



New Options for Smart Water AMI – Neptune R900[®] and LoRaWAN[™] Network

SOLUTION BRIEF BY NEPTUNE TECHNOLOGY GROUP, INC.

DEPLOY WITH CONFIDENCE – R900[®] AND LoRaWAN[™] OPEN-STANDARD AMI NETWORK

With Neptune's R900[®] System, the LoRaWAN[™] IoT network, and the Neptune[®] 360[™] cloud-based data management platform, a Smart Water AMI Network can be easily deployed and operated by your utility.

The R900 System and LoRaWAN network architecture provide broad coverage with minimal AMI network infrastructure and low-cost connectivity.

Managed through the LoRa Alliance[™] and supported by the broad consortium of participating companies, developers provide a wide range of water and wastewater sensors, ensuring network compatibility and interoperability for large IoT applications such as AMI.

Based on the LoRaWAN specification and network protocol, the system incorporates built-in standardized features and algorithms to assure end-to-end security and confidentiality of all application data.

With its interleaved mobile and fixed network messaging, the R900 System allows your utility to deploy AMI with assurances of backup mobile reading (AMR). Handheld, mobile, and fixed network collectors operate seamlessly in parallel to support any reading method.

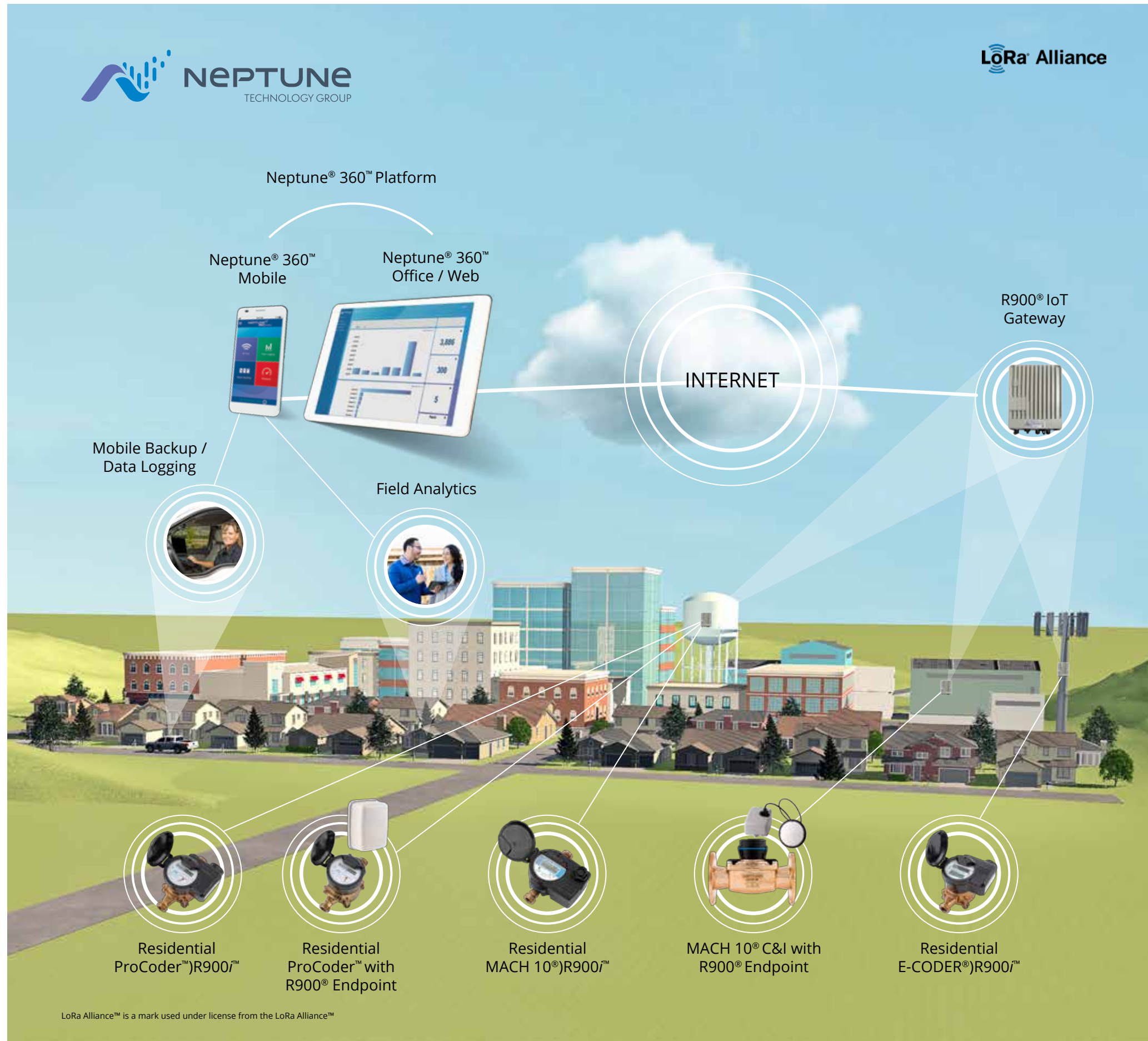
Based on a common platform, Neptune 360 provides mobile device and head end system management functions for seamless integration into multiple CIS/billing systems with the flexibility to interface with other third-party systems as required. Hosted in a world-class data center, Neptune 360 provides for the security, scalability, and reliability expected of today's water AMR/AMI systems.

Neptune's R900 System and the LoRaWAN Smart Water Network enable your utility to deploy with confidence and realize the full operational benefits and improved customer service that AMI offers.

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NEXT GENERATION SMART WATER AMI NETWORK

Neptune's Smart Water solution provides for unprecedented coverage, scalability, security, and efficiency in support of Advanced Metering Infrastructure (AMI). Now LoRaWAN compatible and based on an open-standard protocol, the R900 endpoint and network establish key building blocks for the next generation of Smart Water AMI networks, while supporting backup mobile reading.



COMPREHENSIVE AMI SOLUTION

The R900® endpoint combined with the LoRaWAN network and Neptune's cloud-based data management platform, Neptune 360, provide key benefits in improved operational efficiencies, enhanced customer service, and distribution system optimization. Share and leverage actionable data captured by Neptune 360, empowering collaboration across your utility to manage Key Performance Indicators (KPIs) for billing, meter services and AMI network performance.



Neptune IoT Gateway

NEPTUNE R900® ENDPOINTS

The Neptune R900 endpoint is designed and engineered to be ready and operational "out of the box." Shipped from the factory, the R900 endpoint is active and transmitting at predetermined intervals for operation on a LoRaWAN compatible AMI network, providing meter data as well as backup mobile AMR support without the need for any field programming. This approach simplifies and speeds deployment of endpoint hardware, as well as alleviates any concerns for errors in programming while installing meters.



Neptune R900 endpoint

AMI NETWORK ARCHITECTURE

The LoRaWAN network is ideally suited for Smart Water AMI networks. R900 endpoints communicate to the R900® IoT Gateways through full duplex operation, making all receive and transmit channels available simultaneously, providing maximum data throughput. The two-way communications provide hourly time-synchronized meter readings and alarms to the Neptune 360 head-end data management platform.

The R900 IoT Gateway is highly scalable, providing superior performance and reliability for the deployment of Smart Water AMI networks. The R900® IoT Gateway provides extensive scalability in a compact enclosure and supports millions of messages daily.

The R900 IoT Gateway is designed for the harshest of environmental conditions and can be installed in a variety of ways, including roof mount, tower mount and wall mount, providing broad flexibility for Gateway placement.

STANDARDS-BASED AMI NETWORK TECHNOLOGY

LoRaWAN is a global standard managed by the LoRa Alliance with a focus on expanding Low Power, Wide Area (LPWA) networks for IoT deployments such as Smart Water AMI. Developed primarily for battery-operated devices, the LoRaWAN specification guarantees network compatibility and interoperability independent of operator, ensuring optimal network performance, end-to-end security, and scale for the most rural or dense AMI deployments. The large group of companies currently supporting the LoRa Alliance ecosystem ensures the availability of a wide variety of water sensors and network interoperability for AMI now and in the future.

NETWORK SECURITY AND RESILIENCY

The LoRaWAN network incorporates several standardized features and algorithms for end-to-end security and confidentiality of the application data transcending the network. The LoRaWAN specification provides key information for network security

including credentialing, network authentication, key management/provisioning, and AES encryption of all application data.

CLOUD-BASED DATA MANAGEMENT PLATFORM

Neptune 360 is designed as a cloud-based platform providing a single source of secure, accurate data and access for all meter reading types including AMR and AMI reading solutions.

Because Neptune 360 is delivered in a Software-as-a-Service (SaaS) model, there's no need to install AMI servers or perform system upgrades, thereby

reducing IT support requirements. All that is needed is an Internet browser managed through secure login credentials. Ease your security concerns with a system monitored 24/7 that operates from a world-class data center and provides the highest level of security, redundancy, and disaster recovery services.



*Neptune 360 Cloud-Based
Data Management Platform*



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