

SCADAFEST 2026



IoT/Telemetry Hardware integration with VTScada using MQTT

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About Cattron Global

Connect. Control. Protect.

Cattron provides wireless solutions that connect devices, control machines and protect assets and people, for critical applications which require high safety standards and reliability.

With more than 75 years of history, Cattron has grown organically and through acquisition on a global basis from early origins servicing Motorola radios in 1946.

ANTX, a name many in the VTScada community might recognize, was acquired by Cattron in 2020. ANTX developed solutions for remote monitoring and control of sewer liftstations, wastewater treatment, municipal water systems, stormwater, landfills, and more.

Current about 3,500 devices hosted on VTScada



Global Reach

13 locations, 340 employees
50+ countries, 45 partners



Control Solutions

Industrial Automation and wireless remote control
Locomotive remote control
Engine/VFD Control



Water & Wastewater

AquaVX, Messenger, EliteIQ

13 Global Locations, 340 Employees, 50+ Countries Served

Supported By a Global Network of 45 Partners

North America

Warren, OH – **Global HQ**
Butler, PA
Roswell, GA
Montreal, Canada
Nova Scotia, Canada

South America

Sao Paulo, Brazil

EMEA

Liberec, Czech Republic
Krefeld, Germany
Almelo, Netherlands
Dubai, UAE

UK

Slough, UK

Australia

Brisbane, Queensland
Melbourne, Victoria



Catron offers reliable control solutions tailored to meet customer-specific requirements across a variety of applications, worldwide.



Industrial Remote Control and Safety/EStop Systems



Locomotive Remote Control



Engine & VFD Control

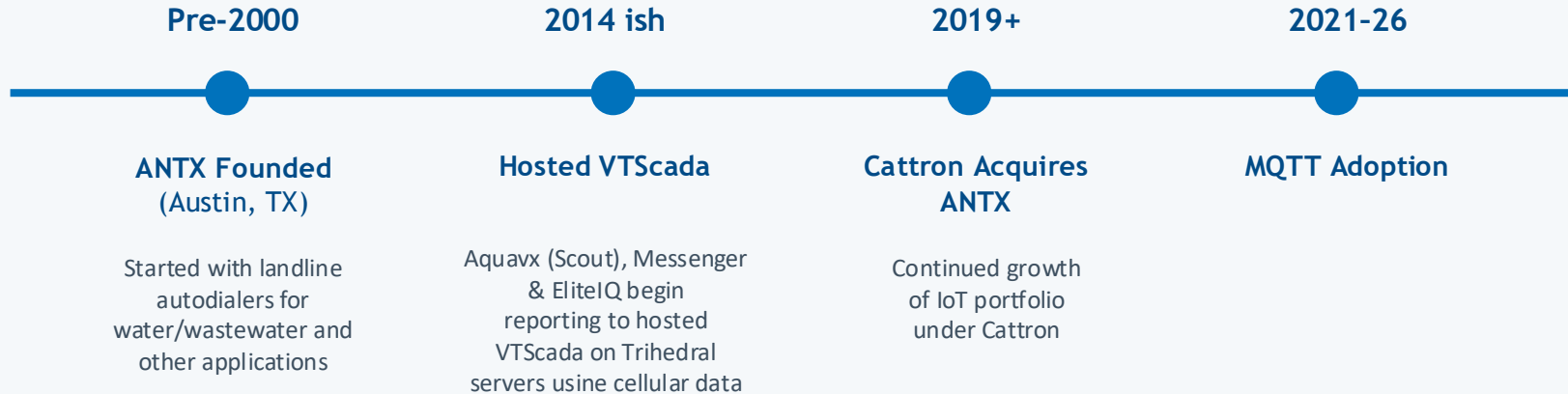


Water/Wastewater Remote Monitoring and Control



Cattron/ANTX history with VTScada

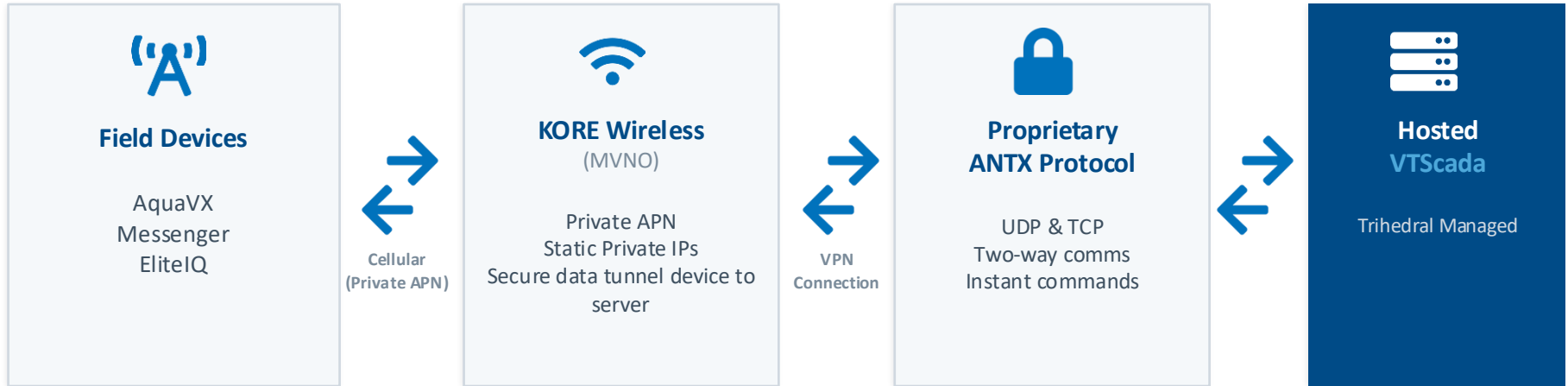
12+ years sending data to our hosted VTScada instance



Note: Our hosted VTScada instance is separate from our RemoteIQ™ Cloud on the Losant platform. These are complementary — not competing — solutions

Original Architecture

How our IoT devices communicate with hosted VTScada



Key Strengths

- ✓ Strong cybersecurity via VPN + private APN
- ✓ Static private IPs for reliable two-way comms
- ✓ Instantaneous commands to field devices

The Customer Need

"Many current and prospective customers have asked to integrate our Effortless SCADA telemetry solutions with their own on-premise or hosted VTScada systems."



On-Premise VTScada

Customers running their own VTScada servers want to connect our IoT devices directly



Third-Party Hosted

Customers with VTScada hosted by other providers needing easy integration with our hardware



Multi-Platform

Customers want to share data with reporting, AI, and other platforms simultaneously

Why MQTT?

The industry-standard IoT messaging protocol

What is MQTT?

MQTT (Message Queuing Telemetry Transport) is a lightweight **publish/subscribe messaging protocol** designed in large part for IoT.

Devices publish data to topics on a broker. **Any number of subscribers — VTScada, other devices, AI/reporting platforms** — can receive that data in real time or near real time by subscribing to those messages.

Key Advantages



Built-in TLS encryption and authentication



Publish/subscribe decouples devices from platforms. No open ports needed in server firewall for unsolicited incoming data.



Rapid integration with any MQTT-aware system

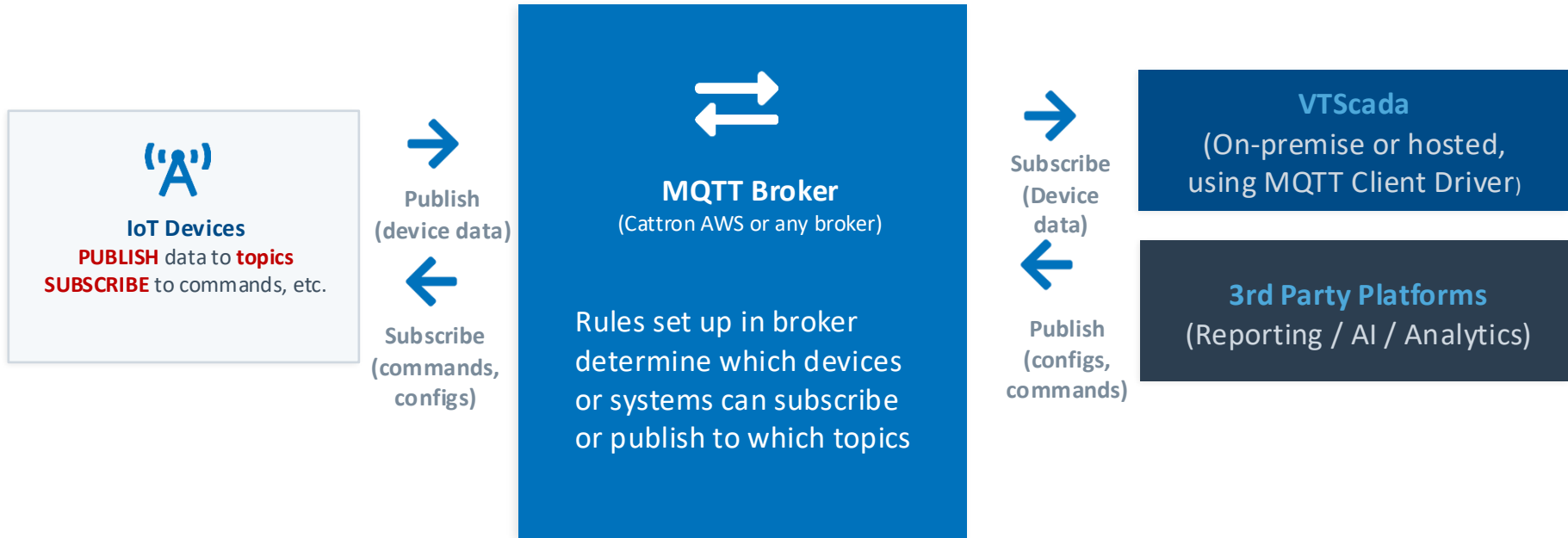


Broker-level redundancy and failover. QOS levels for assured message delivery



Share select data with 3rd party reporting/AI

MQTT Architecture



Architecture comparison

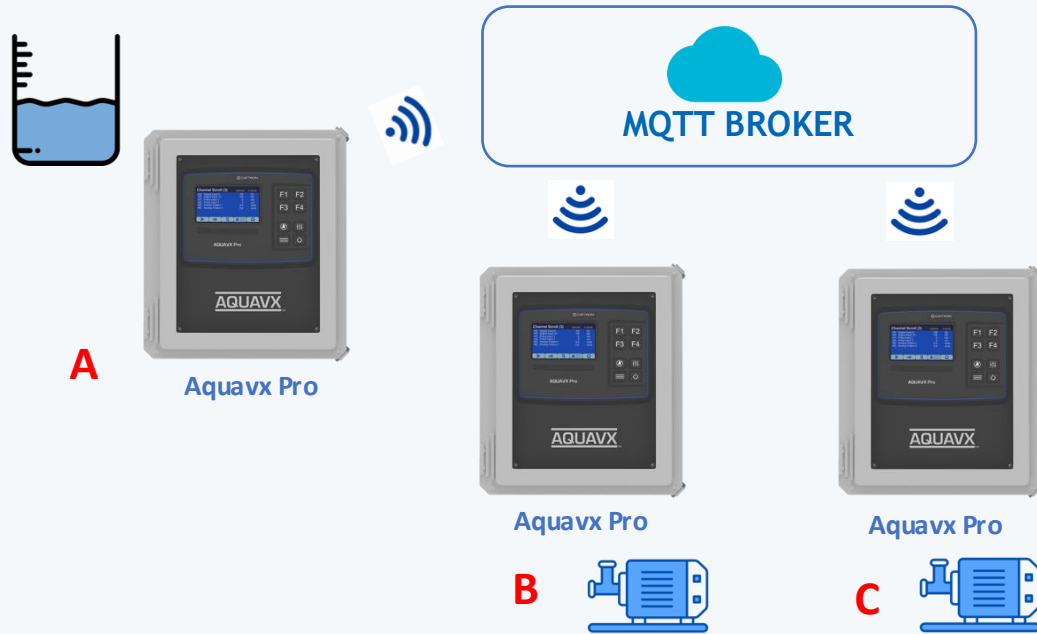
Proprietary "ANTX" Protocol

- ✓ UDP/TCP with proprietary ANTX protocol
- ✓ VPN connection to KORE Wireless MVNO
- ✓ Private APN with static private IPs
- ✓ Two-way communication & instant commands
- ✓ **Data flows only to Cattron hosted VTScada**
- ✓ **Integration to other systems requires custom work due to custom protocol, VPN, etc.**

New: MQTT Integration

- ✓ MQTT publish/subscribe standard protocol
- ✓ **TLS encryption built into MQTT brokers**
- ✓ Broker redundancy with automatic failover
- ✓ Two-way communication via MQTT topics
- ✓ **Data flows to ANY subscribing VTScada system**
- ✓ **Share data with 3rd party reporting & AI platforms**

Peer to Peer Networking with MQTT

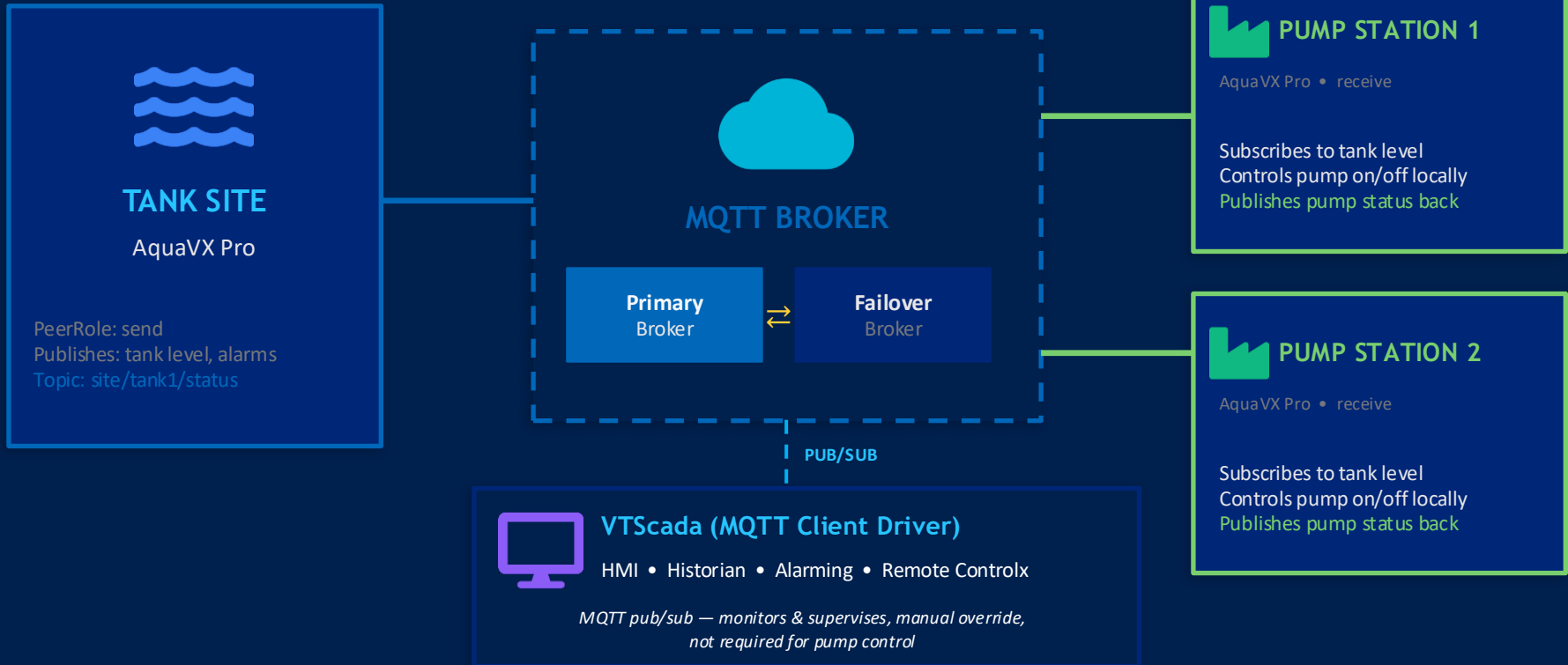


Municipal Well Water Supply

Simplex/Duplex Pump Control
With lead/lag, alternation

Peer to Peer System Architecture

Tank → MQTT Broker → Pump Stations | VTScada MQTT Client Driver subscribes for SCADA/HMI



AquaVX P2P MQTT — Devices communicate directly via broker; VTScada MQTT Client Driver is a subscriber, not a relay

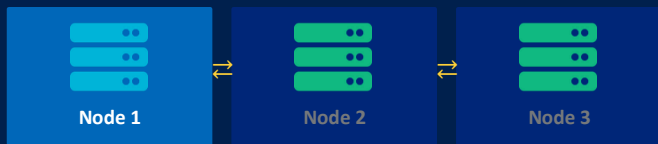
Redundancy & Failover

Multiple layers of resilience — no single point of failure

BROKER REDUNDANCY

Enterprise clustering + device-level broker failover

A Enterprise MQTT Cluster



e.g. HiveMQ

B Device-Programmed Broker Failover



Configured on each AquaVX device
Connection lost → auto-reconnect to backup URL

DEVICE CONNECTIVITY

Multi-path WAN failover at the router level



Wi-Fi / Ethernet
(Primary)

● ACTIVE

↓ failover



Cellular LTE/5G
(Secondary)

○ STANDBY

↓ failover



Starlink / Broadband
(Tertiary)

○ STANDBY



Multi-SIM Cellular Modems

Dual-SIM routers provide carrier redundancy — auto-switch to alternate SIM on carrier failure

- Router manages WAN failover independently of AquaVX
- AquaVX reconnects to broker on new path automatically

Two independent failover layers — broker-level redundancy + device connectivity redundancy

Cybersecurity: End-to-End Protection

MQTT provides multiple layers of security from device to broker to SCADA



SECURE

All data encrypted in transit
Devices authenticate to broker
No open ports on field devices
Outbound connections only



TLS/SSL Encryption

All MQTT traffic encrypted via TLS 1.2/1.3 on port 8883. Data cannot be intercepted or read in transit between device, broker, and VTScada.



X.509 Certificate Authentication

Mutual TLS (mTLS) — both client and broker verify identity via certificates. Prevents unauthorized devices from connecting to the broker.



Username / Password + Client ID

Broker-level authentication per device. Each AquaVX has a unique Client ID. VTScada MQTT Client Driver supports credentials and MD5 password hashing.



Topic-Level Access Control (ACLs)

Broker enforces which clients can publish or subscribe to specific topics. Send devices can only publish; receive devices can only subscribe to their assigned topics.



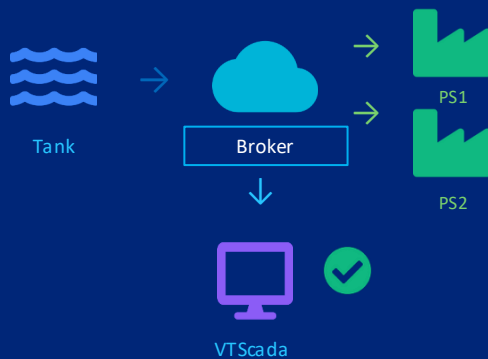
Last Will & Testament

Broker detects disconnects via Last Will messages, provide session-aware device health tracking across the network.

Independent operation of peer to peer

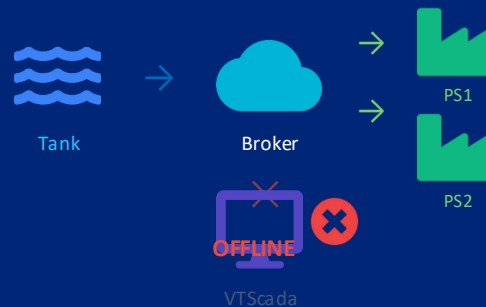
Pump control continues — devices talk directly through the MQTT broker

NORMAL OPERATION



- Tank publishes level to broker
- Pump stations subscribe & control pumps
- VTSkada MQTT Client Driver subscribes for HMI/historian
- All 3 layers active

VTSkada UNAVAILABLE



- Tank still publishes level to broker
- Pump stations still receive & control pumps
- VTSkada MQTT Client Driver / HMI / historian unavailable
- **Pump control is NOT affected**

KEY: VTSkada's MQTT Client Driver is a primarily a subscriber — not in the control path. Pump control via MQTT pub/sub is always active. Manual override and remote configuration available from VTSkada through published commands.

Real-World Walkthrough

Connecting a Cattron IoT device to your VTScada via MQTT

1

Configure Device — Set MQTT broker address, credentials, and topic structure on the Cattron IoT device

2

Connect to Broker — Device publishes data to MQTT broker (Cattron AWS broker or customer's own)

3

Install VTScada Driver — Add the MQTT driver and OEM Layer, if available, to your VTScada instance

4

Subscribe & Map Tags — VTScada subscribes to device topics and maps data to VTScada tags automatically

5

Operational — Real-time monitoring, alarming, trending, and two-way control — up and running

Key Takeaways



MQTT provides a plug & play path to integrate Cattron IoT devices with any VTScada system



Enterprise-grade security: TLS encryption, authentication, and topic-level access control



Publish/subscribe model enables flexible data sharing with multiple platforms simultaneously



Leverage Cattron's secure AWS broker or bring your own — the architecture is broker-agnostic

Questions & Discussion

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Thank you!



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