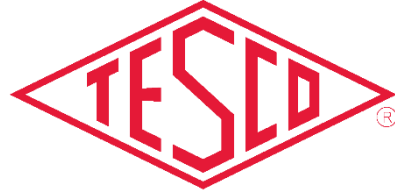


METERING LEADER SINCE 1904



THE EASTERN SPECIALTY COMPANY

NIGHTHAWK AMI ON THE PUBLIC NETWORK

Adaptiv[™] *Scalable AMI*
by NIGHTHAWK





About Nighthawk

- 25-years of utility experience
- 100+ utilities served

About Adaptiv™

- Unique zero-infrastructure network
- Cellular + Mesh Communications
 - Verizon LTE
 - AT&T
- **Ideal for either incremental or rapid deployment**
- Lowest total cost of ownership in the industry



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INTRODUCING ADAPTIV™

Adaptiv™ 
Scalable AMI
by NIGHTHAWK

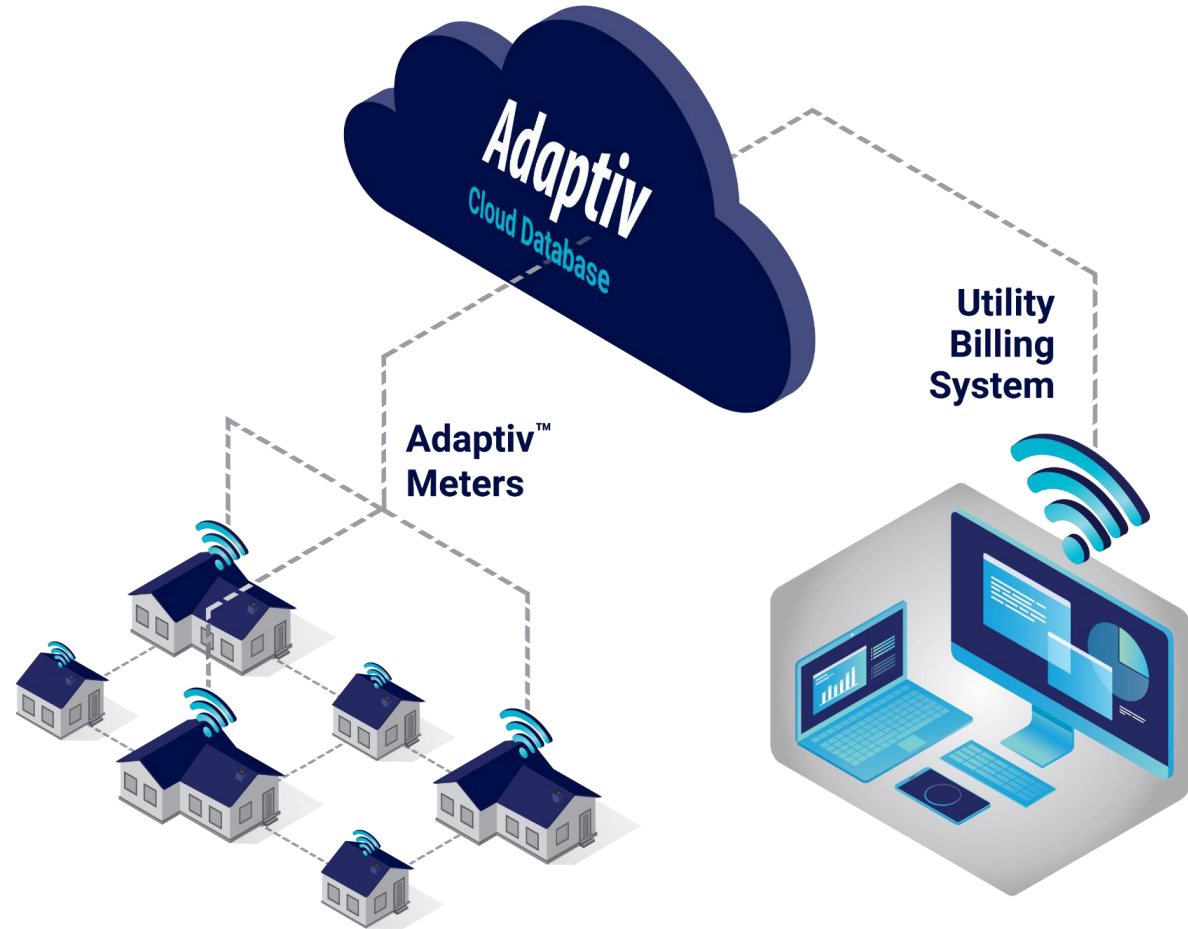




INTRODUCING ADAPTIV™ AMI

ADVANCED METERING SOLUTION BY NIGHTHAWK

- Zero Infrastructure
- Adaptiv™ AMI means no costly infrastructure to install / maintain
- Integrated Data Transfer
- Standards-based integration to utility billing applications
- Multispeak, MV-RS, CMEP
- Seamless Cloud Software
- No hardware to buy or databases to manage
- Secure, Reliable Reads
- Secure communications for on-demand move in/move out reads on all meters



ADAPTIV™ SOLUTION BENEFITS

Billing & Operations FEATURES

- On-demand remote move-in/ move-out reads
- Predictive billing
- Interval data for advanced analytics: load analysis, interruptions monitoring, line loss calculations
- Standards-based integration to other applications
- Integration to MDMS

Smart Meter FEATURES

- Outage and restoration alerts
- Voltage monitoring
- Bi-directional metering
- Remote connect and disconnect
- Load control options

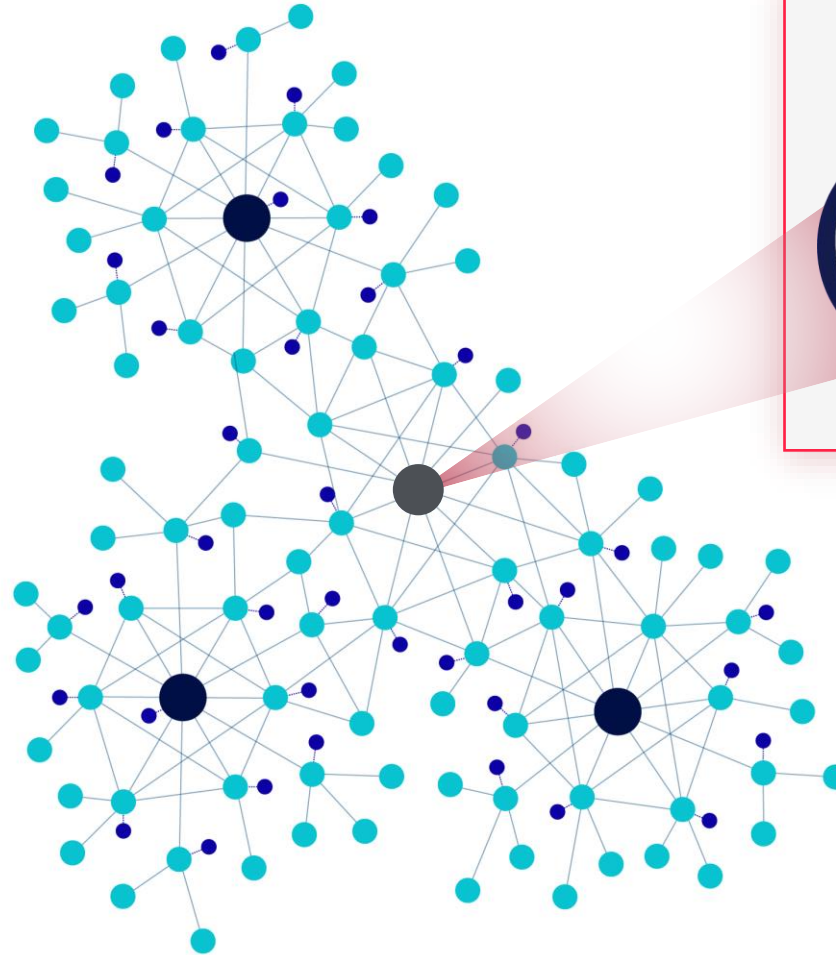
Consumer Engagement FEATURES

- Integration to prepaid
- Customer portal
- Interval data collection and presentment
- Complex rates



ADAPTIV™ | ONE HUB UNIT TO MANY LEAF UNITS

- Scalable, self-healing, self-configuring network
- Next generation high bandwidth cellular-mesh
 - One Hub with cellular modem per cluster
 - Several Leaf meters within range of hub via short-hop RF
- Simple installation and maintenance



Adaptiv™ Hub Meter
CELLULAR + MESH HUB RADIO



Adaptiv™ Leaf Meter
MESH HUB RADIO





Adaptiv™ Water Endpoint (WEP)
MESH RADIO-ENABLED



ADAPTIVTM | EASILY ADD WATER ENDPOINTS

- Water LINK sends reads via AdaptivTM smart meters
- Scalable, self-healing, self-configuring mesh network
- Built-in security and redundancy
- Interval data and leak detection with exceptional battery life



-  **AdaptivTM Hub Meter**
CELLULAR + MESH HUB RADIO
-  **AdaptivTM Leaf Meter**
MESH HUB RADIO
-  **AdaptivTM Water Endpoint (WEP)**
MESH RADIO-ENABLED

NIGHTHAWK HUB ERT COLLECTOR



LINK Xi-C

ITRON CENTRON II



- LINK Xi - Itron C2SLD - Cell + Mesh w/ ERT Collector and remote disconnect
 - Collects data from Water ERT and/or Leaf endpoints
- Supports SCM (for older ERTs) and SCM+ (newer ERTs) protocols
 - Programmed in bubble-up mode
- Uploads on a scheduled basis alternating between SCM and SCM+ modes
- Latest daily read and historical daily reads can be viewed in Adaptiv™
- Collector stores the latest reading for each unique ERT
- No limit on number of ERT's read by a single collector
 - ERT collector table uploads collected reads when full (minimum of once daily) and reloads with additional ERT reads as needed

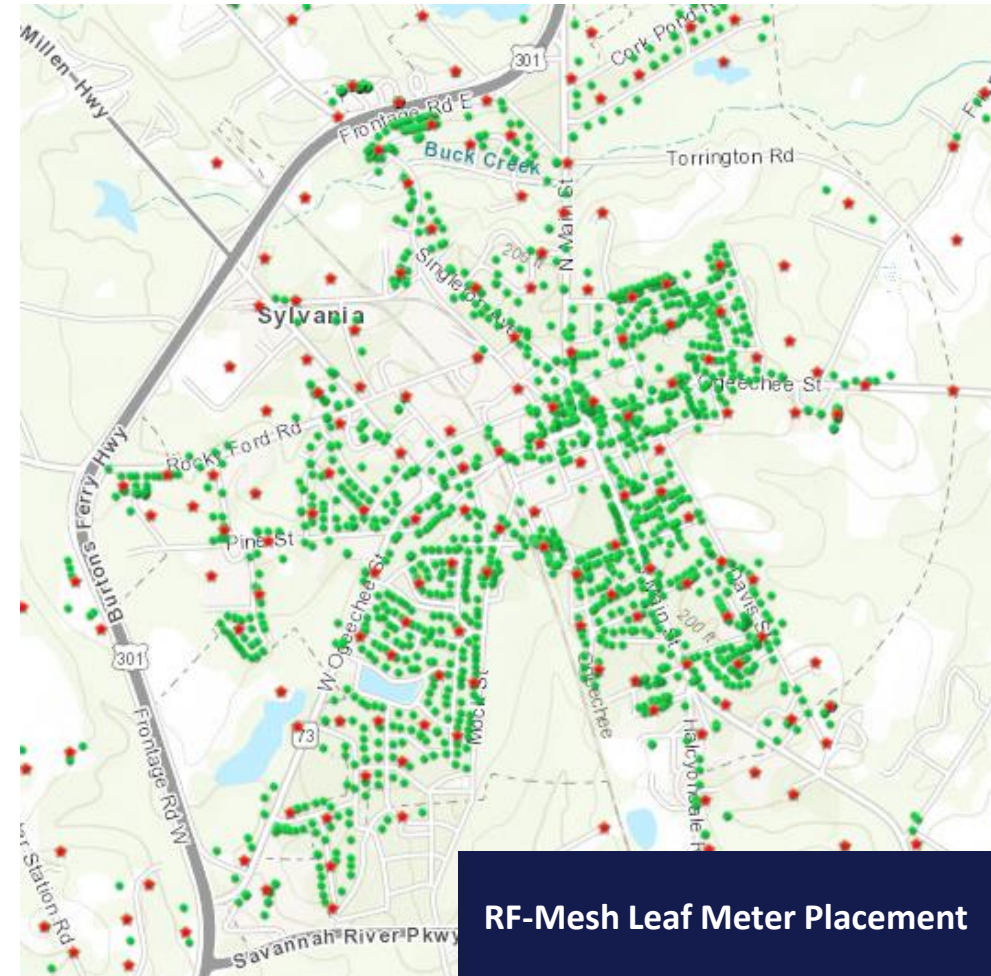
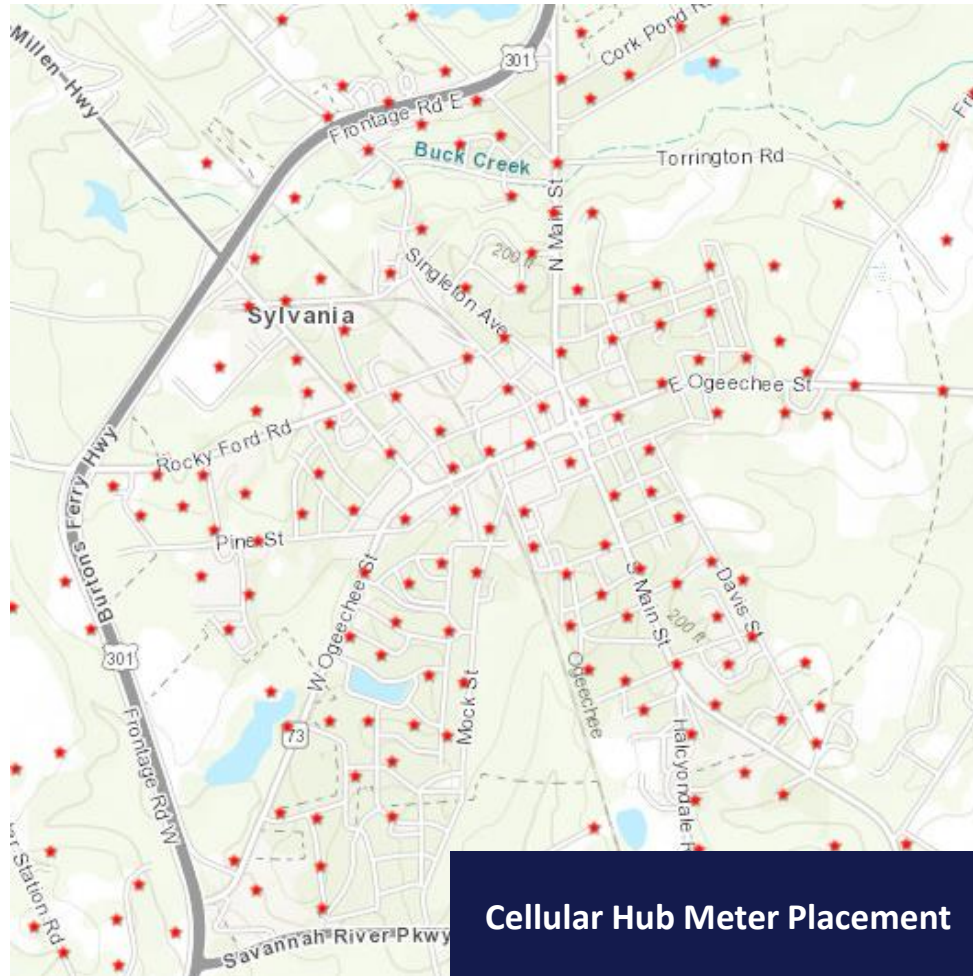


ERT COLLECTOR SUPPORTED ERTs

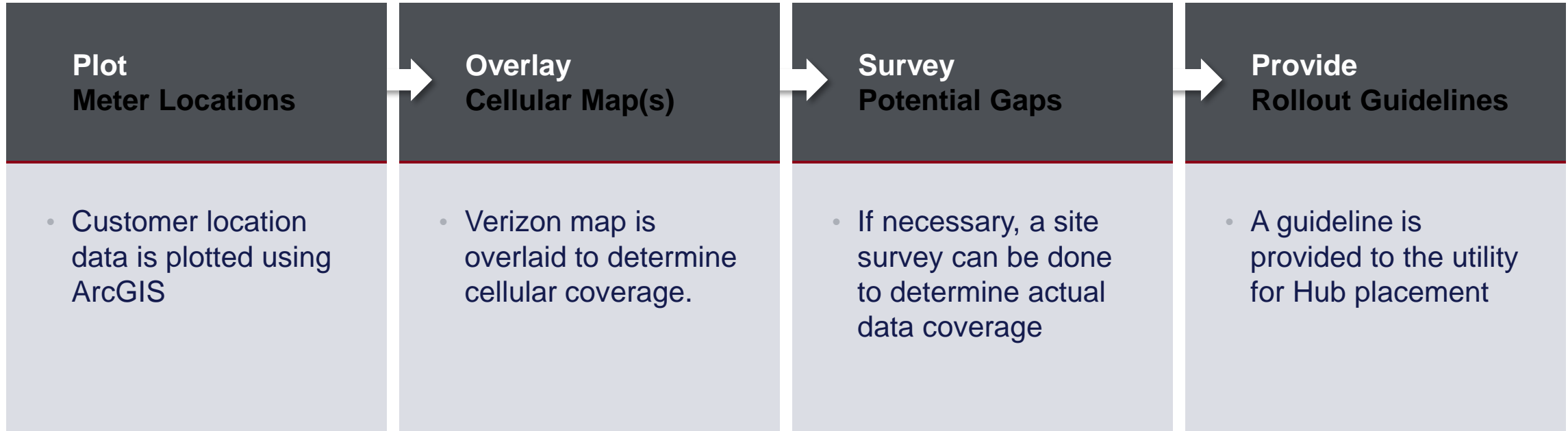
Model	ERT Collector Support	Itron Protocol
Electric	✓ Yes	SCM, SCM +
50 W	✓ Yes if in bubble up mode	SCM
60 W	✓ Yes	SCM, SCM +
100 W/G	✓ Yes	SCM, SCM +
100 W+	✓ Yes	SCM +

+ signifies daily reads, no interval data

ADAPTIVTM | SIMPLE SYSTEM DESIGN

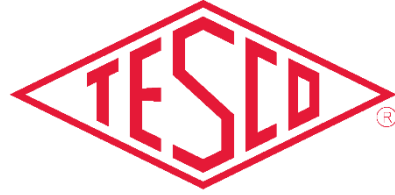


ADAPTIVTM | SIMPLE SYSTEM DESIGN



Leverage Deep Utility Experience

METERING LEADER SINCE 1904



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TM

ADAPTIV FEATURES & BENEFITS

*Adaptiv*TM 
Scalable AMI
by NIGHTHAWK



ADAPTIVTM | CUSTOMER SERVICE

Predictive Billing

Know what's missing before it's too late!



- Immediate access to current customer information
- Detailed views of customer usage by day, month, or year
- Resolve billing concerns quickly and efficiently
- Remotely disconnect and connect meters

Dashboard

Map

Billing Status

Bill Cycle	Next Read Date	Missed
01	03/04/2020	2
02	03/04/2020	0
03	03/04/2020	0
04	03/04/2020	0

Customer Detail

Connected

Recent Activity: No recent activities have been recorded.

Last Read

68487.13

Meter Activity

Daily Consumption (kWh)

Interval Daily Monthly Yearly

45 Day Read History

Customer Number	Customer Name	Address	Meter Number	Device Serial Number	Read Date & Time	kWh Delivered
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 11:00 PM	55467.13
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 10:00 PM	55465.18
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 9:00 PM	55471.08
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 8:00 PM	55465.88
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 7:00 PM	55466.89
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 6:00 PM	55465.79
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 5:00 PM	55465.33
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 4:00 PM	55466.99
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 3:00 PM	55464.94
10584	GARY BAILEY	7713 13 1/2 ST W	N/A	J010221850000000	03/03/2020 2:00 PM	55462.08

Detailed views of customer usage

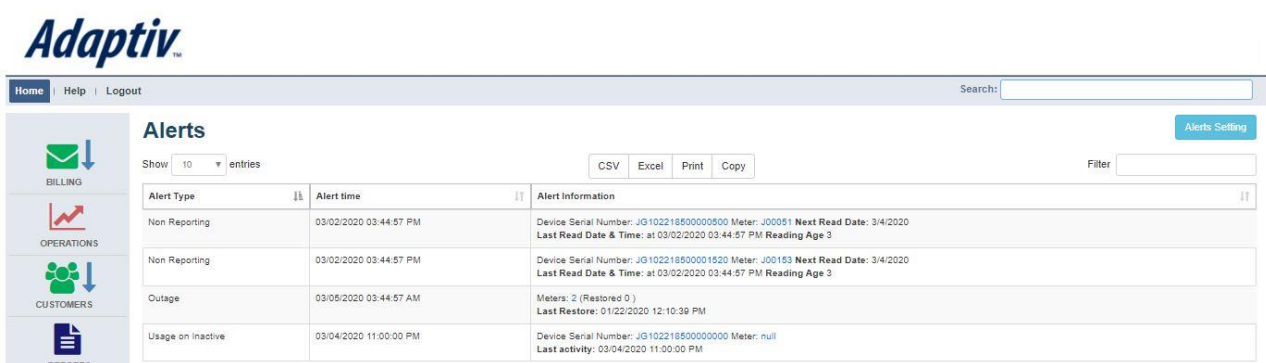
Accurate, secure customer records

ADAPTIVTM | OUTAGE FEATURES

- Immediately notify utility personnel of a sustained outage
- Effectively monitor blinks and momentary outages with daily reporting
- Provide precise outage data for power quality reporting

Outages and blinks are monitored daily, managed easily and effectively

Refine your alerts to enhance your OMS



Adaptiv Alerts

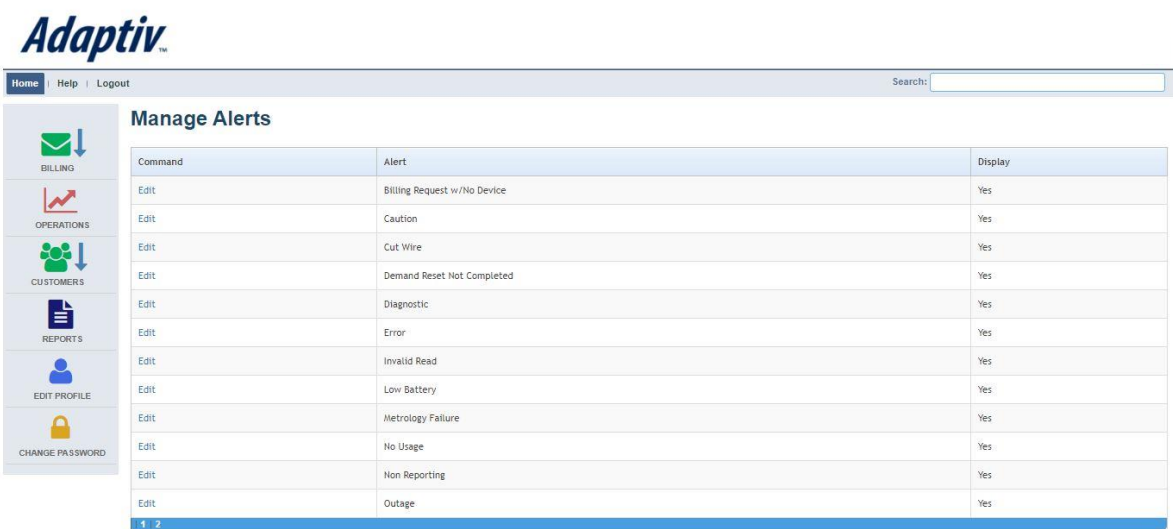
Home | Help | Logout Search:

Alerts Settings

Show 10 entries CSV Excel Print Copy Filter

Alert Type	Alert time	Alert information
Non Reporting	03/02/2020 03:44:57 PM	Device Serial Number: JG102218500000500 Meter: J00051 Next Read Date: 3/4/2020 Last Read Date & Time: at 03/02/2020 03:44:57 PM Reading Age 3
Non Reporting	03/02/2020 03:44:57 PM	Device Serial Number: JG1022185000001520 Meter: J00153 Next Read Date: 3/4/2020 Last Read Date & Time: at 03/02/2020 03:44:57 PM Reading Age 3
Outage	03/05/2020 03:44:57 AM	Meters: 2 (Restored 0) Last Restore: 01/22/2020 12:10:39 PM
Usage on inactive	03/04/2020 11:00:00 PM	Device Serial Number: JG1022185000000000 Meter: null Last activity: 03/04/2020 11:00:00 PM

Showing 1 to 4 of 4 entries



Adaptiv Manage Alerts

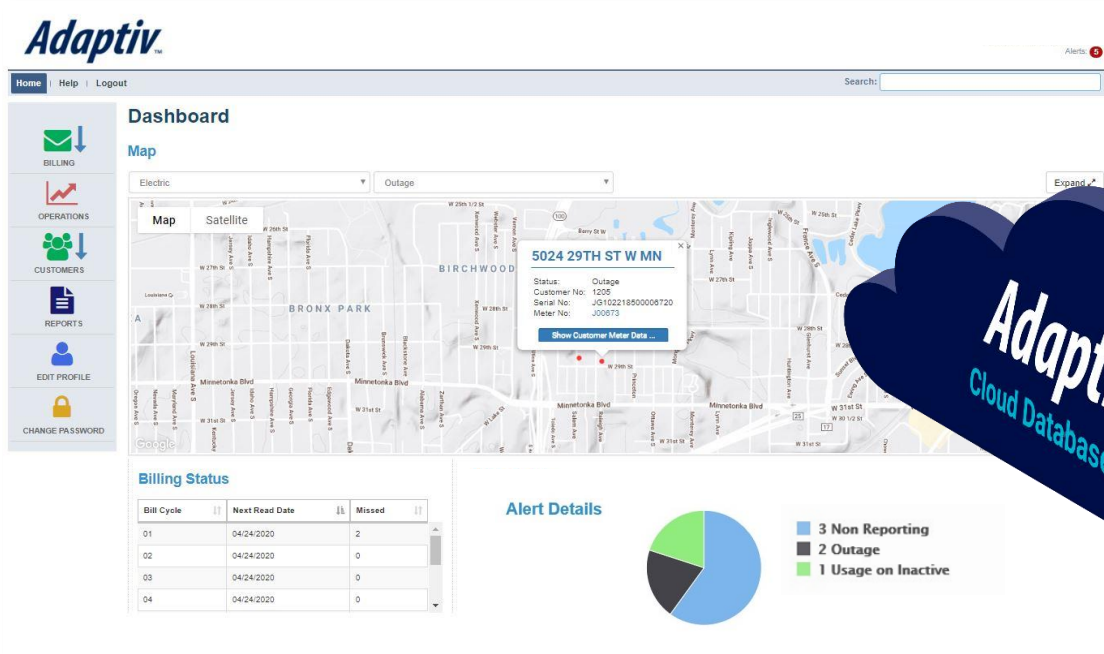
Home | Help | Logout Search:

Command	Alert	Display
Edit	Billing Request w/No Device	Yes
Edit	Caution	Yes
Edit	Cut Wire	Yes
Edit	Demand Reset Not Completed	Yes
Edit	Diagnostic	Yes
Edit	Error	Yes
Edit	Invalid Read	Yes
Edit	Low Battery	Yes
Edit	Metrology Failure	Yes
Edit	No Usage	Yes
Edit	Non Reporting	Yes
Edit	Outage	Yes

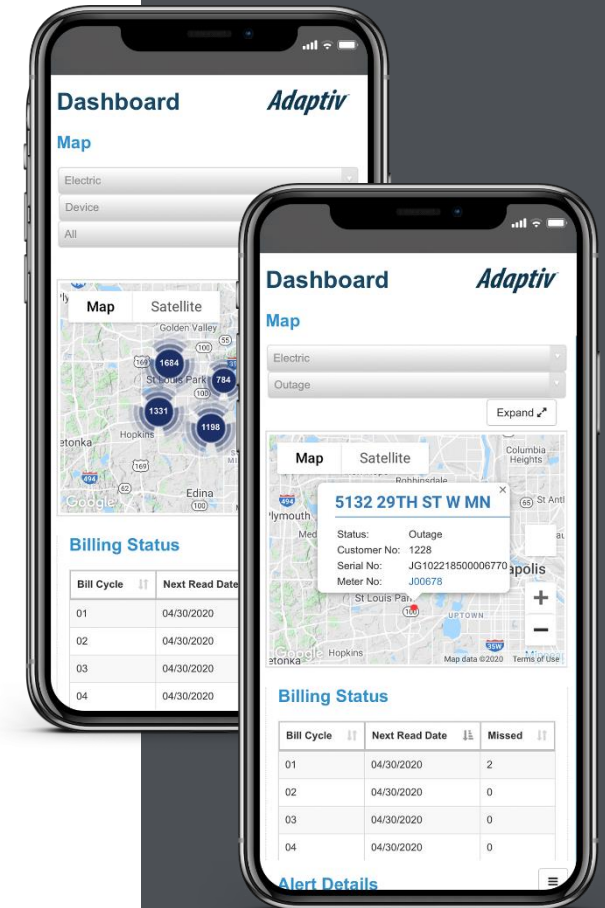
1 2

***Integration Fees May Be Incurred**

ADAPTIV™ | SOFTWARE SOLUTION



Smart billing
integration with
secure mobile access



Over-the-air
configuration
and upgrades on
all Adaptiv™ units

Utility
Billing
System





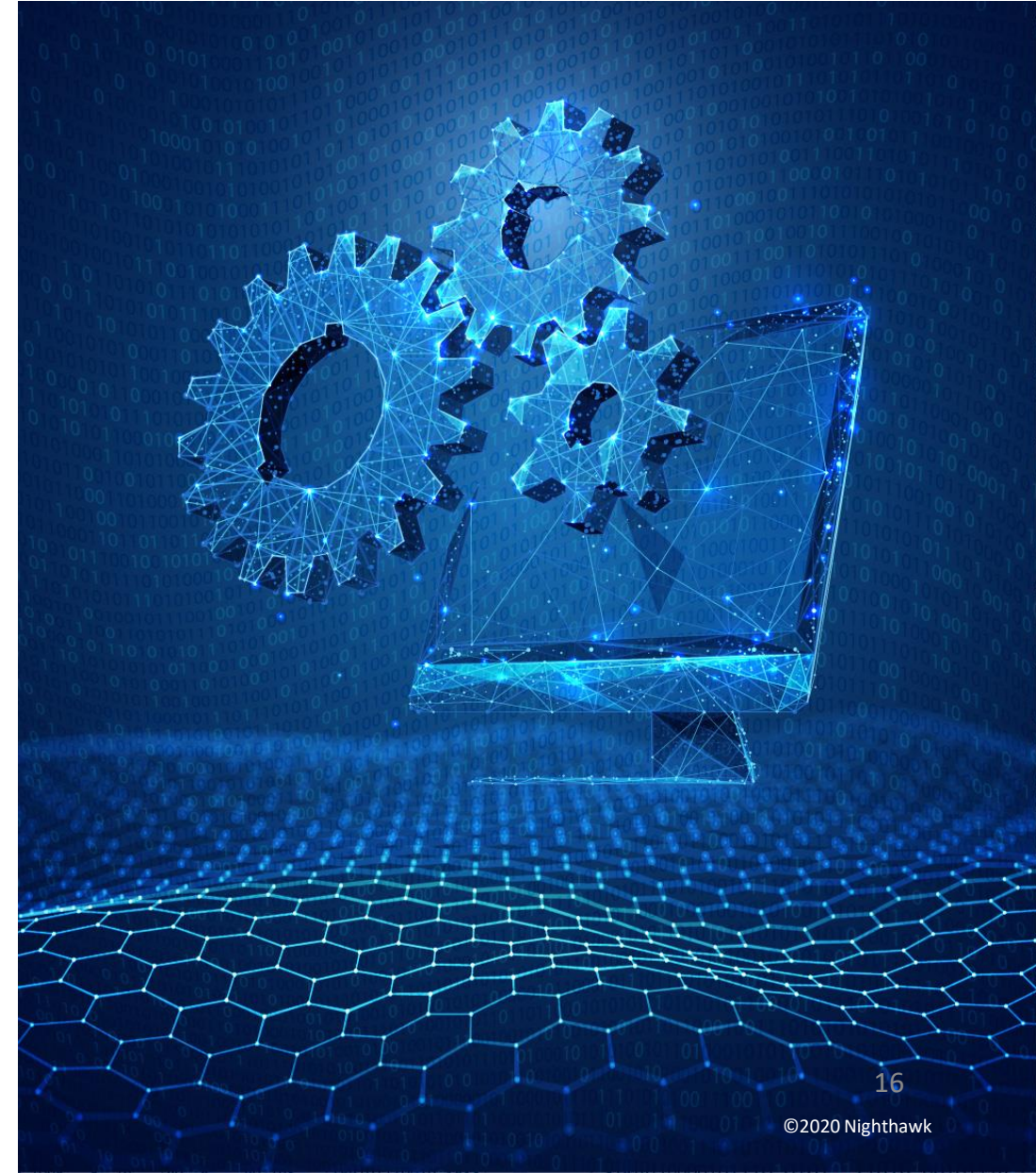
Adaptiv™ Value for Life

No additional charges for upgrades, maintenance or support for the life of the product

- Over-the-air configuration changes and upgrades to firmware
- Designed to evolve with the changing needs of the utility industry by enabling more features as required



ADAPTIV™ | SOFTWARE UPDATES



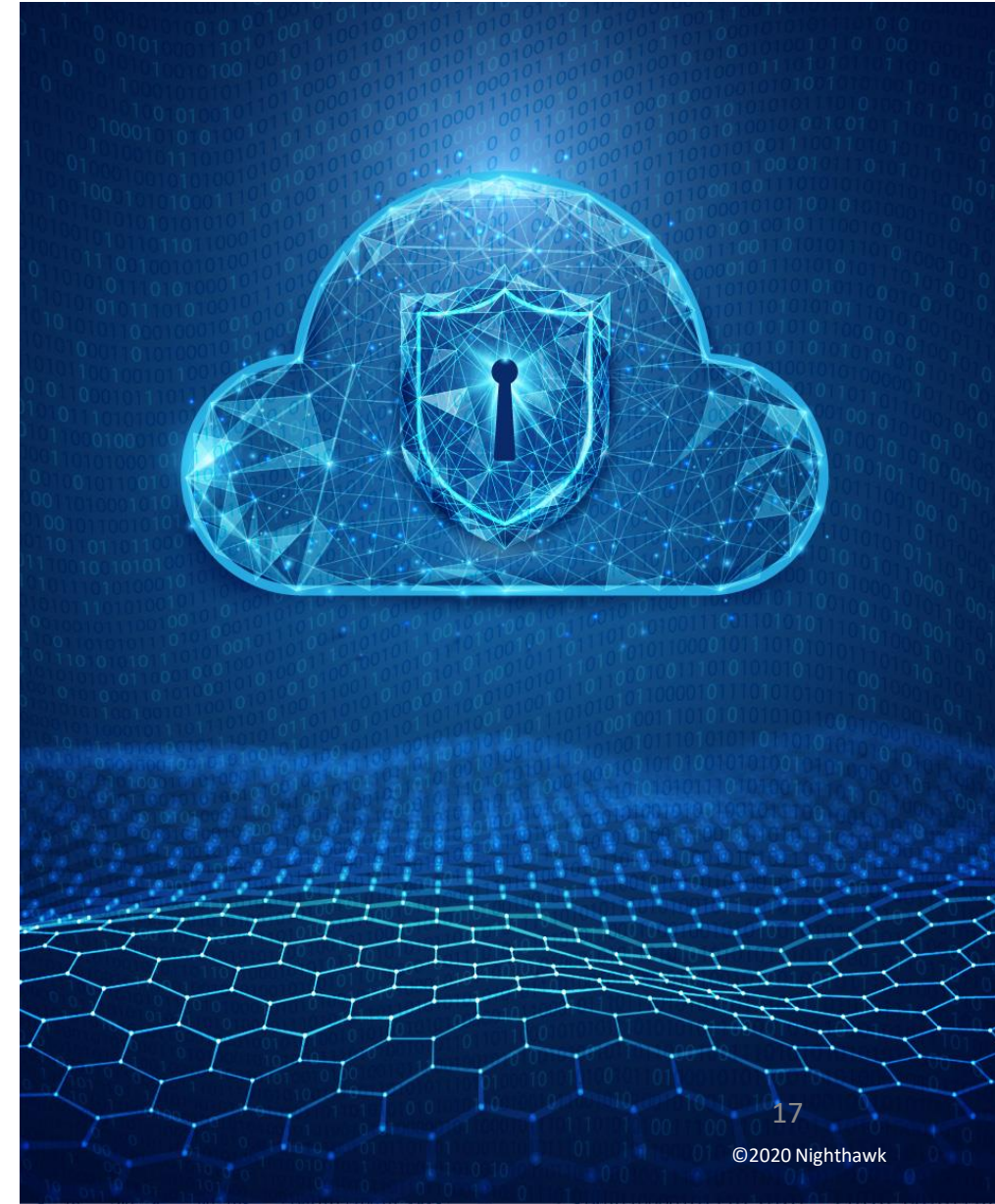


• Database & Software Security

- Best-in-class accessibility and security standards
- Data securely managed through Rackspace
- Secure communication via Thawte SSL
- Available multi-factor authentication capability



ADAPTIVTM | SECURITY



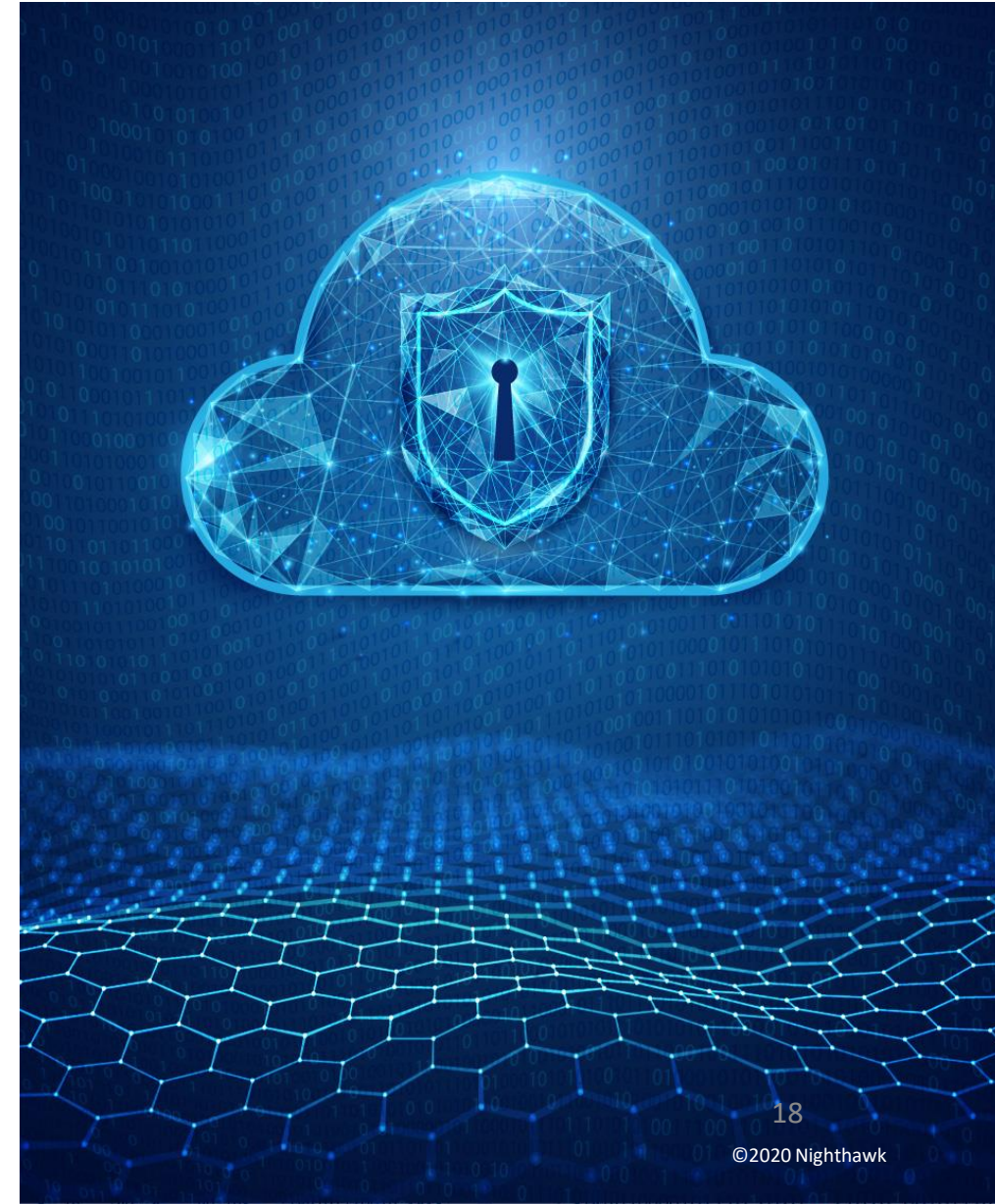


• Network & Device Security

- 128-bit AES encryption for all mesh-enabled devices
- Unique AES encryption key to partition users' data
- Protects against external tampering via:
 - Content encryption
 - Channel encryption
 - Dedicated private network



ADAPTIVTM | SECURITY



ADAPTIVTM | PARTNER ECOSYSTEM

MDMS

- NISC
- CSA
- PrimeStone
- Exceleron

OMS

- Milsoft

Load Control

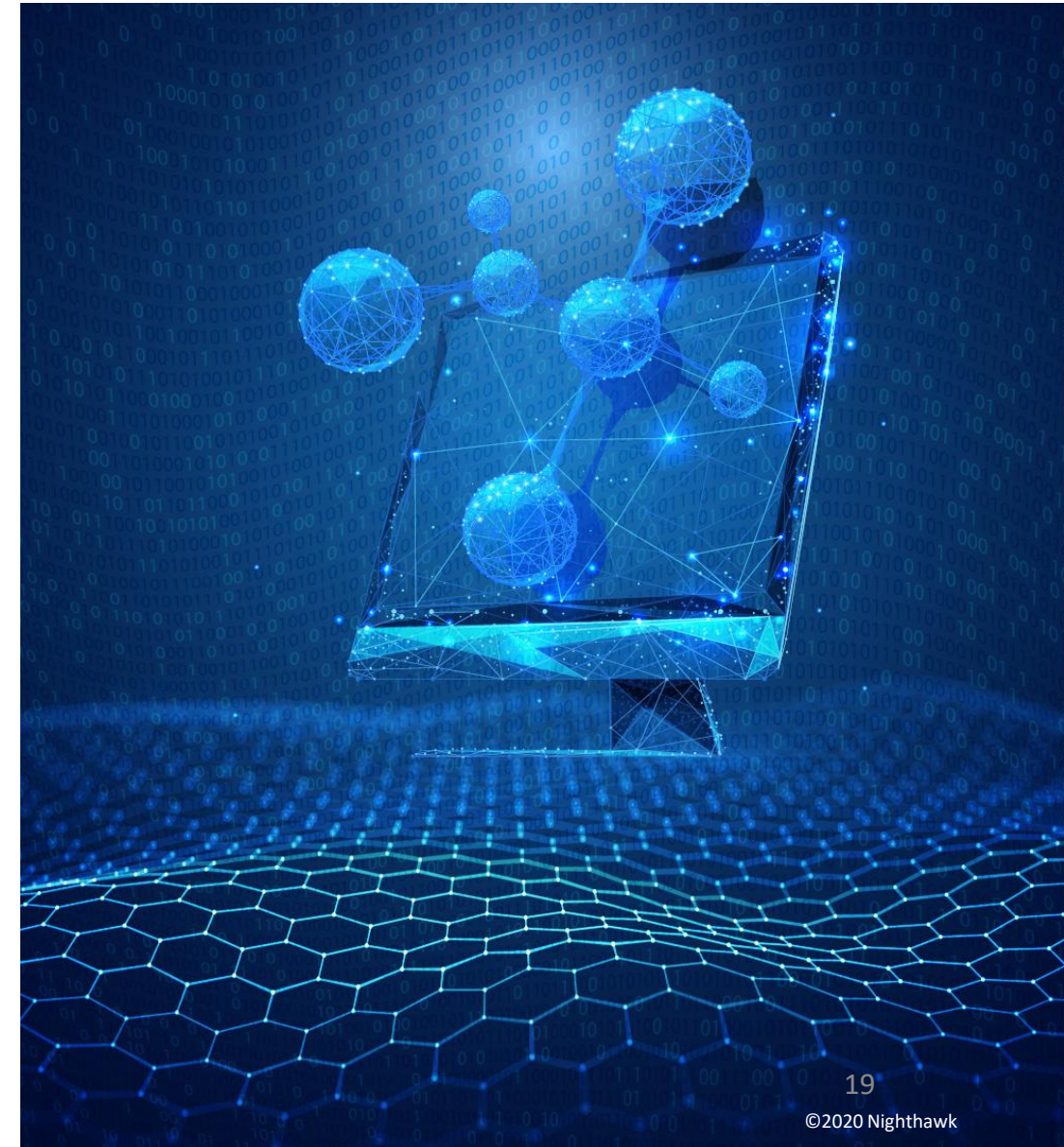
- CSE

Prepay

- PayGo
- UtiliFlex
- Exceleron

CIS/Billing

- CSA
- NISC
- Caselle
- Tyler Incode
- SEDC
- DTI
- +more



THE ADAPTIVTM DIFFERENCE

Lowest Risk Solution

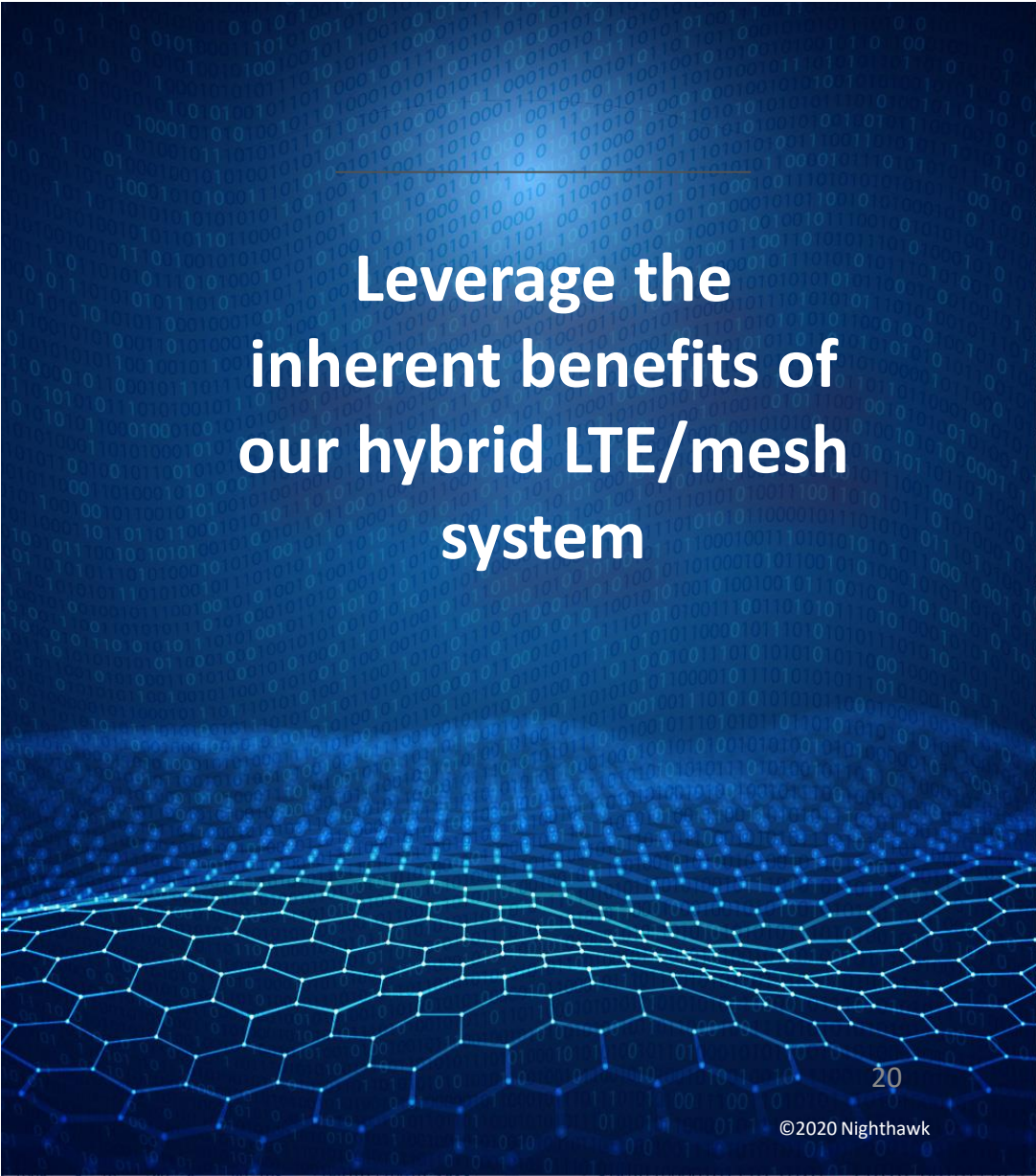
- Zero network infrastructure to install and/or maintain
- Low-cost flexible pilots
- Uses common radio frequencies (LTE and 2.4GHz) found in most households and businesses

Most Flexible Deployment Options

- Flexible deployment strategies based on your priorities and budget
- Solve problems with little effort or cost – disconnect meters (prepay enabled), scope outages, monitor voltage, polyphase first, etc.

Lowest Total Cost of Ownership

- Zero infrastructure investment or maintenance
- Cost reduction for project management and integration
- Easily train your team to use the solution within hours
- Low recurring costs are predictable and controllable



Leverage the
inherent benefits of
our hybrid LTE/mesh
system



MV-90 SOLUTION

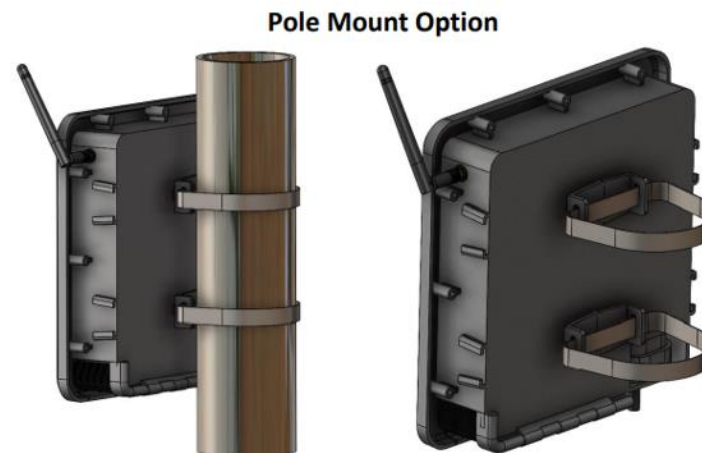
- Does not require any middleware – direct connection to MV-90
 - Stand-alone solution that does not require Adaptive Headend or other Adaptive endpoints
- We can offer cellular services if needed, but ideally, the utility should have its own private contract with AT&T or Verizon
 - Other carriers can be supported



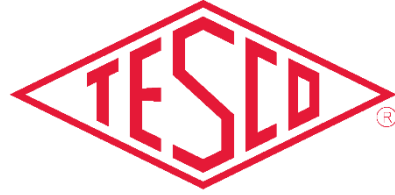


FIBER HUB SOLUTION

- The Nighthawk Fiber HUB product is a self-contained mesh HUB device with a wired Ethernet uplink.
 - Fiber hub is Adaptiv compatible
 - Acts as a cost-effective collector for multiple devices
- Ideal for utilities who have mostly fiber throughout service territory
 - Federal government incentivizing rural co-op fiber to the home
 - Utilities looking for applications to use the deployed fiber
- Advanced Outage Management power fail detection
 - Configurable blink and sustained outage event thresholds, event logging and data upload
- Rechargeable Battery Backup of 10 minutes to allow for last gasp transmissions
- Supports OTA firmware upgrades to associated mesh devices
- Robust end to end security and encryption



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THANK YOU

