CASE STUDY

FullStackS

TRX R6

Powering Containers and Kubernetes Onboard Trains

Overview

Quickly get started with RANCHER and Kubernetes on board rail rolling-stock.

Challenges

- Compute to support Kubernetes on trains
- Secure cloud-to-edge access for RANCHER
- EN Compliance

Solution

RANCHER running in the cloud and Kubernetes on TRX R6, with secure access over mobile networks using Keel SD-WAN.

Benefits

WIth Kubernetes running on TRX R6 out of the box, and integration support from FullStackS, developers get a jump start on their container R&D programs, eliminating the hassle and time spent installing, configuring, and debugging the container orchestration and management platform across a fleet of trains.

Executive Summary

In partnership with FullStackS, the TRX R6, an EN compliant compute gateway, now supports modernization of onboard IT systems and applications through the use of containers. Built on RANCHER and Kubernetes, an open source container orchestration platform, the holistic solution makes it easier to deploy, scale and manage containerized applications such as Docker onboard trains remotely.

FullStackS is an integration service provider that transforms software monoliths and applications to containers and microservices, to run at the edge, onboard rail compliant compute gateways.

Developer Requirements

To deliver and enhance IT, data and application services at the edge, DevOPs teams are increasingly leveraging the cloud to create scalable digital services that can efficiently and effectively manage data in near real-time. From a cost perspective, containers are increasingly becoming the deployment platform of choice as they require less compute resources.

However, supporting containers at the edge, and in particular on trains, requires an open EN compliant compute architecture that can be securely managed from anywhere.

RANCHER

Figure: TRX R6 supports containerization with Rancher and Kubernetes.

KLAS

TRX R6 Case Study

FullStackS

EN Compliant Compute Gateways and Automation

TRX R6 is a rugged compute cellular gateway, underpinned by the KlasOS Keel operating system, providing virtualization, network switching and route capabilities, alongside secure network SD-WAN paths over mobile networks.

Blackrock from Klas, is an Ansible automation platform, that is integrated into Keel. The result is improved IT productivity by automating manual, mundane and repetitive tasks such as firmware and security updates at scale on the TRX R6.

With Kubernetes running on the TRX R6, and secure remote access to the RANCHER cloud, quickly deploy, scale, manage and monitor Kubernete applications across the edge.

RANCHER and Kubernetes from FullStackS

FullStackS is a silver of member of the Cloud Native Computing Foundation (CNCF), and has many years experience in developing containers and contributing to the open source Kubernetes community.

FullStackS has developed various edge computing solutions for containers on rail vehicles, for railroad companies in Germany and Austria. An example use case is the operation of passenger information systems and applications for on-board personnel such as passenger counting, seat reservation, etc.

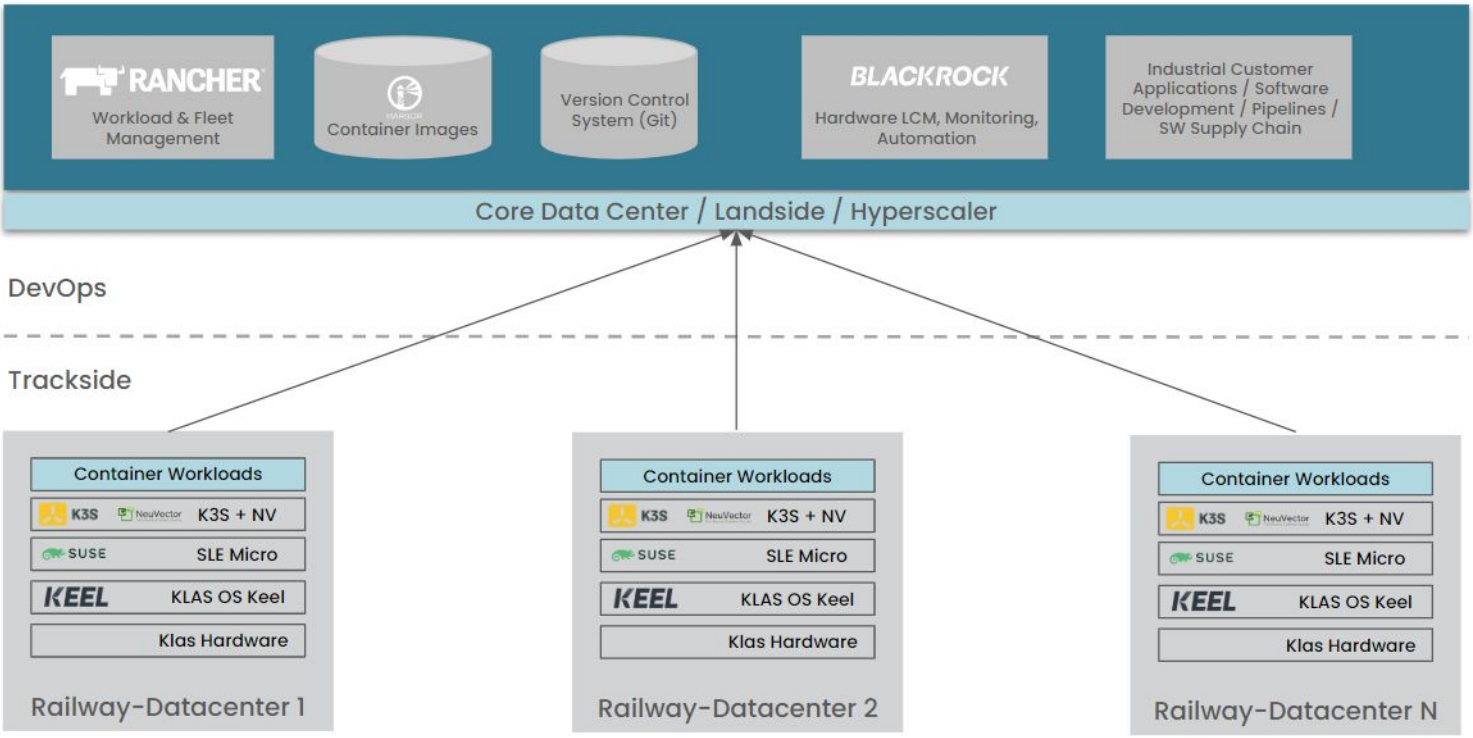

Figure: Simplifying the deployment of Kubernete applications, with a secure automation development chain.

Conclusion

Quickly and efficiently move to container based IT systems and applications at the edge with Klas hardware running RANCHER and Kubernetes from FullStackS. The joint solution provides:

- One-stop solution to containerization of onboard IT and passenger systems.
- Hassle-free approach to getting started with containers.
- EN rail compliant rugged compute to run Kubernete Pods.
- Keel managed robust connectivity, with dynamically managed and secure traffic over mobile networks.

For more information on FullStackS, visit:
https://www.fullstacks.eu/?lang=en

For more information about Klas rail solutions, visit:
https://www.klasgroup.com/markets/transportation/

© 2024 Klas. Product specifications and descriptions in this document are subject to change without notice.

KLAS