

Nested Virtualization meets Micro-Hypervisors: Towards a Virtualization Architecture for User-Centric Multi-Clouds

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Is this the best of all possible clouds?

Telco 2 Realm

Data Center

Data Center

CPEs

New Applications Domains:

- IoT
- Healthcare
 - Tele-medicine
- Network Security
 - Privileged point of control

New challenges:

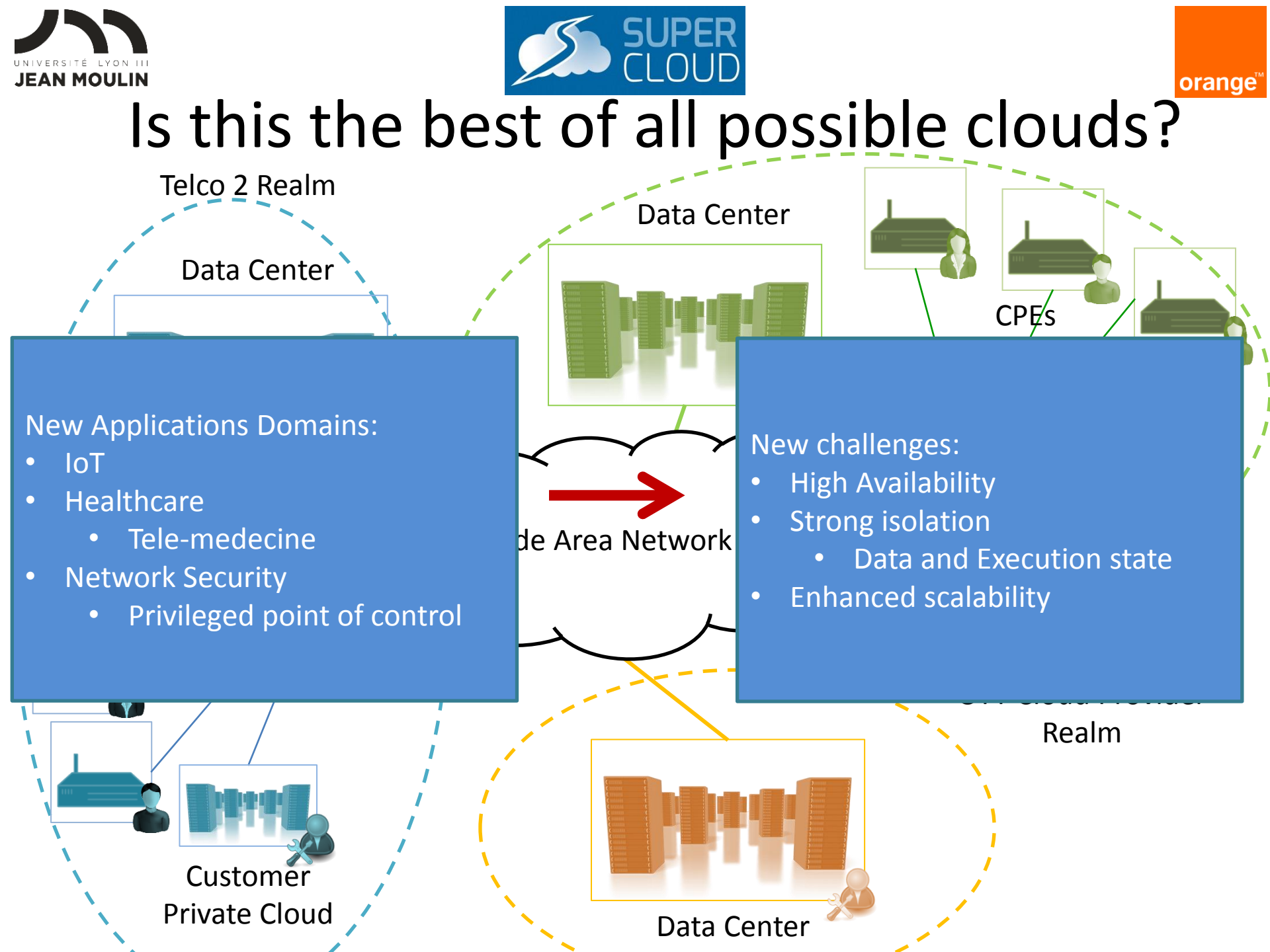
- High Availability
- Strong isolation
 - Data and Execution state
- Enhanced scalability

Wide Area Network

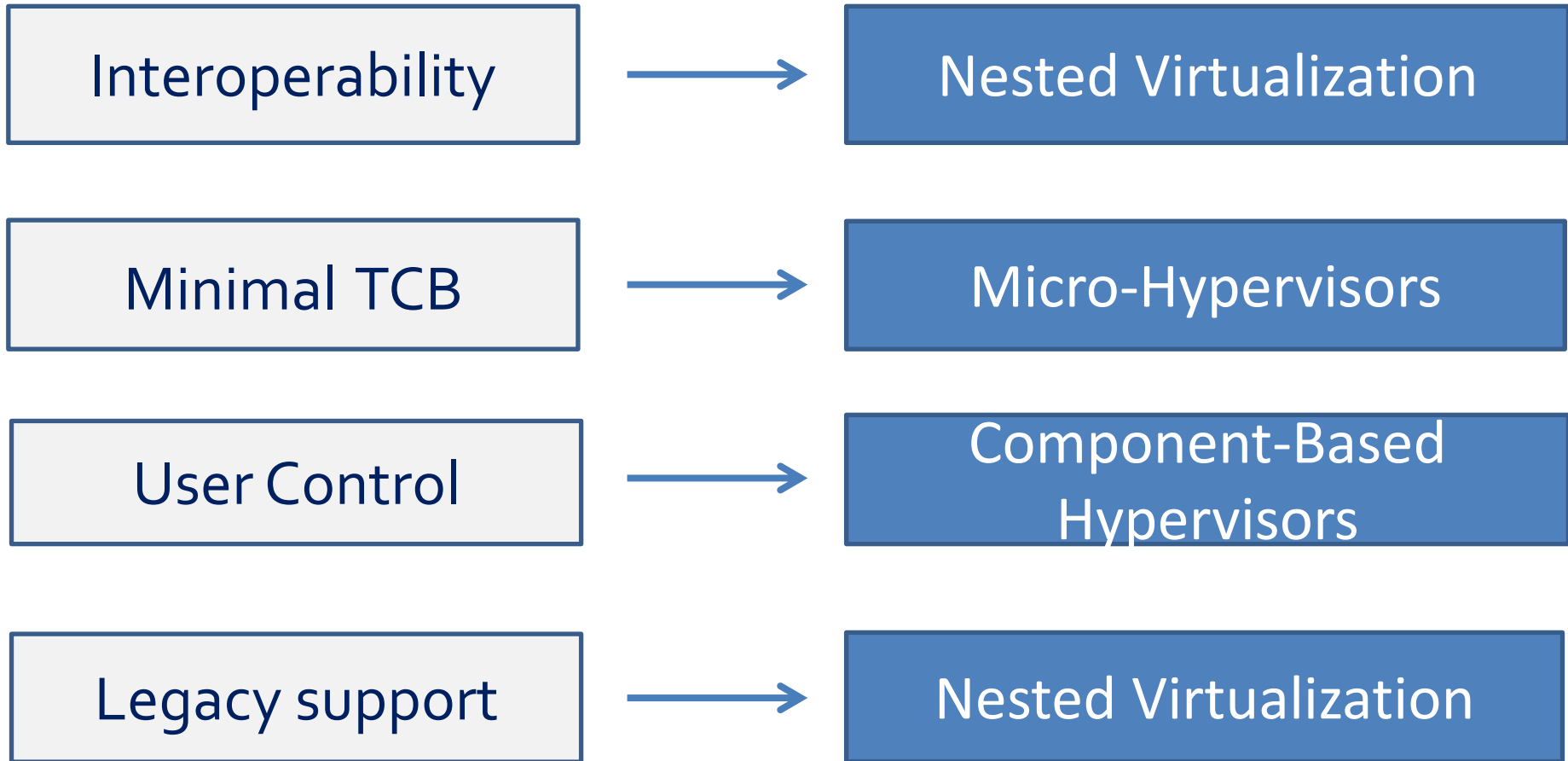
Realm

Customer
Private Cloud

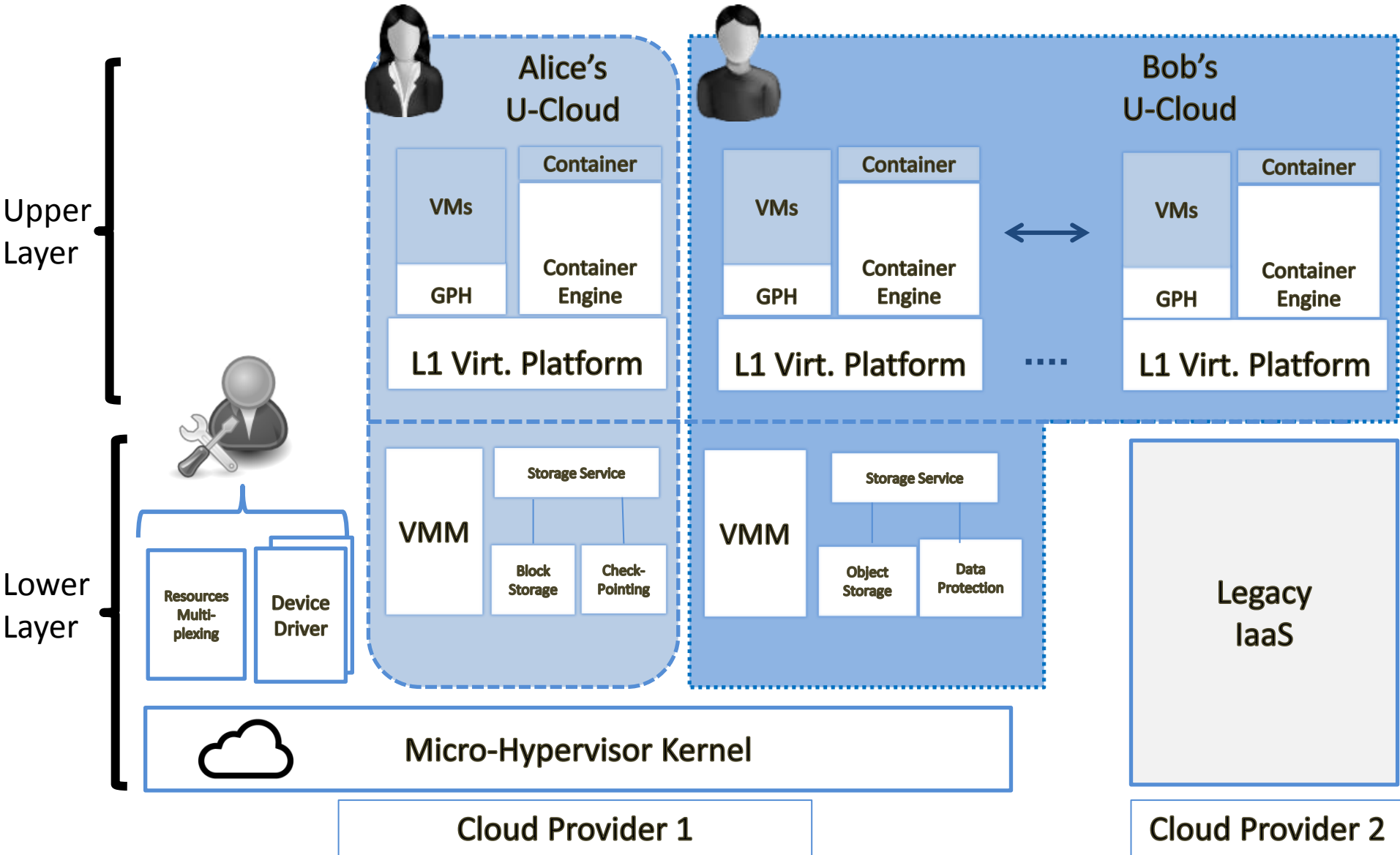
Data Center



From requirements to virtualization design



A first Distributed Virtualization Architecture



Proof-of-concept and Next Steps

- Implementation:
 - LL based on Nova hypervisor
 - Under investigation extensions to support nested virtualization
 - UL based on Openstack with multiple virtualization technologies
 - Evaluating multi-provider architecture
- Future work:
 - Automated cross-layer/cross-domain security management
 - VESPA framework for automated security monitoring
 - User/Provider security policy reconciliation

Thank you!!!

- Questions?

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