endpoint and implemented immediately. Using UtiliNet, no field visits are required; rate changes and calendar updates can be done through the network. Exhibit 43. *GE configures Grid IQ data storage for customers. In general terms and without limiting the scope of these contentions to specific examples, storage may be performed by the Grid IQ head end system and/or database back end. Any data storage and repository options offered to customers that are used to store meter data (e.g., primary address, group addresses, and acknowledgement data) are Accused Instrumentalities.* GE stores group addresses that are shared among multiple smart meters.

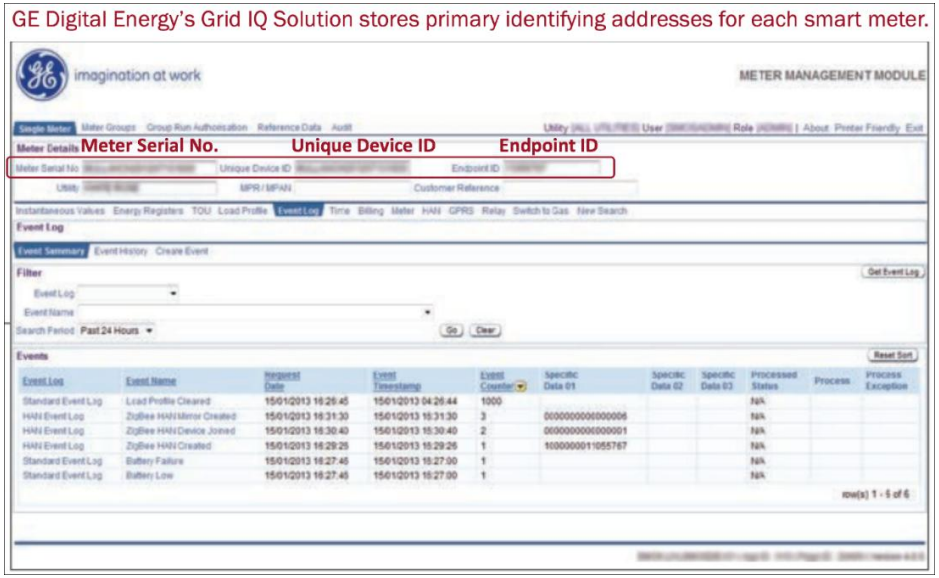

GE Digital Energy's Grid IQ Solution stores primary identifying addresses for each smart meter.
imagination at work
METER MANAGEMENT MODULE
Meter Details
Meter Serial No.
Unique Device ID
Endpoint ID
Event Log
Events

Exhibit 11

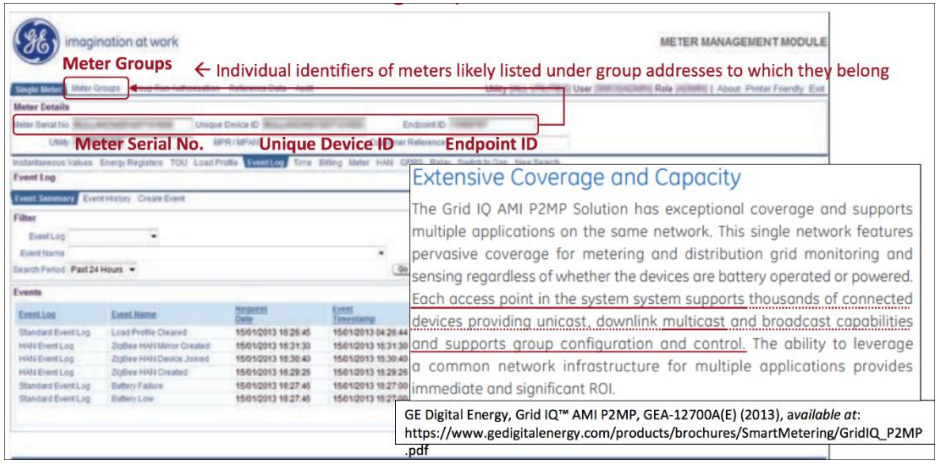

imagination at work
METER MANAGEMENT MODULE
Meter Groups
← Individual identifiers of meters likely listed under group addresses to which they belong
Meter Details
Meter Serial No.
Unique Device ID
Endpoint ID
Event Log
Events
Extensive Coverage and Capacity
The Grid IQ AMI P2MP Solution has exceptional coverage and supports multiple applications on the same network. This single network features pervasive coverage for metering and distribution grid monitoring and sensing regardless of whether the devices are battery operated or powered. Each access point in the system system supports thousands of connected devices providing unicast, downlink multicast and broadcast capabilities and supports group configuration and control. The ability to leverage a common network infrastructure for multiple applications provides immediate and significant ROI.
GE Digital Energy, Grid IQ™ AMI P2MP, GEA-12700A(E) (2013), available at: https://www.gedigitalenergy.com/products/brochures/SmartMetering/GridIQ_P2MP.pdf

Exhibit 11

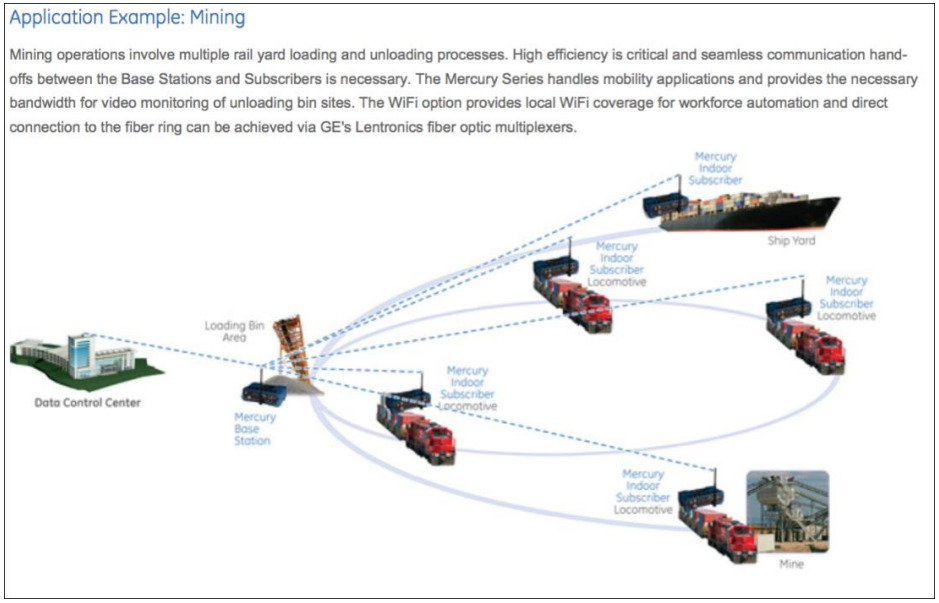


Exhibit 15.

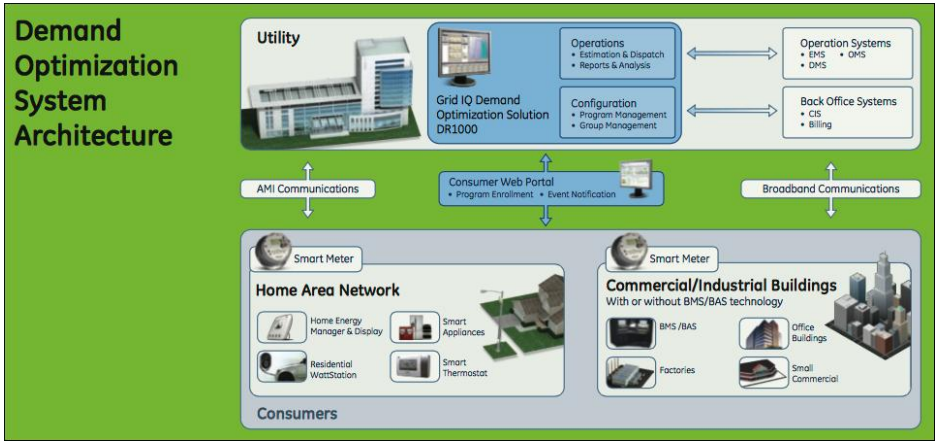


Exhibit 12

Once you determine your demand-shifting objective, GE's DRMS system lets you select from a variety of options based on combinations of consumption demand groups and the remaining level of utility load resources. By

Exhibit 12

Graphs displaying specific group participation, overrides, and a comparison of results of different groups.

Exhibit 12

GE's DRMS is designed to manage demand response programs by establishing policy rules based on tariff specifications. It has the flexibility to establish program groups and sub-groups, and track information at the consumer level to ensure your success.

GE's DRMS provides a straightforward mechanism to import large amounts of data into the system (e.g. system commissioning).

Exhibit 12

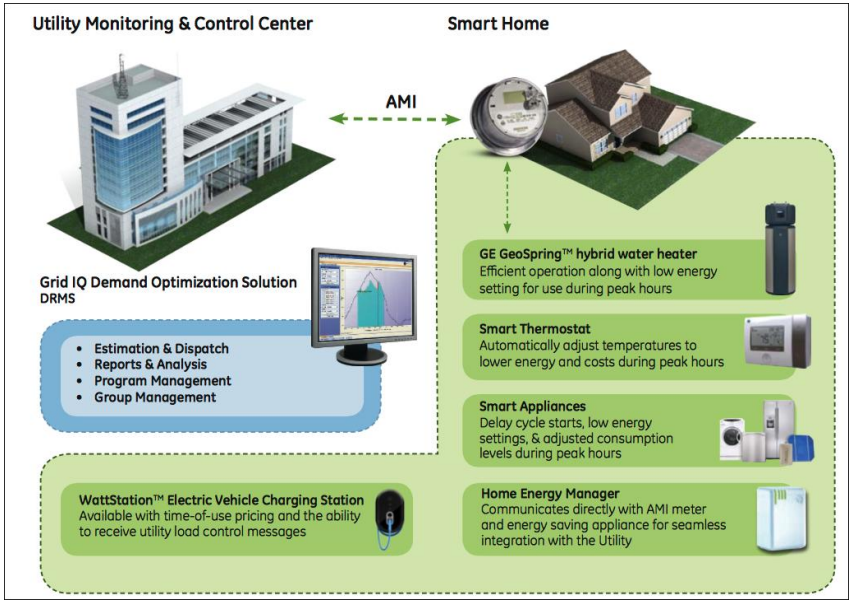


Exhibit 12

AMI Integrations

Factory integrated AMI communication options for kV2c/kV2c+

GE's kV2c and kV2c+ meters are integrated with a wide variety of AMI communication modules. GE is constantly seeking to provide diverse solutions suitable for each customer's AMI needs. The following table summarizes current factory installed communication options.

AMI Technologies	Type	kV2c		kV2c+	
		120-480V	120-480V EPS	120-480V	600V
Aclara® (UMT-C)	PLC	X			
Itron (53ESS ERT®)	RF (AMR), 900 MHz	X		X	X
L+G Gridstream® (TS1/TS2)	PLC	X			
L+G Gridstream (Command Center)	RF Mesh, 900MHz		X		
L+G Gridstream (UtiliNet Solution Center)	RF Mesh, 900MHz	X			
Sensus (FlexNet®)	RF (Tower-based)	X			X
Silver Spring Networks® (NIC)	RF Mesh, 900 MHz		X		
Trilliant CDMA (CellReader®)	Cellular		X		
Trilliant GPRS (CellReader)	Cellular			X	X
Trilliant (SecureMesh™)	RF Mesh, 2.4 GHz		X		

Exhibit 63.

GE's DRMS is designed to manage demand response programs by establishing policy rules based on tariff specifications. It has the flexibility to establish program groups and sub-groups, and track information at the consumer level to ensure your success.

GE's DRMS provides a straightforward mechanism to import large amounts of data into the system (e.g. system commissioning).

Program Management

Create, customize and manage demand optimization programs to meet business and operating objectives. The program administrator can assign each user rights and privileges, and creates an audit trail.

Inventory Management

The inventory management function oversees multiple demand optimization programs, including grouping customers by meters, hierarchy, devices, or other categorizing methods.

Exhibit 12

3.6.6.1 The Group ID Table

The NWK layer of a device may maintain a group ID table, *nwkGroupIDTable*, accessible as an attribute of the NIB as shown in Table 3.44. If the *nwkGroupIDTable* NIB attribute is present then it shall contain a set of 16-bit group identifiers for groups of which the device is a member.

Note that the optional *nwkGroupIDTable* NIB attribute has a functional overlap with the mandatory APS group table (see Table 2.18). If a device maintains both tables, and thereby expects to use NWK-layer multicast as a method for receiving group-addressed frames, it must assure that each 16-bit group identifiers that appears in the APS group table also appears in the NWK group table.

Note also that from an implementation perspective, it would be wasteful to duplicate the list of group identifiers across layers and it is assumed that implementers will find a way to combine the APS and NWK group tables to avoid waste.

2.2.3.1 Application Support Sub-Layer Data Entity (APSDE)

The APSDE shall provide a data service to the network layer and both ZDO and application objects to enable the transport of application PDUs between two or more devices. The devices themselves must be located on the same network.

The APSDE will provide the following services:

- **Generation of the application level PDU (APDU):** the APSDE shall take an application PDU and generate an APS PDU by adding the appropriate protocol overhead.
- **Binding:** once two devices are bound, the APSDE shall be able to transfer a message from one bound device to the second device.
- **Group address filtering:** this provides the ability to filter group-addressed messages based on endpoint group membership.

2.2.3.2 Application Support Sub-Layer Management Entity (APSME)

The APSME shall provide a management service to allow an application to interact with the stack.

The APSME shall provide the ability to match two devices together based on their services and their needs. This service is called the binding service, and the APSME shall be able to construct and maintain a table to store this information.

In addition, the APSME will provide the following services:

- **Binding management:** this is the ability to match two devices together based on their services and their needs.
- **AIB management:** the ability to get and set attributes in the device's AIB.
- **Security:** the ability to set up authentic relationships with other devices through the use of secure keys.
- **Group management:** this provides the ability to declare a single address shared by multiple devices, to add devices to the group, and to remove devices from the group.

2.2.4.5.1 APSME-ADD-GROUP.request

This primitive allows the next higher layer to request that group membership for a particular group be added for a particular endpoint.
and there is space in the table for another entry then the APSME will add a new entry to the group table with the values given by the GroupAddress and Endpoint parameters. After the entry is added to the APS group table, and if the NWK layer is maintaining a group table, then the APSME ensures that the corresponding NWK group table is consistent by issuing the NLME-SET.request primitive, for the *nwkGroupIDTable* attribute, with the list of group addresses contained in the group table of the APS sub-layer. Once both tables are consistent, the APSME issues the APSME-ADD-GROUP.confirm primitive to the next higher layer with a status value of SUCCESS. If no entry for the given GroupAddress and Endpoint is present but there is no room in the group table for another entry, then the APSME will issue the APSME-ADD-GROUP.confirm primitive to the next higher layer with a status value of TABLE_FULL.

	2.2.4.5.1.3 Effect on Receipt After checking the parameters as described above, the APSME will check the group table to see if an entry already exists containing the values given by the GroupAddress and Endpoint parameters. If such an entry already exists in the table then the APSME will issue the APSME-ADD-GROUP.confirm primitive to the next higher layer with a status value of SUCCESS. If there is no such entry
1 (c) receiving a communication from a network client requesting wireless transmission of a message to recipients sharing a selected one of the group addresses;	GE Grid IQ performs this step when used as instructed by GE by GE's end users or customers and by GE when it provides services to customers. A communication requesting wireless transmission to recipients of a message (e.g., requests regarding demand response, downloads, etc.) is received from a network client, e.g., Grid IQ software systems such as those shown below in the AMI Stack graphic (e.g., MDM applications, third party applications, systems/software based on Oracle Application Framework) used by GE and customers to access GE AMI and AMR systems. *See, e.g.*, Exhibit 58; Exhibit 62. **Accused Instrumentalities include Grid IQ subcomponents (e.g., head-end components, Grid IQ software systems (e.g., MDM applications, third party applications, systems/software based on Oracle Application Framework, Oracle Utilities applications) responsible for generating, sending, or receiving transmission of a message to a group of meters:** **rid IQ systems may be delivered to customers by GE or operated by GE under GE's Software-as-a-Service or fully Managed Service solution. To the extent the Software-as-a-Service and Managed Service solution are distinct from the specific systems identified in these contentions, Plaintiff identifies these GE products as additional Accused Instrumentalities. This step may be performed by customers or end users of the Accused Instrumentalities following GE's**

instructions and using the Accused Instrumentalities as directed by G

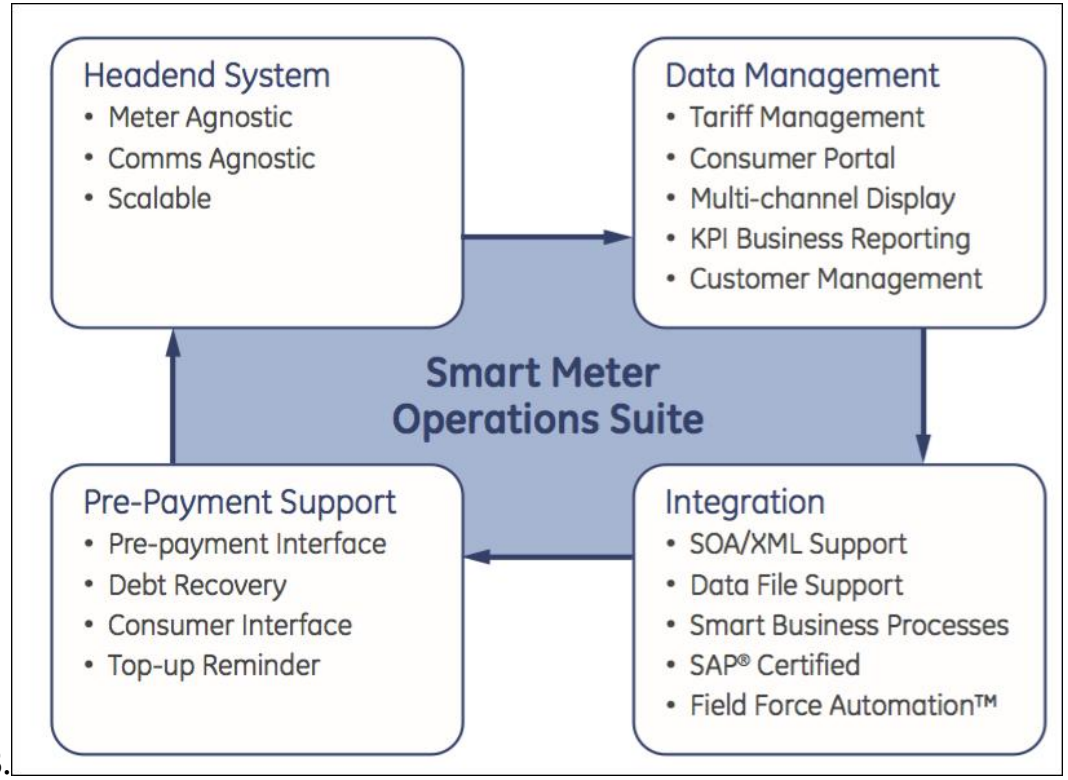
MeterMate

Full featured, secure metering software

GE's innovative MeterMate™ software suite enables meter administrators to easily configure and manage GE's meter family. Each software component in the MeterMate suite is optimized to address the different aspects of a meter's life cycle. MeterMate program creation software enables the user to effortlessly configure the meter's basic and advanced functionality, ranging from creating a simple demand program to setting up the meter display to configuring the meter's I/O and alerts. With MeterMate reading and programming software, MM Comm, a user can read, program and perform real-time instrumentation and power quality monitoring on a meter, via a variety of different communication methods: local OPTOCOM™, remote telephone, RS-232/485 and IP communications.

The suite also provides the MeterMate Batch Control, MeterMate Load Profile (MMLp) and MeterMate XTR utilities. MeterMate Batch Control enables the user to automate remote meter reading. MeterMate Load Profile (MMLp) provides analysis of load profile data and MeterMate XTR supports the export of meter data to the MV-90 HHF format.

Exhibit 63.


Headend System
• Meter Agnostic
• Comms Agnostic
• Scalable
Data Management
• Tariff Management
• Consumer Portal
• Multi-channel Display
• KPI Business Reporting
• Customer Management
Smart Meter Operations Suite
Pre-Payment Support
• Pre-payment Interface
• Debt Recovery
• Consumer Interface
• Top-up Reminder
Integration
• SOA/XML Support
• Data File Support
• Smart Business Processes
• SAP® Certified
• Field Force Automation™

GE's MDS PulseNET Enterprise

GE's MDS PulseNET Enterprise Element Management System (EMS) is an industry-leading management application enabling Utilities to manage their communications network.

The MDS PulseNET Enterprise solution provides a unified interface that allows Utilities to manage and control all elements of their network devices with an extensible architecture that effortlessly supports networked products. This provides Utilities the ability to manage the functionality and capability of network devices in a cost effective, reliable and scalable fashion.

The key functionality of the MDS PulseNET Enterprise System is divided into four key areas including Fault, Configuration, Performance and Security Management.

The system contains everything needed to manage a communications network. Scalable enough to serve the largest networks, a single MDS PulseNET Enterprise server can support thousands of network elements.

Exhibit 14.

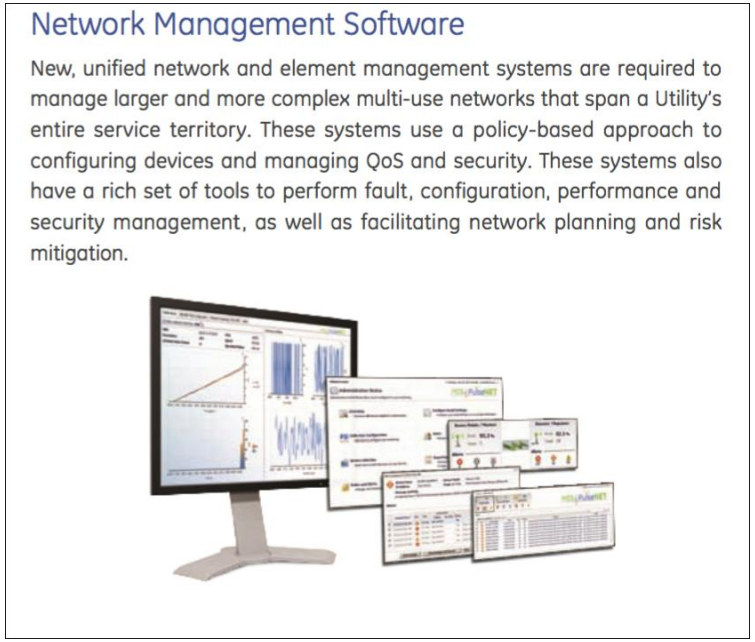

Network Management Software
New, unified network and element management systems are required to manage larger and more complex multi-use networks that span a Utility's entire service territory. These systems use a policy-based approach to configuring devices and managing QoS and security. These systems also have a rich set of tools to perform fault, configuration, performance and security management, as well as facilitating network planning and risk mitigation.

Exhibit 13.

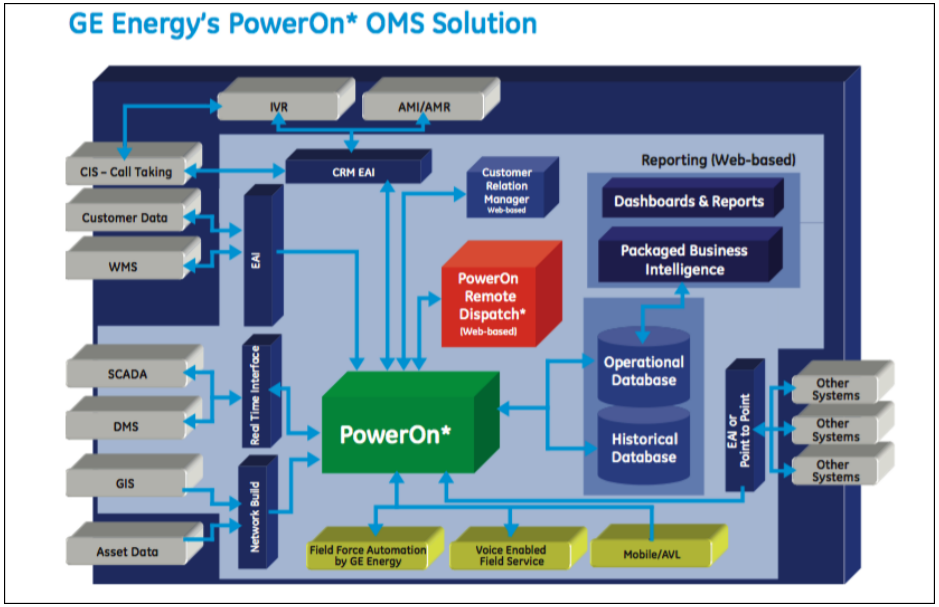

GE Energy's PowerOn* OMS Solution
IVR
AMI/AMR
CIS – Call Taking
Customer Data
WMS
CRM EAI
Customer Relation Manager Web-based
Reporting (Web-based)
Dashboards & Reports
Packaged Business Intelligence
EAI
PowerOn Remote Dispatch* (Web-based)
SCADA
DMS
GIS
Asset Data
Real Time Interface
Network Build
PowerOn*
Operational Database
Historical Database
EAI or Point to Point
Other Systems
Other Systems
Other Systems
Field Force Automation by GE Energy
Voice Enabled Field Service
Mobile/AVL

Exhibit 40.

MeterMate Software

Full Featured Meter Configuration

Aclara Meters' innovative MeterMate™ software suite enables meter administrators to easily configure and manage Aclara Meters meters. Each software component in the MeterMate suite is optimized to address the different aspects of a meter's lifecycle. MeterMate program creation software enables the user to effortlessly configure the meter's basic and advanced functionality, ranging from creating a simple demand program and setting up the meter display to configuring the meter's I/O and alerts.

With MeterMate reading and programming software, a user can read, program and perform real-time instrumentation and power quality monitoring on a meter, via a variety of different communication methods such as local OPTOCOM, remote telephone, RS-232/485 and IP communications.

The suite also provides the MeterMate Batch Control, MeterMate Load Profile (MMLp) and MeterMate XTR utilities. MeterMate Batch Control enables the user to automate remote meter reading. MeterMate Load Profile (MMLp) provides analysis of load profile data and MeterMate XTR supports the export of meter data to the MV-90 HHF format.

Exhibit 23.

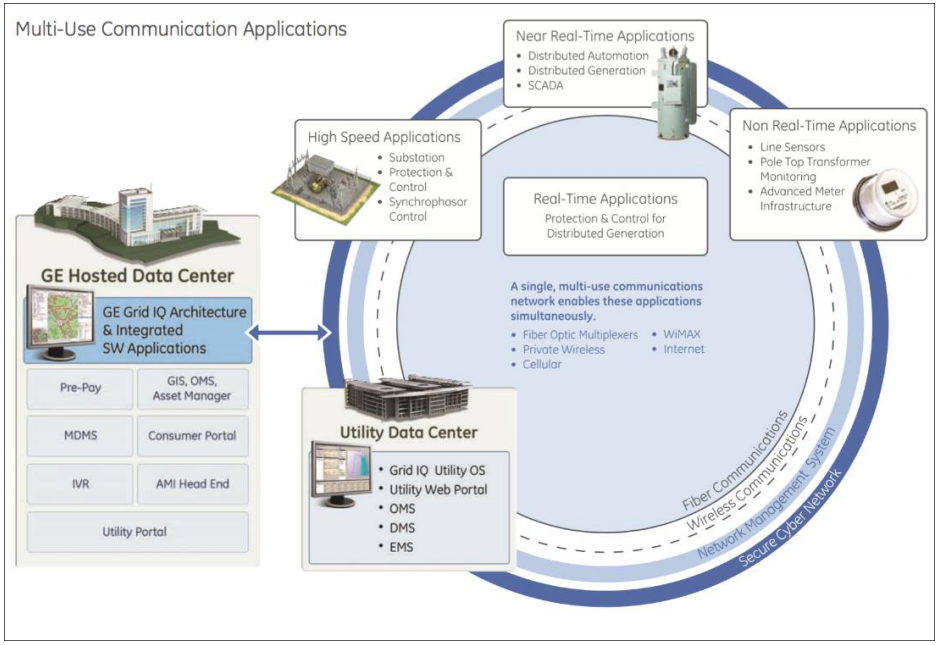

Multi-Use Communication Applications
Near Real-Time Applications
• Distributed Automation
• Distributed Generation
• SCADA
High Speed Applications
• Substation
• Protection & Control
• Synchrophasor Control
Non Real-Time Applications
• Line Sensors
• Pole Top Transformer Monitoring
• Advanced Meter Infrastructure
Real-Time Applications
Protection & Control for Distributed Generation
A single, multi-use communications network enables these applications simultaneously.
• Fiber Optic Multiplexers
• Private Wireless
• Cellular
• WiMAX
• Internet
GE Hosted Data Center
GE Grid IQ Architecture & Integrated SW Applications
Pre-Pay
GIS, OMS, Asset Manager
MDMS
Consumer Portal
IVR
AMI Head End
Utility Portal
Utility Data Center
• Grid IQ Utility OS
• Utility Web Portal
• OMS
• DMS
• EMS
Fiber Communications
Wireless Communications
Network Management System
Secure Cyber Network

Exhibit 13.

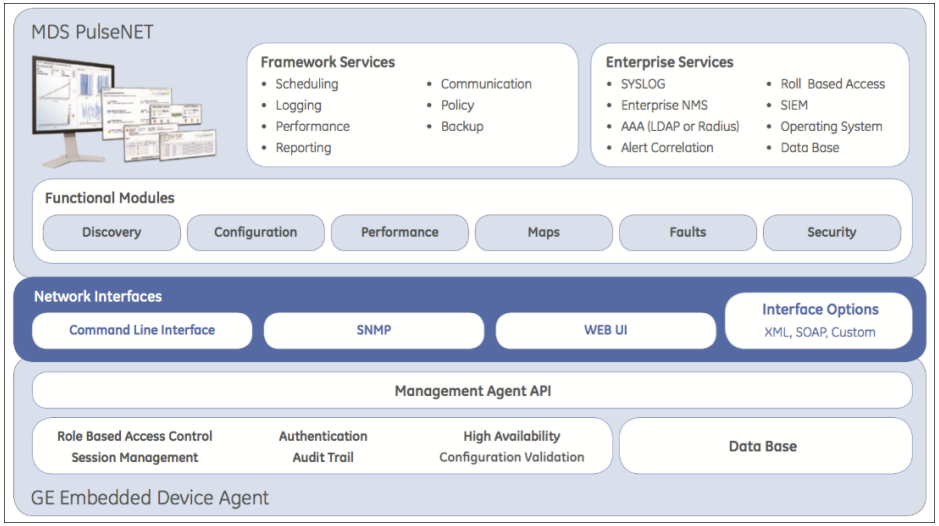

MDS PulseNET
Framework Services
Scheduling
Logging
Performance
Reporting
Communication
Policy
Backup
Enterprise Services
SYSLOG
Enterprise NMS
AAA (LDAP or Radius)
Alert Correlation
Roll Based Access
SIEM
Operating System
Data Base
Functional Modules
Discovery
Configuration
Performance
Maps
Faults
Security
Network Interfaces
Command Line Interface
SNMP
WEB UI
Interface Options
XML, SOAP, Custom
Management Agent API
Role Based Access Control
Session Management
Authentication
Audit Trail
High Availability
Configuration Validation
Data Base
GE Embedded Device Agent

Exhibit 13.

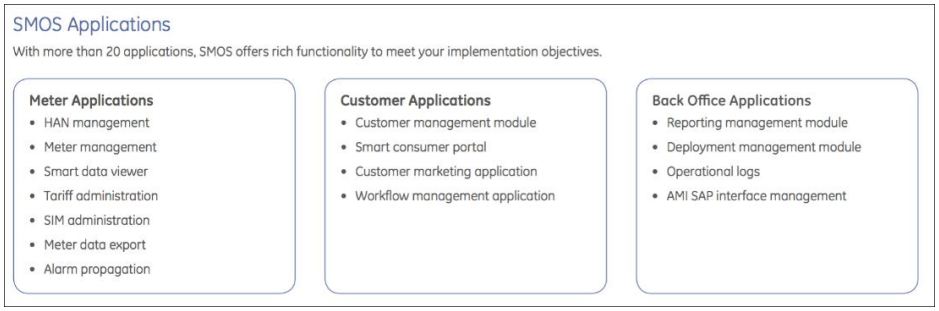

SMOS Applications
With more than 20 applications, SMOS offers rich functionality to meet your implementation objectives.
Meter Applications
HAN management
Meter management
Smart data viewer
Tariff administration
SIM administration
Meter data export
Alarm propagation
Customer Applications
Customer management module
Smart consumer portal
Customer marketing application
Workflow management application
Back Office Applications
Reporting management module
Deployment management module
Operational logs
AMI SAP interface management

Exhibit 11.

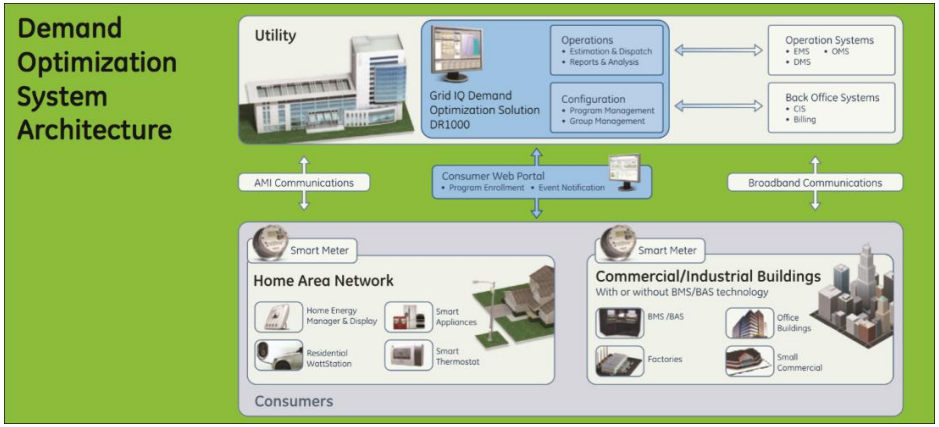
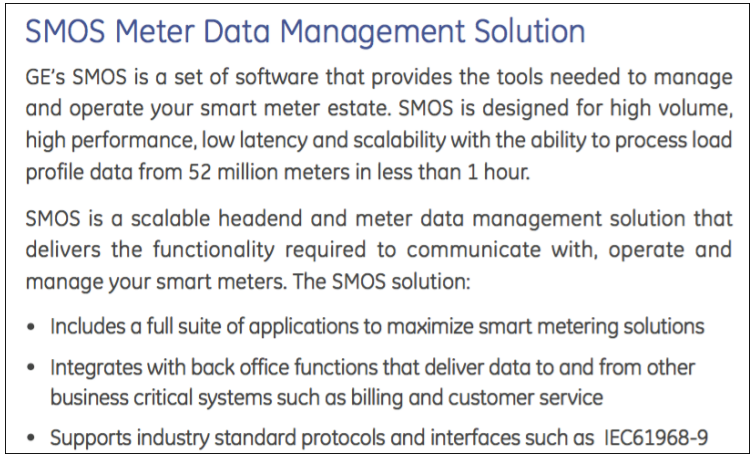


Exhibit 12.

Grid IQ receives requests to wirelessly transmit a message (e.g., a command to perform an action, a reset, a ping, etc.) to a group of endpoints in response to utility operator personnel initiation (e.g., scheduling, or prompting in real time). Grid IQ subsystems and/or the Head End system request wireless transmission (of a message to recipients sharing a selected group address).



SMOS Meter Data Management Solution

GE's SMOS is a set of software that provides the tools needed to manage and operate your smart meter estate. SMOS is designed for high volume, high performance, low latency and scalability with the ability to process load profile data from 52 million meters in less than 1 hour.

SMOS is a scalable headend and meter data management solution that delivers the functionality required to communicate with, operate and manage your smart meters. The SMOS solution:

- Includes a full suite of applications to maximize smart metering solutions
- Integrates with back office functions that deliver data to and from other business critical systems such as billing and customer service
- Supports industry standard protocols and interfaces such as IEC61968-9

Exhibit 7.

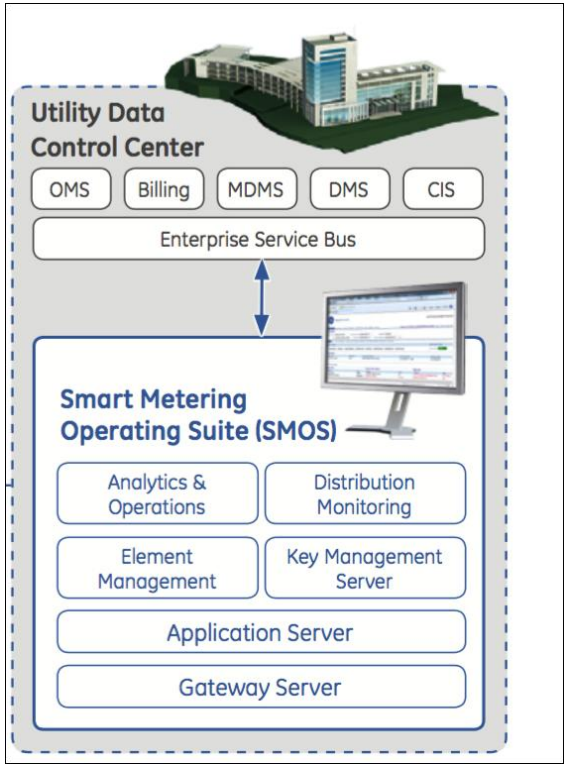

Utility Data
Control Center
OMS
Billing
MDMS
DMS
CIS
Enterprise Service Bus
Smart Metering
Operating Suite (SMOS)
Analytics &
Operations
Distribution
Monitoring
Element
Management
Key Management
Server
Application Server
Gateway Server

Exhibit 1.

Network Management Software

Covering GE's MDS wireless product portfolio, from data acquisition to backhaul, MDS PulseNET is capable of creating, storing and software trending derived metrics using built-in program logic. MDS PulseNET software provides warning performance thresholds that can trigger exception events, which in turn can trigger specific actions, such as sending messages to trouble ticketing systems or other management systems.

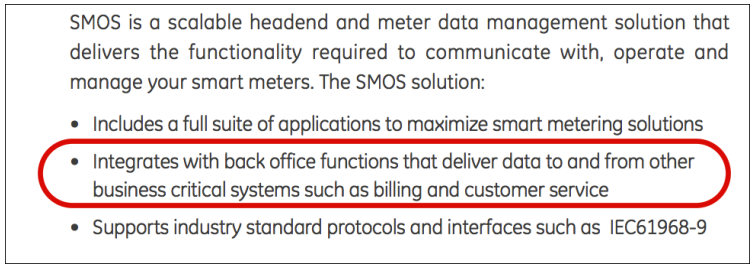
Learn more about our MDS PulseNET solutions.

Exhibit 5.

Beyond networking technologies, GE's Grid IQ Connect platform offers a menu of options to choose from, including hosting of both data and applications for implementing meter data management (MDM) and network operations support on the back-end, and for customers, a choice of energy web portals and prepayment plans via partner PayGo (http://home.paygoelectric.com/).

Exhibit 3.

A user can perform events on groups of smart which are wirelessly transmitted to the smart meters.



SMOS is a scalable headend and meter data management solution that delivers the functionality required to communicate with, operate and manage your smart meters. The SMOS solution:

- Includes a full suite of applications to maximize smart metering solutions
- Integrates with back office functions that deliver data to and from other business critical systems such as billing and customer service
- Supports industry standard protocols and interfaces such as IEC61968-9

Exhibit 1

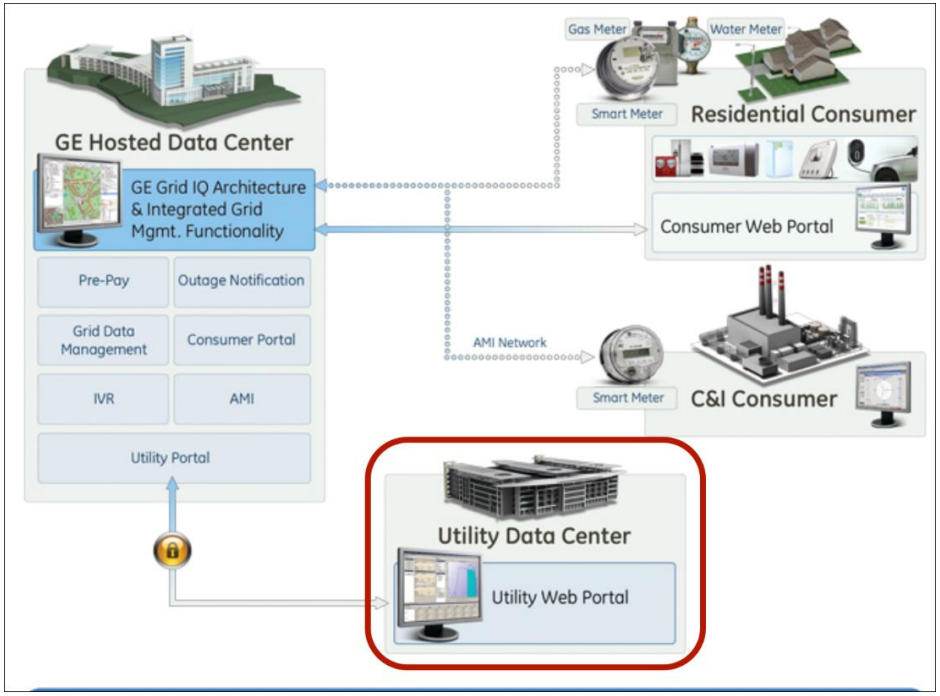

Gas Meter
Water Meter
Smart Meter
Residential Consumer
GE Hosted Data Center
GE Grid IQ Architecture & Integrated Grid Mgmt. Functionality
Consumer Web Portal
Pre-Pay
Outage Notification
Grid Data Management
Consumer Portal
IVR
AMI
Utility Portal
AMI Network
Smart Meter
C&I Consumer
Utility Data Center
Utility Web Portal

Exhibit 2

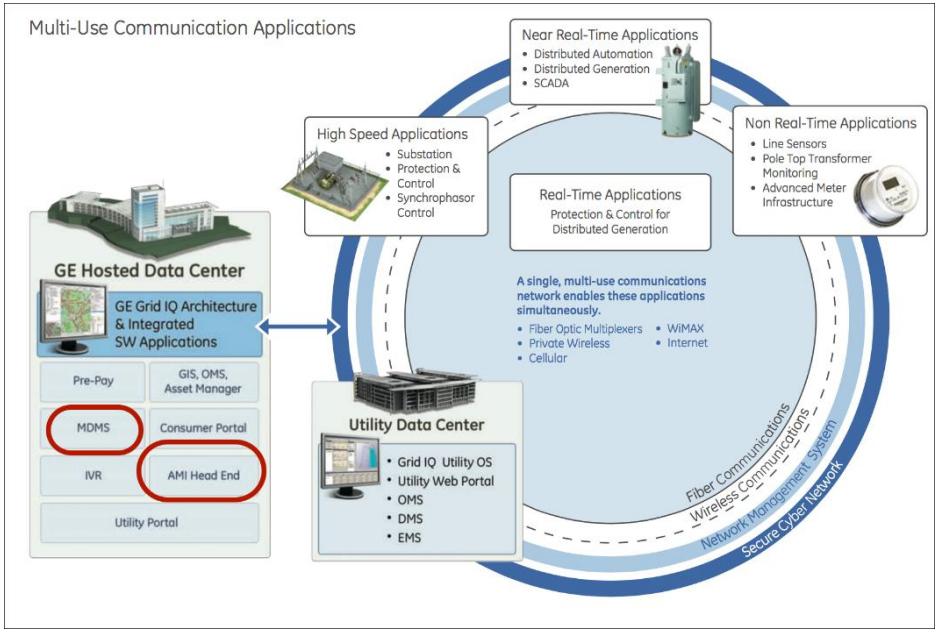


Exhibit 13

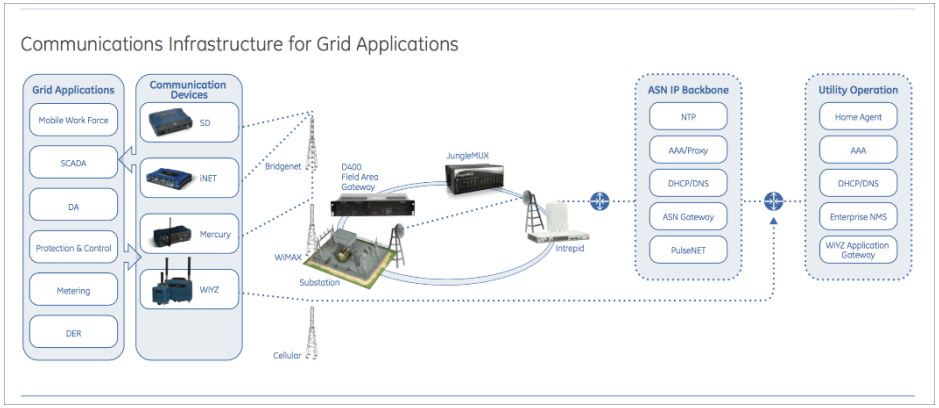


Exhibit 13

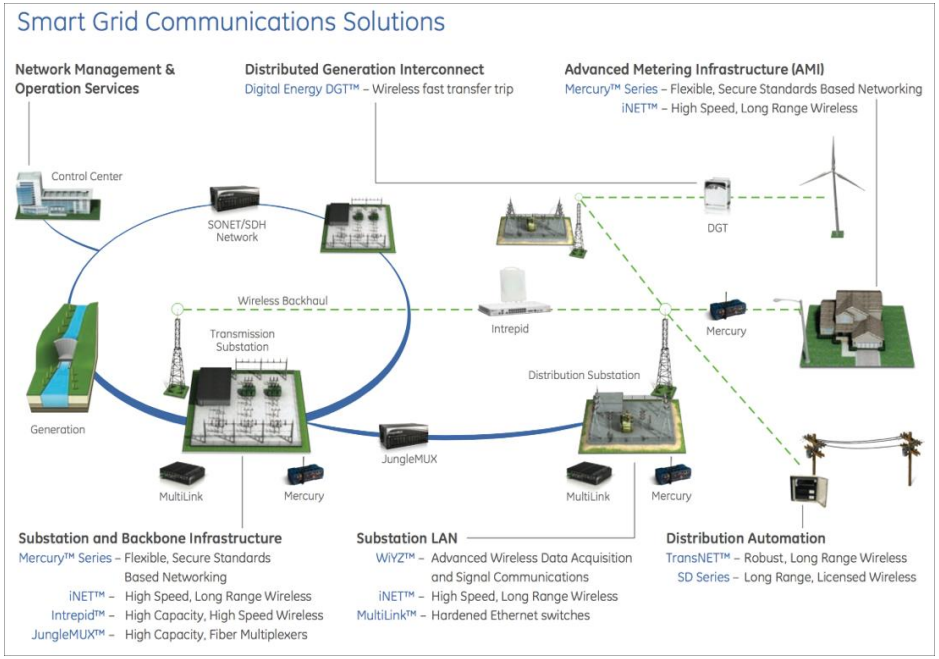

Smart Grid Communications Solutions
Network Management & Operation Services
Distributed Generation Interconnect
Digital Energy DGT™ – Wireless fast transfer trip
Advanced Metering Infrastructure (AMI)
Mercury™ Series – Flexible, Secure Standards Based Networking
iNET™ – High Speed, Long Range Wireless
Control Center
SONET/SDH Network
DGT
Wireless Backhaul
Intrepid
Mercury
Transmission Substation
Distribution Substation
Generation
JungleMUX
MultiLink
Mercury
MultiLink
Mercury
Substation and Backbone Infrastructure
Mercury™ Series – Flexible, Secure Standards Based Networking
iNET™ – High Speed, Long Range Wireless
Intrepid™ – High Capacity, High Speed Wireless
JungleMUX™ – High Capacity, Fiber Multiplexers
Substation LAN
WiYZ™ – Advanced Wireless Data Acquisition and Signal Communications
iNET™ – High Speed, Long Range Wireless
MultiLink™ – Hardened Ethernet switches
Distribution Automation
TransNET™ – Robust, Long Range Wireless
SD Series – Long Range, Licensed Wireless

Exhibit 13

A user can remotely perform send messages to groups of smart meters (e.g., demand read, remote connect/disconnect, firmware update) which are wirelessly transmitted to the smart meters.

GE's I-210 or SGM3000 Meter and Meter Communications Module

The Electric MCM is integrated with both the I-210 ANSI and SGM3000 IEC Family of meters and provides:

- Up to fifteen minute intervals and daily register reads provided every fifteen minutes over the network, including precise event correlation across reads.
- Two-way meter communication to support on demand functionality, meter configuration, and remote meter disconnect.
- Last gasp meter reporting for power outage.
- Over the air updates of endpoint firmware.
- End-to-end security designed for Grid Modernization applications to ensure meter to network authentication, message integrity and confidentiality, and secure firmware binary updates.

Operate

- Secure, authenticated remote communication
- Remote over the air firmware update
- Automated, scheduled & on demand operations including:
  - Time synchronization
  - Billing data collection
  - Tariff updates
  - Energize/de-energize (connect/disconnect)
- Automated re-try read process

Manage

- Role based access control
- Remote meter configuration
- Flexible reporting framework
- Flexible data export framework
- Flexible SOA interfaces
- Enterprise interfaces

GE Digital Energy, Grid IQ™ AMI P2MP, GEA-12700A(E) (2013), *available at*: https://www.gedigitalenergy.com/products/brochures/SmartMetering/GridIQ_P2MP.pdf

GE Digital Energy, *SMOS Smart Metering Operations Suite*, GEA-12699C(E) (2014) *available at*: https://www.gedigitalenergy.com/products/brochures/SmartMetering/SmartMeterOperationsSuite.pdf

http://www.gegridsolutions.com/SmartMetering/catalog/i210plusc.htm#i210c2

Remote "Endpoint" devices, such as utility smart meters or fault indicators, communicate directly with the "Access Points" deployed either on towers or utility poles allowing for flexible low cost deployments. An Endpoint a is device containing a small RF module designed for easy integration and ultra-low power operation in Smart Meters or sensors. A network of Access Points can provide redundant coverage for a wide area, such as a city or a county and has industry leading range enabling ubiquitous coverage. The Access Point is designed for indoor or outdoor operation and can be easily deployed on buildings, utility poles or communication towers enabling low cost pervasive coverage in the most challenging environments.

Exhibit 1

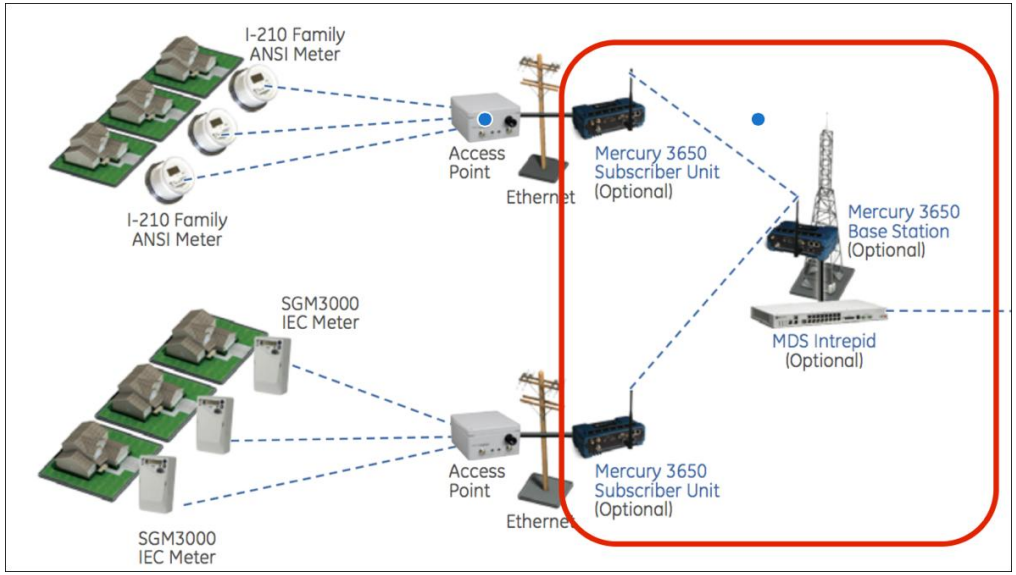
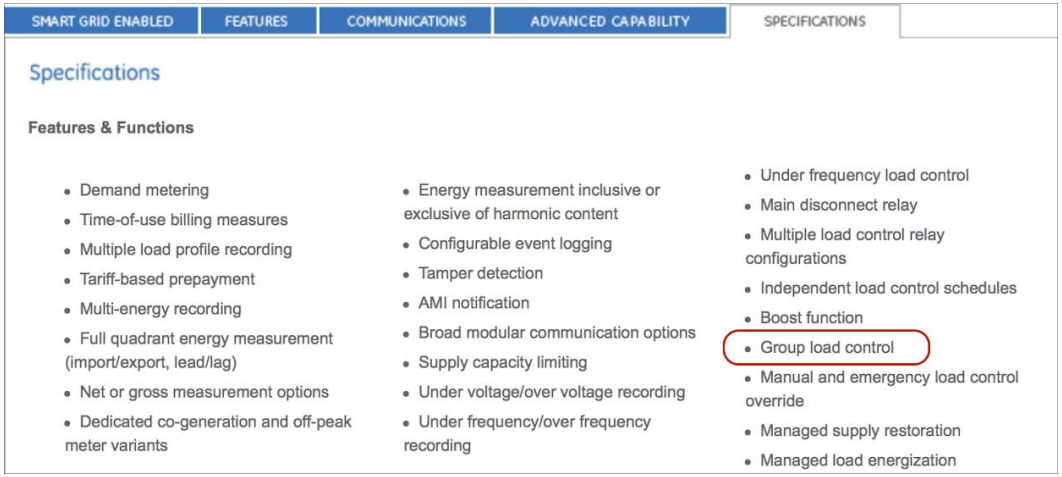


Exhibit 1



http://www.gegridsolutions.com/SmartMetering/catalog/SGM3000_Residential.htm#sgm3

	000tab5 GE requests wireless transmission of a message (e.g., a command to perform an action, a reset, a ping, etc.) to a group of endpoints in response to utility operator personnel initiating (e.g., scheduling, or prompting in real time) the transmission of messages (e.g., through Grid IQ AMI Subsystems). The GE system accordingly requests wireless transmission (of a message to recipients sharing a selected group address).

ANSI C12.22 Node ApTitles

C12.22 Node ApTitles shall be globally unique. To assure this, organizations implementing this Standard can register an ApTitle Universal Identifier. Under this registered branch, each organization can assign a unique ApTitle for each node installed on the network. There is no limit on the number of C12.22 Nodes assigned under the same branch.

For use in ACSE messages, this ApTitle forms the local root object identifier for either a client or server in a C12.22 Network. This ApTitle is used by C12.22 Networks to propagate C12.22 Messages from source to destination over any network architecture.

Multicast addressing

Multicast addressing is similar to broadcast except that it can be assumed that some communications process has a distribution list (found in Table 122 Interface Control Table) and only routes the message to certain recipients. These recipients, knowledgeable about their membership in the multicast group can respond to such a message as if directly addressed to them.

Broadcast and multicast messages shall be targeted to one C12.22 Network Segment. A C12.22 Relay may forward broadcast and multicast C12.22 Messages to other network segments according to its internal configuration.

A broadcast is addressed to <application-context-oid>.0.[<service provider id>[.<node id>].]0. A multicast is addressed to <application-context-oid>.0.[<service provider id>[.<node id>].]0.xxx where xxx is a specific multicast address. The specific multicast address can be any relative branch of a Universal Identifier. Note that routers and C12.22 Relays may want to optimize the distribution of such messaging.

Registration

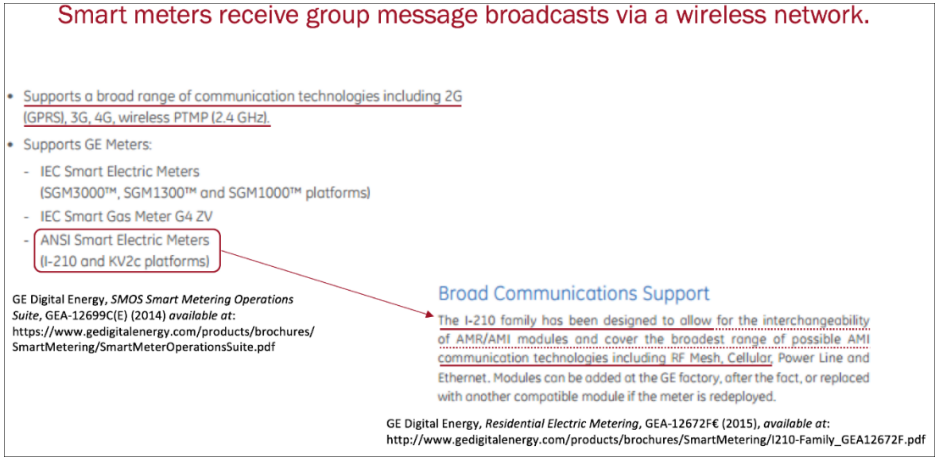
It is the intent of ANSI C12 Subcommittee 17, IEEE SCC31 and Measurement Canada, to form an oversight group (the ANSI/IEEE/MC OID Oversight group) to oversee/manage the issuance, to Certified Registrars, of root level numbers associated with the Root ApTitle and Root Class Object ID.

Exhibit 68.

1 (d) transmitting a communication to the network client comprising group information relating to the selected group address, the group information comprising at least one of the number of the recipients having the selected group address and the identifying addresses of the recipients having the selected group address;	*See* disclosure and exemplary evidentiary support and explanation for claim elements 1(a) - (c) above. The Accused Instrumentalities (e.g., Grid IQ) are used by GE and GE customers or end users to perform this step, consistent with GE's instructions and directions for normal operation. The Grid IQ system transmits group information to network clients (as identified above) including information about groups such as unique identifiers for individual endpoints that are included in the group. Without limiting the scope of these contentions, examples of communications transmitted to a network client include group information sent to GE Meter Data Management Systems and other GE Grid IQ subsystems depending on the nature of the intended group communication. For example, where meter reads are conducted of groups of endpoints for purposes of collecting usage information for billing, the Grid IQ billing subsystem requests a meter read and group information is returned. **Accused Instrumentalities include software, hardware, and systems (e.g., Grid IQ systems, subsystems, applications, interfaces) responsible for designating, tracking, displaying, or transmitting the number of endpoints (and additionally the individual identifying addresses for those endpoints) having a group address (e.g., identifier).** Grid IQ administrator clients for performing DR, issuing endpoint commands, updating endpoint software, and conducting two-way communication with endpoints receive the group information from the Grid IQ Head-end systems, databases, and software configured in the Accused Instrumentalities to provide the capability to initiate communication to groups of endpoints. The claimed step of transmitting a communication to the network

	client is performed by various Grid IQ systems or subsystems depending upon the particular deployment and configuration. The examples of the Grid IQ systems used for performing this step are specific ways this step is performed under Plaintiff's infringement theory, but they are probably not exhaustive because specific details about Grid IQ deployments and configurations are not publicly available. GE communicates within its Grid IQ AMI system to transmit group communications to the network clients associated with Grid IQ AMI (e.g., GE operated, utility operated). Transmissions of group communications include unique identifiers for individual smart meters. Extensive Coverage and Capacity The Grid IQ AMI P2MP Solution has exceptional coverage and supports multiple applications on the same network. This single network features pervasive coverage for metering and distribution grid monitoring and sensing regardless of whether the devices are battery operated or powered. Each access point in the system system supports thousands of connected devices providing unicast, downlink multicast and broadcast capabilities and supports group configuration and control. The ability to leverage a common network infrastructure for multiple applications provides immediate and significant ROI. GE Digital Energy, Grid IQ™ AMI P2MP, GEA-12700A(E) (2013), *available at*: https://www.gedigitalenergy.com/products/brochures/SmartMetering/GridIQ_P2MP.pdf
1 (e) broadcasting the message to the selected	See disclosure and exemplary evidentiary support and explanation for claim elements 1(a) - (d) above. The Accused Instrumentalities (e.g., GE AMI systems, Grid IQ) are used by GE

group address via a wireless network;	and GE customers or end users to perform this step, consistent with GE's instructions and directions for normal operation. Grid IQ broadcasts to groups of meters via a wireless network. **Accused Instrumentalities include any software, hardware, interface, application, or systems (e.g., Grid IQ systems, subsystems, applications, interfaces) used by GE, a Grid IQ end user or customer, or third party on behalf of GE or the end user/customer, to designate or cause a command, communication, or transmission to be sent to multiple endpoints, where multiple endpoints are designated at the same time. Accused instrumentalities include software, hardware, interfaces, applications, or systems used for group designating, tracking, displaying, or transmitting the number of endpoints (and additionally the individual identifying addresses for those endpoints) having a group address (e.g., identifier). Broadcasting the message to the endpoints sharing a group address is initiated by the Grid IQ back-office systems and carried out using the wireless network configured for communication in the particular Grid IQ deployment. Such wireless networks are identified and discussed above and may be particular to each deployment.** Grid IQ network infrastructure broadcasts the message to the selected group address via a wireless network (e.g., cellular or another public wireless network). Smart meters receive group message broadcasts via a wireless network.



- **Multicast Services.** Groups of meters may need to be addressed simultaneously using multicast, e.g., to enable software upgrade or parameters updates sent by a network management system (NMS) to all meters using multicast requests, and multicast queries for meter readings of various subsets of the meters.

Exhibit 64

"The headend system of a basic FAN, as shown in Figure 3, collects the meter readings, maintains meter configurations, and monitors network operations. It has end-to-end connections to the meter nodes, provided by WANs and NANs. So, while the physical connections to the meter nodes change from WAN to NAN technologies, the principle of logical, end-to-end, IPv6 connections is maintained. This is achieved by introducing one or more routers at the borders of the NAN. Also called IP edge routers, these routers connect to the WAN, enabling bidirectional data streams between WAN and NAN. In case of multiservice infrastructures, it may be expected that IP edge routers have to be configured as dual-stack (that is, IPv6 and

	IPv4) and will be capable of tunneling IPv6 over IPv4 or the converse. This may be required when connecting legacy DA devices that only run IPv4 over serial or Ethernet interfaces, or when providing remote workforce connectivity to an IPv4 intranet, or when using IPv4- only WAN infrastructure, such as General Packet Radio Service (GPRS). The IP edge router has to be properly configured to accommodate scenarios such as running both IPv6 and IPv4 over the WAN or tunneling one protocol version over the other, mechanisms that have been well-defined and tested by the Internet industry." Exhibit 64.

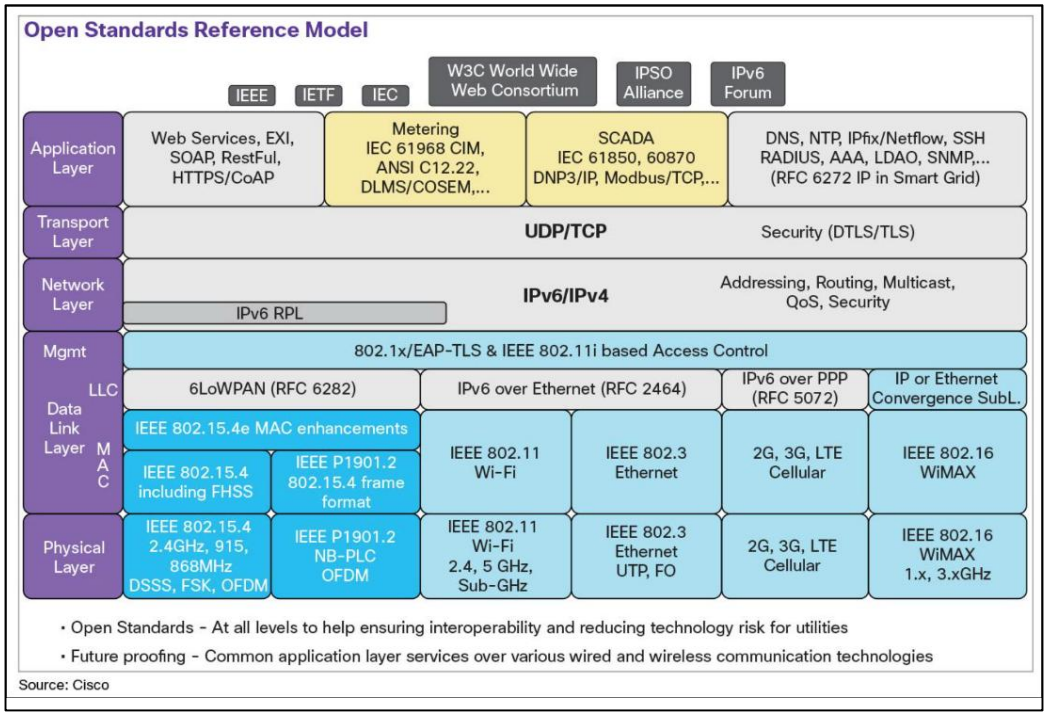


Exhibit 64

"Global, public, and private address space have been defined for IPv6; therefore, a decision must be made regarding which type of IPv6 addressing scheme should be used in utility networks. Global addressing means the utility must follow the Regional Internet Registries (RIR) policies (such as ARIN https://www.arin.net/policy/nrpm.html) to register an IPv6 prefix that is large enough for the expected deployment and its expansion over the coming years. This does not mean the address space allocated to the infrastructure must be advertised over the Internet allowing any Internet

	users to reach a given device. The public prefix can be advertised if representing the entire utility corporation - or not - and proper filtering mechanisms are in place to block all access to the FANs and devices. On the other end, using a private address space means the prefix not be advertised over the Internet, but, in case there is a need for business-to-business (B2B) services and connectivity, a private address would lead to the deployment of additional networking devices known as IPv6-IPv6 NPT (Network Prefix Translation, RFC 6296) gateways." Exhibit 64. *"Therefore, performing routing at the network layer, as fundamentally adopted in the layered IP architecture is an appropriate choice. To that end, the IETF formed in 2008 the Routing over Low Power and Lossy Networks Working Group (RoLL WG) chartered to specify an IPv6 routing protocol for constrained large-scale networks such as FAN [RPL-AMI]. Tasked with designing a routing solution for IP smart objects, the RoLL WG initially specified four standard documents, spelling out in detail the technical routing use-case requirements for urban networks, including smart-grid, industrial, and home and building automation networks. A protocol survey conducted to determine whether an existing routing protocol (OSPF, etc.) could be used for IP smart objects, given the characteristics and requirements of these networks (including table scalability, loss response, cost control, support of cost routing for links and nodes) led to the consensus that a new routing protocol had to be specified. Being rechartered, and after almost two years of intensive work performed by numerous industry routing experts, RoLL WG published a new distance-vector routing protocol, called IPv6 Routing Protocol for Low-Power and*

	Lossy Networks (RPL)." Exhibit 64. Accused Instrumentalities support communications in accordance with GE ANSI C12.22 Standards. ANSI C12.22 requires multicast capability: **4.6. IP Multicast** In addition to unicast, the ANSI C12.22 protocol requires the support of a multicast message delivery service from the network. In cases where C12.22 IP Nodes MUST perform Native IP Address discovery (e.g., the discovery of the Native IP Address of C12.22 IP Relays that provide a route out of the C12.22 IP Network Segment, or the discovery of the Native IP Address of a C12.22 IP Master Relay on the C12.22 IP Network), the C12.22 IP Nodes use IP multicast to send a C12.22 Message that contains an EPSEM Resolve Service Request on the IP LAN. Exhibit 65

Access Point

The Grid IQ AMI P2MP Solution Access Point (AP) is the key network infrastructure component of Grid Modernization Infrastructure network. The AP provides wireless coverage for thousands of sensor endpoints delivering unmatched network scalability over vast geographic areas. The AP communicates in a simple star topology with endpoints in the coverage area. Multiple APs can be configured to provide extensive coverage. APs communicate with back-office systems using secure IP networking. On the back-end, the APs connect to the Gateway.

Exhibit 1.

GE's MDS WiYZ™ Remote

MDS WiYZ Remotes are packed with features and functionality to match up with a diverse range of remote monitoring and control requirements. Each Remote accommodates 2 Analog Inputs, 2 Analog Outputs, 2 Digital Inputs and 2 Digital Outputs. One RS232 port is used for configuration.Optional radio configuration to operate on the Grid IQ AMI P2MP network.

- Configurable sample periods allow remotes to periodically sample sensor and I/O data, and transmit back to the gateway at specified intervals, conserving battery power and reducing network traffic.
- Condition-based data transmission allows remote to transmit data only when there is a change of state for a Digital Input.
- I/O extension can be implemented to regenerate sensor and I/O signals between devices.

Exhibit 1.

	Grid IQ administrator clients for performing DR, issuing endpoint commands, updating endpoint software, and conducting two-way communication with endpoints broadcast group messages from the Grid IQ Head-end systems, databases, and software configured in the Accused Instrumentalities to provide the capability to initiate communication to groups of endpoints. The claimed step of broadcasting to the group is performed by various Grid IQ systems or subsystems depending upon the particular deployment and configuration. The examples of the Grid IQ systems used for performing this step are specific ways this step is performed under Plaintiff's infringement theory, but they are probably not exhaustive because specific details about Grid IQ deployments and configurations are not publicly available.
1 (f) receiving acknowledgment responses from the recipients sharing the selected group address via the wireless network in response to the message, the acknowledgement responses each comprising recipient identifying information and	See disclosure and exemplary evidentiary support and explanation for claim elements 1(a) - (e) above. The Accused Instrumentalities (e.g., GE AMI systems, Grid IQ) are used by GE and GE customers or end users to perform this step, consistent with GE's instructions and directions for normal operation. Grid IQ (e.g., the head-end system, collection engine, MDMS) receives acknowledgement responses via the wireless network from endpoints sharing the group address. Acknowledgements provided to the network client include recipient identifying information and indication of successful receipt or that the message was read by the endpoint. **Accused Instrumentalities include hardware, software, interfaces, and subsystems that send, receive, originate, format, select, transmit, relay, store, or handle acknowledgements from endpoints, where the acknowledgements traverse a wireless component (e.g., transmitter, transceiver, receiver) and (1) indicate successful receipt of a communication by the endpoint and/or (2) indicate a communication was read, carried out, processed, completed, etc. by the endpoint (e.g., meter). Accused Instrumentalities in a portion of deployments rely upon ZigBee and/or ANSI C12.22**

at least one of an indication of successful receipt of the message and an indication that the message was read by the recipient that transmitted the corresponding acknowledgement response; providing the acknowledgment responses to the network client; and	**protocol acknowledgement messages.** Acknowledgement responses (e.g., exception events and notification events) are received from smart meters in response to a group message. Monitor • Key performance indicator dashboard • Smart data viewer • Exception management & reporting • Event notification & event propagation • User authentication & logging • Audit logging • Exception logging GE Digital Energy, *SMOS Smart Metering Operations Suite*, GEA-12699C(E) (2014) *available at*: https://www.gedigitalenergy.com/products/brochures/SmartMetering/SmartMeterOperationsSuite.pdf 5.4.3. Choice of Protocol for C12.22 Response APDUs When a Target C12.22 IP Node receives a C12.22 Request Message from an initiating C12.22 IP Node, it SHALL send a C12.22 Response Message using the same transport protocol (i.e., TCP to TCP, UDP to UDP). In the case of UDP, the target SHALL send the C12.22 Response Message to the source IP address and port number. Exhibit 65. ANSI C12.22 is the designation of a new standard that is being developed to allow the transport of ANSI C12.19 table data over networked connections. It is part of a group of related ANSI protocols but has some fundamental differences from the other protocols within the group. This article discusses the ANSI C12.22 protocol and how it works, but to fully understand the C12.22 protocol, it is helpful to consider a brief history of ANSI meter communications standards.

Exhibit 66.

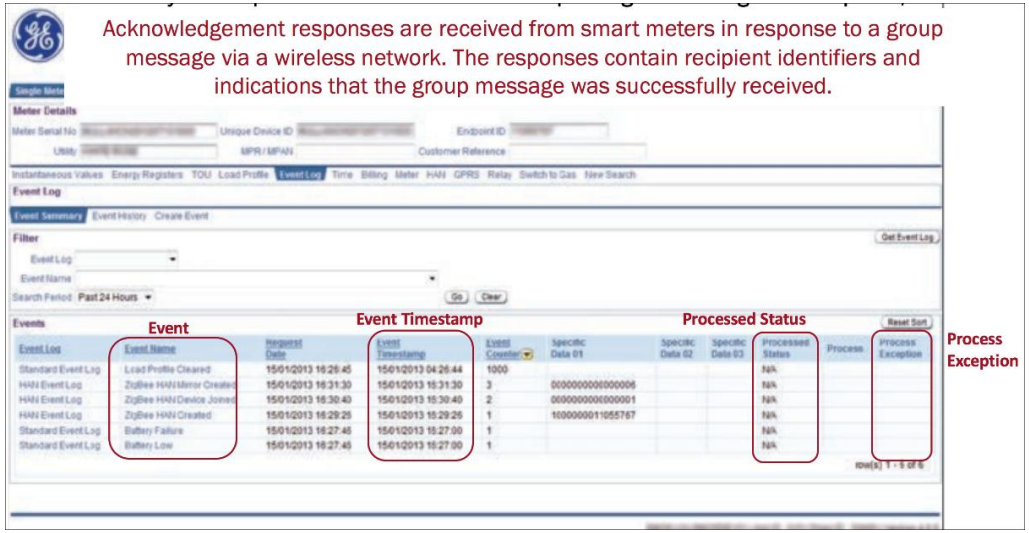


Exhibit 11.

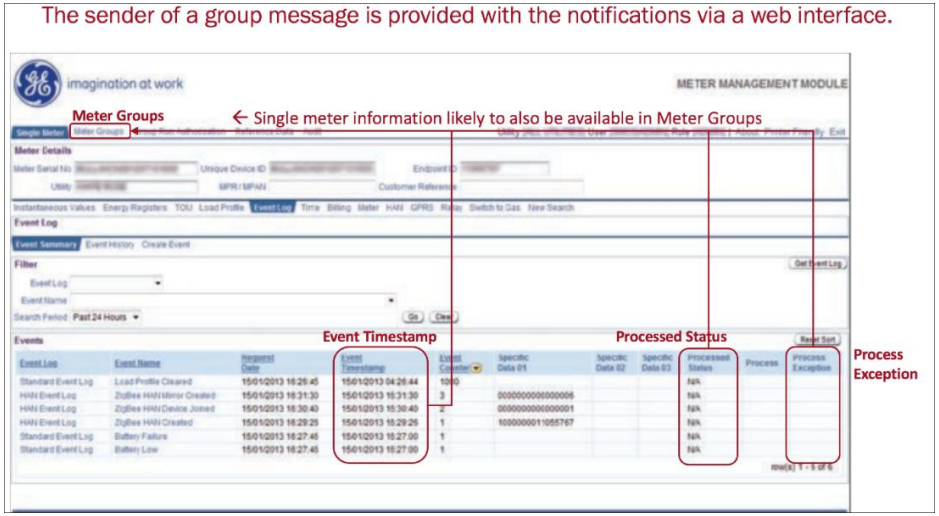


Exhibit 11

ANSI C12.22 requires a response from endpoints that are Accused Instrumentalities:

5.4.3. Choice of Protocol for C12.22 Response APDUs

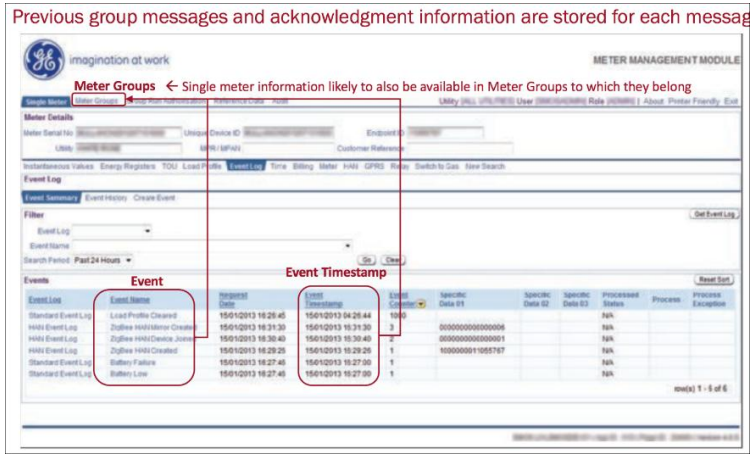
When a Target C12.22 IP Node receives a C12.22 Request Message from an initiating C12.22 IP Node, it SHALL send a C12.22 Response Message using the same transport protocol (i.e., TCP to TCP, UDP to UDP).

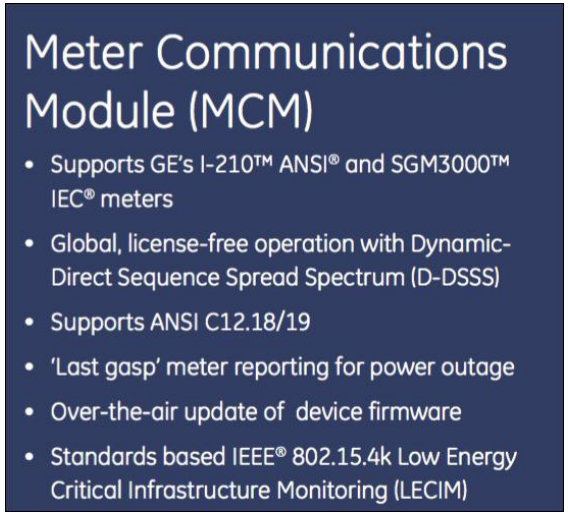
In the case of UDP, the target SHALL send the C12.22 Response Message to the source IP address and port number.

Exhibit 65.

Acknowledgements are provided to the network client(s) described above and may, alternatively, be received via the wireless network through responses to commands with

	data indicating the endpoint source of the response, or be provided by the endpoint as a write notification at the Grid IQ collection engine. To the extent such acknowledgements do not literally perform this claim step, these notifications and endpoint responses acknowledging the group messages satisfy this claim step under the doctrine of equivalents. *See* Exhibit 79. Grid IQ administrator clients that receive acknowledgements having these specific data include the Grid IQ Head-end systems, databases, and software configured in the Accused Instrumentalities to provide the capability to initiate and receive communication to/from groups of endpoints. The claimed step of broadcasting to the group is performed by various Grid IQ systems or subsystems depending upon the particular deployment and configuration. The examples of the Grid IQ systems used for performing this step are specific ways this step is performed under Plaintiff's infringement theory, but they are probably not exhaustive because specific details about Grid IQ deployments and configurations are not publicly available.
1 (g) storing, for each recipient having the selected group address, the respective recipient identifying information for each recipient and a corresponding message alert status indicator indicating at	See disclosure and exemplary evidentiary support and explanation for claim elements 1(a) - (f) above. The Accused Instrumentalities (e.g., GE AMI systems, Grid IQ) are used by GE and GE customers or end users to perform this step, consistent with GE's instructions and directions for normal operation, to determine which of the endpoints has received the message and which endpoints have not yet received the message. GE Grid IQ systems store meter identifying information and alert status for each recipient. The alert status is stored at the head-end system or associated database and may be provided to the customer (e.g., utility provider or utility operator) to various software applications (e.g., MDMS, etc.) in the AMI stack.

least one of the message has been received by that recipient, and the message has been sent but not yet received by that recipient, depending on when that recipient transmitted its corresponding acknowledgement response; wherein message alert status for each of the recipients in the group corresponding to the selected group address is determined,	 Exhibit 11 **Accused Instrumentalities include hardware, software, applications, and subsystems responsible for (1) storing endpoint addresses; (2) determining (or designating) when an endpoint (or associated communication module) transmits, originates, sends, or conveys an acknowledgement, and at least one of: (3) determining or storing the status regarding whether a communication (and/or for e.g., its underlying command) was received, processed, acknowledged, or carried out by an endpoint; or (2) determining or storing the status regarding whether a communication was sent (e.g., transmitted over a network, wirelessly transmitted, etc.).**

including at least identifying which of the recipients received the message and which of the recipients have not yet received the message, using the stored message alert status indicator.	 Exhibit 8. Acknowledgement responses from the endpoints contain device identifiers, allowing a determination of which smart meters did not receive the message sent to the group. **Accused Instrumentalities include hardware, software, applications, and subsystems responsible for tracking, determining, displaying, conveying, storing, or transmitting status information to operators regarding whether endpoints (or associated communication modules) received, processed, parsed, or carried out a communication (or underlying command).** Grid IQ administrator clients for performing DR, issuing endpoint commands, updating endpoint software, and conducting two-way communication with endpoints receive the group information from the Grid IQ Head-end systems, collection engines, databases, and software configured in the Accused Instrumentalities to provide the capability to initiate and receive communication to and from groups of endpoints. The head-end system or

	collection engine may have associated databases or other subsystems that store alert status information and recipient action data. The claimed step of transmitting a communication to the network client is performed by various Grid IQ systems or subsystems depending upon the particular deployment and configuration. The examples of the Grid IQ systems used for performing this step are specific ways this step is performed under Plaintiff's infringement theory, but they are probably not exhaustive because specific details about Grid IQ deployments and configurations are not publicly available.

Claim 2 '959 Patent – GE System	
2. A method as claimed in claim 1, further comprising the step of customizing handling by a selected recipient of messages broadcast to different ones of the group addresses to which the selected recipient belongs.	*See* Claim 1(a-g) above. GE messages broadcast to recipients in different groups will provide for customized handling by the selected recipient depending upon the group the recipient belongs to. Such customized handling may include, for example and without limiting the different types of customized handling commands, demand response commands, read commands for response with status or usage data, and ping responses initiated by different functions on the utility side at the head-end system. The billing department and demand response group at the utility or GE, for example, will have their own groups arranged and configured for their particular applications and data requirements. Messages broadcast to different ones of the group addresses will require customized handling by the recipient based upon the purpose and functional need of the message originator. *See* also Claim 1(e) above.

	Group messaged requests may specify particular stored procedures at the endpoint to be carried out to provide customized handling. *See also*, ANSI C12.19, 12.22.
3. A method as claimed in claim 1, wherein the message instructs at least one of the recipients to perform an action in addition to or instead of displaying message text to the user.	*See* Claim 1(a-g) above. In normal operation, Grid IQ endpoints receive group messages commanding the endpoint to perform an action. The smart meter endpoint or DA endpoint action may be in addition to or instead of displaying text to the user. GE displays text at least through in-home displays. GE Grid IQ messages include instructions to perform various actions such as disconnecting service. As an example, a Grid IQ system with an integrated remote service switch may perform this action: Messages associated with Demand Response also instruct recipients to perform an action in addition to or instead of displaying message text: In some instances, display at the recipient is effected during commissioning.
8. A method as claimed in claim 1, further comprising the step of the recipients providing status information in the responses to convey status of multiple recipients in the group corresponding to the selected group address to the	*See* Claim 1(a-g) above. The GE Grid IQ system requests responses from recipients providing status information that conveys aggregated status information for multiple recipients in the group corresponding to the selected group address. This status information is provided to the network client. *See* detail for Claim elements 30(h), 1(e), and 1(f).