



P25 NETWORK MONITORING

— EF JOHNSON ATLAS · INTEGRATION OVERVIEW

ATLAS P25 Alarm Monitoring System

How Davicom extends visibility beyond the radio network: one console for every alarm, at every site.

RF POWER

DC DISTRIBUTION

GPS TIMING

ENVIRONMENTAL

NETWORK BACKHAUL

5

site subsystems
monitored

1

unified operator
console

0

changes to ATLAS
NMS authority

ATLAS[®] P25 SYSTEM

ATLAS P25 NMS

EF Johnson Network Management System



MOSAIC

Davicom Operator Console



CORTEX 360 RTU

Davicom Site Monitoring Unit

A Comlab Telecommunications company

davicom.com

THE OPPORTUNITY

One Network, Two Worlds of Visibility

Why a proven P25 radio system still leaves operators partly blind, and what closes the gap.

The EF Johnson ATLAS P25 platform is a proven, purpose-built Land Mobile Radio system. What Davicom adds is comprehensive **site-level intelligence** and a single pane of glass: operators monitor not only the radio network, but every supporting system at every remote site: power, RF performance, environment, timing, and network connectivity.

Every P25 LMR network carries two distinct layers of operational data that matter to public safety organizations. The radio layer is well managed. The site layer, historically, is not.

Layer	What it covers	Who manages it
Radio Network	Repeaters, channels, controllers, synchronization, trunking logic	EF Johnson ATLAS NMS
Site Infrastructure	Power systems, RF transmit chain, environmental sensors, network backhaul, GPS timing	Historically unmonitored, or managed in isolation

When a site goes down or degrades, the cause is more often a **failed battery charger**, a **VSWR spike on an antenna**, a **temperature excursion**, or a **lost backhaul link** than a fault in the radio equipment itself. Without visibility into site infrastructure, operators are blind to the real cause of outages and must dispatch field technicians to diagnose problems that could have been detected and resolved remotely.

The Davicom solution bridges this gap by adding a **site-monitoring layer** alongside the ATLAS NMS, and unifying both data streams into a **single operator interface**, without changing how EF Johnson manages the radio network.

5

site subsystems monitored: RF, power, environment, network, timing

1

unified operator console for radio & site alarms

0

change to EF Johnson's authority over the P25 radio network

THE SOLUTION

Three Components, End-to-End Visibility

From the NOC down to every sensor at every remote site: three roles, one system.



EF JOHNSON · RADIO LAYER

ATLAS NMS

EF Johnson's native platform for managing the ATLAS LMR network: repeaters, controllers, radio-layer alarms and configuration. In a Davicom deployment it **keeps full authority over the radio network**. What changes is only where its alarms are delivered: the ATLAS NMS forwards them to MOSAIC over standardized SNMP traps.



DAVICOM · SITE LAYER

CORTEx RTUs

A Davicom CORTEx RTU at each remote site is the **local intelligence layer**. Through GPIO, Modbus and SNMP, it continuously watches every supporting subsystem. It tracks the state of every circuit breaker, every antenna, the indoor temperature, and whether the generator has started.



DAVICOM · OPERATOR CONSOLE

MOSAIC

The centralized alarm-management console. It collects telemetry from every CORTEx RTU and receives the ATLAS network alarms forwarded by the NMS. Both streams are **normalized and presented in a single interface**, the operator's primary daily view, from any device.

Together these provide one continuous chain of visibility: **radio network** (ATLAS NMS) and **site infrastructure** (CORTEx) converge in **MOSAIC**, where every alarm is seen, acknowledged, and resolved in one place.

SITE INTELLIGENCE

What Each CORTEX RTU Monitors

The full scope the platform supports. Actual coverage is configured per site, to match the equipment present and the operational requirements of the customer.

RF & Transmit Chain

- Forward power for each ATLAS channel, measured individually after the combiners
- Composite forward power, reflected power and antenna VSWR with real-time trending
- Per-channel transmit status to confirm active RF output

Power Systems

- DC distribution panels with per-circuit voltage, current and fuse status
- Power inverter input/output status, including VAC output
- UPS metrics: runtime, load percentage, input/output status
- Generator status and Automatic Transfer Switch (ATS) position
- AC-failure detection with immediate alarm and escalation

Environmental & Facility

- Indoor temperature and humidity sensors
- HVAC system status
- Smoke detection and water-leak detection
- Door contact sensors (open / closed)
- Dehydrator operation for pressurized transmission lines
- Tower-lighting status where required

Network & Connectivity

- Ping reachability checks for ATLAS repeaters and controllers
- Network switch status and microwave-backhaul RSSI levels
- Confirmation that MOSAIC and the ATLAS NMS stay reachable from the site
- A secondary validation layer, independent of the ATLAS NMS

GPS & Timing Synchronization

- Number of satellites tracked by each GPS receiver
- Synchronization status for each timing source (in sync / holdover)
- Major and minor alarm states for Safran SecureSync and similar units
- SAS (GPS amplification) signal-path monitoring where installed

Monitoring never stops

CORTEX RTUs keep operating even when IP connectivity to the NOC is lost. Local conditions are still detected, logged and displayed for any field technician who connects directly at the site, so the data needed for troubleshooting is always captured, even when the backhaul goes down.

HOW IT WORKS

How Alarms Flow Through the System

All alarm paths converge in MOSAIC. They originate from two distinct sources.

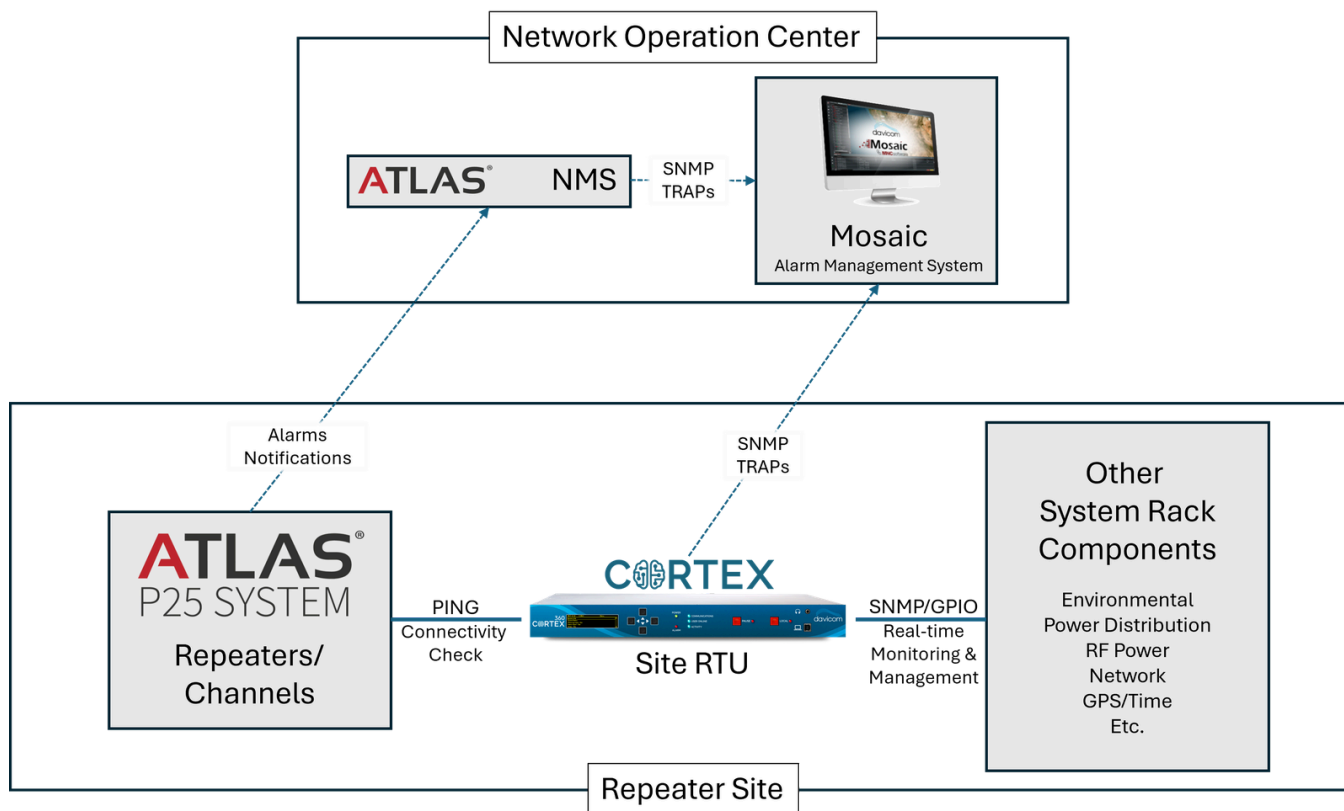


Figure 1. ATLAS network alarms and CORTEX site alarms both reach MOSAIC at the Network Operation Center.

ATLAS Network Alarms

When a repeater, controller or channel faults, ATLAS sends a notification to the NMS, which converts it into a standardized SNMP trap and forwards it to MOSAIC, presented with its description, severity and configured operator instructions.

Site RTU Alarms

CORTEX RTUs raise alarms on threshold crossings and state changes, sent to MOSAIC as SNMP traps and retrieved by polling. Operators can view instructions, chart the trend, and connect directly to the site for deeper investigation.

Cross-Validation

Because CORTEX independently checks ATLAS reachability, if a repeater goes offline and cannot report its own fault, the RTU detects the lost connectivity and raises an **independent alarm**. This dual-path design reduces blind spots.

One operator console, two independent reporting paths. **MOSAIC remains the single place** where every alarm is viewed, acknowledged, annotated and cleared. Every action is timestamped and logged for a full audit trail.

A DAY IN MOSAIC

The Operator Experience

From a network-wide glance to a single sensor, without switching tools or learning a second system.

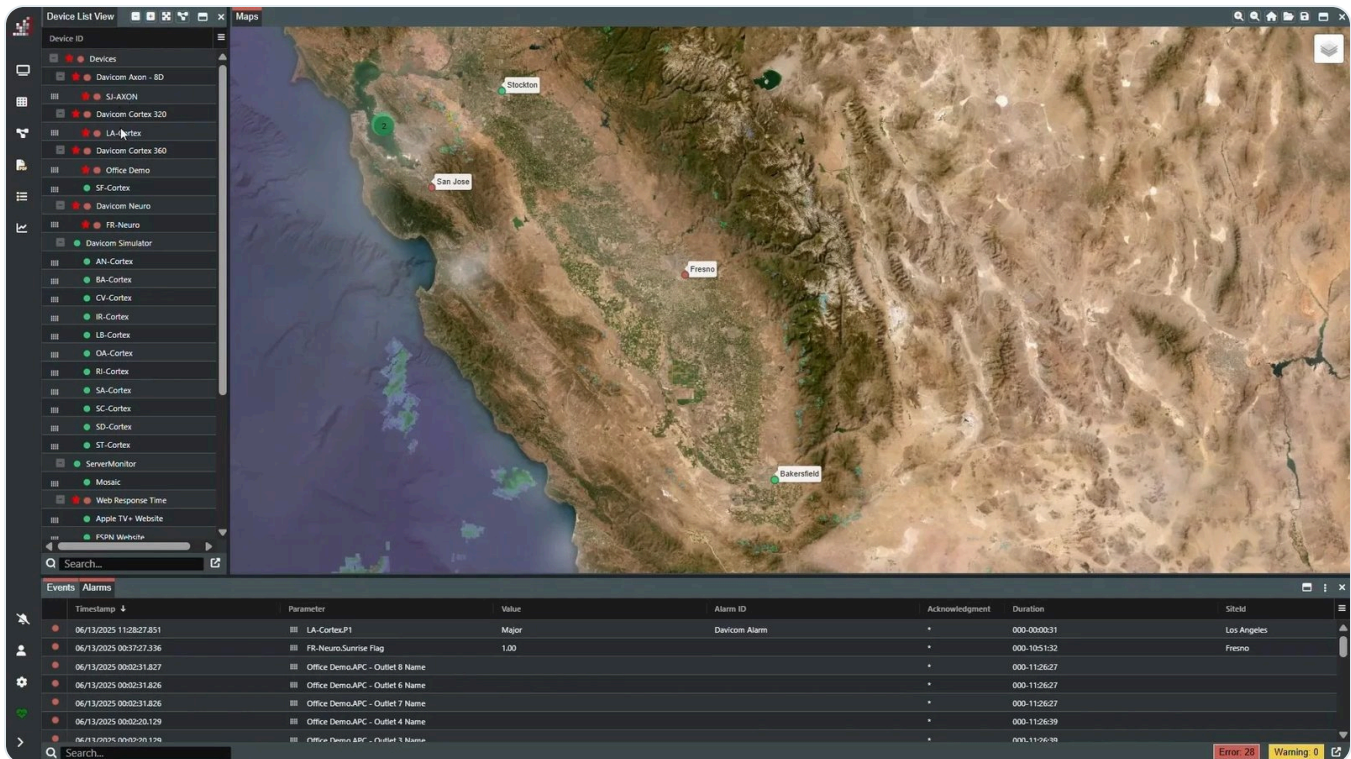


Figure 2. The default map view: every site color-coded green, yellow or red. Operators read the health of the whole network before reading a single alarm.

Investigating an alarm

Right-click a red site to see all active alarms, organized by source (ATLAS NMS or site RTU) with description, severity and duration. Operator instructions are one click away. For more detail, drill from the map into the RF-power, DC-distribution, GPS or network panel of the CORTEX RTU at that site.

Reviewing history

Any monitored parameter can be charted over time. An operator chasing a recurring VSWR alarm can pull up weeks of trend data to tell gradual degradation from an intermittent fault. Site reports summarize all alarm activity over any period, useful for post-incident review and for sharing status with EF Johnson support.

Alarm acknowledgment, annotation and escalation run through role-based access control: read-only for viewers, full control for supervisors and administrators. Every action carries a complete audit trail.

ARCHITECTURE & DEPLOYMENT

Built for Real Public-Safety Networks

Flexible across network topologies, and engineered to grow with the system.

Network Architecture Flexibility

In a **consolidated network**, where the radio access and core management networks share one IP domain, MOSAIC communicates with all CORTEX RTUs and the ATLAS NMS directly: the simplest model.

Many deployments require strict separation between the **Radio Access Network** and the **Core Infrastructure Network**, with a firewall between them. MOSAIC maintains connections to both subnets simultaneously: monitoring RAN-side switches and CORTEX RTUs through one interface and core-side infrastructure through another, delivering **unified visibility across the firewall boundary without compromising security policy**.

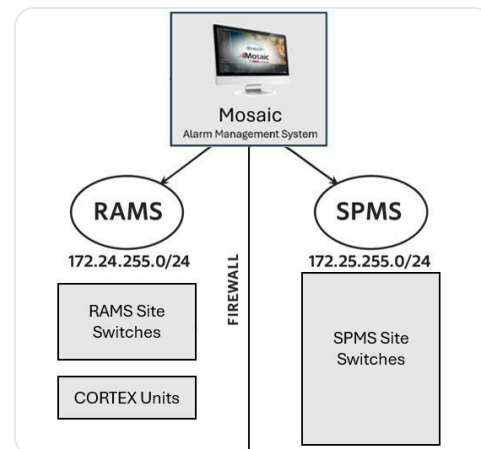


Figure 3. Segmented model: MOSAIC bridges both subnets across the firewall.

Deployment Strengths

- ✓

Template-Driven Deployment

Every CORTEX RTU is configured from standardized templates. Adding a site means applying the template, not engineering from scratch.
- ✓

ATLAS NMS Authority Preserved

The ATLAS NMS stays the authoritative system for P25 management. Davicom extends visibility without altering EF Johnson control.
- ✓

Site Autonomy During Outages

RTUs keep monitoring and logging locally even when the backhaul to the NOC is lost. Site conditions are never invisible.
- ✓

Scalable Architecture

The system grows incrementally: new sites, sensors and monitoring scope can be added any time, without redesigning the core platform.
- ✓

Single Operator Console

MOSAIC consolidates radio-network and site-infrastructure alarms into one interface. No switching tools, no second system to learn.
- ✓

Dual-Path Confidence

Independent cross-validation between CORTEX and the ATLAS NMS reduces blind spots and increases confidence in alarm accuracy.

PROVEN IN THE FIELD

Reference Deployment

A public-safety agency operating an EF Johnson ATLAS P25 LMR network across a large geographic service area.

The agency deployed Davicom **CORTEX 360 RTUs at each remote repeater site**, with MOSAIC as the centralized operator console at the primary NOC. The network spans multiple unmanned tower sites requiring continuous remote monitoring.

Coverage includes RF power across VHF and UHF equipment racks, per-circuit DC distribution, GPS timing with satellite and sync status, microwave-backhaul RSSI, managed switches on both RAN and core segments, and full environmental monitoring: temperature, humidity, smoke, water intrusion and door sensors. ATLAS NMS alarms are forwarded to MOSAIC as SNMP traps, giving operators a unified view of radio events and site conditions side by side. Each CORTEX RTU also displays the current ATLAS active-alarm count, so a technician on site sees both local conditions and how many network-level alarms are active there.

CORTEX 360

RTU deployed at every remote repeater site

VHF + UHF

RF power monitored per equipment rack

Live

fully operational, real-time monitoring & alarm management

Standardized templates enabled consistent configuration across all sites and reduced commissioning time significantly.

The Bottom Line

Agencies that run ATLAS P25 networks already have strong radio-network management through the ATLAS NMS. Davicom adds the site-intelligence layer that has traditionally been invisible: the power, RF transmit chain, environment, backhaul and timing that ultimately decide whether a repeater site stays on the air. By combining a CORTEX RTU at each site with MOSAIC as the central console, every alarm from every layer reaches the operator through one interface, with the context and tools to understand the problem, respond quickly, and validate the resolution.

The result: faster incident response, fewer unnecessary site dispatches, better accountability through complete alarm history and reporting, and a monitoring foundation that grows with the network.



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This document was produced by AI and validated by the Davicom team.