Welcome

Red Hat Summit: Connect 2025 Darmstadt

Bertelsmann Marketing Services

OpenShift Journey BMS-IT

Welcome to our OpenShift transformation story. This presentation outlines our technical evolution from 2021 through 2025, highlighting key milestones in our containerization strategy.

Darmstadt, 19.11.2025

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Organisation: Level Bertelsmann

BMS-IT

Internal IT service provider within Bertelsmann Marketing Services, delivering comprehensive technology solutions and infrastructure management.

Arvato-Systems

The internal IT service provider at Bertelsmann and part of the arvato group, providing enterprise-scale technology services.

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Business Units Supported by BMS-IT

Our technology infrastructure powers diverse business units across the Bertelsmann Marketing Services ecosystem, delivering reliable and scalable solutions.

beDirect

Prinovis

DeutschlandCard

Campaign

AZ Direct

BPG USA

Mohn Media

Bertelsmann Marketing Services IT

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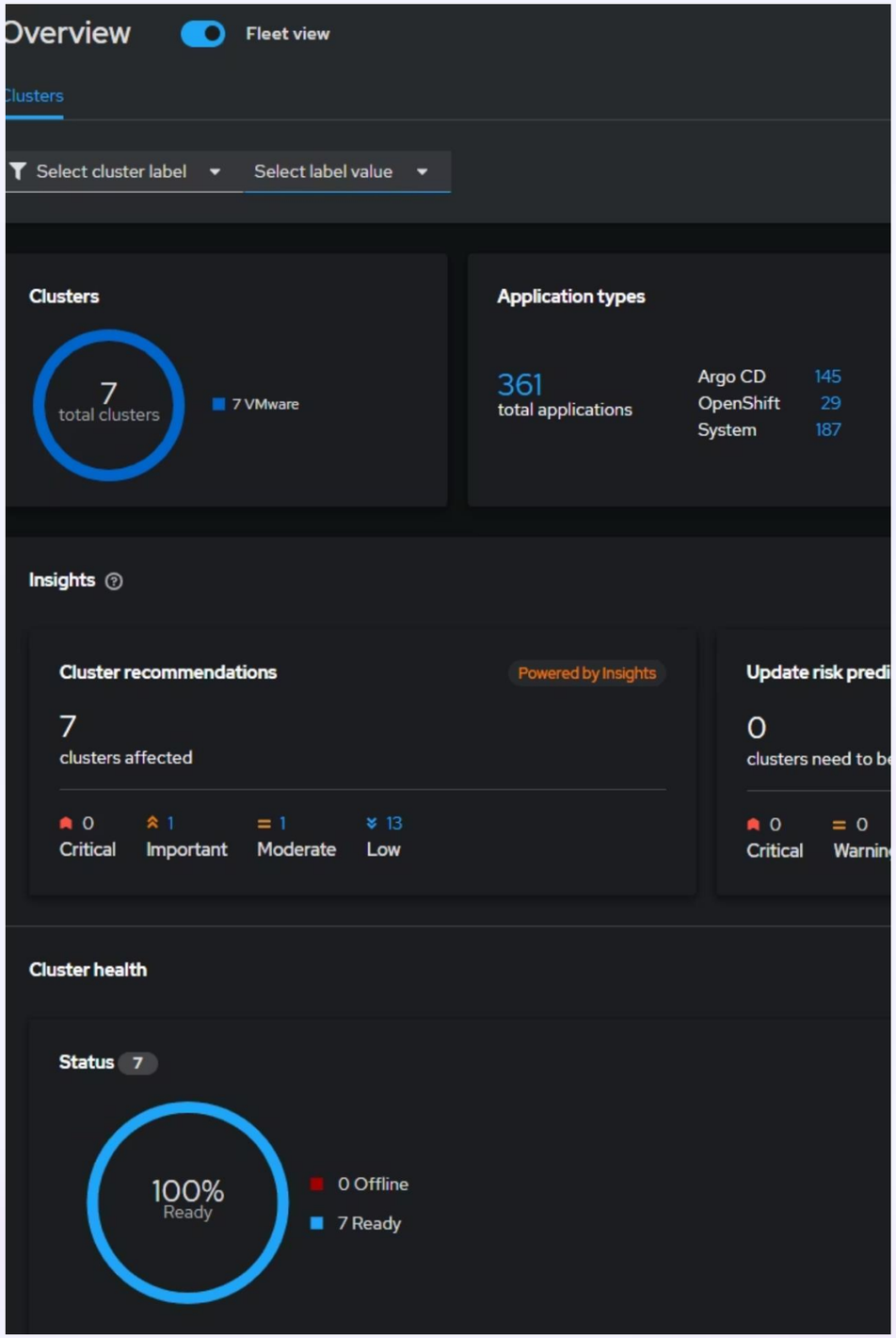

Advanced Cluster Management Implementation

Planning Phase

Selected ACM for multi-cluster orchestration capabilities.

Deployment

Installed ACM on hub cluster. Configured managed clusters.

Validation

Tested policy engines and application lifecycle management.

Adoption

Full implementation completed in Q4 2021.

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GitOps Automation with ArgoCD

ArgoCD Implementation

Implemented ArgoCD as our central GitOps tool for declarative, automated deployments and continuous synchronization of applications and infrastructure.

Repository Structure

Developed unified repository structure with clear separation between application code and infrastructure code for optimal management.

Standardized Project Creation

Established standardized approach for automatic project provisioning and setup based on proven templates.

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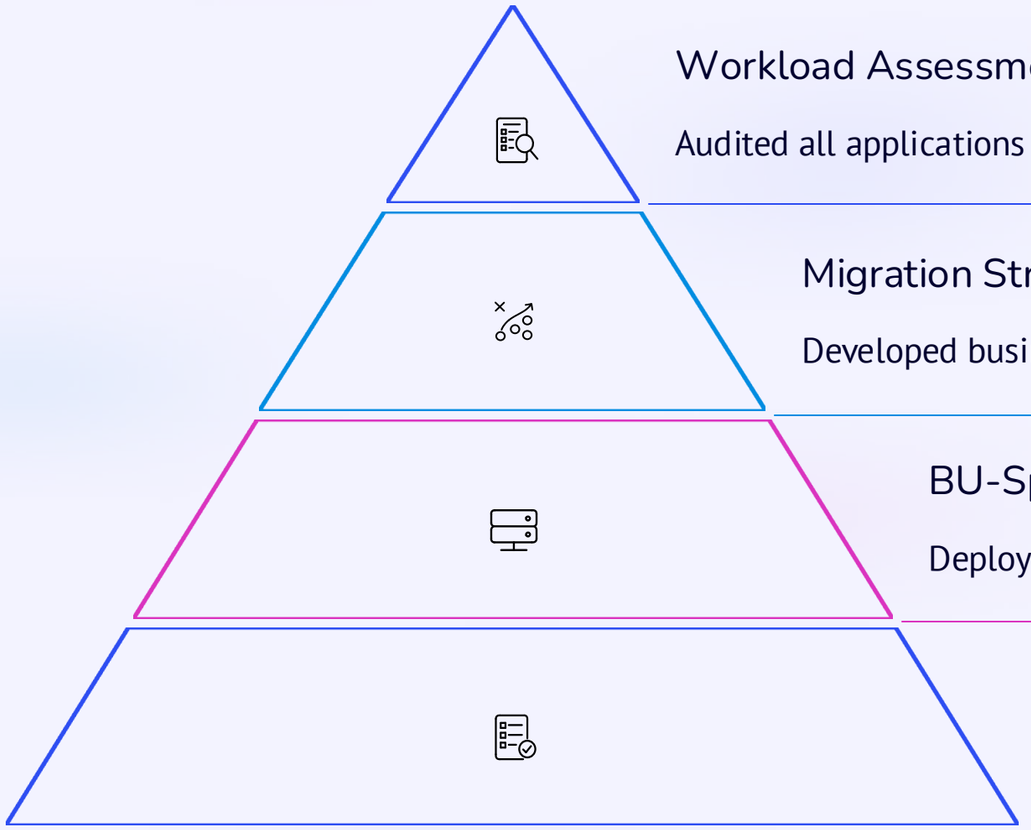
Cluster Migration Strategy



Workload Assessment

Audited all applications and dependencies across the legacy cluster.

Migration Strategy

Developed business unit specific migration paths and rollback procedures.

BU-Specific Clusters

Deployed separate OCP 4.X clusters for each business unit.

Completed Migration

Successfully migrated all workloads by Q2 2022.

Migration completed in Q1-Q2 2022, moving from centralized OCP 3.11 to dedicated OCP 4.x clusters for each business unit.

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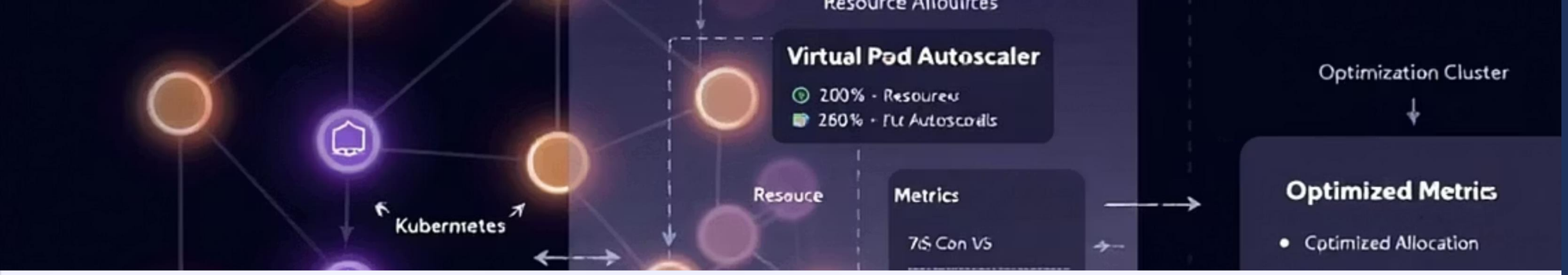
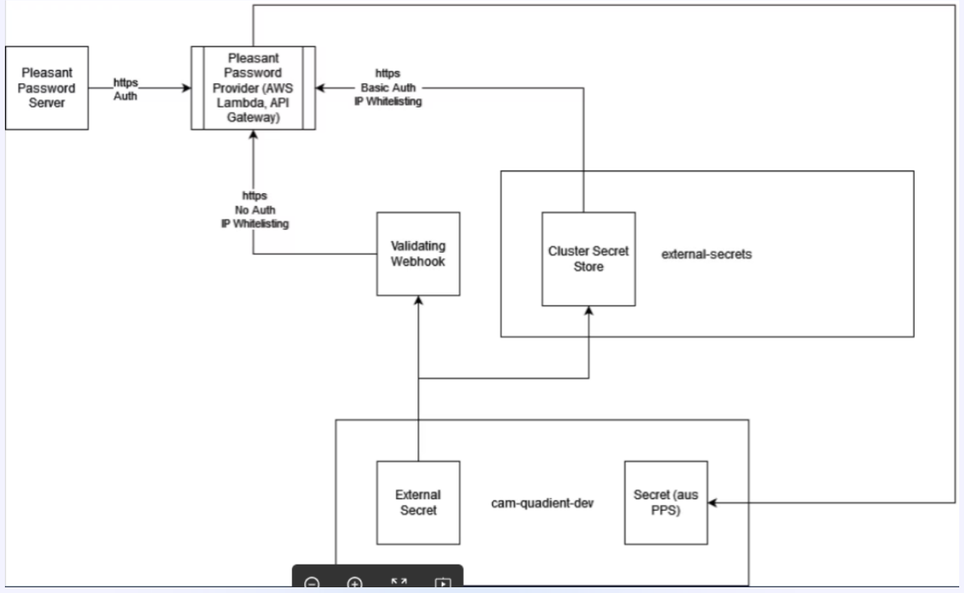


Secrets Management

- Centralized secret management using Pleasant Password Server and External Secrets Operator
- Integration with AWS Lambda, API Gateway, and ArgoCD GitOps workflows
- Secrets are not stored in Git repositories, but managed securely and injected at runtime



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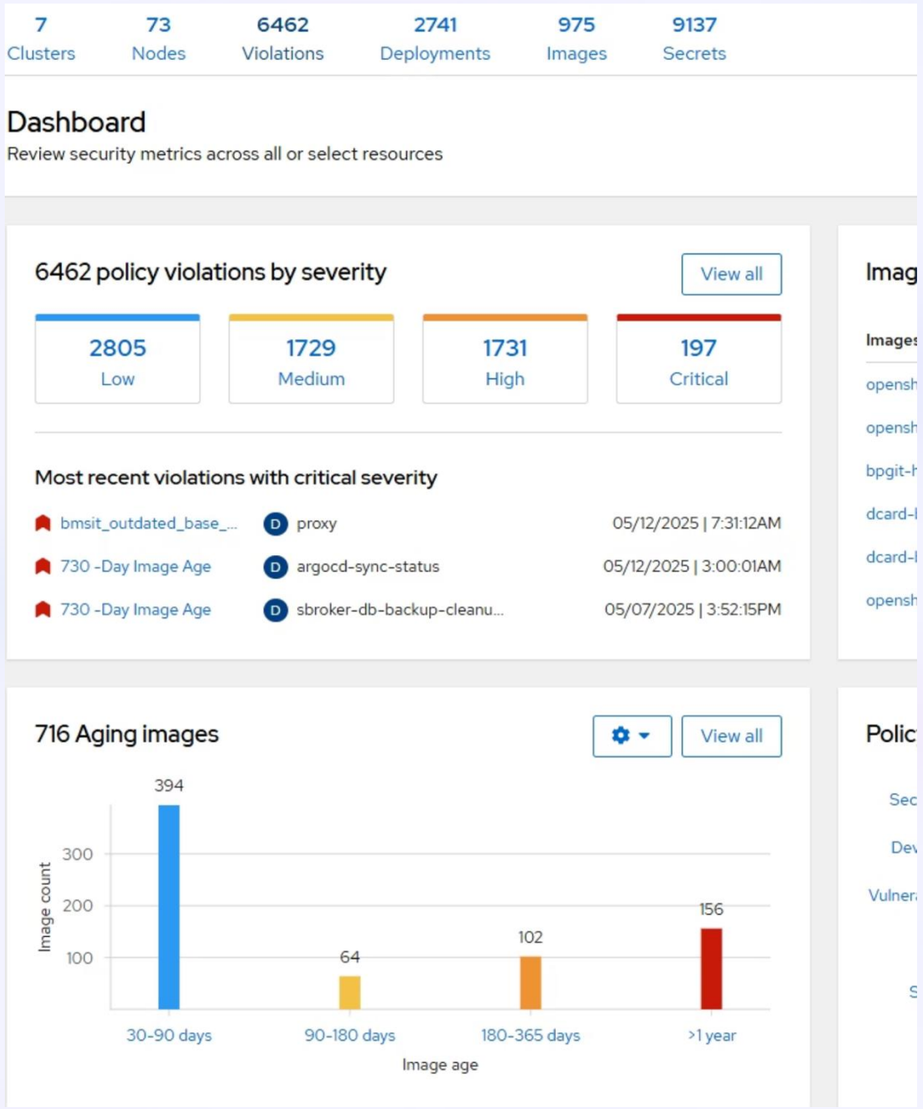

Advanced Cluster Security Integration

Vulnerability Management

Implemented continuous scanning of container images and running deployments.

Created policies for critical CVEs.

Compliance Frameworks

Enforced industry standards like CIS Benchmarks.

Runtime & Network Security

Real-time threat detection across all clusters and securing pod-to-pod communication.

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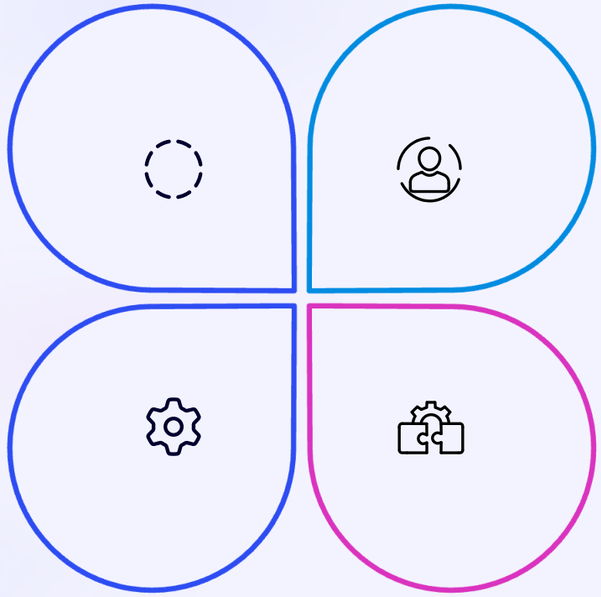
S3-Compatible Object Storage

Selection

Conducted a thorough evaluation of Ceph storage solutions.

Configuration

Established buckets as requested for dedicated projects.



Operation

Chose to adopt the Arvato S3 service, which has reached General Availability (GA).

Integration

Integrated applications using standard S3 API for seamless connectivity.

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Logging Stack Modernization

Grafana/Loki Advantages

Better performance and cost efficiency

Implementation Steps

Parallel operation during transition

Team Training

New LogQL query language adoption

Legacy Retirement

ELK stack decommissioning

Our Overall Clusters Availability is **99.98%**

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Security Standardization Process

Regular Security Calls

Bi-weekly meetings establish consistent security practices. Teams review policies and discuss emerging threats.

- Cross-team collaboration
- Knowledge sharing
- Timely vulnerability response

Ticket-Based Management

Structured process ensures proper tracking of security issues. Every vulnerability follows a documented remediation path.

- Clear ownership assignment
- Documented resolution steps
- Compliance verification

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Network Modernization: SDN to OVN

6

Advanced Features

IPv6, Egress IPs, Egress Firewall, Load Balancer, Namespace Isolation, and Hybrid Networking

100%

Compatibility

Full native support for Kubernetes NetworkPolicy resources

5

Phases to migrate

Carefully planned transition phases

The migration from OpenShiftSDN to OVN-Kubernetes provides improved scalability, better network policy support, and advanced features.

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Test / Production Cluster Separation

Environment Separation

Created dedicated clusters for testing and production workloads. Improved resource isolation and security boundaries.

Migration Framework

Developed GitOps-based promotion process. Automated application migration between environments.

Validation Process

Ensured identical configuration between environments.

BIM/BAM Success

Achieved excellent assessment results. Validated our architecture and operational practices.

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VPA Resource Optimization Results

Cluster	Request/Lower Bound Diff	Request/Upper Bound Diff
OS8	2.90	89.8
OS8-Test	2.87	57.4
OS10	8.16	249
OS10-Test	8.72	337

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ACS Image Whitelisting Policy

Implemented granular control of container image sources in OpenShift using Red Hat Advanced Cluster Security, providing multi-layered protection against unauthorized or potentially malicious container images.

Two-Tier Policy Architecture

1

Allowed Registries Policy

Central registry whitelist providing top-level control that blocks unauthorized registries and serves as the foundation for more granular repository policies.

2

Repository Policies

Granular per-registry control with registry-specific allowlists, precise repository access controls, and enforce mode active since July 2025 across all production clusters.

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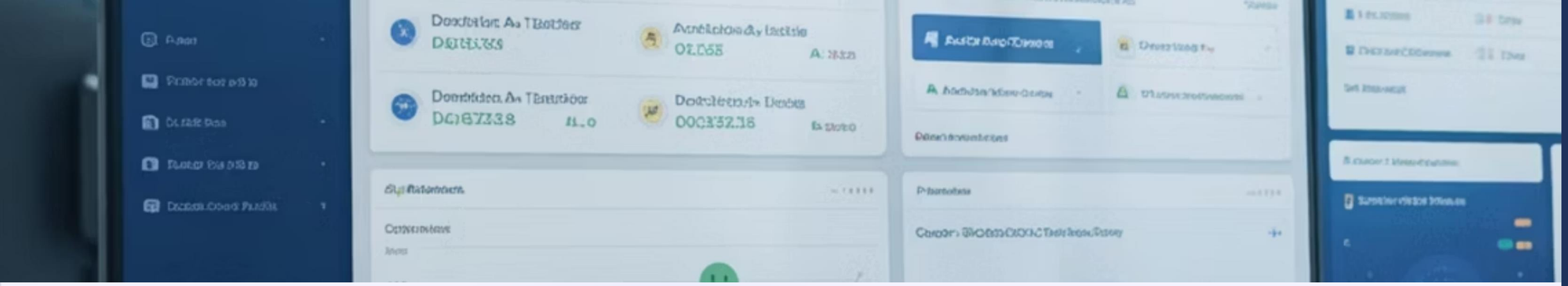

Audit Logging

Comprehensive Security Monitoring

OpenSearch Integration

Audit logging implemented with OpenSearch for centralized log aggregation and analysis.

Pattern-Based Alerts

Alerts generated automatically through specific pattern matching in audit logs, enabling proactive security response.

Automated Notifications

Implemented with Elastalert to trigger email alerts for security events.

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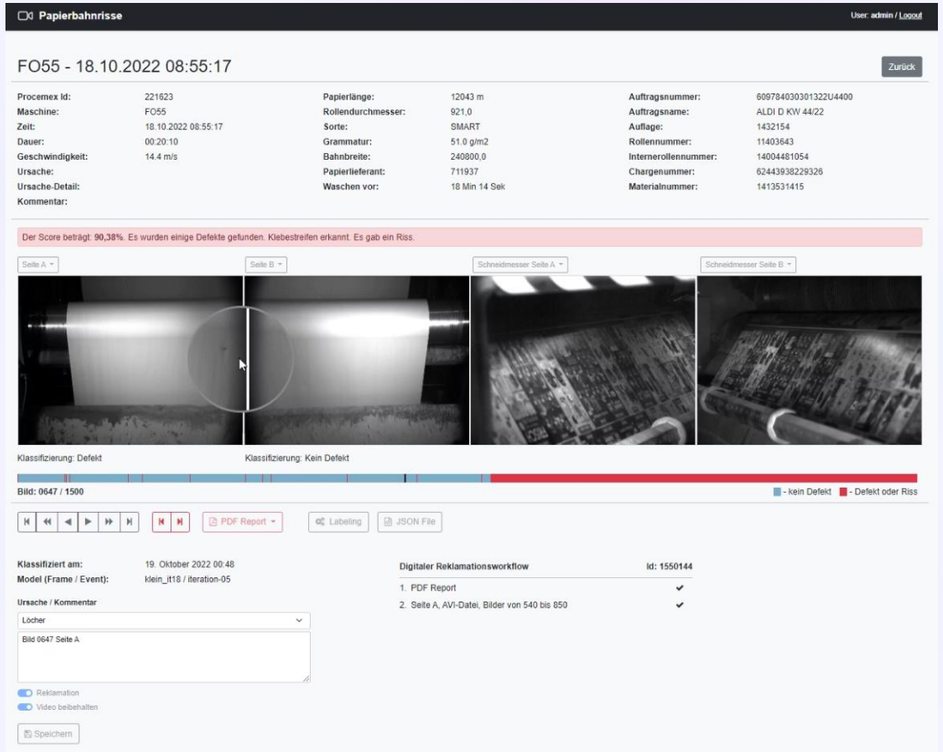
Automatic recognition of paper defects

Problem

- Small holes in the paper reels can lead to paper web breaks during printing which cause costly production interruptions
- If paper break is caused a paper manufacturing defect, we can re-claim part of the costs from the manufacturer
- Identifying defects manually is error prone and time consuming

Solution

- Fully automated data pipeline of video files and production parameters
- Computer vision interpretation of high-speed camera recordings
- Recommendation engine for business actions
- Web front-end for easy interaction with the system
- Model trained in Azure Cloud
- System hosted on the OpenShift platform



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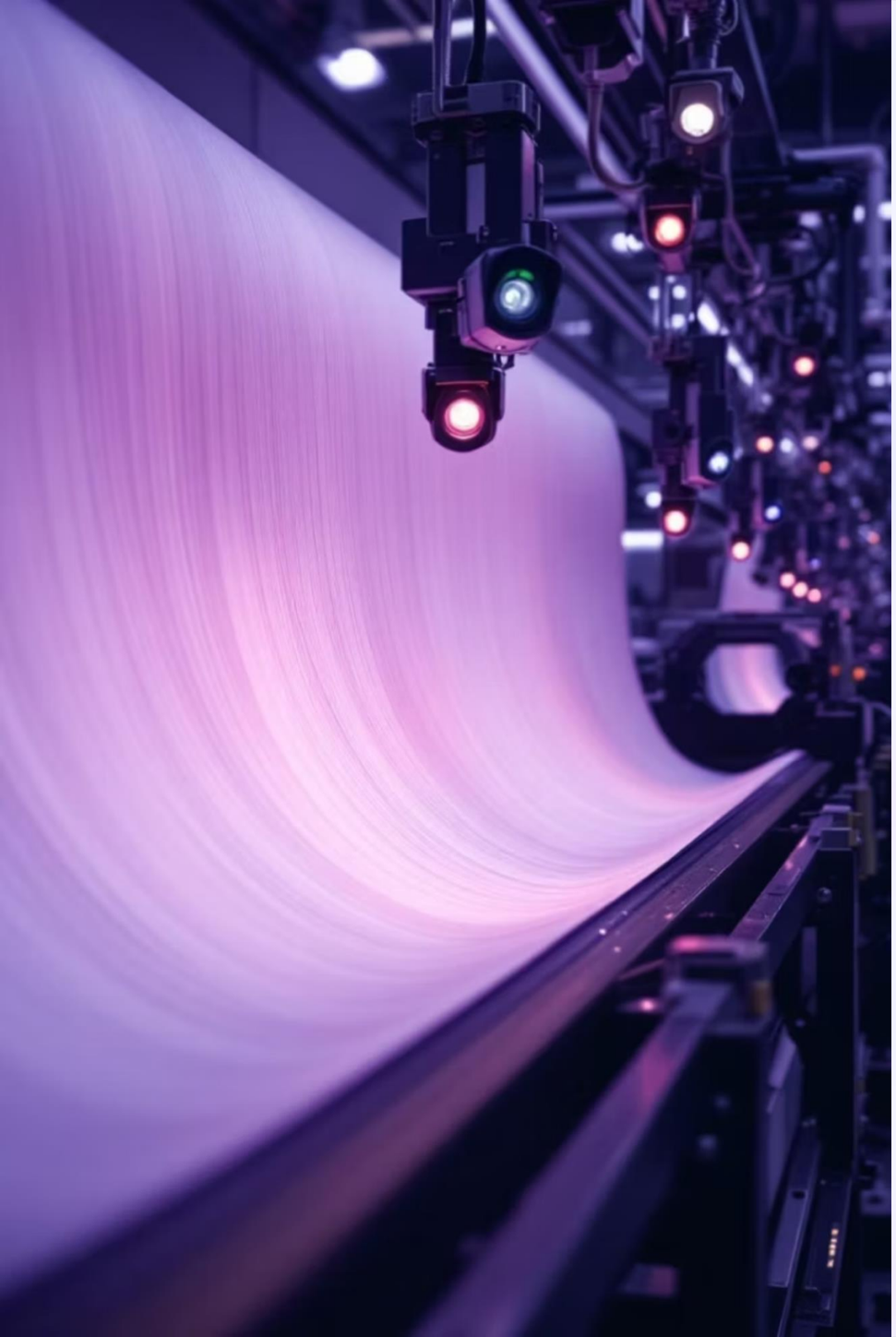

PBR system KPIs

4
Years in production

2
Printing facilities

15
Printing machines

100%
Web breaks analyzed

29%
Automatically sorted out

80%
More claims (*)

60%
Time saving (*)

99.99%
Application availability

👍
User satisfaction

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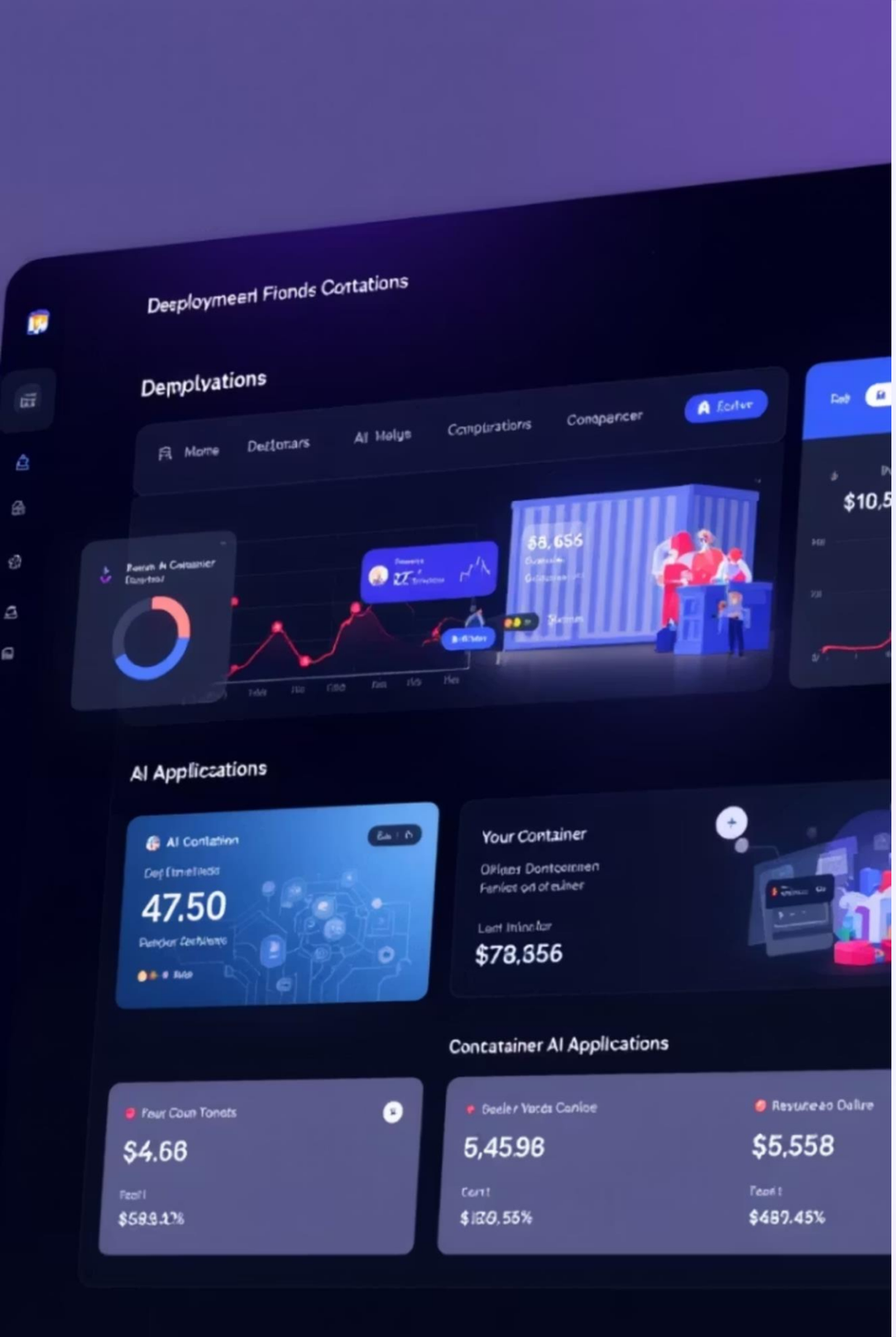

How OpenShift benefits PBR

Not just hosting

- Centralized image management for consistent, secure container updates
- Runs in isolated, scalable containers with health checks and auto-recovery
- Zero-downtime deployments through fully automated CI/CD pipelines
- GitOps driven infrastructure – versioncontrolled and reproducible

Preconfigured and ready to use

- Built-in security and monitoring
- Best practices baked in
- Continuously patched and up-to-date

Premium Support

- Central knowledge base and regular weekly syncs
- Helpful and experienced colleagues always ready to help ☒ 🙏

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What's Next?

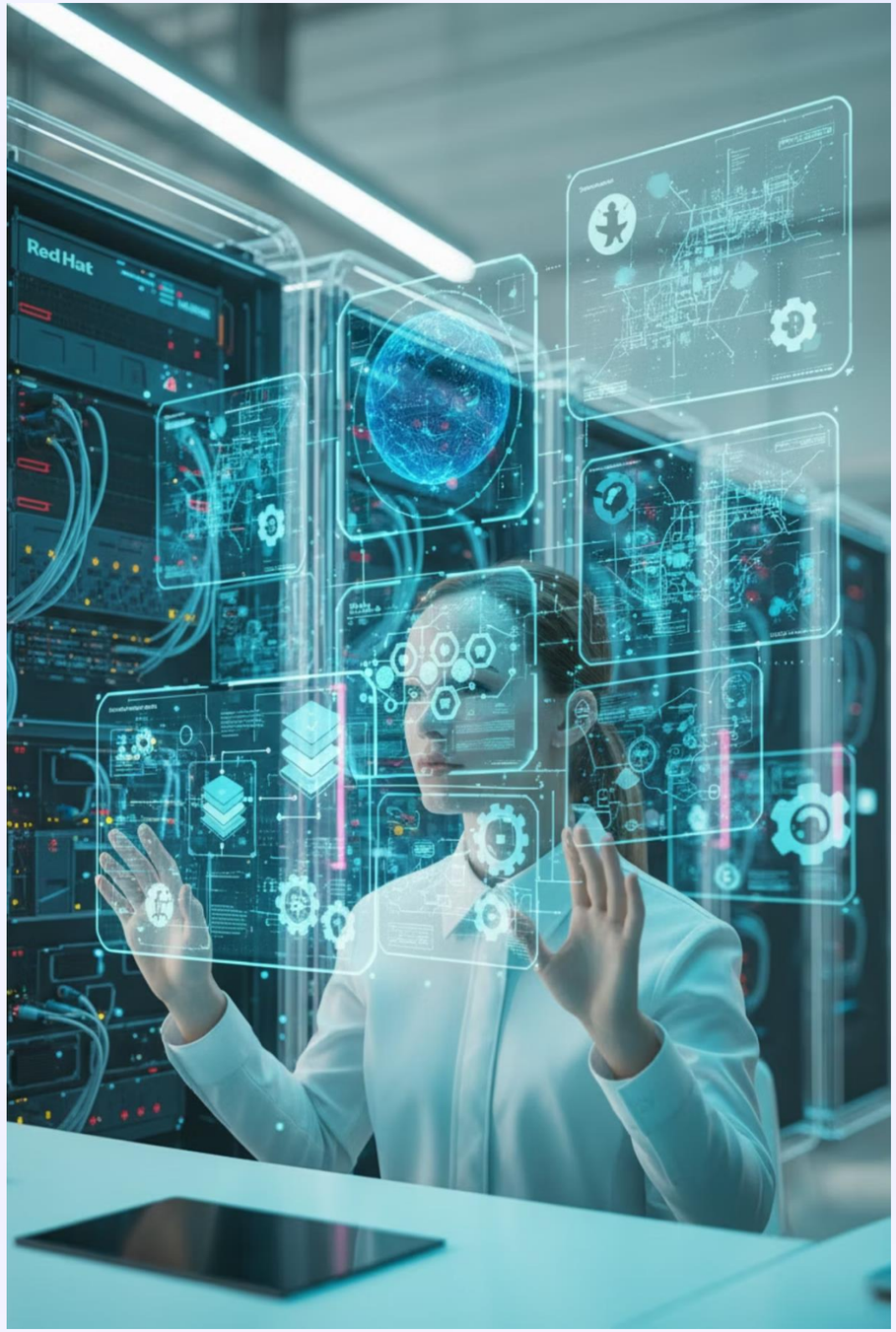
Red Hat Virtualization POC: Alternative to VMware vSphere

- Evaluate RHV as a direct alternative to VMware vSphere, enabling VM management through OpenShift standards and streamlined migration.
- Deploy KubeVirt on OpenShift, ensuring seamless integration with existing network, storage, and operational standards.
- Transition from proprietary solutions, unify VM/container management with OpenShift, reduce VMware licensing, and standardize operations.

Bare Metal OCP POC: Cost Benefits & RHV Foundation

- Evaluate bare metal OpenShift as an alternative host for OCP (currently on VMware), serving as foundational infrastructure for RHV deployment.
- Provision bare metal servers, implement OpenShift on Bare Metal, and integrate with existing networking and storage.
- Assess cost savings by eliminating VMware licensing for OCP, gain greater hardware control, and optimize for future RHV deployments.

These strategic proof-of-concept initiatives are critical steps in our OpenShift transformation journey. They will expand our cloud-native capabilities, provide more deployment options, and enable us to tackle complex business challenges with agility and efficiency.



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Thank you

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