BCWWA Operator Continuing Education Day

Cellular Meter Reading, Turn Your Data into Proactive Intelligence

ORION® Cellular LTE AMA System
Customer portal / phone app
From cellular IoT and 5G to connected vehicles and Industry 4.0: it’s all happening, now

By 2024, there will be 4.1 billion cellular IoT connections. Such connections are not specific to one region or industry – they’re emerging everywhere.
Acronyms or Industry Terms Used Today

- AMA – Advanced Metering Analytics
- AMI – Advanced Metering Infrastructure
- Endpoint – Meter Interface Unit (MIU) or Transmitter
- PIA – Privacy Impact Assessment
- FCC – Federal Communications Commission
- LTE – Long-Term Evolution
- LTE-M – Long Term Evolution (4G), category M1
- IR - Infrared
- DMA – District Metering Areas
- EOW – Eye on Water consumer portal
Cellular Meter Reading

What is Cellular LTE meter reading

What is AMA

What is a hosted AMA managed solution

What is a consumer portal
WHY CELLULAR?

With so many options for your next technology, why should you choose a cellular solution?

1. Fixed Network capability made easy for any size water utility - No Utility owned infrastructure required
2. Secure, non-proprietary 5G-ready two-way LPWAN cellular licensed network
3. No cellular carrier contracts or negotiations for you to worry about
4. Standard 15-minute interval data for better decision making
5. Simple installation made through start on consumption design
6. Built-in system redundancy through robust Long-Term Evolution (LTE-M) cellular network optimized for IoT
7. 20-Year Endpoint and Network Warranty (10-Year Full / 10-Year Pro-rated)
Cellular meter reading is AMI without the infrastructure
WHY CELLULAR?

ORION® CELLULAR LTE-M ENDPOINT

Collects and securely transmits 15-minute interval consumption/exception data in a non-proprietary two-way digital format via LTE-M Cellular Network four times per day. Stores 42 days of data backup and transmits a mobile signal to support installation, troubleshooting, and walk-by back-up method of data collection for obtaining a missed read. More than 1M successfully deployed.

LTE-M CELLULAR NETWORK

Robust Long-Term Evolution Network securely transfers Endpoint Data to BEACON® AMA while also sending confirmation and any queued commands to Endpoint. LTE-M Network utilizes Custom APN with Private IPs for advanced security with no direct access to Public Internet.

BEACON® AMA CLOUD PLATFORM

Securely stores Queued Commands and Endpoint Data in AES-256-Bit Encryption format. Sends endpoint confirmation of data storage. Data is accessible via internet connected device for Utility and Consumer.
Cellular endpoint communication should *not* be equated with cellular calls. *Here is why!*

<table>
<thead>
<tr>
<th>Cellular Call</th>
<th>Cellular Endpoint Communication</th>
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</thead>
<tbody>
<tr>
<td>Moves from cell tower to cell tower</td>
<td>Stationary – No need to transition between cell towers – No “dropped calls”</td>
</tr>
<tr>
<td>Requires good connection for clear voice communication (5 bars)</td>
<td>Any connection will transmit data – similar to a text message</td>
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<tr>
<td>Calls are lengthy (minutes of connection time)</td>
<td>Data packet is small (micro-seconds of connection time)</td>
</tr>
</tbody>
</table>

*3001#12345#*
Infrastructure-free Cellular Approach
What is LTE-M and why you need it

Manufacturers are now offering residential electronic meters that incorporate integrated shutoff valves, along with pressure and temperature encoders to provide high resolution metering data through the cellular endpoint to the AMA software.

- **LTE-M** is the abbreviation for LTE Cat-M1 or Long Term Evolution (4G), category M1. and future 5G networks.
- This technology is for Internet of Things (IoT) devices to connect directly to a 4G/5G network, without a gateway and on batteries.
- **It’s cheaper.** Devices can connect to 4G/5G networks with chips that are less expensive to make, because they are half-duplex and have a narrower bandwidth.
- **Long Battery Life.** Devices can enter a "deep sleep" mode called Power Savings Mode (PSM) or wake up only periodically while connected. 20 year battery life.
- **Service Costs Less.** Because the maximum data rate of LTE-M devices is only about 100 kbits/s, they do not tax the 4G network as much.
Cellular LTE endpoint and installation

- Standard data interval is 15 minutes
- LTE communication is once per day, LTE-M up to four time per day.
- Standard is 42 days of data storage in endpoint
- Endpoint will always send cellular message with ability to capture mobile read as backup. QuickRead Function
- 20 year warranty
Cellular Value

CELLULAR
- BEACON and EOW License
  - Includes analytics, managed software updates, access to data exchange and built-in APIs
- Cellular Communication
- Cloud Hosting and Data Storage
- Data Security
  - ISO 27001 and SOC2
- Field and Technical Support
- Interoperability

Proprietary Traditional Fixed Network
- Software License
  - Include both Analytics, Utility Reading Software and Consumer Engagement Applications
- Cloud Hosting and Data Storage
- Data Security (if any)
- Monthly Cellular Backhaul Charges
- Gateway Permits
- Gateway Installation
  - Poll, electric, communication
- Field and Technical Support
- Annual Gateway Down Time
- Gateway Inspections Per Published Documentation
- Gateway Replacement
  - Includes installation, Electric, Cellular
- Professional Services
- Costs Associated with Gateway Downtime
- Proprietary Traditional Fixed Network Costs Tied to Working with a Single Supplier
WHAT CAN AMA DO FOR ME?

Reduce water use through a combination of:

» Reducing leakage on private water service connections;
» Addressing leakage within the municipal distribution system;
» Identifying unauthorized water connections and excess seasonal water use; and
» Promoting water conservation through behavioral change.
» Facilitate an equitable, consumption-based billing rate structure for all customers;
» Increase system management capabilities through enhanced metering features; and
» Facilitate a user-friendly and efficient reading and billing process.
Hosted AMA combines the power of the intuitive BEACON AMA “Advanced Metering Analytics” software suite with proven ORION LTE technology to provide utility management with greater visibility and control.
Badger Meter uses the Canadian Amazon Web Services (AWS) The availability of the Canada Region allows customers to store data locally and help them to address their Canadian data compliance requirements for certain industries such as the financial sector and public sector organizations.
What is a consumer portal
Eye on Water
Where’s the Leak?

4-Dial Encoder

8-Dial Encoder
15-Minute Data in BEACON
Hosted Software Demo

Easy-to-use dashboard modules to enable users to perform the following functions:

- **Endpoint health** – percentage of successful transmissions within past 48 hours, plus alarms
- **Top accounts by usage** – displays top water users in system
- **Favorites** – defined by individual utility user, displays those favorite accounts they want to track
- **What’s New** – describes new features added since last software update
- **Technical support** – provides contact information and WebEx link for technical support
- **System water usage** – compares total system consumption week over week
- **Flow health** – provides an overview of the flow anomalies in your water system
Questions

Thank you
Contact your local Iconix account manager for more information

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