Data Protection solution for Toll4Europe

Case Study

About the Customer

Toll4Europe GmbH (T4E), founded in Berlin 2017, is a joint venture of T-Systems Road User Services GmbH, Daimler Truck AG, DKV EURO SERVICE KG and euroShell Cards B.V. and is one of the leading providers in the European Electronic Toll Service (EETS). Based on the combined know-how, the individual partners, the company has developed a standardized on-board unit (OBU) and Platform for collecting and billing cross-border and cross-service tolls. To make this happen, Toll4Europe developed a universal toll box for the truck cockpit. The comprehensive EETS service is already available in Belgium, Germany, France, Spain, Portugal, Austria, Bulgaria, Hungary, Italy, the Switzerland, Poland, Slovakia, Denmark (Storebælt Bridge), Sweden (Øresund Bridge), various Tunnels and parking lots active.

(Toll revenue is several Billion Euro per year)

Customer challenge

The challenge is to reconcile both general and country-specific IT security requirements driven by (national) toll chargers such as ISO27001, BSI (Federal Office for Information Security), ANSSI (Agence Nationale de la Sécurité des Systèmes d'Information), into one common platform.

Toll4Europe has been looking to migrate its data center (s), consisting of almost 100 mission-critical applications plus 15 databases, to AWS. As a prerequisite for this transformational journey, they were looking for a trusted partner solution to ensure data sovereignty at all times, as required by their end-customers. This includes:

- Encrypting all data at rest and in transit
- Storing data in AWS regions within the European Union (EU) only
- Providing EU support only
- GDPR compliance

The solution must include preventive and detective controls to establish an automated governance structure as well as an auditable transparent trail of (data) events at all times.

Solution

In preparation for the migration to the AWS cloud, the digital sovereignty requirements were mapped to technical building blocks by the T-Systems DevSecOps team.

As part of an agile project delivery, T-Systems also introduced a risk management process for all involved departments to understand and document the sovereignty requirement and determine the technical, operational and organizational path to compliance as also given by GDPR.

Encrypting all data at rest and in transit

The confidentiality of data in the AWS cloud was implemented using appropriate cryptographic processes leveraging AWS KMS. AWS Config rules and AWS Service Control Policies ensure, that all data in transit and at rest is encrypted. On top, proven technologies from F5, Cisco and Palo Alto were used on network level. T-Systems has many years of experience in the technical capability to plan, implement and operate the network components used.

The firewalls support extensive security features such as:

- Antivirus
- Next-Generation Intrusion Detection
- Application Firewall
- Content review and analysis
- Content Access Security Broker
- Web Security
- SSL Visibility Appliance

The following features have been implemented to ensure access and identity management:

- Secure Portal
- Secure Gateway
- DDoS Prevention
- Web Fraud Protection
- Intrusion Prevention

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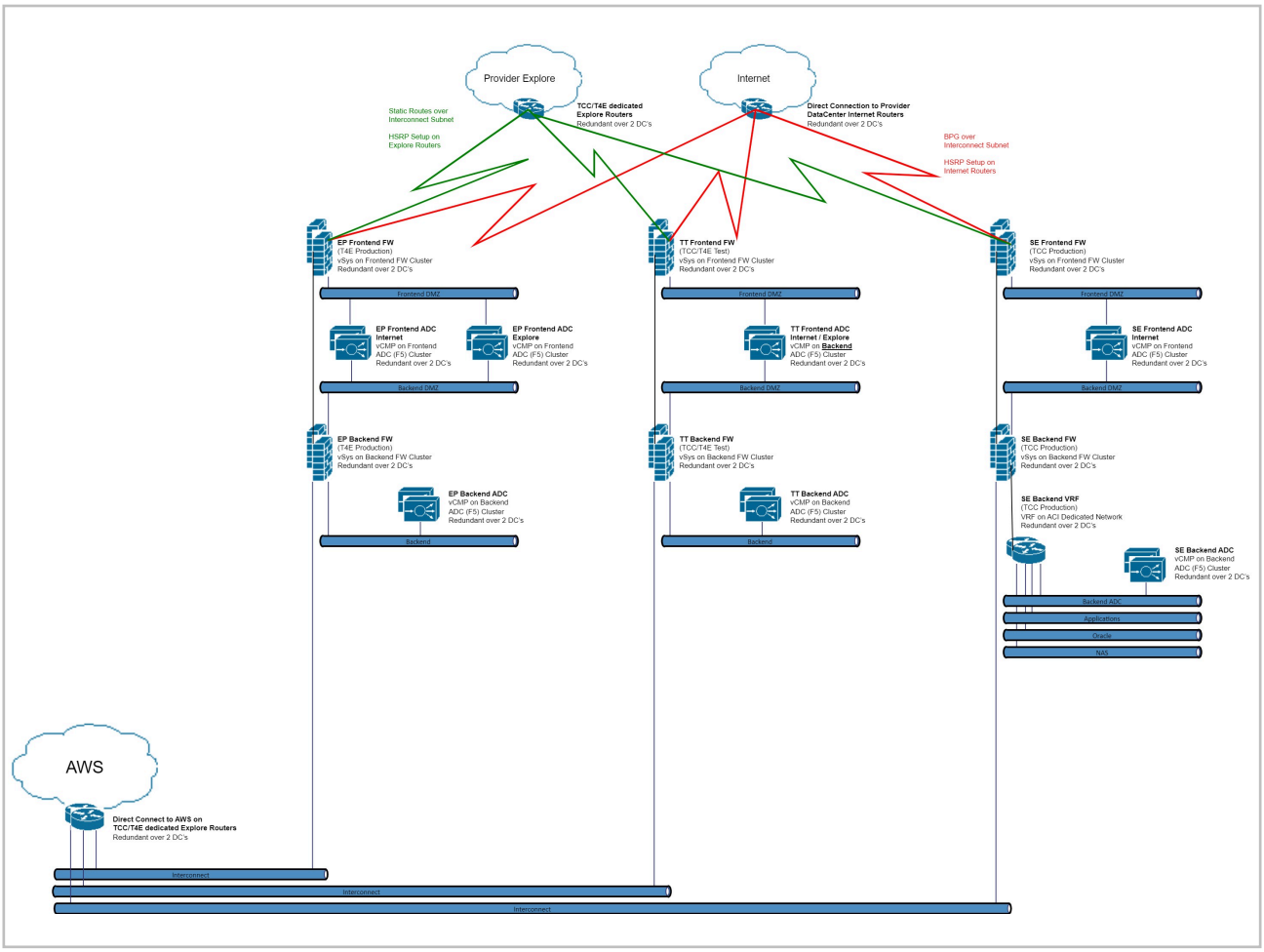
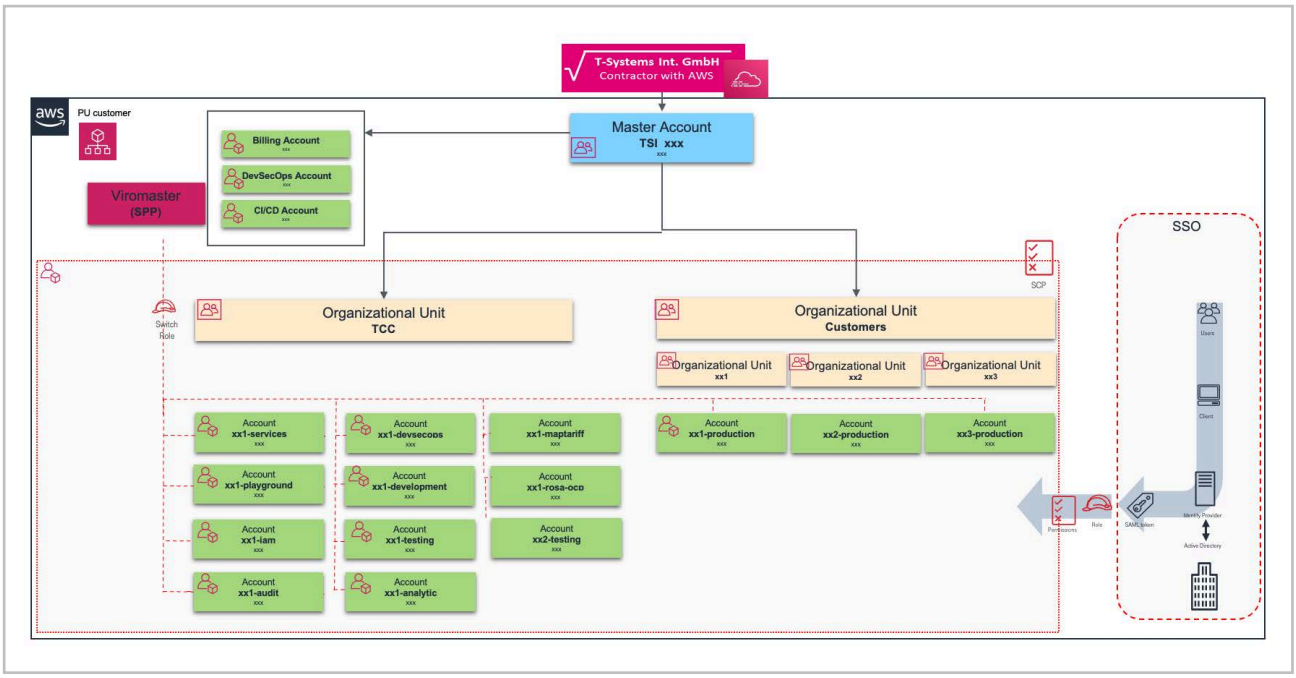
The architecture of the Internet connection is shown in the following image.



Storing data in AWS regions within the European Union (EU) only

T-Systems implemented AWS Service Control Policies as well as AWS Config rules to restrict the use of AWS regions to prevent data being stored and processed outside the EU.

Leveraging AWS Control Tower and AWS Organizations, a dedicated organizational structure has been setup and is centrally managed:



Providing EU support only

All operational support for Toll4Europe is provided by EU-resident T-Systems employees who are located in the EU according to an SRE methodology (Site Reliability Engineering) and DevSecOps - principle (DevSecOps: merging of development security and operations teams).

Prevention, Detection, Monitoring and Logging

In order to ensure preventive and detective controls as well as an auditable transparent trail, T-Systems implemented their Trusted Cloud Landing Zone Solution. The Solution provides out-of-the-box sovereignty guardrails, as well as logging, monitoring, and alarming of AWS management events via AWS CloudTrail and Amazon CloudWatch. On top, it has been validated by the Privacy and Security Assessment (PSA) process of Deutsche Telekom AG and is integrated with T-Systems' DevSecOps and SRE processes for support and incident handling.

GDPR compliance

Through the mechanisms described above, Toll4Europe can

- Ensure where their customer data will be stored, including the type of storage and geographic region of that storage.
- Ensure strong encryption for customer data in transit (f.e. s2n-tls 256-bit AES) or at rest (AES-256)
- Manage access to their customer data and AWS services and resources through users, groups, permissions and credentials that they control

Results and benefits

The Toll4Europe toll platform on AWS today processes data from several hundred thousand active on-board units (OBUs) across 17 European toll operators in 14 European countries each day.

Through the collaboration with T-Systems, Toll4Europe has implemented strong mechanisms to ensure data sovereignty, as well as compliance with GDPR requirements. These include:

- Establishing a Trusted Cloud Landing Zone in the AWS cloud, with security functions configured and operated by T-Systems to meet Toll4Europe's high sovereignty standards.
- Data storage and support operations are limited to the European Union.
- Encrypting all data at rest and in transit also by leveraging proven network technology from vendors such as F5, Cisco, and Palo Alto.
- Setup an automated governance structure as well as an auditable transparent data trail

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