Case Study

A Government Smart City Builds an OpenStack Cloud for Critical Surveillance Infrastructure

XaasIO Compute powers the infrastructure supporting monitoring for 4,000+ CCTV cameras

A standards-based private cloud on KVM, integrated with external Dell storage and VLAN-based networking, provided a scalable infrastructure foundation for surveillance, video-management and related smart-city workloads.

EXECUTIVE SUMMARY

A Government Smart City project required a scalable, open infrastructure foundation that is secure, resilient, and future-ready for surveillance workloads associated with more than 4,000 CCTV cameras. XaasIO Compute provided OpenStack on KVM with centralized orchestration of compute, images, networks, and volumes, enabling simplified infrastructure management and efficient resource utilization across the deployment. The implementation retained external Dell storage and integrated with the existing VLAN-based network design, while preserving a future path to Ceph-based SDS and Open vSwitch-based SDN. This approach ensured investment protection, operational continuity, and flexible architecture supporting future infrastructure growth in long-term and evolving smart city requirements.

KEY OUTCOMES

- 4,000+ CCTV Cameras - Surveillance workloads supporting a city-wide camera estate.
- OpenStack Private Cloud - Upstream-aligned cloud control on KVM.
- External Dell Storage - Existing enterprise storage integrated through Cinder.
- Migrate - Execute approved waves, verify each workload, and maintain change records.
- VLAN Networking - Provider-network segmentation aligned to the city design.

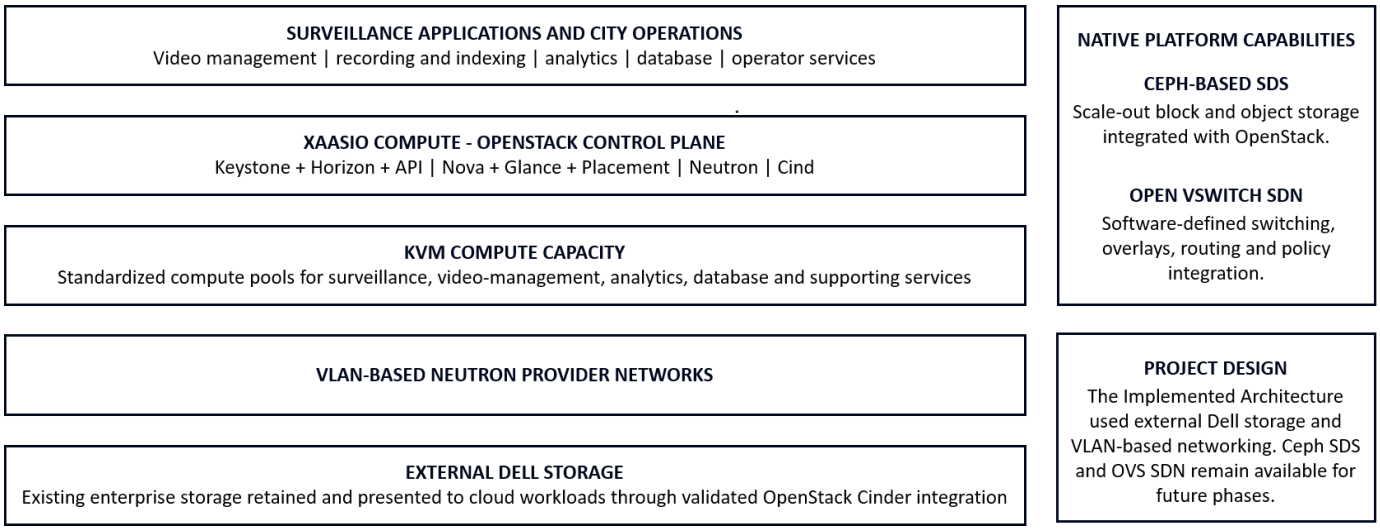
BUSINESS DRIVERS

- Provide reliable cloud infra for surveillance, video-management, database and operator workloads.
- Support growth across a camera estate exceeding 4,000 CCTV endpoints.
- Retain the existing external Dell storage investment.
- Integrate with established VLAN-based network segmentation.
- Standardize provisioning and lifecycle operations on an open platform.
- Keep a future path to SDS and networking.

IMPLEMENTED PLATFROM

- XaasIO Compute - OpenStack private cloud on KVM.
- Nova + Glance + Placement - Compute orchestration, images and capacity placement.
- Neutron - VLAN provider networks and policy-based connectivity.
- Cinder - Integration with external Dell storage
- Keystone + Horizon + APIs - Identity, portal, project access and automation interfaces.
- Native expansion options - Ceph-based SDS and Open vSwitch-based SDN.

IMPLEMENTED ARCHITECTURE



OUTCOME

An open and extensible private cloud foundation for large-scale surveillance workloads, integrated with the city's existing storage and network architecture.

AN OPEN CLOUD FOUNDATION FOR LARGE-SCALE SURVEILLANCE

XaasIO Compute hosted the cloud infrastructure for surveillance applications to process, store and present camera data. The camera endpoints remained part of the city surveillance system.

Challenge 1 - Camera-Scale Demand

Infrastructure had to support applications associated with more than 4,000 CCTV cameras.

Challenge 2 - Storage Continuity

Existing external Dell storage had to remain part of the production architecture.

Challenge 3 - Network Segmentation

Integrate Active Directory or LDAP, federate SSO through XaasIO IAM, enforce MFA, and apply role-based administration.

Challenge 4 - Future Expansion

The cloud needed a path to scale-out SDS and SDN without changing the control plane.

DEPLOYMENT AND WORKLOAD ONBOARDING

- Classified surveillance applications by compute, memory, storage I/O, network and availability requirements.
- Mapped application dependencies, camera-ingestion flows, database services and operator access paths.
- Defined OpenStack projects, images, flavors, quotas, security rules and approved service profiles.
- Integrated external Dell storage through Cinder while retaining the customer's enterprise storage architecture.
- Connected Neutron provider networks to established VLAN zones for management, workloads, storage and external
- Validated VM provisioning, volume attachment, network connectivity, application start-up and camera-service continuity.
- Onboarded workloads in controlled groups with prechecks, postchecks, rollback criteria and stakeholder acceptance.

CONTROLLED DEPLOYMENT FOR CONTINUOUS CITY OPERATIONS

The delivery program combined infrastructure discovery, application dependency mapping, storage and network integration, validation and structured operational handover for a smooth, controlled deployment for continuous city operations.

- Discover - Inventory applications, data flows, camera ingestion, dependencies and operating constraints.
- Design - Size compute; map Dell storage; define VLANs, projects, access, resilience and capacity.
- Build - Deploy OpenStack control services, KVM compute, network integration and storage connectivity.
- Validate - Test provisioning, storage, network reachability, application startup and camera-feed continuity.
- Operate - Complete runbooks, monitoring baselines, capacity procedures and operational handover.

OPERATIONAL READINESS

- Centralized cloud control for compute, images, network and storage lifecycle.
- Documented procedures for provisioning, change, incident handling and capacity expansion.
- Role-based access through OpenStack projects and identity controls.
- Repeatable validation of application, network and storage dependencies.
- Visibility into compute capacity, instance state, network services and storage consumption.
- A defined expansion path to Ceph SDS and Open vSwitch SDN when future phases require software-defined scale.

SCOPE NOTE: XaasIO Compute provides the private cloud infrastructure for the surveillance applications. Camera hardware, video-management software and public-safety operating procedures remain separate solution components.

SERVICE CONTINUITY BY DESIGN

Phased workload onboarding, dependency discovery, prechecks, controlled change windows and post-cutover validation were used to minimize interruption to surveillance services.

SMART CITY SCALE WITHOUT PROPRIETARY INFRASTRUCTURE LOCK-IN

Retain existing infrastructure | Standardize cloud operations | Expand with software-defined services when required.

This Government Smart City critical-infrastructure project demonstrates how XaasIO Compute can provide an open, API-driven infrastructure foundation for large-scale surveillance applications while integrating existing storage and network designs. External Dell storage and VLAN networking were retained for the implemented architecture, with Ceph SDS and Open vSwitch SDN available as native platform options for future growth.

SOLUTION COMPONENTS AND THEIR BUSINESS OUTCOMES

- Cloud platform - XaasIO Compute on upstream-aligned OpenStack.
- Hypervisor - KVM
- Compute orchestration - Nova and Placement
- Images - Glance
- Network - Neutron with VLAN provider networks.
- Storage - Cinder integration with external Dell storage.
- Identity and Access - Keystone, Horizon, APIs and project controls.
- Native SDS Option - Ceph-based software-defined storage

OPERATIONAL IMPROVEMENTS

- Standardized compute capacity and VM lifecycle on OpenStack and KVM.
- Provided centralized orchestration for images, projects, networks and volumes.
- Preserved the external Dell storage investment.
- Integrated with the established VLAN-based city network design.
- Reduced dependence on a proprietary cloud control stack.
- Created a future path to Ceph Software Defined Storage and Open vSwitch Software Defined Networking without replacing the OpenStack control plane.

THE RESULT

The Government Smart City project established an open OpenStack private cloud foundation for the workloads supporting monitoring across more than 4,000 CCTV cameras. The solution integrated existing Dell storage and VLAN networking while retaining native XaasIO options for Ceph-based SDS and Open vSwitch-based SDN.

XAASIO COMPUTE PLATFORM

Build a sovereign OpenStack cloud for city, public-safety, video, analytics and critical-infrastructure workloads.

Deliver self-service compute, networking and storage on KVM while preserving the freedom to use external enterprise infrastructure or XaasIO's native Ceph-based SDS and Open vSwitch-based SDN capabilities.

Explore the Platform at xaasio.com/platform/compute/

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