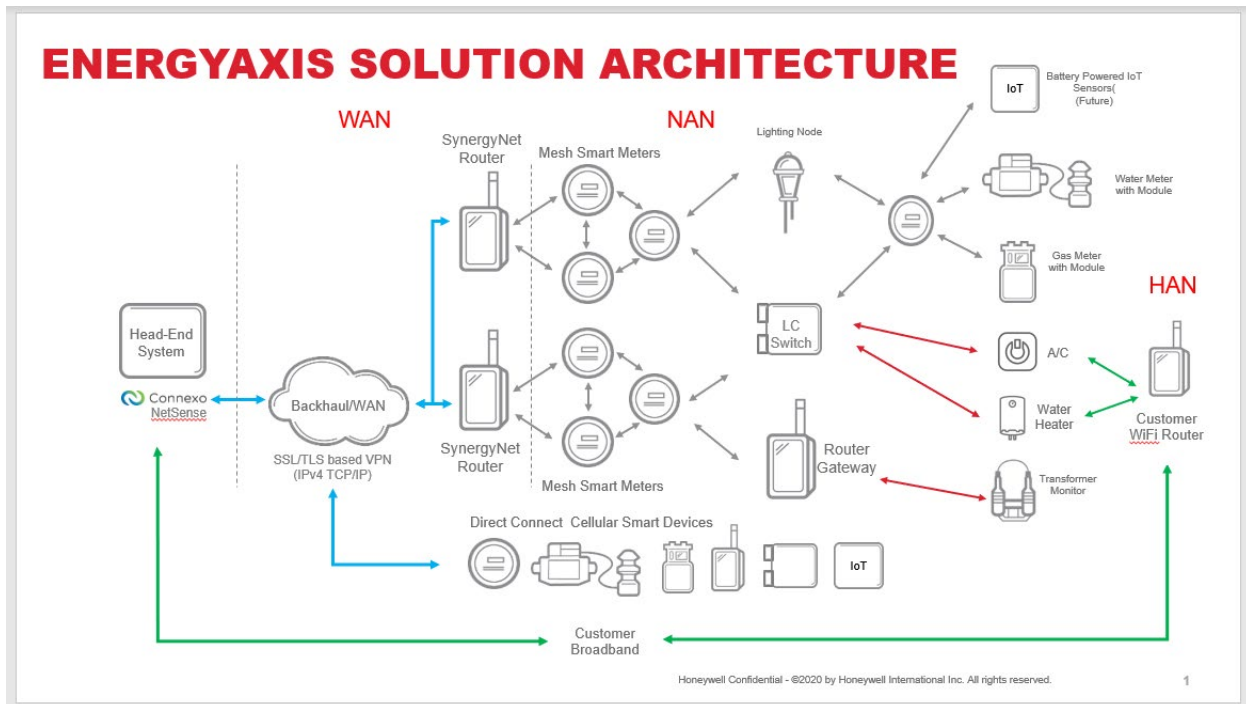
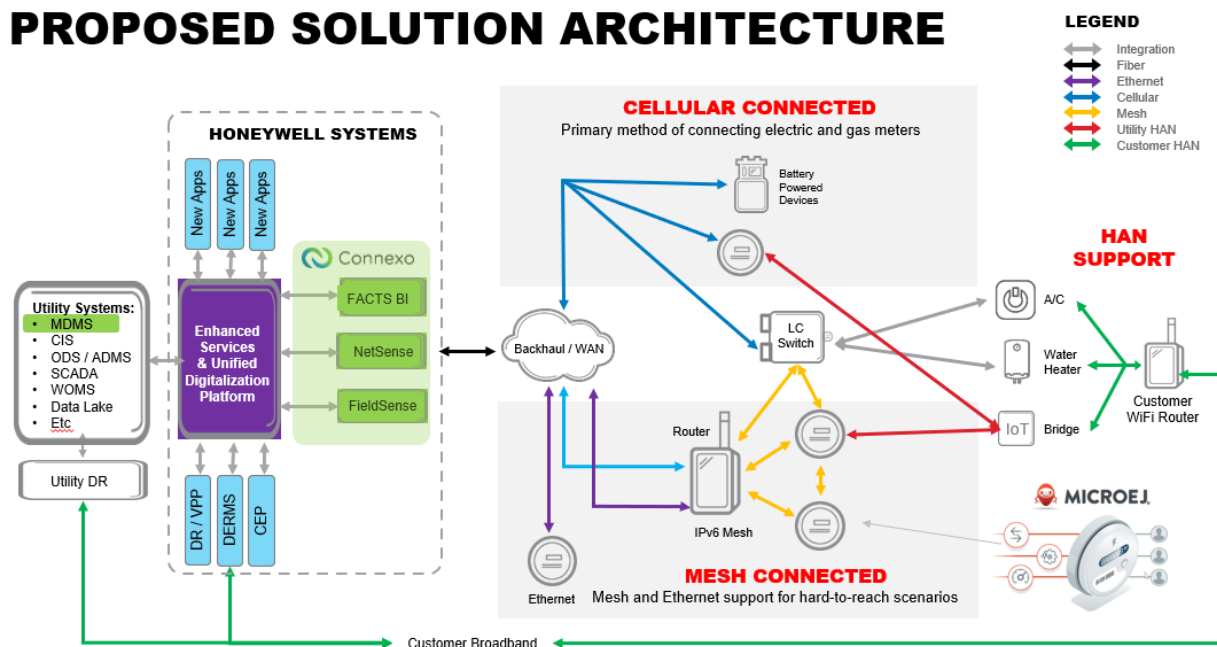


Solution Overview



PROPOSED SOLUTION ARCHITECTURE

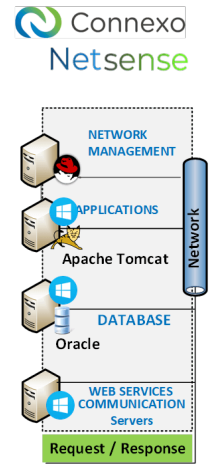


The proposed AMI solution architecture is comprised of 3 layers : a "Honeywell Systems" side for all related GUC activities. This includes the Honeywell AMI Software platform called "Connexo". Connexo is comprised of 3 key software components: NetSense (AMI Meter Data Collection), FieldSense (AMI Field Tools) and Facts BI (AMI Business Intelligence). As well, this layer also includes the newly release Unified Digitalization Platform capable of integration with DERMS, Consumer Engagement portal and 3rd party tool support combined with new "Smart Apps". On the GUC Systems side we will also see the most common MDMS, CIS, ODS, WOMS and other system integrations working through the UDP.

NetSense is made up of four independent servers:

- Network Management Server (NMS) – Red Hat Enterprise Linux
- Applications Server (APP) – running on Tomcat Web Server - Windows Server
- Communications Server (COMM) – Windows Server
- Oracle Database Server (DB) – Windows Server

The second layer is the Communications/Backhaul for both your Mesh and Cellular connected devices and finally a 3rd layer for all Home/Neighborhood Area Networking functionality.



At Honeywell, we understand that you are not just choosing an AMI solution; you are choosing a strategic partner. In the rapidly changing high-tech Smart Grid environment, maintaining and supporting a solution for the system's life and beyond is paramount. Our legacy speaks for itself. Utilities that deployed our initial AMI solution over a decade ago are still updating their systems today to include new features and options as available. Our demonstrated commitment to our customers and the product life cycle ensures your investment continues to deliver value and does not have to be wasted or abandoned. A decision to collaborate with Honeywell will pay dividends to you for many years to come.



The EnergyAxis system provides comprehensive and stringent security capabilities and measures at all levels—security features are built into the edge devices, the network communications infrastructure, and the network management system. Our network and data security clearly differentiate us within the AMI industry because we have embraced and incorporated security standards in every layer of the architecture.

Our proposed EnergyAxis solution includes the following components:

- **Connexo®** – Honeywell's unified, open, standards-based, scalable GUC intelligence software suite that gathers and manages the entire data flow from smart endpoints to the head-end network servers and customer presentment. The Connexo software applications include AMI head end (Connexo NetSense), Meter Data Management (MDM – Connexo Insight), system and installation tools (Connexo FieldSense), and customer presentment (Consumer Engagement Portal: CDP).

To further promote interoperability with third-party solutions and applications (including GUC back office CIS, OMS, MDM, and GIS systems and/or partner solutions); Connexo platform interfaces are designed using industry standards such as MultiSpeak Standard 4.1 and CMEP. This approach to system interfaces enables deployment of advanced smart grid applications without the requirement of custom interfaces and associated custom maintenance or support programs.

- **Connexo NetSense** – Honeywell’s high-performing AMI “head-end” application is the command console that provides comprehensive AMI and network data collection, management, monitoring, and reporting covering residential and C&I electric, water, and gas meters, demand response and load control devices, distributed automation and street light controller nodes, home area networks (HAN), electric vehicles, grid routers, transformer monitors, solar panels, and other network elements. Connexo NetSense performance offers consistent and reliable read rates with 100% system coverage including rural and challenging areas. Additionally, we offer flexible delivery models—from on premise own-and-operate to secure hosted options to managed services solution options via our industry alliances.
- **FieldSense** – Connexo FieldSense is Honeywell’s latest and most advanced tool yet for the administration, configuration, and service of smart meters. Field applications run off an Android device and allow field personnel to retrieve configuration data from a centralized server and send to the server all meter data reads from the field.
- **SynergyNet** – A true IPv6 wireless communications network that is standards-driven, with backward compatibility and unprecedented interoperability to the Internet of Things (IoT). SynergyNet enables GUC to utilize one common communications network (leveraging Linux-based routers) to support current and future network applications and devices.
- **Alpha 4 Electric Meter Platform** – The proposed Alpha 4 meters are the most advanced electric metering platform in the market today. The A4R (Residential) and A4CI (Commercial) meters are built on an advanced meter to deliver maximum technology at an affordable price. The A4 is packed with industry-leading capabilities and processing power for advanced grid applications, delivering real-time data insights and edge intelligence and analytics for today’s metering needs and capacity to grow to meet tomorrow’s grid applications. The A4 platform ensures reliable, efficient service by offering:
 - **Expanded data gathering at higher resolution and enhanced processing power** (with a sampling rate of 4,000 samples per second) to provide significantly more grid information to monitor and analyze much faster, enabling you to quickly gain deeper insights into particular service areas, usage, and more.
 - **Industry-leading memory** (8MB A4R/16MB A4CI to support 365 days of registry data and 60 days of profiling with full commitment of channels) enables you to store more metrology data over longer periods of time and expand your ability to optimize grid functionality and quality of service to your customers.
- The **A4R (Residential)** is an advanced residential/small commercial meter with IPv6 communications, options for connect/disconnect, kW/kVA capabilities; TOU; remote TOU schedule updates, demand reset, and on-demand reads; net-metering capabilities; voltage and temperature data streams; over-the-air upgrades; enhanced outage filtering and “last gasp” reporting (including a super capacitor), direct WAN connectivity; capability to support Prepay or HAN (ZigBee) functionality without additional hardware; and built-in security and encryption. 12 channels IP / 8 channels LP.
- The **A4CI (Commercial)** is an advanced 4-quadrant, commercial/industrial meter with IPv6 communications, up to 6 metering quantities and 8 channels of LP interval data (i.e., 1/2/5/15/30/60 minute intervals); kW/kVA/kVAR capabilities; 4-tier, 4-season TOU energy and demand; per phase voltage reads; remote TOU schedule updates, demand reset and on-demand reads; up to 32 channels of over 75 values of instrumentation profiling including harmonic and demand distortions; over-the-air upgrades; net-metering capabilities; complete outage and restoration monitoring; direct WAN connectivity; and built-in security and encryption. 32 channels IP/8 channels LP.

- **CAT-M1 Cellular** - The Honeywell solution also supports our newest generation of cellular smart electric meters and cellular gas retrofit modules with no additional infrastructure investment or maintenance as compared to other available solutions in the market, such as fixed base or RF Mesh. It is a network solution based on open standards which supports interoperability. LPWA technology for both 4G and 5G allows deploying the solution for current 4G/LTE network that would be supported till the end of 5G sunset. The communication infrastructure is maintained and managed by the wireless carriers. Through CAT-M1, we can connect to all Unifit gas meters regardless of proximity to an electric meter. You would decide when to expand AMI for gas customers not located within your electric footprint without concern for cost of added infrastructure or additional software integration.

Additionally, CAT-M1 cellular provides:

- Excellent propagation and penetration characteristics
 - Operating in licensed spectrum (impervious of noise)
 - Improved coverage and reliability
 - Better error correction
 - Interoperable between AMI, DR, SCADA
 - Easily extendible for Edge Analytics
 - Nationwide deployment with Zero infrastructure cost
 - Secure via SIM for mutual authentication, integrity, and malware protection.
- **SynergyNet Router** – The SynergyNet Router is the intelligent interface between Connexo NetSense and the IPv6 local area network. Offering unparalleled flexibility, the SynergyNet Router provides security, storage for the collected consumption and network data, and multiple options for communication interfaces to wide area networks (WAN). SynergyNet Routers are easily mounted on buildings or distribution poles, making installation and maintenance incredibly simple and cost effective.
 - **SynergyNet Repeater** – The SN Repeater is a flexible and cost-effective radio relay solution for deployments of EnergyAxis® System networks, including gas or water only service areas. The SN Repeater enables the SynergyNet System to easily extend network coverage into areas where only gas or water is metered. It also enhances network performance with two-way communications in remote areas where SynergyNet-enabled electricity meters are not sufficiently dense to support reliable mesh network communications.
 - **EnergyAxis Gas Module V4 900Mhz** – Our module is compatible with nearly all major brands of gas meters and easily retrofits onto existing gas meters, freeing the GUC from closing out the meter and taking a reading. The meter continues to count without a change in total volume; and the AMI module is programmed to match the volume reading on the meter's index.
 - **NXCM Retrofit AMI Module** – Next-generation Cellular IoT capabilities for your existing metering assets. The NXCM fits almost all residential, commercial, and industrial gas meter applications from American Meter and other major manufacturers. Available in front-mount, top-mount, and remote configurations with a 20-year battery life and advanced tamper detection.

Honeywell Delivery Team Services and Resources

Honeywell has an excellent record of delivering and supporting robust, Smart Grid solutions (including integration and installation services) to global customers of all sizes. Our delivery team includes a dedicated team of development, project management, sales, technical support, engineering, training, and field services staff to deliver a successful project for GUC.

Our Project Delivery Services also include the following:

- **Optional Managed Installation Services** – Honeywell and our chosen partner(s) bring extensive installation experience and proven practices to ensure the safe, accurate, and efficient install of your AMI system.
- **Optional Field Marketing Services** – Honeywell's field marketing team is experienced in providing personalized outreach campaigns that promote high levels of program awareness and satisfaction among GUC customers. Proactive customer communications help educate your customers on the benefits of smart meters, improve acceptance rates, and increase productivity for field operations. We can create and deliver a customized outreach campaign to meet your specific needs.

Conclusion

In closing, we thank you for the opportunity to submit this proposal. We are confident that our proposed solution will enable you to achieve your business and operational goals by:

- **Minimizing your risk.** Having never left an investment stranded, Honeywell has stood the test of time and continues to be a stable and diversified market leader. In addition, Honeywell offers a cost-effective integrated solution with significant financial backing and resources to ensure this project will be a success. From a technical standpoint, our EnergyAxis solution offers unparalleled reliability, performance, and security.
- **Maximizing your Return on Investment.** Honeywell's integrated solution, with best-in-class partners, delivers the lowest total cost of ownership. In addition, a decision to choose Honeywell also leverages our deep and wide heritage as a metering company with the innovation of an industry leading AMI solutions provider that results in a solution that is fully integrated and operational.
- **Future proofing your AMI solution.** With Honeywell, GUC can scale, expand, and tune your AMI solution as new needs arise, providing a future-proof platform right from the start.