



# Edge-Cloud Support for Predictable, Global Situational-Awareness and Control for Autonomous Vehicles (1837382, 2019)

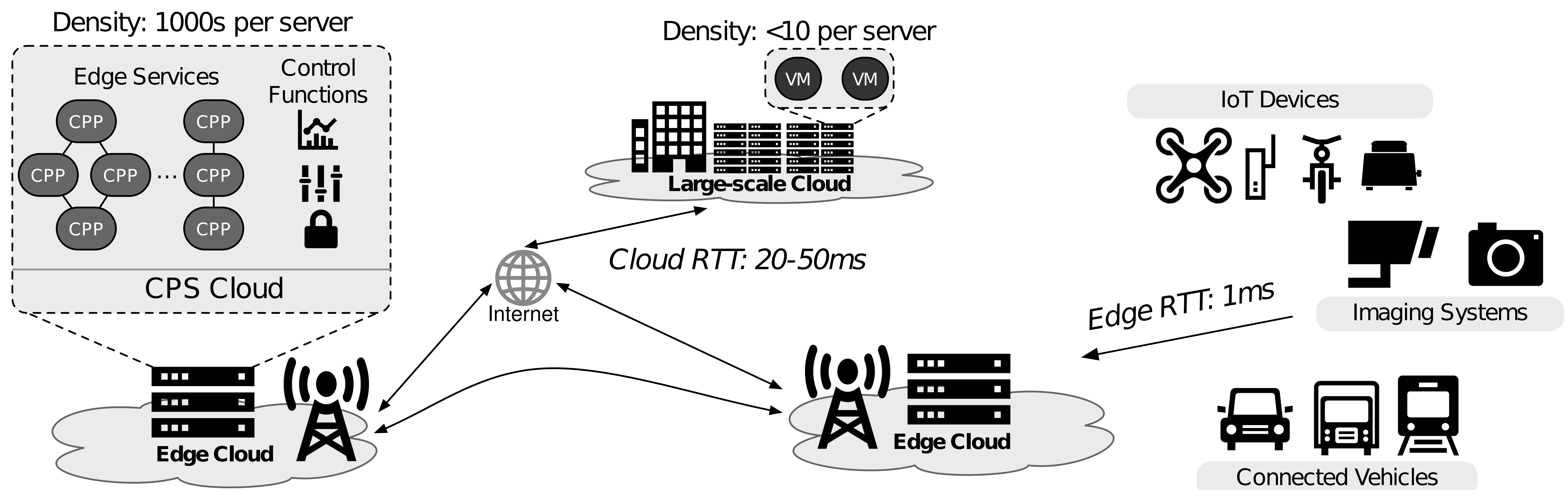
Gabriel Parmer, Timothy Wood, Taeyoung Lee  
The George Washington University

## Challenge:

- Multi-tenancy – Various companies provide edge code
- Latency-awareness – deadline-sensitivity for a CPS-capable edge
- Density – limited HW resources

## Solution:

- OS for the edge – CPSEdge w/ new resource management, isolation facilities
- Cyber-Physical Processes – Chains of per-client nanoprocess computations
- Per-packet deadline scheduling – optimized for latency & throughput



## Scientific Impact:

- Abstractions to enable a high-throughput, latency-aware CPS edge
- Edge-in-the-loop computing – offloading, global-sensor awareness

“We need a latency-sensitive, multi-tenant edge”

## Broader Impact:

- More capable AVs and CPSes → more reliable, smarter consumer products, less HW
- CP Infrastructure-as-service – potential for a multi-tenant, latency-sensitive, CP cloud
- Integration into 3 classes, 3 Phd, > 10 ugrad



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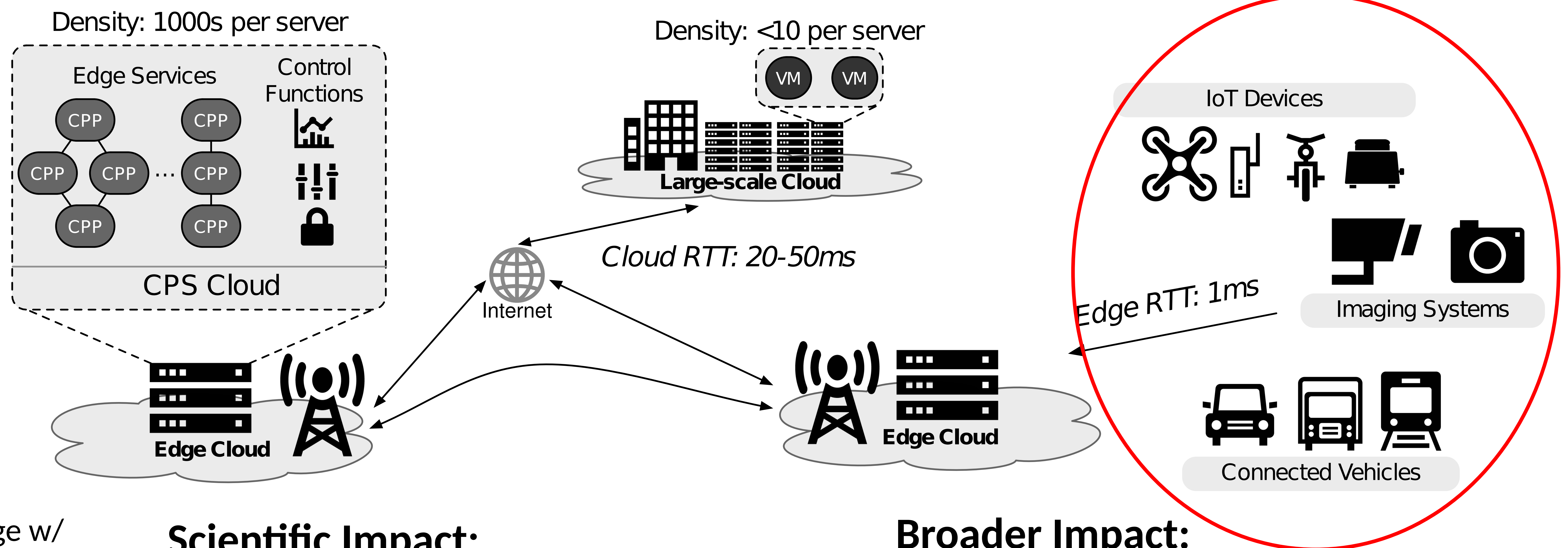
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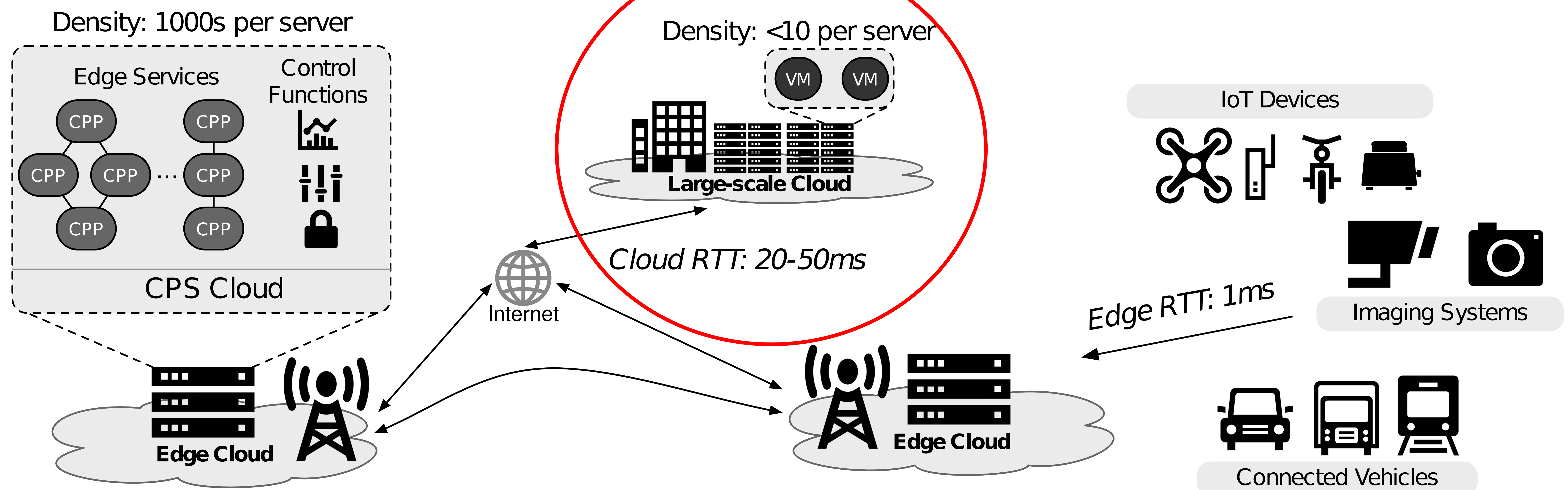
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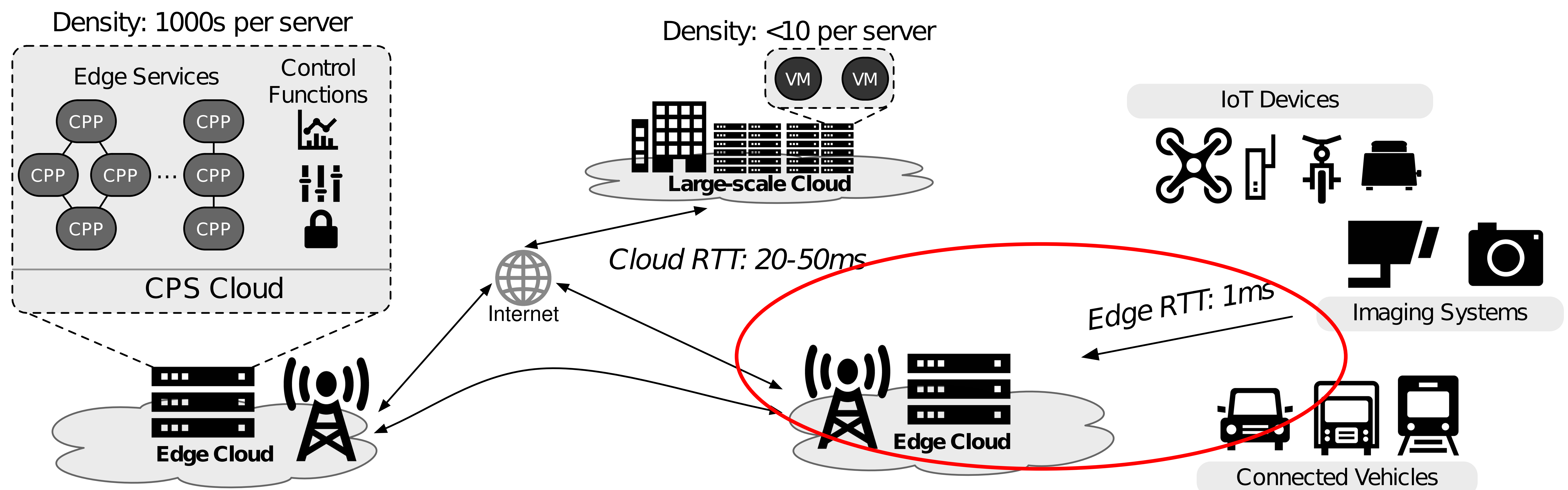
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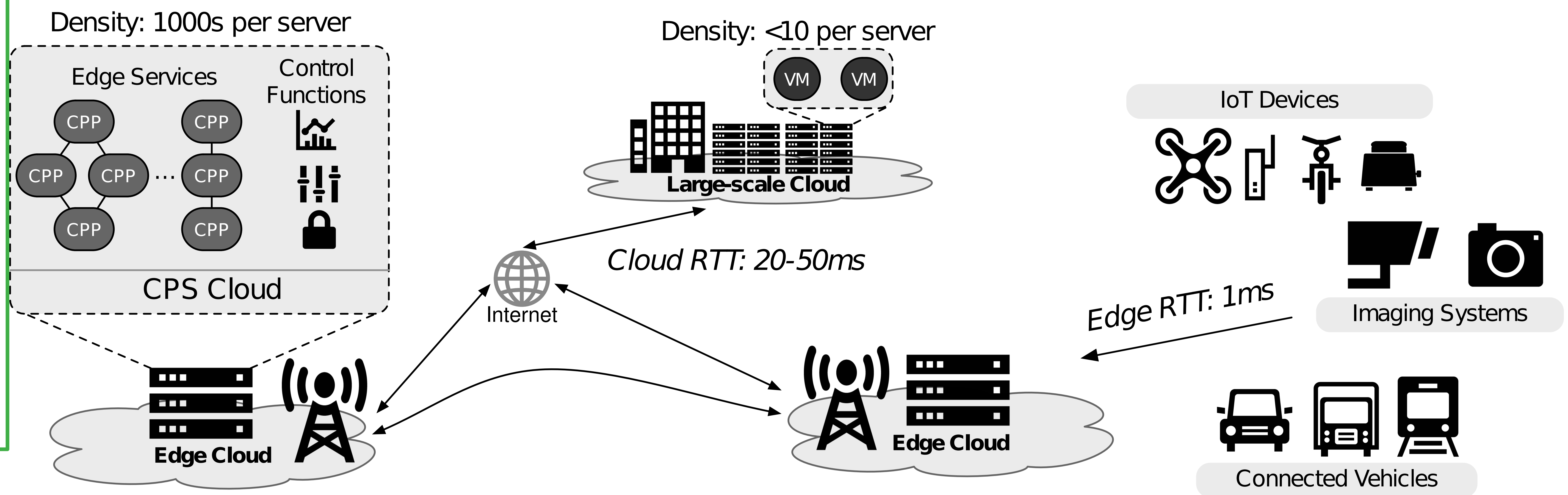
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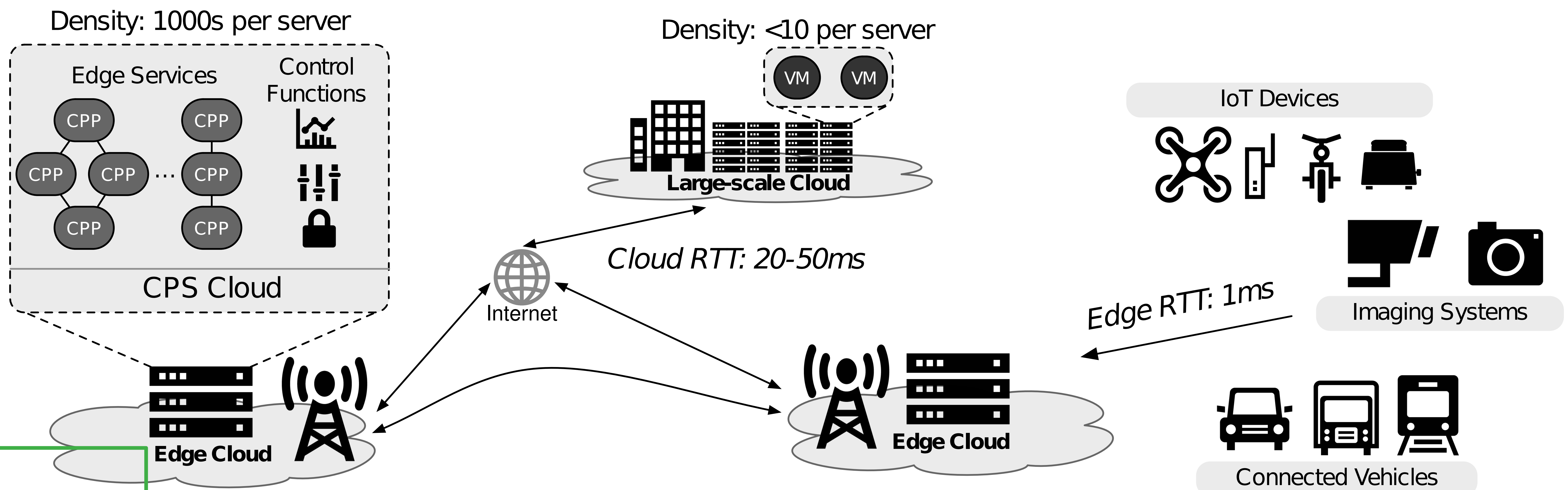


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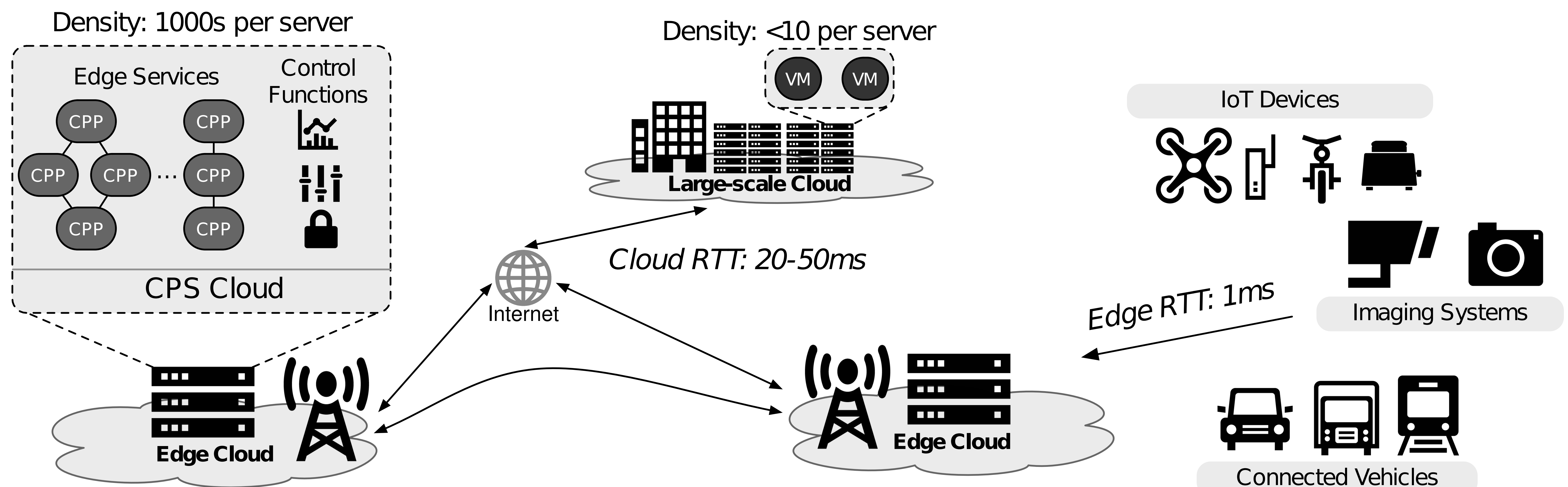
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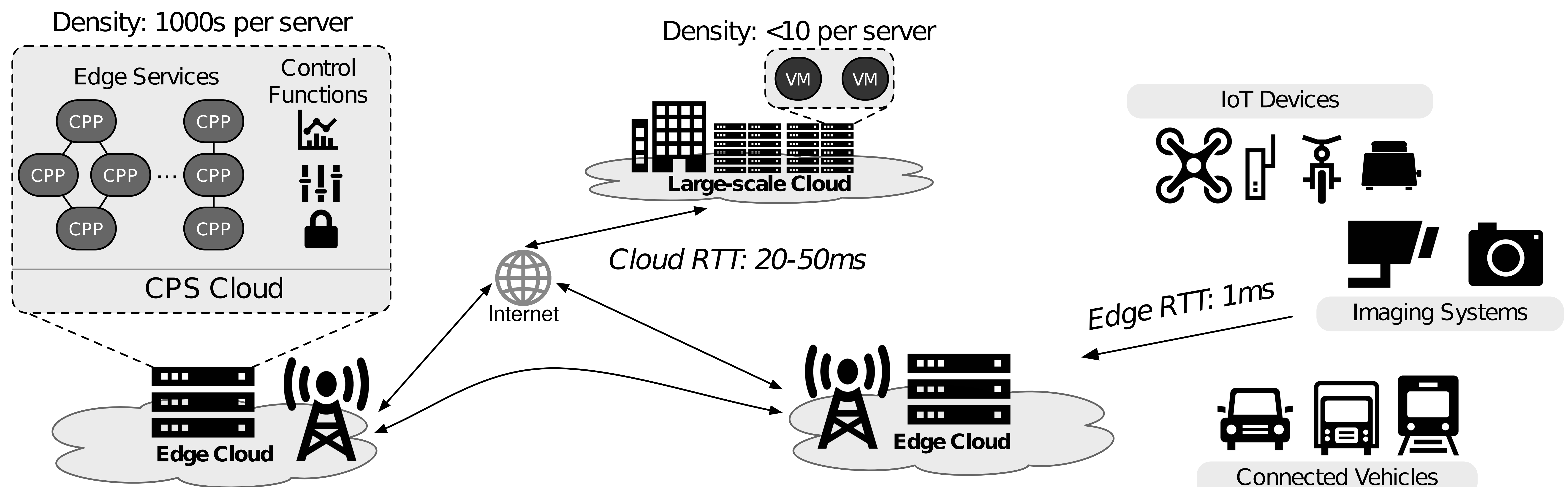
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