

Federal Data Center Perimeter Security with RaySense and PulseVi

How a federal agency data center replaced a failing copper fence sensor across a 2.5 km perimeter: two sensor lines on a mid-railed fence, 11 zones with point-accurate location, four PulseVi LiDAR on the gates, and a cutover with no coverage gap.



AERIAL VIEW OF A SECURE DATA CENTER CAMPUS. ILLUSTRATIVE IMAGERY; CUSTOMER IDENTITY AND LOCATION WITHHELD.

2.5 km

PERIMETER COVERED

11

DETECTION ZONES

2

SENSOR LINES ON THE FENCE

4

PULSEVI LiDAR ON THE GATES

XProtect

MILESTONE INTEGRATION

The Challenge

A copper sensor cable around a 2.5 km metal fence behaves like a very large antenna, and the weather found it.

The customer operates a data center for a United States federal agency: a secured campus with a continuous fenced boundary of roughly 2.5 km (8,200 ft), several vehicle and personnel gates, and the uninterrupted-availability requirement that comes with government workloads.

The campus already had fence-mounted detection, an older copper-based sensor system from another manufacturer, and it was failing. Strikes and nearby atmospheric discharge coupled into the sensor line, producing false alarms in volume and, over time, damaging the electronics attached to it.

The operational cost of that is worse than the repair bill. A perimeter system that cries wolf during every storm gets treated as noise, and on a federal site with audit obligations a control that operators have learned to discount is a problem in its own right.

WHY CAMERAS AND PATROLS WERE NOT ENOUGH

- Cameras on a 2.5 km boundary spend nearly all their time showing empty fence, and someone still has to be watching the right view at the right moment.
- Patrols cover one point at a time, on a schedule an observer can learn.
- The fence itself is built with a horizontal mid-rail, so a single line of detection would have left half the fabric weakly covered.
- The replacement could not take any part of the perimeter out of service while it was installed.

The Solution, RaySense AI DAS and PulseVi LiDAR

RaySense AI DAS fiber optic sensing runs the full perimeter in two parallel lines, one above the mid-rail and one below, for roughly 5 km of sensor cable in total. Four PulseVi 3D Solid-State LiDAR units cover the gates, where fence detection stops and controlled access begins.

- **Fully dielectric:** no copper and no powered electronics anywhere on the fence line, so there is nothing out there for a storm to couple into and nothing at the fence to damage.
- **Point-accurate location:** 11 operational zones for response, but events resolve to a position along the fiber rather than only to the zone containing them.
- **Gates covered separately:** a fence sensor cannot distinguish an authorized opening from an exploited one, so LiDAR tracks movement in three dimensions through the openings and their approaches.
- **No coverage gap:** the legacy system stayed live until RaySense was commissioned and verified, then was removed.

The Results

The failure mode that broke the old system cannot occur on the new one.

A dielectric sensor cable cannot conduct an induced surge, so the lightning-driven false alarms and the storm damage to fence electronics do not apply to the replacement. That is a property of the technology, not an estimate.

- Alarms arrive with a usable location along 2.5 km of fence, instead of a zone-wide area to search.
- RBtec has not published measured before and after alarm or incident counts for this site.
- Nothing changed at the monitoring end: the perimeter became another input into the Milestone XProtect installation the operators already used, with Vidalert showing the RBtec site map beside the video.
- Every alarm carries a time and a location on the fence, which is what audit evidence looks like.

“Copper on a fence is an antenna. Two and a half kilometers of it around a metal boundary, somewhere that gets real storms, and the weather will find it every time. Glass does not have that problem. There is nothing out there to induce a current into. That is the whole reason the false alarms stop.”

RBtec engineering team

RaySense at a Glance

System	RaySense AI DAS Fiber Optic Perimeter Security System
Perimeter	Approximately 2.5 km (8,200 ft)
Sensor lines	Two runs, above and below the fence mid-rail, approximately 5 km of sensor cable
Zones	11 operational zones, with point-accurate location along the fiber
Fence electronics	None. Fully dielectric sensor cable, no copper and no powered devices on the fence line
Gate coverage	Four PulseVi 3D Solid-State LiDAR units
Integration	Milestone XProtect VMS, with Vidalert displaying the RBtec site map
Installation	Security integrator, approximately three weeks, site live throughout
Cutover	Legacy copper system kept operational until RaySense commissioning was complete
Year	2026



RAYSENSE INSTALLATION ON A PERIMETER FENCE. REPRESENTATIVE PHOTOGRAPHY; CUSTOMER IDENTITY WITHHELD.

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