

Unwired Networks GmbH

Challenges establishing vehicles as data centers

Unwired Edge Cloud - 360° Solution für Smart Networks, Passenger WiFi and Edge Computing in the connected vehicle.



Auszug aus der Kundenliste



Challenges compared to stationary data centers



High datacenter numbers

Each vehicle is a data center



number of instances

4 applications on 800
vehicles correspond to 3.200
instances



power loss

Power supply is not guaranteed



unreliable connectivity

spotty cellular connectivity causes
connection interruptions



computing resources

limited space, power limits and
temperature constraints

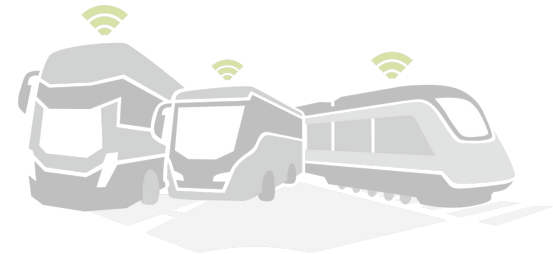


Regulatory compliance

temperature, vibration, power
supply, IT - security

Unwired Edge Cloud Services

The solution for easy, reliable and secure communication with and on-board of vehicles



Key components of a data center



Storage

Usecase specific storage (e.g. ssd, flash, ...)



Compute

CPU, memory, virtualization, interfaces and APIs



APIs

API surface for all functions, Automation, Security



Networking

LAN (VLAN), WAN (4G/5G), QOS



applications

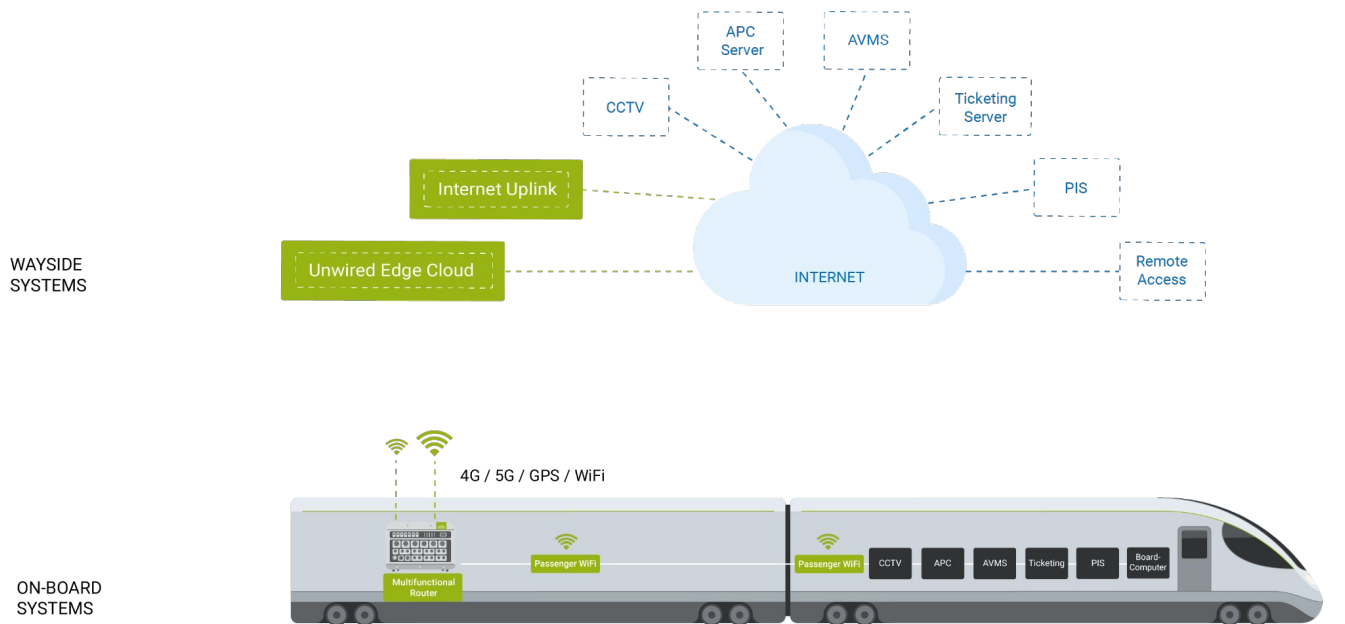
Ressources (cpu, memory, storage, apis), security (isolation, containers)



Orchestration

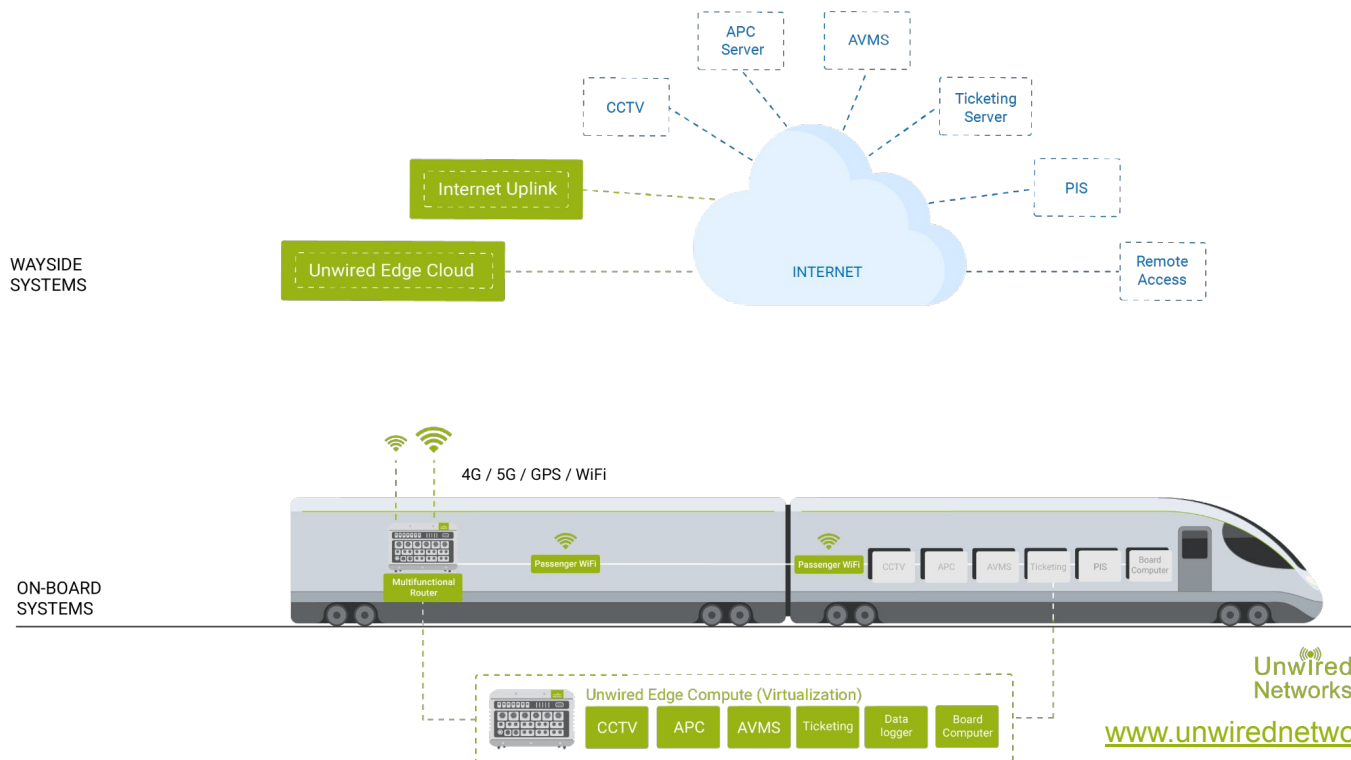
State of the art bootstrapping, configuration, updating and monitoring of containers

Old paradigm of multiple embedded systems



- ✓ Individual embedded systems for each application
- ✓ Multiple uplinks to the wayside
- ✓ No centralized management
- ✓ Software updates only on-site
- ✓ No APIs

New paradigm of vehicle as data center



- ✓ Multifunctional Router for communication with wayside
- ✓ Smart onboard networks for multitude of connected devices
- ✓ Virtualization of application workloads on the router
- ✓ Cloud management of all resources on the vehicle
- ✓ Secure and modern APIs for all functions

New opportunities for vehicle OEMs and operators

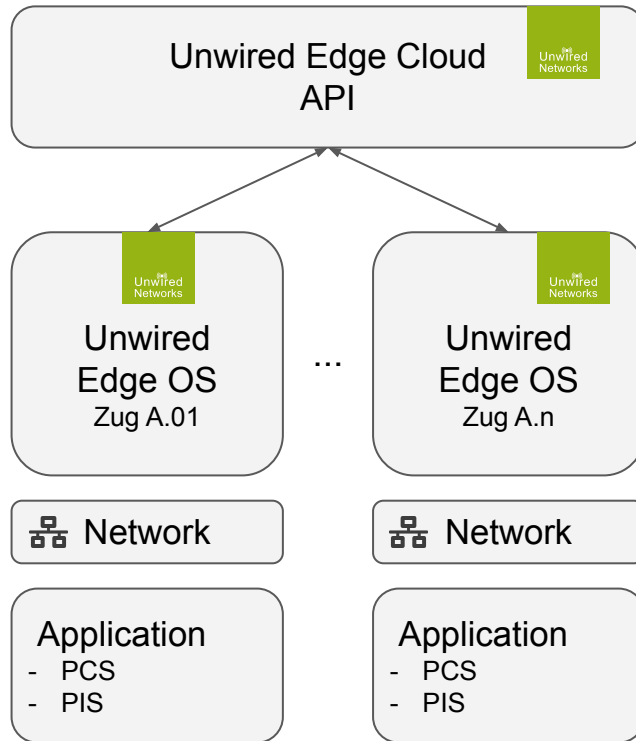
Data center style networking, monitoring, application virtualization and orchestration adapted to the specific needs of vehicles on the move.

- ✓ Scalable management of high number of vehicle based data centers
- ✓ Realtime deployment of configurations and updates to large fleets
- ✓ Reliable network communication to and on-board of vehicles
- ✓ Reduction of individual embedded hardware appliances and cellular uplinks on-board
- ✓ Data center style application virtualization for on-board applications
 - rapid deployment and updates
 - Security by design
 - Developer friendly (continuous integration and continuous deployment)
 - Modern APIs and automation for every functional aspect

Unwired Edge Cloud Platform

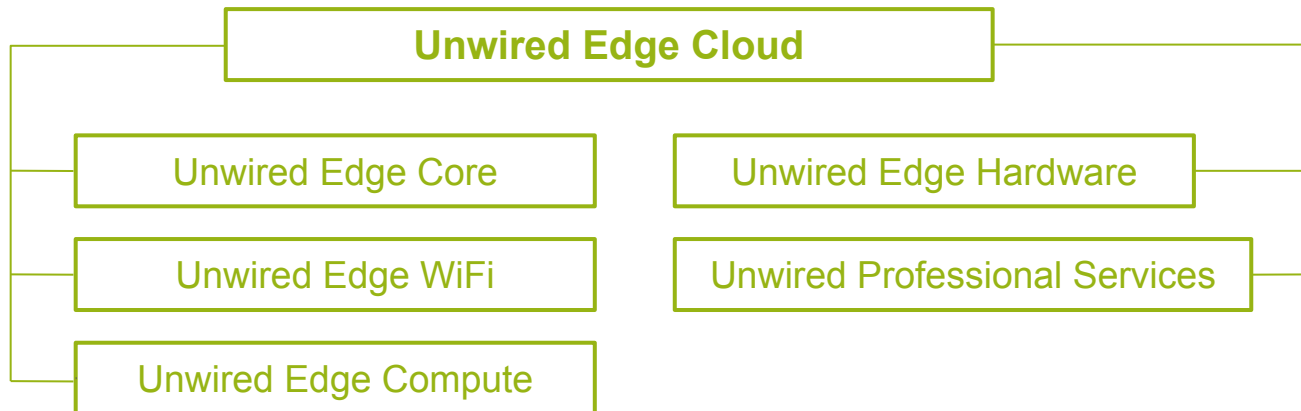
Unwired Edge Cloud solves many of the above mentioned challenges in terms of communication, network management and edge computing.

- ✓ Scalable management of high number of vehicle based data centers
- ✓ Realtime deployment of configurations and updates to large fleets
- ✓ Application ready open source software platform for a large number of embedded devices
- ✓ Application virtualization and orchestration based on containers
- ✓ Reliable network communication to and on-board of vehicles
- ✓ Modern APIs for all functional layers of the Edge Cloud Platform
- ✓ Available globally



Unwired Solution Overview

Unwired Edge Cloud is an open cloud and api first platform available on selected hardware and supported by professional services of Unwired certified integrators.





Customer

Abellio/Westfalenbahn: EMIL Network

EMIL Network: Edge Computing, Networking and Passenger WiFi

“Mit dem EMIL Netz bieten wir unseren Fahrgästen seit Frühjahr 2020 den bestmöglichen Fahrkomfort inklusive WLAN im Zug.”

- Sven Jamelle, Eisenbahnbetriebsleiter, Westfalenbahn GmbH

Main challenges

- Fleet of 40 existing vehicles in service
- Different vehicle types (Stadler FLIRT3, Stadler KISS)
- Upgrade of entire on-board network, cellular uplinks, pis screens without service interruption
- Network, Passenger WiFi for hundreds of passengers , virtualization of ITCS software for pis screens





Customer

ÖBB Postbus: Bus Fleet Austria

ÖBB Postbus: Passenger WiFi und Smart Network

"Wir bei Postbus greifen sehr gerne auf die Produkte von Unwired zurück. So ermöglicht etwa der Unwired Edge Cloud Service, dass wir leistungsfähiges WLAN in hunderten Fahrzeugen selbständig ausrollen."

- Ewald Koller, Leiter Technik, ÖBB-Postbus GmbH

Main challenges

- Fleet of 1800 vehicles, upgrade of fleet while in service
- Self deployment of entire components by customer
- Passenger WiFi and networking for onboard units



"Von der Planung bis zur Umsetzung wurden wir kompetent betreut. Somit war eine äußerst zufriedenstellende Abwicklung unkompliziert möglich."

- Ewald Koller, Leiter Technik, ÖBB-Postbus GmbH

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