

Tencent's End User Stories

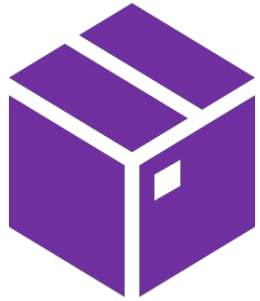
On Edge Computing



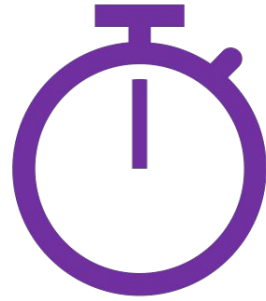
Bart Dong
Tencent

Tencent |  Tencent Cloud

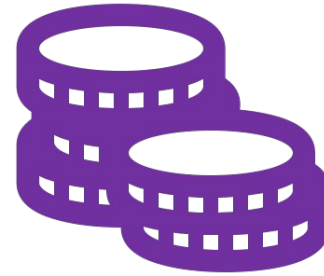
Why do we need Edge Computing



Huge Data



Time Latency



Cost



Localization



Cloud Gaming



Smart Office



Industry Internet



Connected Car



AR/VR



Live Broadcasting

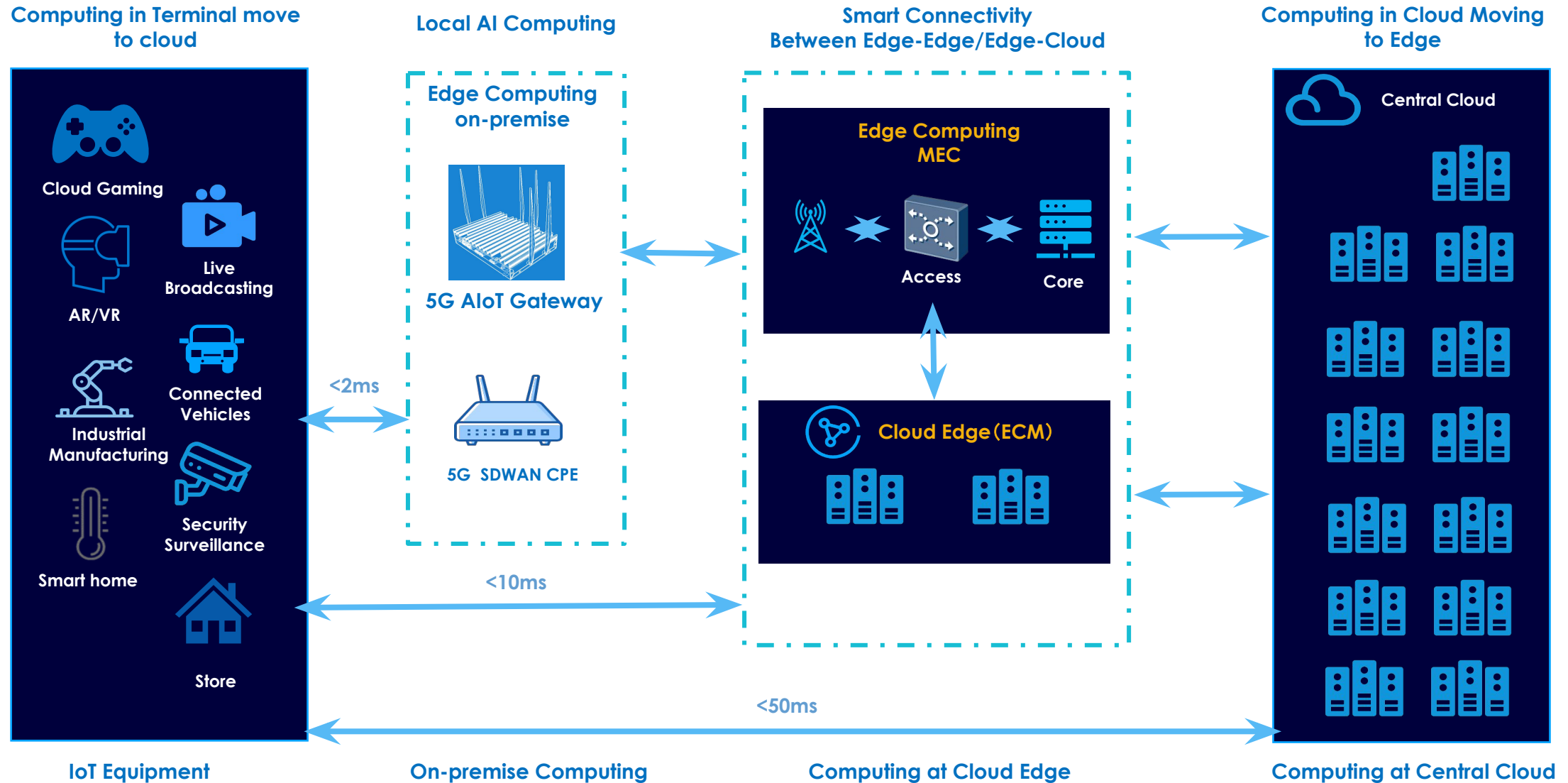


Intelligent Medical

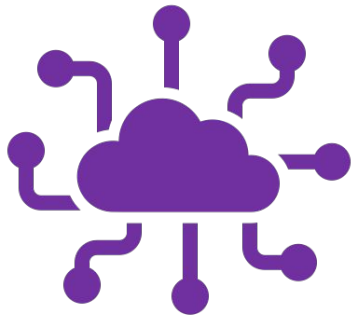


HD Video

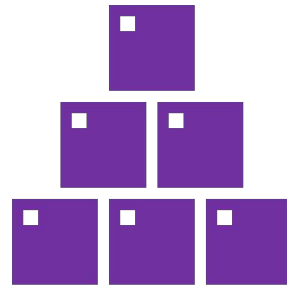
Tencent Cloud Edge Computing Infrastructure



The Challenge in Edge Computing



Heterogeneity



Large Scale



Complex
Environment



Standards
not Unified

Low Efficiency

Difficult to Manage

Low Reliability

Tencent's Work – Edge Hardware



ECM

(Edge Computing Machine)



Low Cost



Cloud-Edge
Collaboration, Consistent
Experience



Low Latency



Mini T-Block

Lightweight deployment,
providing comprehensive
innovative and deliverable 5G
edge computing overall solutions.



AioT Gateway

Lightweight Edge Computing Platform
with multiple Access Methods,
and support Cloud-Native Services.

Tencent's Work – Cloud-Native Software



<https://github.com/superedge>



<https://github.com/TarsCloud>

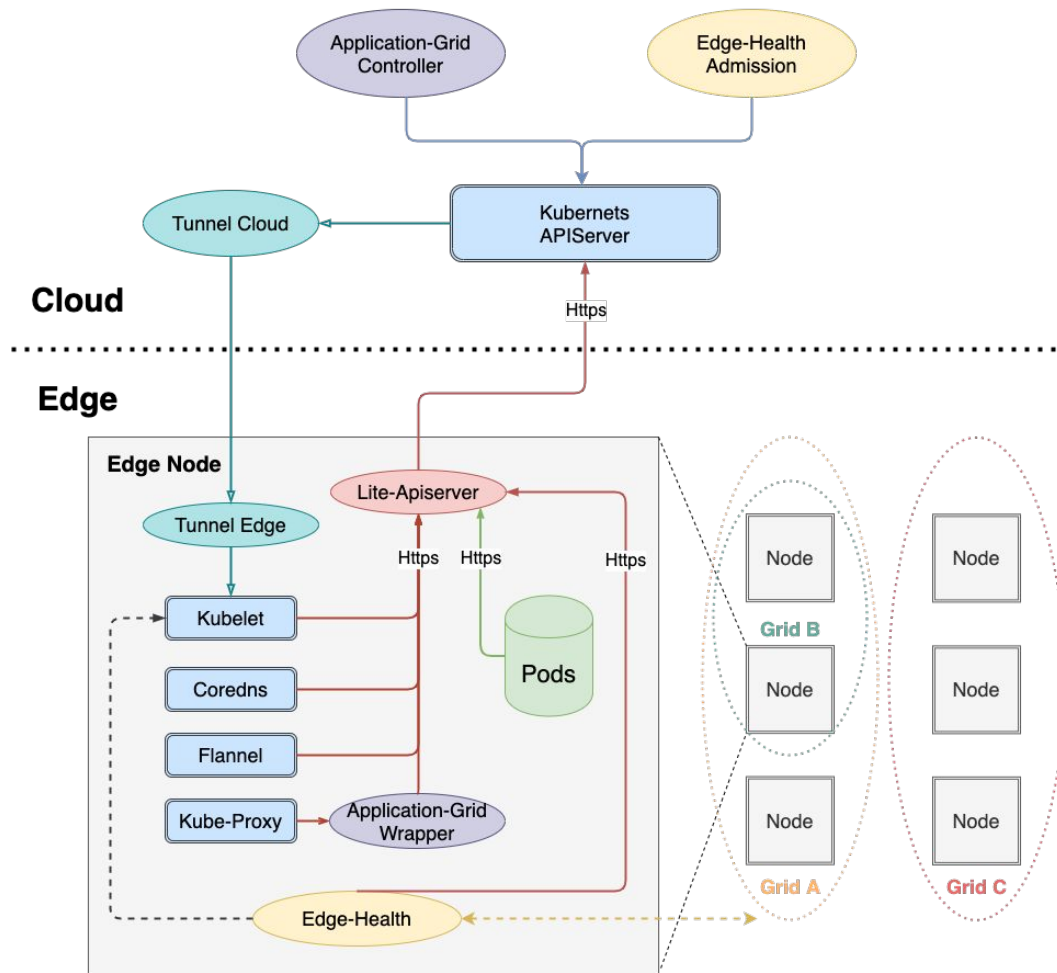
An open source **container management system for edge computing** to manage compute resources and container applications in multiple edge regions.

A high-performance microservice framework based on name service and Tars protocol with multiple programming languages, also integrated administration platform, and implemented hosting-service via flexible schedule.

TARS supports for ARM, x86 and multiple platforms, including macOS, Linux and Windows.



SuperEdge - Container Management System for Edge Computing



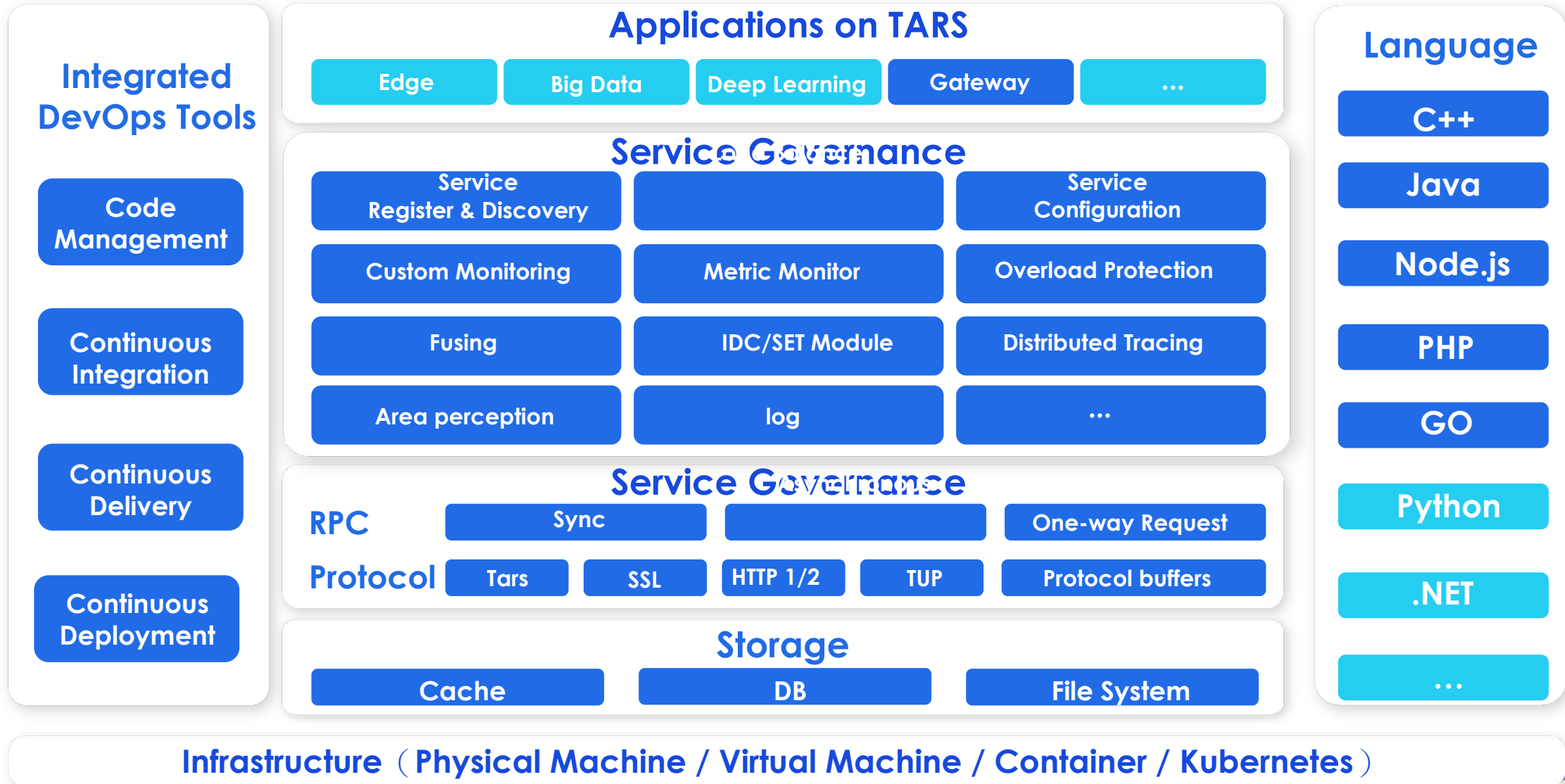
- **Kubernetes-native**
- **Edge autonomy**
- **Distributed node health monitoring**
- **Built-in edge orchestration capability**
- **Network tunneling**

TARS - A Microservices Ecosystem

In TARS Now

Future Plan

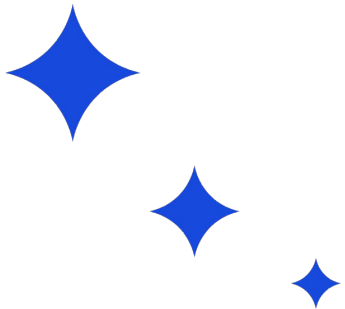
Build your microservices platforms with TARS



A non-profit, microservices foundation under the Linux Foundation umbrella.
Established on March 10, 2020

TARS Foundation Is Not Only TARS, But A Microservices Ecosystem.

A neutral home for open source **Microservices** projects that empower **any industry** to **quickly** turn ideas into applications at **scale**.



TARS characteristics that solve microservices problems:

- Agile Development with DevOps best practices
- Built-in comprehensive service governance
- Multiple languages supported
- High performance with Scalability



TARS Foundation Greenhouse



TARS Lab



TARS Benchmark
Benchmark tool for tars/http service



TARS JMeter
Use JMeter to complete the stress test of TARS microservices



TARS TarTools
A JetBrains plugin for editing Tars files



TARS TarsJavaStart
TarsJava scaffolding tool



TARS Open Testing Lab

The set of open source projects working for testing distribution software

Platform



TARS Framework



TARS TSeer



TARS Log



TARS Monitor



TARS Gateway

Storage & Protocol



TARS TUP



TARS Protocol



TARS DCache

Infrastructure



TARS K8STARS

Kubernetes Native TARS



TARS TarsDocker

Deployment by Docker

Multi-language



TARS TarsCpp



TARS TarsGo



TARS TarsJava



TARS TarsJs

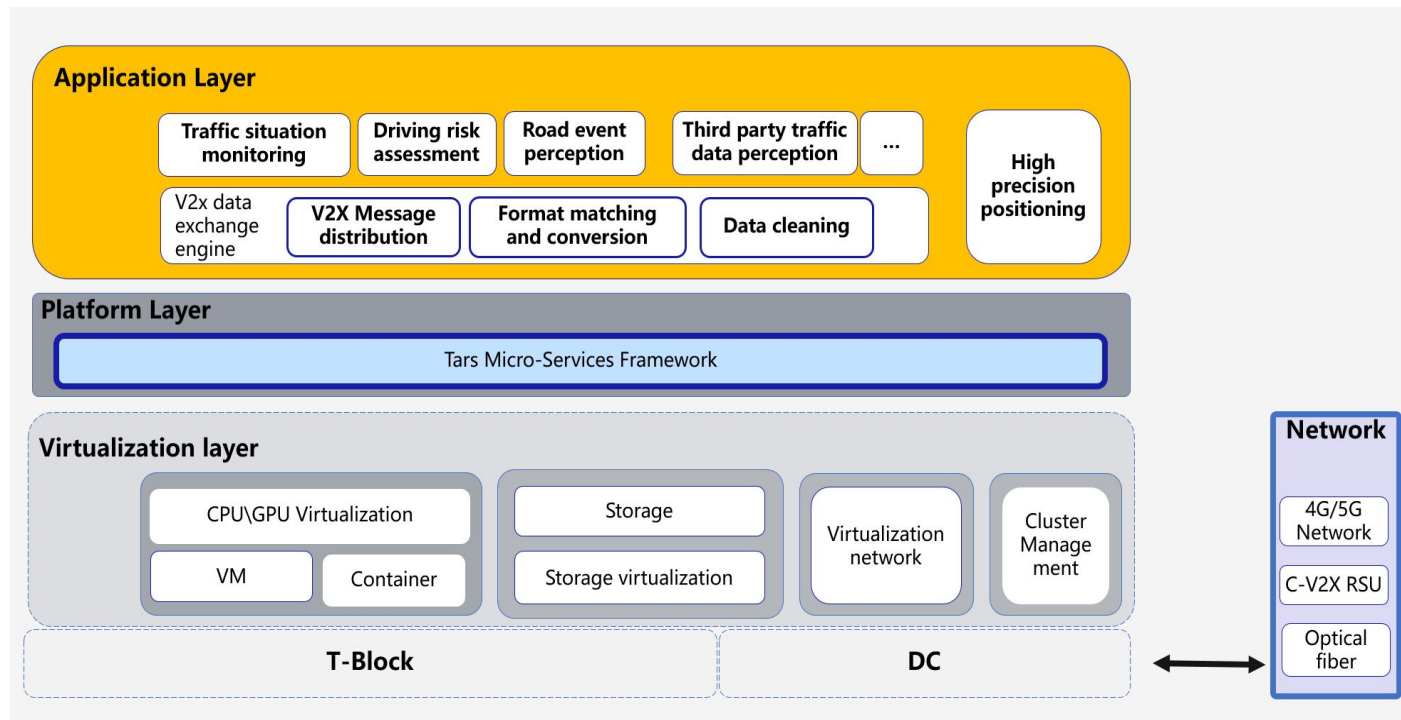


TARS TarsPHP



Connected Vehicle Blueprint (CVB)

The Connected Vehicle Blueprint (CVB) focuses on establishing an open source MEC platform, which is the backbone for V2X application.



- The application architecture of the CVB consists of the following key components:
- Commodity Hardware, Arm/X86 Physical Server.
- Virtualization Layer.
- Tars Microservice Platform layer.
- Connected Vehicle Applications layer.

Accurate Location

Smarter Navigation

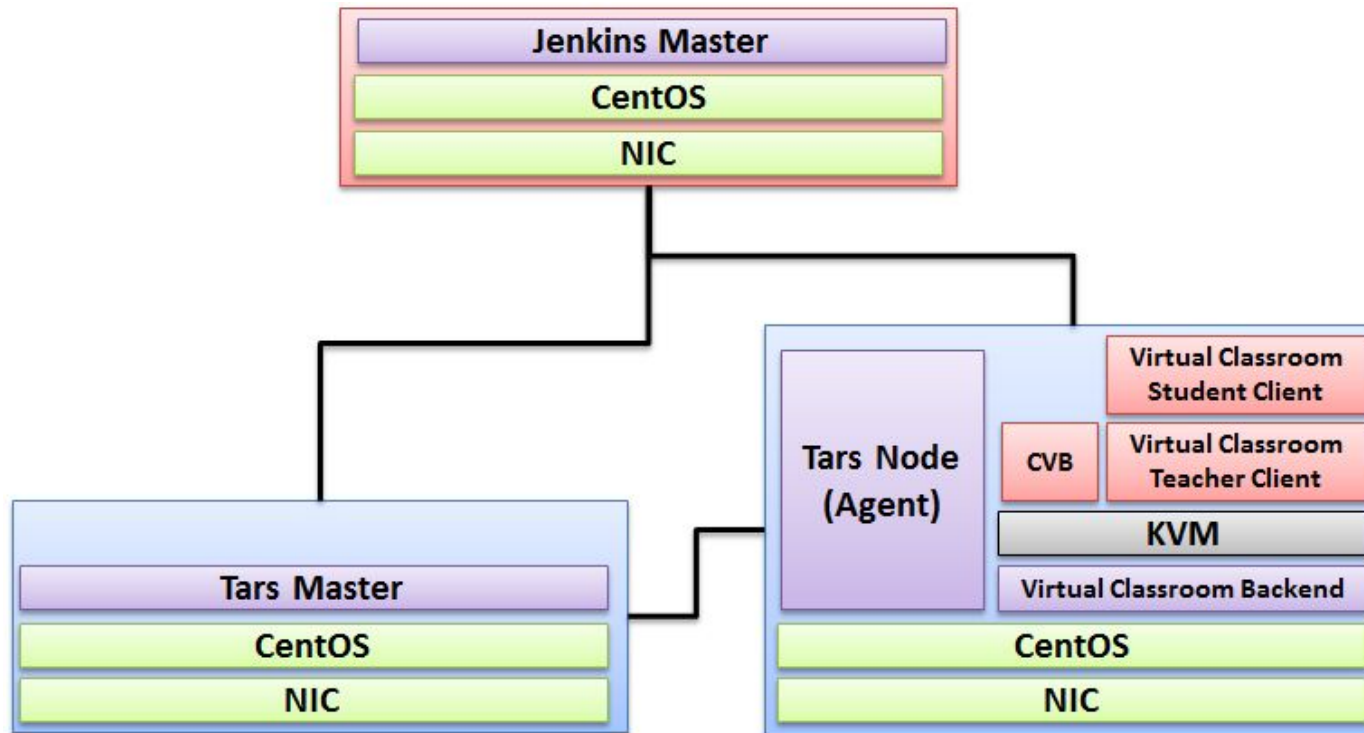
Safe Drive Improvement

Reduce traffic violation

IEC Type 4 AR/VR Blueprint

Use Case: Virtual Classroom

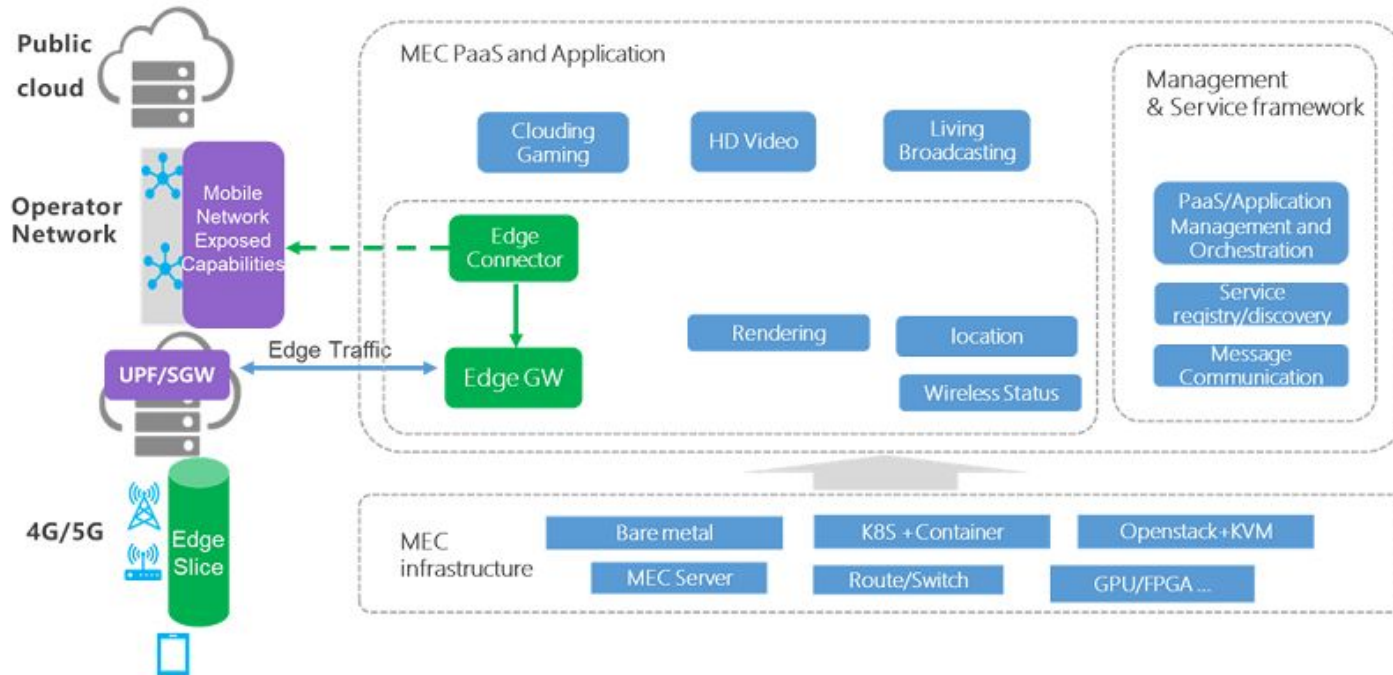
Simulating a virtual classroom, which improves online education experiences for the teachers and students.



- For the Jenkins Master, we deploy a Jenkins Master for our private lab for testing
- For the Tars Master, we deploy a Tars Platform for serverless use case integration
- For the Tars agent, we deploy the Virtual Classroom backend on this node and two front end client as Virtual Classroom teacher and student on KVM.

5G MEC/Slice Blueprint

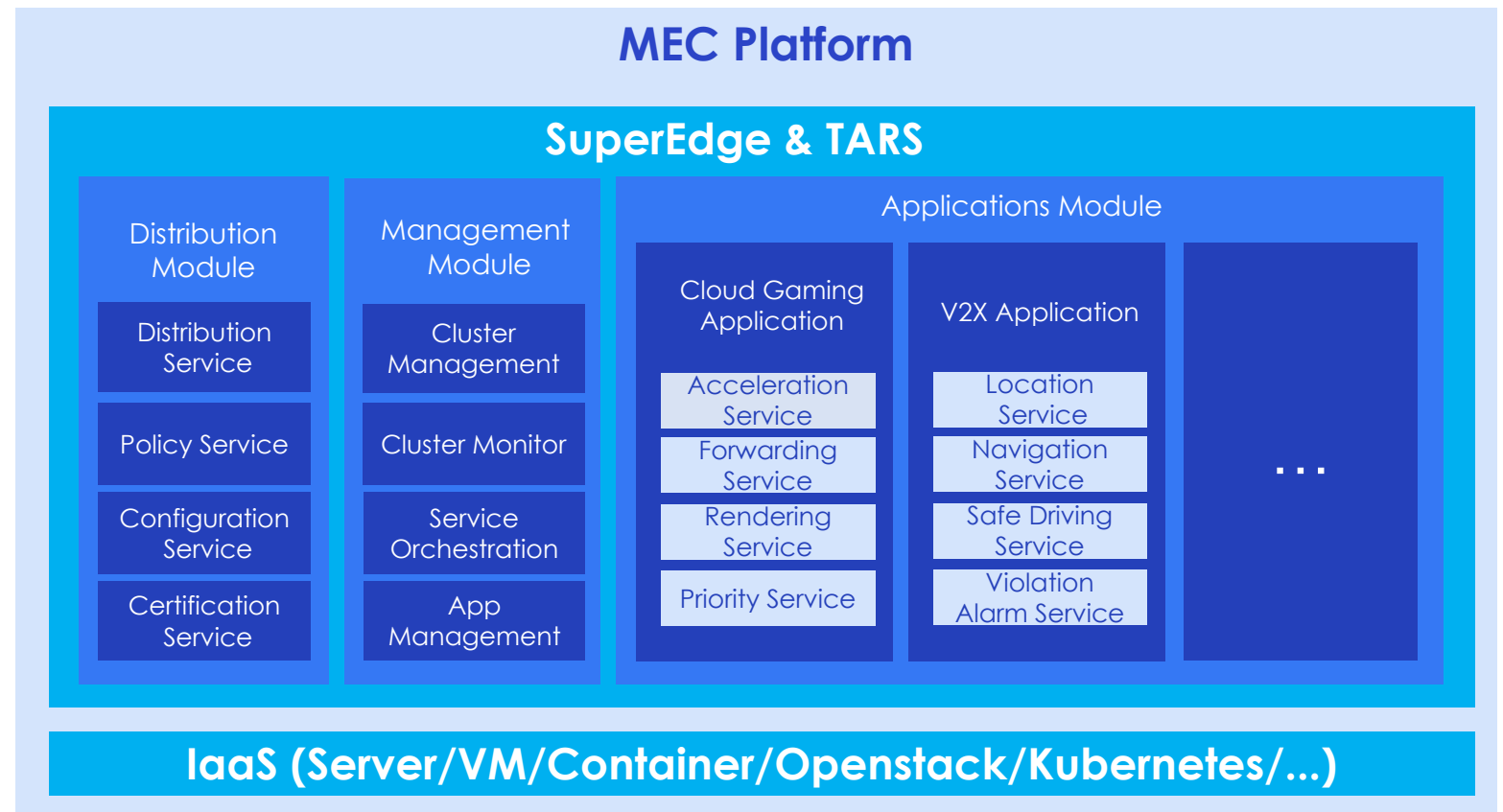
5G MEC/Slice System Blueprint's target is to Support Cloud Gaming, HD Video and Live Broadcasting.



- The 5G MEC BP mainly consists of two network elements:
- **Edge connector**, deployed in the cloud to enable flexible traffic offloading from the aspects of control interaction with mobile network exposed capabilities, and to subscribe the edge slice between UE and edge application.
- **Edge gateway (GW)**, deployed close to the 4G/5G network edge to enable the traffic offloading from the aspects of data plane with local traffic routing, traffic management, etc.

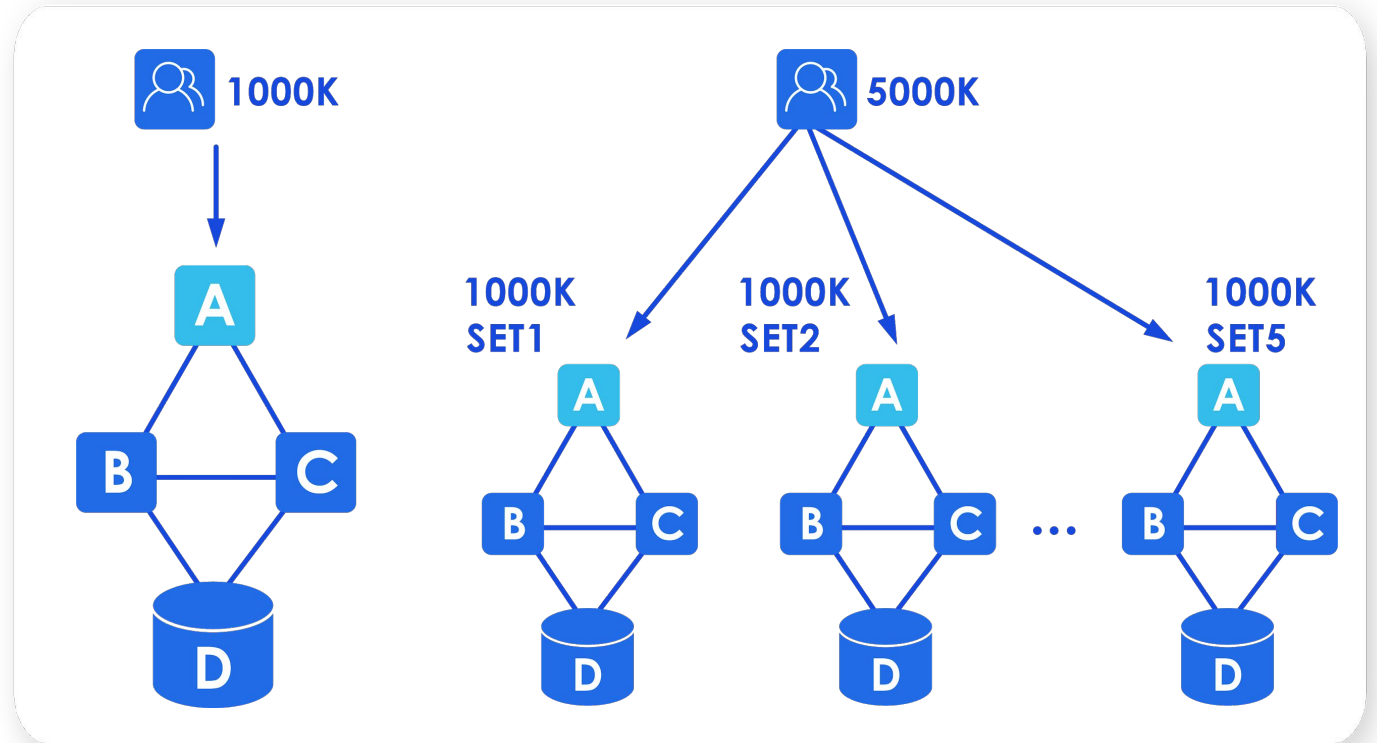
Solving a Common Issue in Edge Computing

- ▶ Time-critical applications cannot allow the long latency caused by long distance data transfer.
- ▶ The **Huge Data Long-distance Transfer** between the end user and traditional Data Center is inefficient and unnecessary. The long latency should be reduced.
- ▶ Applications built on MEC, such as **cloud gaming** and **V2X**, with SuperEdge and TARS can be a key to solving the issue.



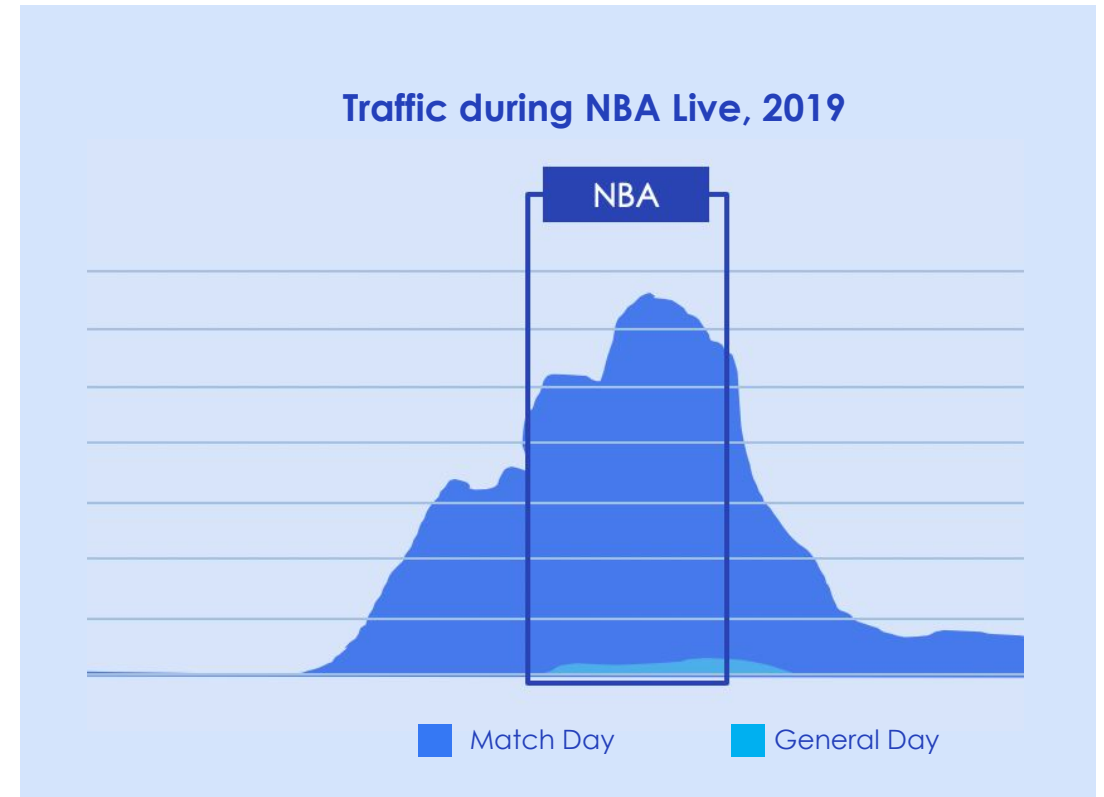
Solving a Common Issue in E-sports

- ▶ With the development of the esports industry, the number of online games has soared and the complexity of management has increased during the expansion of services.
- ▶ This situation requires its architecture to be more **expandable** and **scalable** **without impacting existing services**.
- ▶ Gaming products can use a solution with IDC/Set grouping to solve this bottleneck.
- ▶ After accessing the Tencent Cloud hyper-converged platform, the heterogeneity of underlying resources is shielded to the greatest extent through containerization technology. And the costs drop significantly at the same time.



Solving a Common Issue in Video Streaming

- ▶ Different from gaming, online videos can suddenly have massive requests. This will require their architectures to have **high scalability** and **high performance** when **unexpected massive requests happen**.
- ▶ Targeting this issue, TARS provides name service and load balance, which supports **automatic scheduling after capacity scales up** without needing manual configuration.
- ▶ The architecture that supports massive requests and keeps high performance would be a better solution for those products.
- ▶ After accessing the Tencent Cloud hyper-converged platform, the heterogeneity of underlying resources is shielded to the greatest extent through containerization technology. And the costs drop significantly at the same time.





Thanks and Welcome to Join Us!