

# Use Cases and solutions for High-speed Internet of Vehicles

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# Apollo Go: Autonomous Driving in China

- “Apollo Go,” a self-driving taxi service now available in major Chinese cities including Beijing, Guangzhou, and Shanghai, etc.

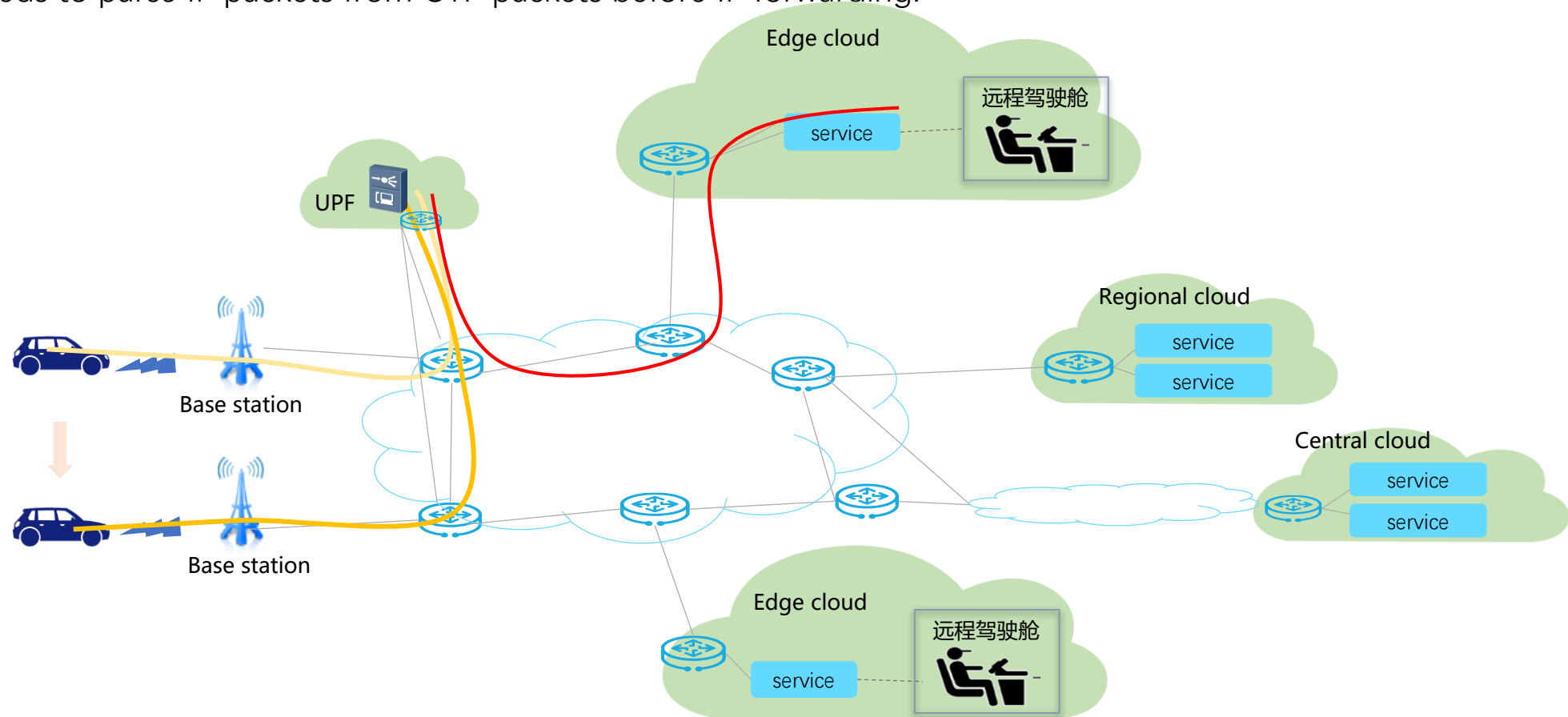


- Remote driving requires reliable network connectivity with low latency, high bandwidth, and strong stability for real-time command transmission.

# Remote driving scenarios in IoV

## Current solutions for remote driving

- The vehicle is connected to UPF through a GTP tunnel, and the vehicle is not aware of IP.
- UPF needs to parse IP packets from GTP packets before IP forwarding.

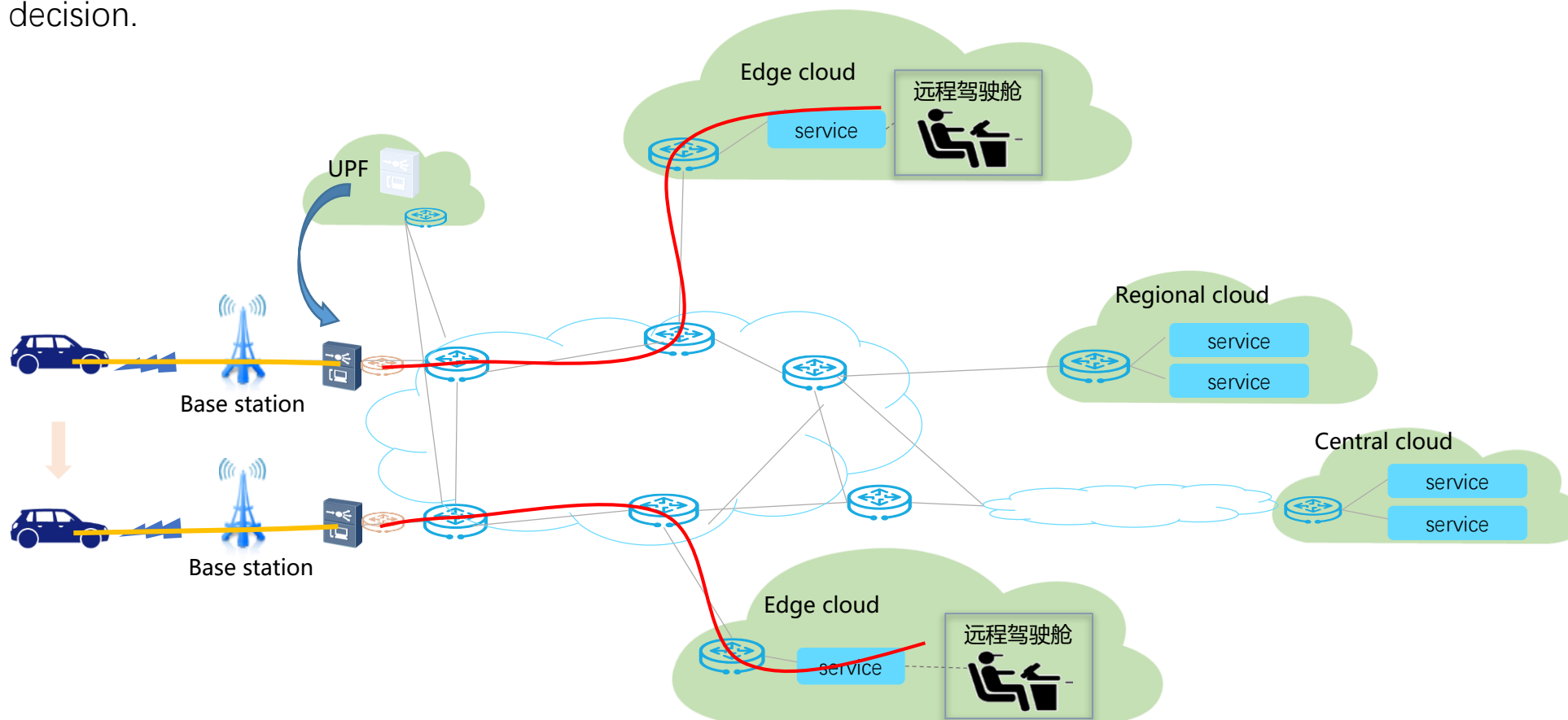


# Consideration

- The starting point of CATS needs to be adjusted, and the diversion function of UPF can be moved closer to the user..
- It is necessary to provide a CATS solution that can meet the requirements of multiple types of services.

# Solution

- The traffic parsing function in UPF moves closer to the user.
- A CATS device is added, which supports distributed routing decision.
- Computing awareness is achieved through BGP-FS protocol extension, which provides capabilities for centralized routing decision.

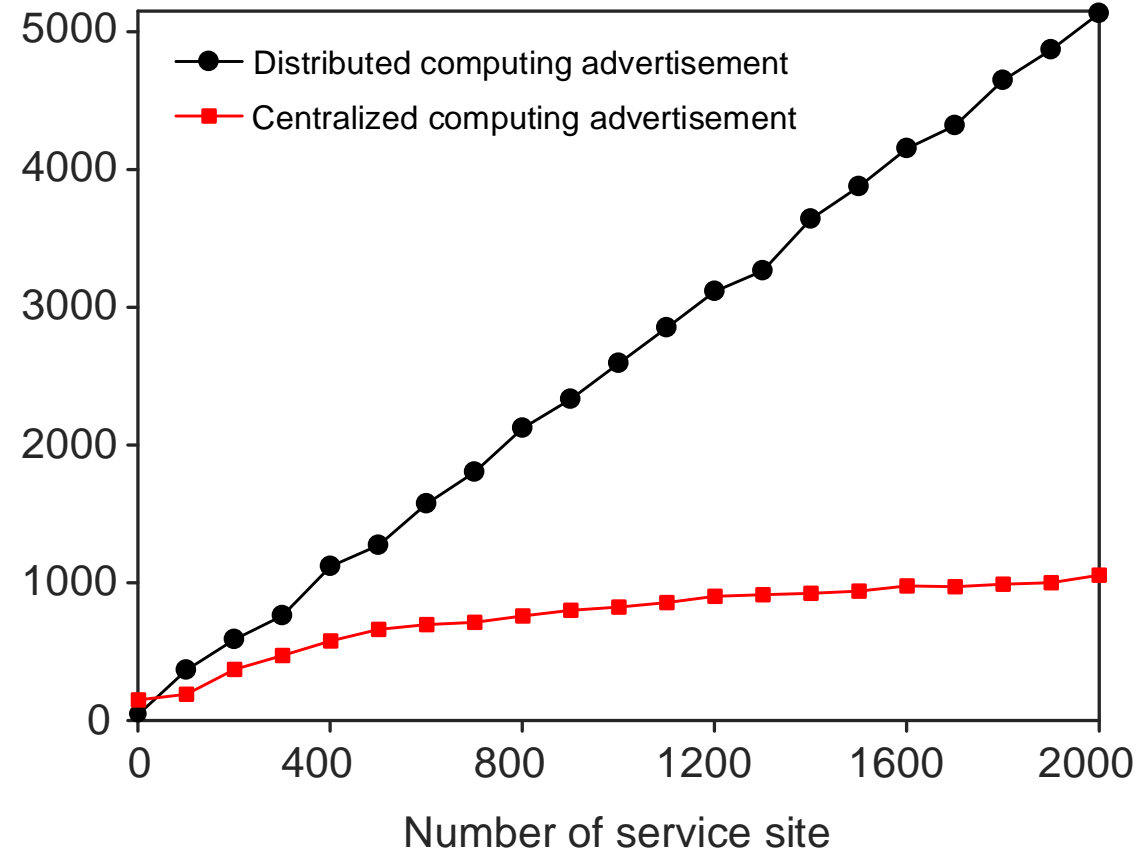


# Specific techniques

- GTP traffic parsing and splitting closer to the user
- Computing awareness-[draft-yi-idr-bgp-fs-edge-service-metadata]
- Distributed and centralized routing decision-[draft-yi-cats-hybrid-solution]

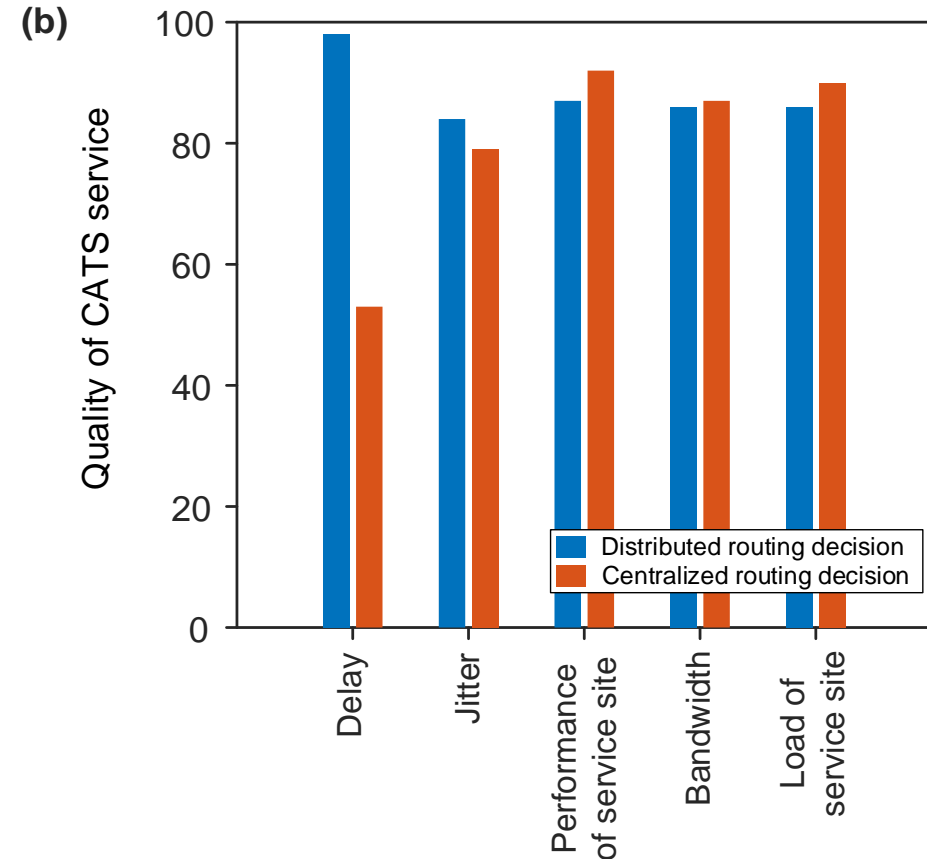
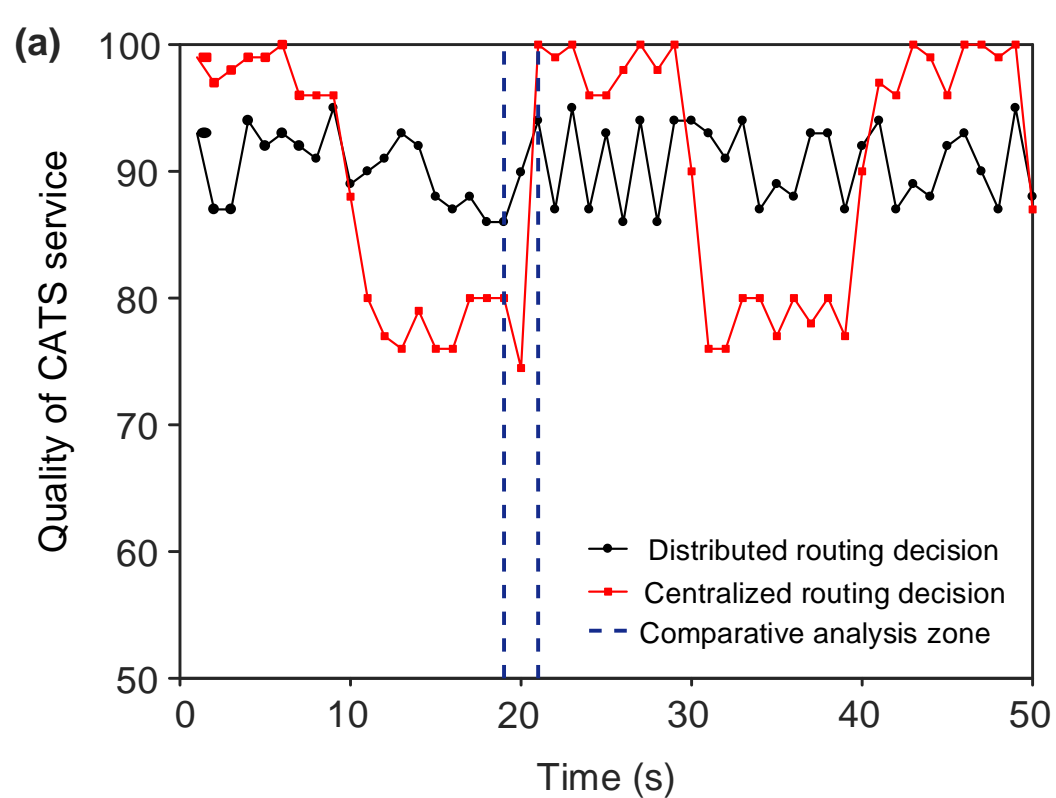
# Simulation results-methods of computing awareness

- Simulation results show that centralized advertisement mode is more suitable for employing a large-scale computing-aware network.



# Simulation results-methods of routing decision

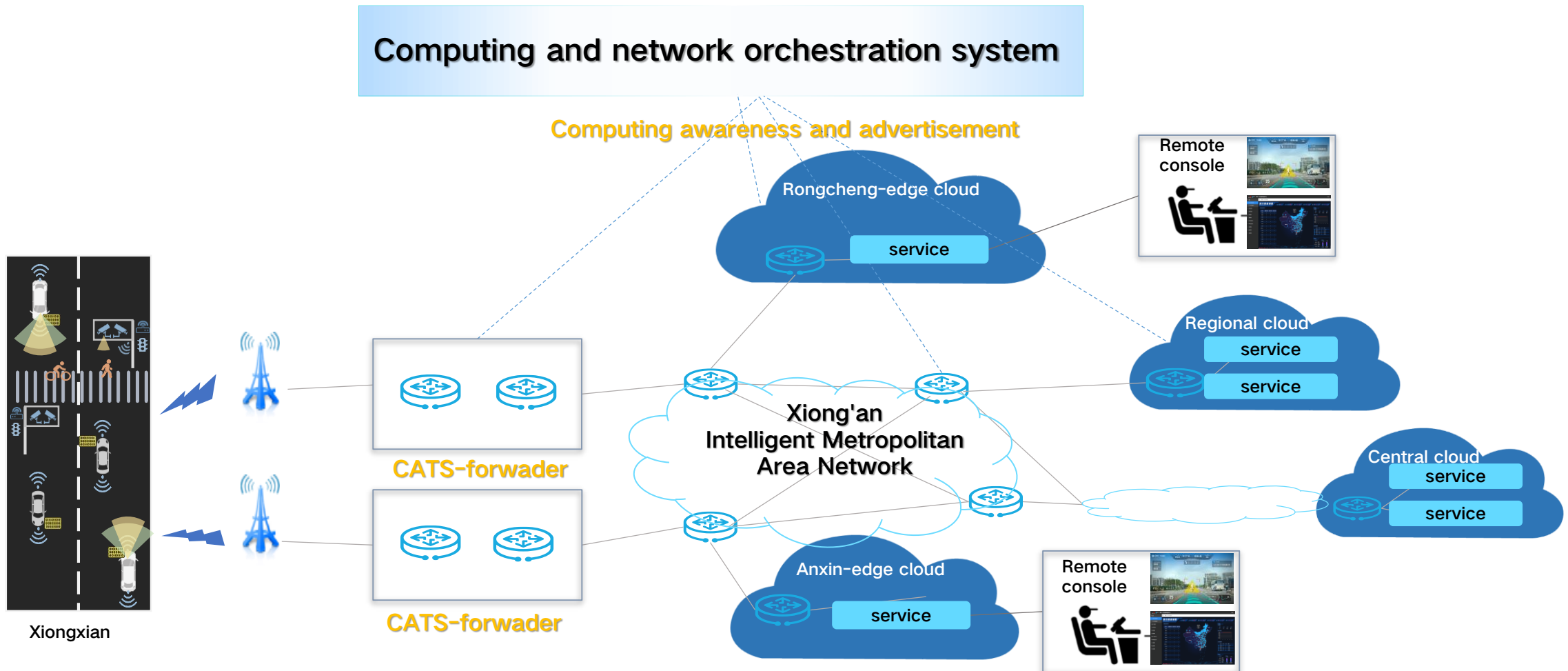
- Both centralized and distributed routing decision modes have their own advantages. They are suitable for different service scenarios.





# Deployment and verification of real scenario

- Current network verification for remote driving scenarios in Xiong'an, Hebei, China





- We have updated the usecase draft with this verification work, and some content in the hybrid draft have also been updated .
- Any comments and suggestions are welcome.