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Oracle Smart Specimen Vault

Connected storage for critical samples

Product preview, not generally available



Oracle Smart Specimen Vault[1] is intended to be a rugged, temperature-managed enclosure with security features for storing and transporting your organization's critical samples. Planned capabilities include environmental monitoring, access control, inventory and location tracking, and activity logging during storage and transport.

Oracle Smart Specimen Vault is planned as more than a piece of hardware. It's intended to be a comprehensive connected devices platform with embedded connectivity intended to link the vault to cloud services, centralized fleet management, enterprise applications, and AI-informed operational intelligence.

Planned as a complete connected platform from day one

- **Embedded cloud connectivity.** The embedded Oracle Cloud Infrastructure (OCI) IoT Connector is intended to support connectivity between the vault and cloud services with limited requirements for networking configuration or specialized setup.
- **Centralized fleet visibility.** OCI Command Center is intended to provide operations teams with a centralized view of the vault and other supported IoT devices, including device health, notifications, location, environmental status, commands, and reporting.
- **Device lifecycle management.** OCI Control Center is intended to support provisioning, configuration, security administration, updates, and management of connected devices throughout their lifecycle.

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How the platform works

The platform is intended to arrive as an integrated experience, reducing the effort required to connect devices, support cloud services, and bring operational data into enterprise workflows.

1 Connect and process	2 View and manage	3 Integrate and analyze
The embedded OCI IoT Connector is intended to support low-touch cloud connectivity, local processing, buffering, and data handling.	OCI IoT Platform and OCI operations management are intended to support centralized fleet visibility and device lifecycle management.	Connections to Oracle and third-party applications are intended to support data integration and AI-informed operational analysis.

Integrated platform capabilities

Oracle Smart Specimen Vault is designed to bring together the edge, cloud, management, and integration capabilities in a unified solution. That approach can help limit the time spent assembling infrastructure, allowing more time to apply connected data to improve critical operations.

Connected devices platform

Component	Planned role in the offering
Oracle Smart Specimen Vault	Connected, temperature-managed storage with capabilities for access control, traceability, and visibility during storage and transport.
Embedded OCI IoT Connector	Cloud connectivity, local processing, buffering, data synchronization, and support for centralized platform lifecycle management.
OCI IoT Platform	Cloud service for telemetry ingestion, event processing, device state, data access, and operational intelligence.
OCI tenancy	Cloud infrastructure for connected services, management applications, data, and integrations.
OCI operations management	Centralized visibility and lifecycle management for the vault and other supported IoT devices, including monitoring, notifications, location, status, commands, reporting, provisioning, configuration, software and firmware updates, security policies, and roles.
Enterprise integration	Native integration with Oracle solutions and connectivity with third-party applications and enterprise workflows.

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The potential of one connected platform

Manage Oracle Smart Specimen Vault and other supported IoT devices through a centralized operational environment. This approach is intended to help organizations limit deployment complexity, enhance visibility, and connect device data with Oracle and third-party workflows.

High-level specifications

Oracle Smart Specimen Vault is intended to combine temperature-managed storage with connected device operations.

Planned feature	Specification
Temperature management	Two thermally isolated storage compartments using phase-change material (PCM), with a design target of supporting frozen, refrigerated, or room-temperature storage for 14+ hours, subject to configuration and validation.
Condition monitoring	Temperature sensing by storage zone, vault-status display, and configurable cloud notifications for temperature excursions, device faults, and loss of communication.
Access control and logging	NFC/badge or mobile authorization with electronic locking, offline credential support, and access-event logging.
Identity and inventory	RFID, barcode, and presence/shelf sensing to record item additions and removals and help support item-level custody tracking.
Location and connectivity	GPS/GNSS location tracking, with optional Wi-Fi and cellular communications for device, location, performance, and material-status events.
Semi-portable, rugged design	Portable insulated enclosure for indoor, outdoor, fixed-site, and mobile workflows, with design targets for weather, ingress resistance, and durability.
Embedded edge capabilities	Embedded IoT Connector board for device identity, connectivity, local processing, and remote device management.
Power and status	Wall power and rechargeable battery, with a front display for temperature, connectivity, battery, and charging status.
Cloud operations and integration	OCI IoT Platform, fleet management, operational tools, digital twins, notifications, reporting, and open APIs for Oracle and third-party workflows.

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Potential use cases

Use case	How Smart Specimen Vault can support the workflow
Laboratory samples	Collection, temporary storage, and transport of diagnostic samples across clinical, outreach, and laboratory networks, with access control and condition monitoring.
Blood products and biologics	Access-controlled storage and condition monitoring for materials requiring temperature, identity, and handoff tracking.
Pharmaceuticals and specialty medications	Storage and transport of medications, GLP-1 therapies, biologics, and clinical-trial materials, with temperature, location, and custody-event tracking. These capabilities are not intended to replace trading-partner package-level traceability systems.
Organ and tissue logistics	Potential future transport workflows involving location tracking, calibrated temperature monitoring, documented communications, and centralized notifications. Clinical deployment requires purpose-specific validation and regulatory approval.
Food and agriculture	Condition and handoff tracking for temperature-sensitive ingredients, food samples, and covered-food workflows. These capabilities are not intended to replace required traceability plans or records.
Emergency medical and transport operations	Access-controlled, semi-portable storage and transport for selected medication, blood-product, and sample workflows in ambulances, ground vehicles, air transport, and future last-mile delivery scenarios, subject to the requirements and validation of each use case.

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