

Interoperability Lessons, From A Metering Perspective

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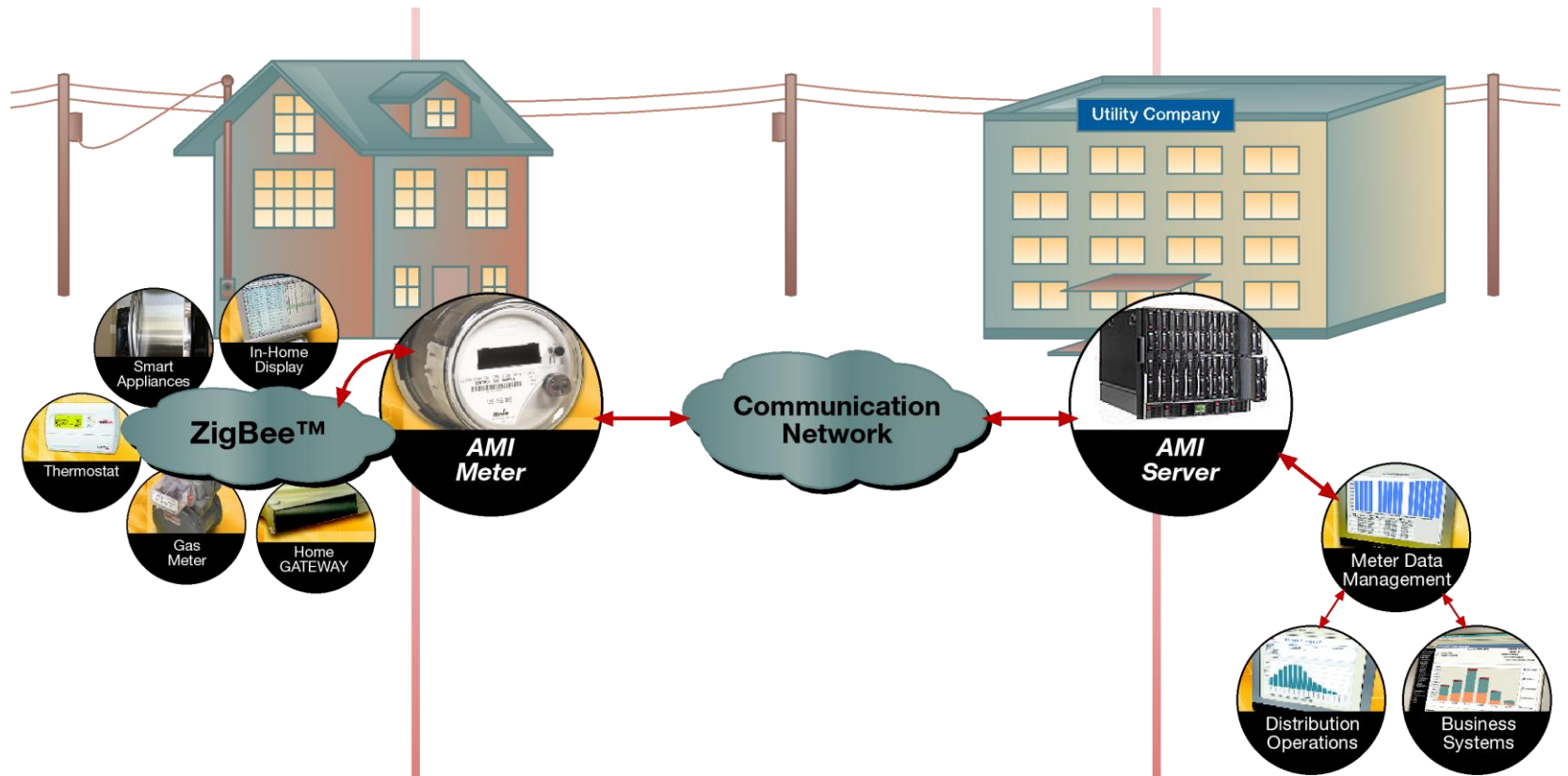
- Meter data
 - Tells who used how much of what, when they used it, and where
 - Provides fundamental information about conditions to which a smart grid must adapt

- Meter data, and the meter itself, must be accessible to be useful in smart grid

- Numerous automated transmission and distribution systems operating in a coordinated manner
- Responds to market needs and handles emergencies by self-healing
- Intelligent communication infrastructure enabling the flow of information needed for the evolving digital energy system

- Advanced metering is the use of smart meters, with advanced two-way communications technologies, that enables utilities to
 - Meet their business and operational needs for meter reading
 - Empower all customers to participate actively and frequently in demand response and conservation
 - Help move towards a smart grid

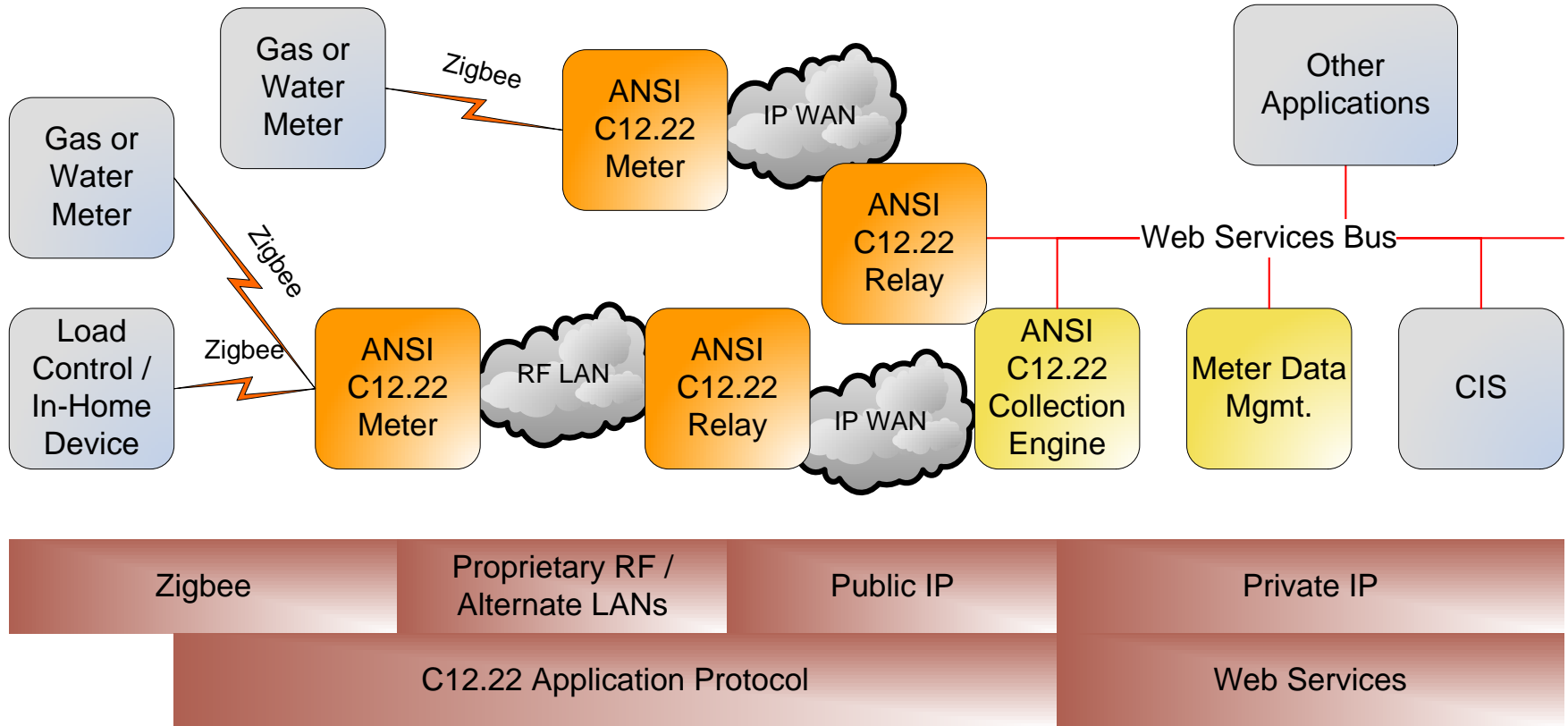
AMI Solution



- Based on open, published standards
 - ANSI C12, ZigBee, IP, WSDL, SOA, IEC
- Object modeling
 - Supported through ANSI C12.19 and C12.22
- Self description
 - Supported through published Web Service Description Language (WSDL) files used to interrogate any meter

- Points of Interoperability
 - Service Oriented Architecture, WSDLs, ANSI standards
- Security
 - Authentication, encryption, and access as defined by C12.22
- Time Synchronization
 - Uses Net Time Protocol (NTP)
 - Set to Universal Coordinated Time (UTC)

AMI Protocols



Open architecture enables any piece of the system to be substituted / upgraded or second-sourced without losing any system investments.

Questions?

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